

# Expert Choice Riskion® Help Center

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# What is Risk?

## What is the meaning when someone says there is a risk of loss?

It means that **something might** happen that can result in a **loss**. The words "something", "might", and "loss" have special meanings.

- The something is what we will call an 'Event', or more formally, a "Risk Event".
  - It is common to also refer to a risk event as a "risk", although "risk" has a formal mathematical definition as the expected value of the loss arising from an event.
  - So from now on, keep in mind that event, risk event, or simply risk, refer to the same thing.
- The "**might**" means that it may or may not happen
  - If the event is sure to happen, we don't consider it a risk, but a definite loss.
  - If there is no chance of it happening, we don't consider it a risk either.
  - Therefore, an event is considered to be a risk only if the probability of it happening is greater than 0 and less than 1.
- The term **loss** refers to losses to an organization's objectives. This might be just one objective, such as money, but typically is a wide range of objectives, some quantitative, some qualitative.

A risk can sometimes have **causes**. Alternative words for causes are **sources, hazards, threats, intents,...**

Riskion can be used to study a single event or risk (such as a fire), multiple events (such as project risks), or risks to an entire organization.

Risk analysis can be very complex. However, by carefully defining terminology and using a process that is both theoretically sound and practical, Riskion will enable you to measure, manage, and communicate risk effectively regardless of how simple or complex the situation might be.

## What is Strategic Risk Assessment and Management?

**Strategic Risk** is, by definition, the expected loss due to the occurrence of an uncertain event that prevents an organization from achieving its strategic objectives.

Strategic risk assessment and management is important in many endeavors and areas, including:

- Banking
- Brokers/Dealers
- Consumer Products
- Energy & Utilities
- Financial Services
- Food and Beverage
- Hedge Funds
- Insurance
- Manufacturing & Distribution
- Media and Entertainment
- Not-for-Profit
- Private Client Services
- Private Equity
- Professional services firms
- Project Management

- Real Estate
- Technology
- Textile Rental
- Transportation

**Strategy consists of goals and objectives.**

- Objectives can be (and, if more than just a few, should be) organized into a structure that humans can understand.
- A Hierarchy is the most common and powerful way to do this
- The **Analytic Hierarchy Process (AHP)** has been found to be one of the best, if not the best way to structure, measure and synthesize key factors of strategic risk assessment and management. AHP methods for structuring, measuring, and synthesizing are used throughout Riskion.

**Risk assessment** requires a systematic process for identifying and analyzing events that can affect the achievement of objectives. Riskion provides a theoretically sound and practical process for doing this by addressing the following two questions about risk events:

- what is the likelihood of the event occurring, and
- what is the impact to the organization's strategic objectives if the event occurs?

As we will be discussing in more detail below, Riskion is the only tool in existence today that implements a process possessing all of the key risk requirements of an assessment methodology as specified by standards and requirements organizations such as the Open Group including:

- probabilistic, accurate, logical, concise, meaningful, feasible, actionable, and able to provide management with a process to optimally apply treatments to the risks facing their portfolio of business opportunities.
-

# The Riskion Process Overview

Riskion® is a revolutionary, web-based risk management tool designed to help enterprise-level businesses identify, accurately measure, and mitigate potential risks (or increase potential gains) through professional crowdsourcing and mathematical models that will end your reliance on inferior spreadsheet swags.

To be successful in business, you should always be aware of events that could potentially impact your business or employees. By using pure ratio-based mathematics combined with experienced minds from around the world, Riskion® technology is able to identify any events, causes, and outcomes to help you allocate necessary resources to mitigate these risks, or to increase opportunities.

Use our structured, disciplined process to eliminate confusion and embedded team collaboration and project management tools to improve communication and buy-in throughout your enterprise.

Riskion's comprehensive risk identification and measurement algorithms help you make better risk decisions that are better understood throughout your organization in less time than ever before.

A Riskion model can be Risk, Opportunity, or Mixed. For a Risk Model, the process would be:



1. identify and structure the Riskion elements -- the risk events, threats (sources) and objectives, contributions, participants, and other model definition
2. define and accurately measure the likelihood of the threats, and the likelihood of the events given the threats
3. define and accurately measure the impact of the objectives, and the impact of the events with respect to the objectives
4. calculate and review the risks in flexible representations (grids, charts, curves, bow-tie, risk map)
5. identify controls or treatments, and allocate resources to reduce the risks
6. review the resulting risk after controls are applied

For Opportunity Model, the events being identified are opportunity events instead of risk events, we also identify the stimulants to increase the "opportunity" instead of controls.

□

1. identify and structure the Riskion elements -- the opportunity events, sources, and objectives, contributions, participants, and other model definition
2. define and accurately measure the likelihood of the sources, and the likelihood of the events given the sources
3. define and accurately measure the impact of the objectives, and the impact of the events with respect to the objectives
4. calculate and review the opportunities in flexible representations (grids, charts, curves, bow-tie, risk map)
5. identify stimulants, and allocate resources to increase the opportunities
6. review the resulting opportunities after stimulants are applied

A Mixed model is a combination of Risk and Opportunity models -- here an event can either be a risk or opportunity.

## Risk Model Process In-depth

Riskion implements a collaborative process for identifying events, measuring their risk, and deciding what preventative actions to take, if any, in order to reduce risks.

- Riskion provides a mechanism for executive, mid-level, and operational managers to collaborate in identifying,

analyzing, and reducing risks to their organization. More specifically:

- Riskion provides mechanisms for deriving ratio scale measures of the likelihood of events, ratio scale measures of the impact of events, and ratio scale measures of the risk of events.
- Riskion makes it easy to drill down to examine risks relative to specific objectives and risks relative to specific causes.
- Riskion provides a mechanism to collaborate in identifying treatments to reduce risks and to estimate the relative effectiveness of such treatments.
- The Riskion process and measures enable decision-makers to use a variety of methods to determine which risk events to address and/or which treatments to implement:
  - This can be done either by using structured discussions (possibly aided by simulations or AHP decision models such as with Expert Choice Riskion
  - and/or with a non-linear programming model that determines an optimal mix of treatments to implement, subject to resource constraints as well as legal and managerial constraints

More specifically, the Riskion process framework consists of:

- Identifying possible events that would result in strategic losses
  - While strategic refers to losses that will impact the achievement of strategic objectives, Riskion can also be applied to tactical or project risk.
  - Riskion provides a variety of tools to identify and organize risk events including collaborative brainstorming, structuring, and categorization.
- Measuring and communicating risks
  - Measuring/estimating likelihoods (probabilities) of causes/hazards/threats.
    - Causes or hazards or threats (used synonymously in Riskion) are sources of events, rather than events themselves. Some risk events may depend on causes or hazards or threats while others may not.
    - Unlike risk events that result in one or more losses, causes, hazards or threats do not, in and of themselves cause losses.
    - Causes or hazards may lead to other cause or hazards which eventually lead to one or more events.
    - Riskion can accommodate a hierarchy of causes or hazards.
    - Causes or hazards may or may not be uncertain.
    - Riskion provides tools to measure/estimate the likelihood or probability of causes, hazards, or threats that are uncertain.
- Measuring/estimating the vulnerabilities of events to causes/hazards. The vulnerabilities are actually conditional probabilities of the events given the causes/hazards/threats.
- Synthesizing the likelihood of events as the sum products of the likelihoods of the event's causes and the vulnerabilities of the event to the causes.
- Measuring/estimating the impact or consequences of each event to each strategic objective to which a loss would occur.
- Measuring the importance of the strategic objectives to which loss would occur.
- Synthesizing the impact of each event as the sum product of the event's impacts on objectives and the importance of the objectives.
- Computing risks for each event as the product of the ratio scale measures of the event's overall likelihood and overall impact.
- Communicating risks in a variety of views, including:
  - the overall risk for each event;
  - risk of each event with respect to specific hazards;
  - risks of each event with respect to specific objectives;
  - "Bow-Tie" diagrams showing, for each risk, the causes, vulnerabilities, and impact on objectives
  - a "Heat Map" bubble plot of likelihood vs. impact for each event the bubble size proportional to the risk.
- Identifying and communicating ways to reduce risks, including:

- treatments to reduce the likelihood of causes
  - treatments to reduce vulnerabilities of events to causes;
  - treatments that mitigate (reduce) the consequences of events on objectives;
  - "Bow-Tie" diagrams to aid in identifying, selecting (if not by optimization), and communicating risks and risk management decisions.
  - Determining optimum allocations of resources to reduce risks, considering:
    - constraints, including costs (budget);
    - Dependencies;
    - musts
    - must-not
    - legal requirements;
    - and politics!
-

# Riskion Taxonomy (Riskion Elements and Risk Measures)

## Industry/Standards Risk Terminology

We have included references and abstracts to industry and standard organizations' risk taxonomies for reference:

- DHS Risk Lexicon 2010 Edition
- Open Group
- ISO

The plethora of terms and definitions found in such references is a major obstacle for understanding and communicating risk. We have carefully distilled a large number of risk-related terms and definitions to just eight basic terms that we believe are necessary and sufficient to identify, measure, communicate and manage risk.

These eight terms include:

Four "**Risk elements**", and Four "**Risk measures**".

We have chosen 'default' terms for each of the eight as shown in the Wording Template in the figure below. This template is used in Riskion so that you can map the default terms to those that are familiar to those in your organization.

There are four basic elements and three basic measures in Riskion® (the elements in the parenthesis are alternative names for the basic wording)

Wording Template	Singular	Plural	Past
<b>Risk Elements</b>			
Events (Risks, Risk Events)	event	events	
Threats (Causes, Sources, Hazards, Capability, Intent, Targeting)	threat	threats	
Objectives (Assets)	objective	objectives	
Controls (Treatments)	control	controls	controlled
<b>Risk Measures</b>			
Likelihood (Probability)	likelihood	likelihoods	
Impact	impact	impacts	
Risk	risk	risks	
Opportunities (rewards, possibilities)	opportunity	opportunities	

As can be seen in the above template for customizing the terminology used in Riskion to that used in your organization, there are eight basic terms used in a Riskion model; four "**Risk Elements**", and four "**Risk Measures**".

## Riskion Elements

### Events

Events can be Risk Event or Opportunity Event.

#### Risk Events

The word '**risk**' is often used in two related but different ways: *What* can go wrong; and *How much* can go wrong.

## What

When we ask, "*what* are the risks?" we are asking *what* can go wrong that will result in a **loss**, or perhaps multiple losses. We refer to these as **Risk Events** or just **Events** for short (for Risk Model).

When we ask "*how much* risk is there", we are asking for a measure or estimate of the risk of the Event or Events that might occur.

If, for example, you make an investment, you might ask what can go wrong that will result in a loss? The answer to this question might be formulated as:

One Event:

- "the investment declines in value", or

Several Events:

- "the investment declines 10% in value",
- "the investment declines 20% in value", ...
- ...
- "the investment loses all of its value".

Another example might be, "what can go wrong with our information processing operations?" This answer to this question might be formulated as:

One Event

- "a cyber attack is made to our information processing operations", or

Several Events:

- "a denial of service attack is made on our information processing operations";
- "sensitive information is accessed by an unauthorized individual or organization";
- "data is destroyed";
- "data is modified";
- .....

## How Much

In order to communicate and manage risk, we need to do more than just identify events, we need to measure or estimate their risks. This is the "*How much*" dimension of risk.

For example, there is a 15% risk to this investment, or 5% of our assets are at risk from a cyber attack.

**For Risk Events, Riskion is designed to:**

- Identify the "what" can go wrong (Events),
- Measure/estimate 'how much' risk each event poses (Expected Loss)
- Identify what can be done to reduce the risks (Treatments)
  - Decide what and how much to invest in reducing the risks (Allocate Resources)

## Opportunity Events

An Opportunity Event is another type of Event that is an opposite of a "risk event" -- instead of asking *what* can go wrong that will result in a loss, we ask what can go right that will result in a "**gain**," or multiple of gains.

### For Opportunity Events, Riskion is designed to:

- Identify the "what" can go right (Events),
  - Measure/estimate 'how much' opportunity each event poses (Expected Gain)
  - Identify what can be done to increase the opportunities (Stimulants)
  - Decide what and how much to invest in increasing the opportunities (Allocate Resources)

## Threats

- An EVENT may be unconditional or it may DEPEND on one or more THREATS.
  - The THREATS can be referred to as CAUSES, HAZARDS, or SOURCES.
  - A threat (cause or hazard or source) is a situation that contributes to or influences the likelihood of an event taking place.
  - For example, a hazard is a potential threat of harm. It can be an activity, condition, operation, or object which can cause one or more events that result in injuries, damage, loss of material, or inhibit the ability to perform a prescribed function.
  - In Riskion, we refer to threat, causes, hazards, and sources interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose in Riskion -- they are all threats of risk.
  - An event can have but doesn't necessarily need to have a threat.
- Threats (causes, hazards, and sources) present a potential for loss, but the actual loss is represented by events as discussed above.
- A cause may depend on other causes which in turn may depend on other causes. These can be represented hierarchically in Riskion.
- Unlike Events that must be uncertain, a cause may be certain or uncertain. If uncertain, we need to measure or estimate its likelihood or probability.
- If an EVENT is dependent on just one uncertain threat, then:
  - the likelihood of the event is the likelihood of the cause times the likelihood of the event given the cause. The latter is referred to as VULNERABILITY.
  - Example:
    - What is the likelihood of having an automobile accident today?
    - We may or may not be in a car today so we could refer to the cause as driving in a car. (We could have more than one cause --- see below).
    - The likelihood of an accident would be the likelihood of driving in a car today times the likelihood of having an accident given that we drive in a car today.
  - If an event has two or more (mutually exclusive) causes that are uncertain then
    - the likelihood of the event is the sum product of the likelihoods of the causes times the likelihoods of the event given the causes (Vulnerabilities)
    - Example:
      - it might rain
      - it might snow
      - it might not rain or snow
      - The likelihood of an accident would be the sum product of the likelihoods of each of these causes (or situations) times the likelihoods of an accident given each of these causes.
  - Causes and events are often confused in practice and it is important to distinguish between them.
    - A cause may lead to an event entailing a loss, but a cause has no loss in and of itself.
    - In an article "Don't Confuse Risk with Risk Sources", (<http://www.ababj.com/risk-management/item/4348-don-t-confuse-risks-with-risk-sources>) EricHolmqist, of Accume Partners,

states:

- There is a common challenge we see in how people approach risk assessments, and that is distinguishing between risks and risk
- Understanding the difference between these two is important to building better risk assessments, and critical to creating effective and efficient treatments.
- Holmqvist suggests that:
  - a risk (or risk event)
    - is tied to a defined process, since virtually all risks represent a process failure of some sort;
    - should have an impact that can be quantified;
    - should generally reflect an unexpected outcome.
  - and that a risk source(cause/hazard):
    - Can be distinguished by asking the question "What might lead to an event taking place?"
    - is a circumstance or action that would set the stage for an unwanted event;
    - as a threat of the event, should not be confused with the event itself (what could go wrong).
  - Anything that is not a Risk (Event), may well be a risk threat (hazard/cause)

## Objectives

- The consequence of an event is the loss in the form of failing to achieve one or more OBJECTIVES and or the loss to one or more ASSETS.
- ASSETS:
  - Assets may or may not be explicitly part of a risk analysis.
  - If included in risk analysis, assets are useful in helping to identify events that would cause a loss to the assets.
- Objectives may be broad (e.g., considering organization-wide strategic, operational, compliance, and reporting requirements) or more narrow (e.g., relating to a product, process, or function such as supply chain, new product sales, or regulatory compliance).
- Strategic risk analysis often includes a broad hierarchy of objectives/sub-objectives/... with the lowest level of the hierarchy consisting of the 'Consequences' to the organization's objectives.
  - External
    - Economic
      - Financial markets
      - Unemployment
      - Mergers & acquisitions
      - Competition
    - Natural Environment
      - Financial viability
      - Quality of execution
      - Service level agreements
    - Political
      - Government/policy
      - Laws & regulations
  - Internal
    - Infrastructure
      - Availability of assets
      - Capability of assets
      - Access to capital
      - Complexity

- Personnel
  - Employee capability
  - Fraudulent activity
  - Health & safety
- Process
  - Capacity
  - Design
  - Execution
  - Suppliers & dependencies
- Technology
  - Data integrity
  - Data & systems availability
  - Development & deployment
  - Maintenance
- The **Impact** would be the sum product of the consequences to each objective times the importance of the objectives.
- In simple cases, there may be just one or a few OBJECTIVES or CONSEQUENCES.
  - Example
    - What would be the impacts of a delay in delivery of parts by our one supplier
      - Financial losses
      - Brand damage
  - Scope:
    - The scope of risk analysis may be enterprise-wide or limited to a particular operational or geographical area

## Controls

Three types of controls can be identified and evaluated with Riskion:

- Controls to reduce the likelihood of one or more sources of risk -- causes, hazards, and threats.
- Controls to reduce the likelihood of an event given a source (e.g. a cause).
  - The likelihood or probability of an event given a cause is known as a VULNERABILITY
  - A vulnerability or the likelihood or probability of an event given a cause is a conditional likelihood or probability.
- Controls to reduce (i.e. MITIGATE) the impact of an event on an objective.

For Opportunity Events, instead of "CONTROLS", we are identifying and evaluating STIMULANTS to increase the likelihood of one or more sources; the likelihood of events given a source, and the impact of an event on an objective.

## Risk Measures

### Likelihood

The Department of Homeland Security RiskLexicon distinguishes between qualitative/semi-quantitative and quantitative likelihood:

- Qualitative and semi-quantitative measures, e.g. high, medium, and low, may be represented numerically, but cannot be used mathematically.
- Quantitative measures, on the other hand, have derived likelihood measures that can be used mathematically
- While Riskion produces only 'Quantitative' measures that can be used mathematically (such as multiplying by impact

to derive a measure of risk), most risk assessment tools use qualitative or semi-quantitative measures and thus do not produce a mathematically meaningful measure of risk.

## PROBABILITY

The DHS Risk Lexicon defines Probability as a specific type of likelihood, meeting more stringent conditions:

1. the probability of the random event —"A" must be equal to, or lie between, zero and one;
  1. the probability that the outcome is within the sample space must equal one; and
  2. the probability that the random event—"A" or —"B" occurs must equal the probability of the random event —"A" plus the probability of the random event —"B" for any two mutually exclusive events
- The 'Likelihood' measures in Riskion satisfy these conditions and could also be referred to as "Probabilities".
- Colloquially, as well as in Riskion, Probability is used as a synonym for Likelihood.
- In statistical usage, however, there is a clear distinction between probability and likelihood:
  - probability allows us to predict unknown outcomes based on known parameters
  - likelihood allows us to estimate unknown parameters based on known outcomes
  - Strictly speaking, Riskion's measures of uncertainty are 'probabilities' because the task at hand is to predict outcomes rather than to estimate parameters of probability distributions. However, Riskion uses the term Likelihood because it is in more common usage for risk assessments.

## Probability of Events

The probability of events may or may not be conditional. They are unconditional for events that do not depend on any cause (or any source).

- Event probabilities are conditional events that depend on one or more sources (causes/hazards/threats).
  - In this case, the event probability is the sum product of the probabilities of causes times the probability of the event given the causes
    - P(Events) dependent on Causes -- Venn Diagram
      - P(Events) dependent on Non-Mutually Exclusive Causes-- Venn Diagram
      - Each of the above probabilities estimated with one of several methods described below
  - For example, the DHS Risk Lexicon states that:
  - The likelihood of a successful attack occurring typically broken into two related, multiplicative quantities: the likelihood that an attack occurs (which is a common mathematical representation of threat), and the likelihood that the attack succeeds, given that it is attempted (which is a common mathematical representation of vulnerability). In the context of natural hazards, the likelihood of occurrence is typically informed by the frequency of past incidents or occurrences.

## Impact

- The IMPACT of an event is a CONSEQUENCE of the event in the form of a loss to one or more objectives of the organization.
- While some losses can be expressed in terms of dollars, other losses may be qualitative (e.g. damage to a brand).
- The IMPACT of an event is the sum product of the losses to the organization's objectives times the importance of those objectives, some of which are typically qualitative.
- The Analytic Hierarchy Process is ideal for structuring an organization's objectives in the form of a hierarchy and deriving ratio scale measures of the relative importance of objectives.

## Risk

- The risk of an event (or just risk for short) is the product of the risk event's likelihood and its impact.

## Opportunity

- The opportunity of an event (or just opportunity for short) is the product of the opportunity event's likelihood and its impact.
-

# Risk, Riskion (and Comparion)

Expert Choice Riskion addresses losses that can occur from the occurrence of risk events. While some definitions of risk include gains as well as losses, Expert Choice Riskion adopts the more traditional definition of risk as the expected value of losses.

Another Expert Choice product, called **Comparion**, focuses on the achievement of objectives (gains) from a decision to choose one or a combination of *alternatives*.

Riskion and Comparion can be used independently of one another. Typically, Riskion is used by professionals responsible for identifying and analyzing losses that can occur in an organization, activity, or process, from the occurrence of one or more risk events. Comparion, on the other hand, is typically used by professionals responsible for strategic or tactical decision-making activities involving the choice of one or a combination of alternatives.

Riskion and Comparion can also be used in conjunction with one another wherein Riskion provides a detailed analysis of the risks of the alternatives being considered in a Comparion decision. The phrase "Risk Informed Decision Making (RIDM)" is sometimes used to refer to decision making (choosing alternatives) when the risks of alternatives are explicitly included in the process.

In Comparion, risks of the *alternatives* being considered are treated as part of the decision making and resource allocation processes. These risks can be evaluated in a choice decision in three ways as follows -- each with an increasing level of explicit detail and greater accuracy:

## 1) An intuitive assessment of the overall risk of each of the alternatives

- This involves an implicit (Intuitive assessment and mental synthesis) of
  - impacts,
  - likelihoods,
  - events
  - threats, hazards, ..
- The intuitive assessment is difficult to do in one person's head, much less synthesize over many people's judgments
  - Example: Including 'Risk' factors in an objectives hierarchy of the Risk Informed Decision Model and evaluating the relative risks of the alternatives with respect to the risk factors

## 2) An analysis of risk factors, such as Cost, Schedule, Scope, Environment

- This involves an
  - explicit assessment of the relative importance of the risk factors, along with an
  - implicit evaluation (intuitive assessment and mental synthesis) of
    - likelihood,
    - impacts,
    - risk events for each alternative
  - The intuitive assessment can be difficult to do in one person's head, much less synthesize over many people's judgments
  - Example: Associated Risk Model in a Resource Allocation with Comparion
    - A risk factors hierarchy might include Cost, Schedule, Scope, and Environment
    - The alternatives are evaluated for their relative risks with respect to each of these factors
      - Events and the product of likelihood and impact of these events are not explicit
    - The anticipated benefit of each alternative is discounted by its resultant risk

3) A detailed analysis:

- Explicitly addressing:
- Sources/Threats/Hazards of risk events
- Risk events
- A hierarchy of objectives for which events result in loss
- Ratio scale measures of
  - likelihood of sources/threats/hazards
  - the vulnerability of events to sources/threats/hazards
  - importance of objectives
  - impact of events to objectives

Example: A Riskion risk assessment of each alternatives' risks (events) resulting in a mathematically sound synthesis of the above. The resulting risks can then be included in the Risk Informed Decision Model.

The first two approaches above do not require Riskion. Riskion is appropriate for the third approach, which includes an explicit treatment of events.

#### Summary:

- While Expert Choice Comparison focuses on
  - prioritizing/deciding/allocating resources to '*alternatives*', such as strategies, products, projects.
- Expert Choice Riskion focuses on
  - '*events*' and sources of events that can cause loss, such as terrorist attacks, information technology vulnerabilities, fire, cost overruns, etc.

Organizational responsibility for strategic planning is often assigned to different personnel than those responsible for risk assessment and management, Comparison is typically more relevant to those responsible for strategy and decision making while Riskion is typically more relevant to those responsible for identifying, analyzing, and mitigating risks.

Of course planning and management involve both; For example, Riskion can be used to provide a more detailed analysis of risks for projects being considered in a Comparison resource allocation.

## Questions that need to be answered as part of a risk assessment are:

1. What events might take place to result in losses to the organization?
2. For each event, how likely is the event?
3. If the event were to occur, what would the impact be on the organization's objectives?
4. Given an event's likelihood and impact, what is its risk?
5. What can be done to reduce the risk?
6. Considering all events and options to reduce their risk, what should the organization do to reduce the overall risk?

Without Riskion, risk analysis and management processes are difficult to understand and implement, owing to the following challenges:

- RISK, defined to be the expected value of a loss or failure to achieve one or more OBJECTIVES due to an uncertain event can be computed as the product of the LIKELIHOOD of the event and its IMPACT.
  - The likelihood of so many events can be difficult to estimate because:
  - there may be no historical data;
  - history is not always a good indication of what will happen in the future;

- judgment by humans is often necessary/valuable to supplement historical data even when data is available;
- simulation may necessary/valuable to supplement historical data;
- when risks DEPEND on CAUSES/THREATS, estimates of the likelihood of the CAUSES/THREATS occurring, as well as the likelihood of the EVENTS given the CAUSES (VULNERABILITIES) must be estimated
- likelihood estimates must be 'ratio level' measures in order for risk estimates to be mathematically meaningful (this is rarely the case using tools other than Riskion);
- The impact of some/many events is difficult to estimate because:
  - the impact is the loss due to an organization's failure to achieve its objectives;
  - organizations have multiple objectives which, unless structured in a manageable form, such as a hierarchy, can be difficult to understand and prioritize;
  - some objectives are quantitative while others are qualitative;
  - the relative importance of objectives differ and must be estimated/prioritized;
  - judgments about the relative importance of objectives differ among different individuals and constituencies;
  - estimates of the relative importance of objectives as well as the impact on the objectives by an event must be 'ratio level' measures in order for the risk estimates to be mathematically meaningful.
- Controls to reduce risk must be identified evaluated as to their anticipated effectiveness in reducing risk. There are three types of treatments:
  - those that reduce the likelihoods of CAUSES/THREATS,
  - those that reduce the VULNERABILITY or the likelihood an event occurring given CAUSES/THREATS);
  - those that mitigate the impacts of one or more events on one or more objectives.

Estimates of the anticipated reduction in risk for each treatment under consideration must be proportional -- that is possessing the ratio level measurement property.

- Decisions as to which CONTROLS to implement are complex and difficult to make due to:
  - constraints in budget and other resources as well as
    - dependencies
    - laws and regulations
    - ...
  - a large number of possible combinations of treatments that might be implemented; governance and politics
- Failing any one or more of the above challenges is likely to produce misleading risk estimates and ineffective allocation of resources in reducing risk.

A major goal of Riskion is to present a coherent framework for the components of risk analysis and their relationships in a way that makes an extremely complex subject understandable and manageable.

- This is achieved by carefully defining the components (or elements-- see below) and their relationships, and providing tools to identify, measure, and synthesize the component parts.

# Models List Overview

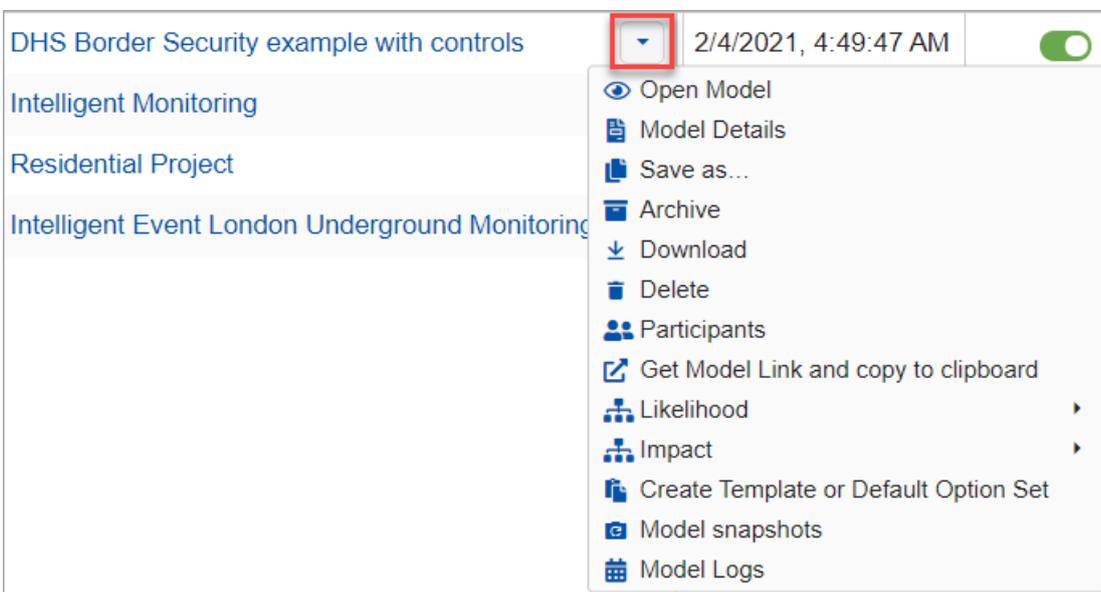
Riskion® models exist within workgroups. Most users will be members of only one workgroup. If you are a member of more than one workgroup, then you will be able to select which workgroup you want to work with using the select Workgroup pull-down menu at the top.



By default, the active Riskion models are displayed. You can view **Archives**, **Templates**, and **Deleted** projects by clicking on the respective tab names.



You can see [several commands](#) by clicking the arrow icon to the right of the model name, or by simply right-clicking a row:



A Riskion model contains a **Likelihood** and **Impact** model. There are separate menus for Likelihood and Impact models for commands applicable to both of the models.

□ The checkboxes to the left of the model names allow you to select one or more models and do specific actions such as Download, Delete, and Archive.

□

**Deleted models** go to the Deleted tab which can be restored or deleted permanently.

**Archived models** go to the Archives tab which can be activated or deleted.

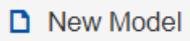
The models' list page shows the following columns by default:

- Online/Offline **Online status** toggle,
- **Last access date/time**, and
- the **Status** column which shows the project availability and additional details/actions in addition to being Online or Offline



# Create New Model

Click the **New Model** button to create a new Riskion model.

 New Model

The New model prompt will open where you will enter the Model name, an optional description, and select the Model Type.

□

Depending on the Model Type you selected, you can select from the "Based on Option Set" dropdown.

The "[Option sets](#)" define the model options such as the wording, evaluation settings, etc -- which you can also modify after the model is created.

---

# Model Type -- Risk, Opportunity and Mixed

A Riskion model can be Risk, Opportunity, or Mixed (Combination of Risk and Opportunity).

The Riskion model type is defined when [creating a model](#), or in [Identify > Define Model > Description/Details](#) page after the model is created.

- **Risk** - A risk model assesses the Risks (expected losses) from uncertain events. Controls or Treatments are defined to reduce the expected losses.
  - **Opportunity** - An opportunity model assesses the Opportunities (expected benefits) from uncertain events rather than the Risks (expected losses) from uncertain events. Stimulants are defined to increase gains.
  - **Mixed** - A mixed model assesses the Opportunities (expected benefits) from uncertain events and the Risks (expected losses) from uncertain events.
-

# Model Status: Online or Offline

A model that is **online** can be accessed by evaluators for their input.

The Project Manager can place a model offline if so desired.

Evaluators won't be able to evaluate a model that is offline. Accessing the evaluator's link will redirect them to the login page with a message stating that the model is offline and to contact the Project Manager for additional information.

The Project Manager can place the currently open model online or offline from the top bar using the toggle switch:

□

The Model's Online or Offline Status can also be updated from the [Model's list](#) page which can be changed whether the model is open or close:

<input type="checkbox"/>	★	Model name	Last Access	On-line
<input type="checkbox"/>	☆	DHS Border Security example with controls	2/17/2021, 11:18:06 PM	<input checked="" type="checkbox"/>
<input type="checkbox"/>	☆	Bayer ERM new	2/17/2021, 9:15:14 PM	<input type="checkbox"/>
<input type="checkbox"/>	☆	Intelligent Event London Underground Monito	2/17/2021, 3:51:21 AM	<input checked="" type="checkbox"/>
<input type="checkbox"/>	☆	Intelligent Monitoring	2/11/2021, 2:15:16 AM	<input checked="" type="checkbox"/>
<input type="checkbox"/>	☆	Risk Model	2/10/2021, 1:51:49 AM	<input type="checkbox"/>
<input type="checkbox"/>	☆	Residential Project	2/4/2021, 4:49:24 AM	<input type="checkbox"/>

# Create New Model From File

Clicking the  button will open a window as shown below:

□

Click "Select File..." to browse for the file on your computer that you want to upload as a new Riskion model. The Model name is just the same as the file name, you can change this as desired.

You can create a new project from:

- a file previously downloaded from a Riskion model and stored on your computer (.ahps)
  - an archived file (.zip or .rar) containing one .ahps model
  - a text file containing textual information about the model to be created (.txt)
-

# Create a Copy of the Model (Save as)

Creating a copy of your model (Save as) is helpful if you want to experiment with some changes, but want to keep a copy of your model before making any changes.

To make a copy of a Riskion model, simply go to the Models list, right-click the model or click  to the right of the model you want to make a copy, and then select "**Save as...**".

□

A modal prompt will be displayed as shown below:

□

**There are also options available:**

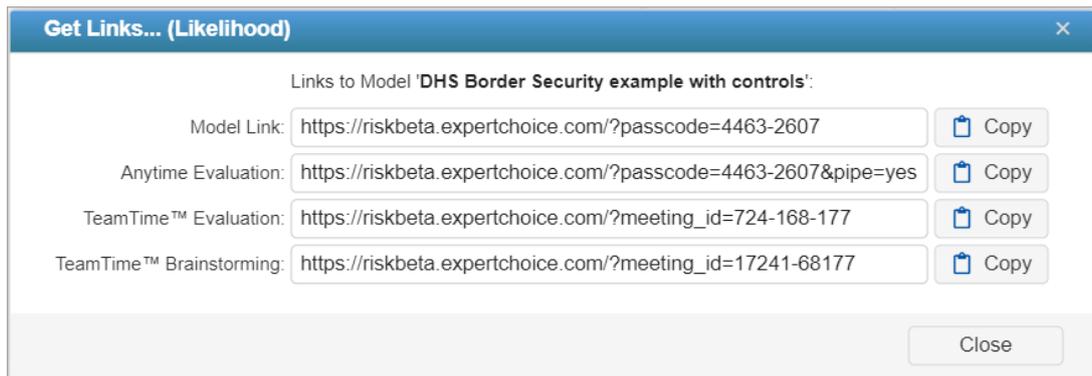
- Copy Participants - copy the participants with their judgments (if any)
  - Camouflage Participants Email - assign a random email name
  - Camouflage Participants Name - assign a random participant name
  - Camouflage Sources Information - (Source1, Source2...)
  - Camouflage Events Information - (Event1, Event2...)
  - Copy Snapshots data - include the snapshots' data of the original model to the copied one
  - Save as Version - save the model into a specific Riskion version. This is helpful when you want to downgrade your model if in case you want to use it on a site with a lower version.
-

# Models List Commands (Archive, Download, Delete etc.)

When you right-click the model or click  to the right of the model name will display several commands:

□

- Open model
- Save as - to save a copy of the model with a different name
- Archive - to **archive** a model
- Download
- Delete
- Get Model link and copy to clipboard - model link with a passcode
- Options specific to the Likelihood and Impact models:
  - - A Riskion model contains a Likelihood and an Impact model. Depending on the selected model menu, the following commands are available.
      - Collect input - go to the Evaluation
      - Evaluation status - go to the Evaluation status page
      - Get links... - displays a modal prompt where you can copy the Model link, Anytime evaluation link, TeamTime Evaluation link, and TeamTime Brainstorming



- Send Invitations - go to the Anytime invitation page
- Results - go to the Events grid
- Create Template or Default Option Set - create a template or default option sets from the model
- Model Snapshots - open the model snapshots. This works even the model is close
- Model Logs

If you want to **download, delete** or **archive** several models at once, you can use the checkboxes at the left of the screen to select the models and then select the action you want to perform.

# Default Wording when Creating a New Model

When creating a new model, the new model's terminologies will be taken from either of the two:

□

1. **Option Sets** - use the wording template specified on the selected options set's "Model Properties > Model Details" page. For example, below is the wording template of the "Risk" option set selected above. The newly created model will have the same wording.

MANAGE MODELS		DEFINE MODEL		COLLECT INPUT	
Model Properties	Likelihood	Impact			
Description					
Model Details					
Model Timeline Begins On:	<input type="text"/>				
Model Timeline Ends On:	<input type="text"/>				
Model Type:	Risk Model				
	<i>A risk model assesses the Risks (expected losses) from uncertain events.</i>				
Model Statistic:	Events count: 0 Causes count: 1, covering causes: 1 Objectives count: 1, covering Objectives: 1				
DB version:	1.1.54				
Created:	9/21/2021 3:41:04 AM				
Last modified:	9/21/2021 3:45:06 AM				
Wording Template					
Event (Risk, Reward):	<input type="text" value="event"/>	Events (Risks, Reward):	<input type="text" value="events"/>		
Cause (Source, Threat):	<input type="text" value="cause"/>	Causes (Sources, Threats):	<input type="text" value="causes"/>		
Objective (Consequence):	<input type="text" value="objective"/>	Objectives (Consequences):	<input type="text" value="objectives"/>		
Control (Treatment):	<input type="text" value="control"/>	Controls (Treatments):	<input type="text" value="controls"/>		

2. **Workgroup Wording Templates** - checking the "Use workgroup wording templates" checkbox will use the "Workgroup Wording Templates" instead of the selected Option Sets wording.

□

NOTE: When uploading an existing model or creating models from Archive or Templates, the terminologies will be based on that model's [Wording Templates](#). For older models that do not have a singular wording defined, the system will use the singular wording from the [Workgroup Wording](#). If the resulting singular-plural terminologies are inconsistent, please update them on the model's **Model Properties > Model Details** page.

For existing models, you can update the element names on the **IDENTIFY/STRUCTURE > Model Properties > Model Details** page.

# Restore and Delete Archived Models

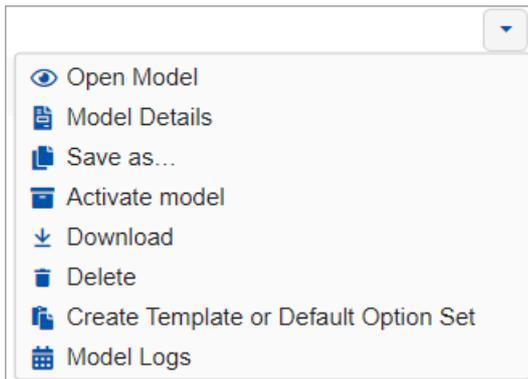
The **Archives** tab lists the models that have been archived from the Models tab. Archived models contain all the model information and participants' judgments.

□

Archived models can be **deleted** or **activated**.

The activated model will be removed from the archives list and will be added to the Models tab.

Click the arrow icon to view commands you can choose from.



If you want to **download**, **delete**, or **activate** several archives at once, you can use the checkbox to the left to select, and then click the download, delete or activate buttons.

# Create and Delete Templates

**Templates** are used to create a new Riskion model with predefined:

- sources and objectives hierarchy,
- events,
- information documents,
- contributions,
- roles for the participant's groups,
- evaluation and measurement settings

Templates are created from an existing Riskion model in the [Models](#) tab:

Click the arrow icon to the right of the model you want to save as a template, and then Create Template or Default Option Set:

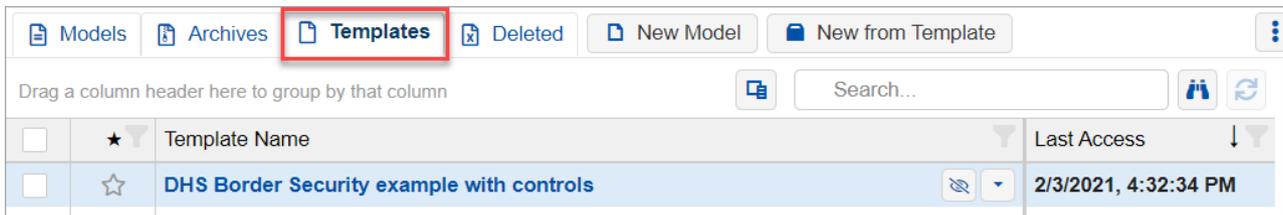
□

You can rename the model and then click Create.

□

Templates only have the Likelihood's and Impact's Structure and Measure tabs available.

The created template will be moved to the Templates tab:



<input type="checkbox"/>	★	Template Name	Last Access
<input type="checkbox"/>	☆	DHS Border Security example with controls	2/3/2021, 4:32:34 PM

To create a model from a template, click the arrow icon to the right of the template name and a submenu will appear. Then click 'Create Riskion model'.

□

Alternatively, you can use the  button and then select from the list of available templates in your workgroup.

To **delete** a template, simply click the Delete option from the same menu above.

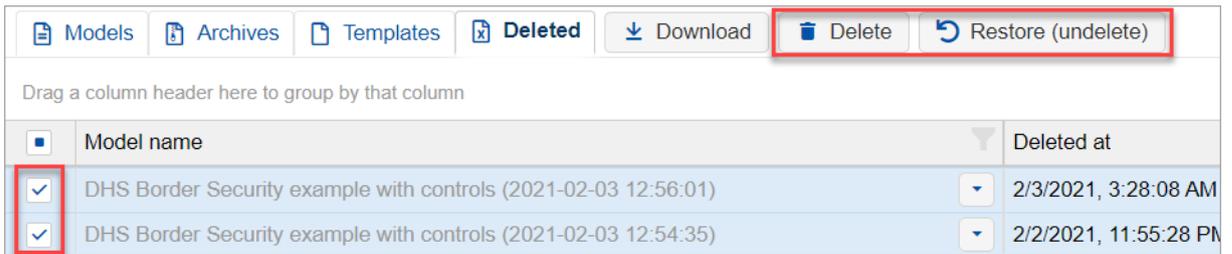
# Permanently delete or restore deleted models

Models that are marked as deleted are put in the deleted tab and remain there until:

1. they are permanently deleted by pressing the Delete option
2. they are restored by pressing the Restore (undelete) option
3. or, until some period of time has elapsed and the models are permanently deleted.

The (permanently) delete and restore options can be done in either way:

1. by selecting the model(s) and pressing the Delete or Restore (undelete) button at the top



 Models	 Archives	 Templates	 Deleted	 Download	 Delete	 Restore (undelete)
Drag a column header here to group by that column						
<input type="checkbox"/>	Model name					Deleted at
<input checked="" type="checkbox"/>	DHS Border Security example with controls (2021-02-03 12:56:01)					2/3/2021, 3:28:08 AM
<input checked="" type="checkbox"/>	DHS Border Security example with controls (2021-02-03 12:54:35)					2/2/2021, 11:55:28 PM

2. by clicking the  button to the right of the model and select Delete or Restore (undelete)



<input type="checkbox"/>	Model name					Deleted at
<input type="checkbox"/>	DHS Border Security example with controls (2021-02-03 12:56:01)					2/3/2021, 3:28:08 AM
					 Restore (undelete)	
					 Delete	

**Warning:** Make sure that you really intend to permanently delete your model(s) as this action can't be reverted.

# Edit Model Name and Model Description

The **Description** tab allows you to edit the Model Name and the Model Description.

This can be found on the **IDENTIFY/STRUCTURE > DEFINE MODEL > [Description/Details](#)** page.

**Description** | Model Details

Riskion® Model Name: \* Intelligent Event London Underground Monitoring

Model description: The Intelligent Event Monitoring is a software system designed by Siemens to monitor degradation of physical assets such as track signals and to provide real-time information about train movements along the entire Central Line of London Underground. The system is in place and active, but no proper risk assessment of events that could occur during the system's operability has been conducted. Since system is already operational, the project will focus on risks as part of on-going operation of the system.



Model Time Frame:

Model Description Tab

Click  to edit the model description. A [rich text editor](#) will be opened where you can add rich texts, images, links, etc.

# Model Details (Access Code, Get Links, Model Statistic)

The **Model Details** shows the same information as in the [Description](#) tab with more details and project settings: Model Access Code, Links, Model Statistic, and [Download](#).

This can be found on the **IDENTIFY/STRUCTURE > DEFINE MODEL > Description/Details** page.



## Model Access Code

The **model** access code is a unique code useful when the evaluators may be unknown beforehand (for example, in a model where participants are not known during the creation of the model) or if the Project Manager does not know the email address of one or more the evaluators. In such cases, the Project Manager can enable the use of an access code using the **"Available by Access Code"** checkbox.

Riskion has two models: Likelihood and Impact -- both have unique access codes.

Likelihood access code: *	<input type="text" value="4870-9381"/>		Get Likelihood Model Links...
Impact access code: *	<input type="text" value="1695-5717"/>		Get Impact Model Links...

When "Available by Access code" is disabled, new users will not be able to join the evaluation using the access code.

You can generate a new access code by clicking . You can also modify the access code from the text box. Creating a new access code is helpful if in case you want to save a copy of your model and would like to continue collecting input on a new model using the same evaluation link(s) of the original model.

To copy the model link with access code to your clipboard, simply click the "Get Model Link" button.

### How to use the access code:

From the Riskion login page, specify email, password and then enter the access code and click "Log in" (the access code is auto-filled when the Model link is used). Evaluators will be taken directly to evaluation screens where they can begin their evaluation. Project Managers will also open a specific model when using the access code during login.

□

## Get Links

For the Likelihood or Impact model, clicking the Get Links button will open a modal where you can copy Anytime evaluation, TeamTime meeting, and brainstorming links.

Get Likelihood Model Links...
Get Impact Model Links...

**Get Links...** ×

Links to Model '**Intelligent Event London Underground Monitoring**':

Model Link:  Copy

Anytime Evaluation:  Copy

TeamTime™ Evaluation:  Copy

TeamTime™ Brainstorming:  Copy

Close

## Model Statistics

The **Model** Statistics displays the number of events, sources, objectives, controls, and participants with judgments of the model.

Model Statistic: Events count: 8  
Controls count: 48 (Controls for Threats: 21, Controls for Events: 14, Controls for Objectives: 13)  
Threats count: 24, covering Threats: 18  
Objectives count: 22, covering Objectives: 15  
Participants count: 10

# Model Wording

## Model Wording

The model's wording or terminologies are defined from the model's **IDENTIFY/STRUCTURE > Model Properties > Model Details** page, scroll down the page to see the "Model Wording" section as shown below:

The screenshot shows the 'Model Details' page in a software interface. The page has a navigation bar at the top with tabs: MANAGE MODELS, IDENTIFY/STRUCTURE, LIKELIHOOD OF EVENTS, IMPACT OF EVENTS, RISKS, CONTROLS, and CONTROLLED RISKS. Under the 'IDENTIFY/STRUCTURE' tab, there are sub-tabs: Model Properties, Visual Structuring, Identify, Relationships, and Participants and Groups. The 'Model Properties' sub-tab is active. Below the navigation, there are two tabs: 'Description' and 'Model Details', with 'Model Details' selected. The 'Model Details' section contains the following information:

- Controls count: 49 (Selected: 41)
- Sources count: 24, covering Sources: 18
- Objectives count: 22, covering Objectives: 15
- Participants count: 14
- DB version: 1.1.54
- Created: 9/1/2021 6:31:35 AM
- Last modified: 9/24/2021 7:18:44 AM

Below this information is the 'Model Wording' section, which is highlighted with a red border. It contains two columns of input fields:

Singular	Plural
Event (Risk, Reward): event	Events (Risks, Reward): events
Cause (Source, Threat): cause	Causes (Sources, Threats): causes
Objective (Consequence): objective	Objectives (Consequences): objectives
Control (Treatment): control	Controls (Treatments): controls

At the bottom of the page, there is a download section with the text 'Please select format for download:' and a dropdown menu set to 'EC Riskion® file (.ahps)'. There is a 'Download' button and a checked checkbox for 'Download with snapshots data (EC Riskion® models only)'.

Here you can define the terminologies for Riskion elements: **Events**, **Causes**, **Objectives**, and **Controls** -- both singular and plural.

The default element names are displayed above, inside the parenthesis are some alternative names you can use. You can change the element names to those familiar to your organization.

The specified terminologies on this page will be applied throughout your model. The plural names are in sync with what's on the **MEASURE > SET MEASUREMENT OPTIONS > Judgment Options** page.

# Download Model

The Download option is available at the bottom of the **IDENTIFY/STRUCTURE > DEFINE MODEL > Description/Details > Model Details** tab:

**Please select format for download:**

EC Riskion® file (.ahps)

Download with snapshots data (EC Riskion® models only)

Here you can download the model and specific model information:

□

You can also download one or more models from the [Models](#) list page.

---

# Advanced Mode: Model Timeline

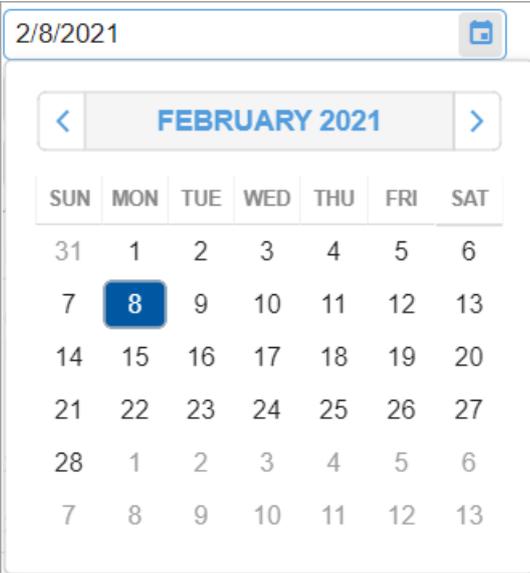
When Advanced mode is ON in the IDENTIFY/STRUCTURE > DEFINE MODEL > Description/Details > Model Details tab, you will see the advanced option:

- **Model Timeline**

The Model Timeline is the evaluation period set by the Project Manager.

Model Timeline Begins On:	<input type="text"/>	
Model Timeline Ends On:	<input type="text"/>	

Click the calendar icon to open the date picker and to select the begin and end date:



The image shows a date picker interface. At the top, it displays '2/8/2021' and a calendar icon. Below this is a header for 'FEBRUARY 2021' with left and right navigation arrows. The main area is a calendar grid with days of the week (SUN to SAT) as columns and dates as rows. The date '8' is highlighted in a dark blue box, indicating it is the selected date.

Alternatively, you can enter the date in the text box in **mm/dd/yyyy** format.

Participants can do their evaluation only on the dates covered by the evaluation period, otherwise, a message that the model is already expired and will no longer accept judgments will be shown on the evaluation page.

Even if a model is online, participants can do their evaluation only on the dates covered by the evaluation period.

If the Project Manager did not set the model timeline, participants can do their evaluation without any date constraints.

# Add, Edit, and Delete Events

Events can be viewed, added, edited, deleted, sorted, and exported to the clipboard from **IDENTIFY/STRUCTURE > IDENTIFY > Review/Refine Model > Events** screen.

Before adding Events, we suggest that you read how Riskion defines Events -- [Riskion Taxonomy \(Risk Elements and Risk Measures\)](#).

## Add Events

For the empty events list, the **Add Events** and **Add from predefined sets of Events** buttons are displayed.

"Add Events" modal on the Events page

Clicking **Add Events one at a time or paste from the clipboard** will display a dialog:

□

Here you can either:

a) enter one or more elements, along with brief descriptions (a simple form of an information document which you can modify later using the Edit description or i buttons).

b) The **Paste from Clipboard**  button will paste elements that have been previously placed on the clipboard into the hierarchy. These elements can be placed on the clipboard in a variety of ways:

1. By copying from adjacent rows/columns in an Excel spreadsheet
2. By copying from adjacent row/s columns in a Word document
3. By copying from a tab delimited text file, where the tab is used to separate the element name from the element description.

## Add Events from predefined sets of Events

Events can also be added from **predefined sets of Events**. This is determined by the site administrator.

If you have existing events, you can position to one of the events and then click Add > **Insert Events Below** to have them appear below the event currently selected.

+ Add ▾		Delete	Duplicate	Attributes	ID
Add Events one at a time or paste from clipboard					
Insert Events below					
Add Events from predefined sets of Events					
⋮	<input type="checkbox"/>	[1]	i	Terrorists Smuggle WMD into US and Commit a Violent Act	
⋮	<input type="checkbox"/>	[2]	i	Terrorists bomb stock exchange building	
⋮	<input checked="" type="checkbox"/>	[3]	i	Criminal Network Smuggles Illegal Drugs Into US	
⋮	<input type="checkbox"/>	[4]	i	Criminal Network Smuggles Counterfeit Goods into the US	
⋮	<input type="checkbox"/>	[5]	i	Unauthorized Migrants Enter the US	

In addition to adding events from the Events page, you can upload a .xlsx file with the list of Events to the Datagrid (Collect Input > DataGrid)

## Delete Events

Events can be **deleted** one at a time, or **several at one time**. Simply check the check box(es) to the right of the event(s) to delete and then click the Delete button at the top.

□

**HINT:** It is advisable to [save a copy of the model](#) before deleting many elements in case you want to save a copy of your model before the deletion. You can also use the **Model Snapshots** feature to revert to what you had.

# Sort (Re-order) Events

Events can be sorted:

1. **Permanently** where the order will be saved and applied throughout the application; OR
2. **Temporarily** where the sorting is only on the Events screen and can be reset

Sorting which can be saved in the model is done by dragging/dropping an element to the desired position in the list; or by using the **Sort** button where you can sort the elements in the list by name or events' risks, ascending or descending, as shown below:

	ID	Infor...	Events
☐	[1]	ⓘ	Terrorists Smuggle WMD into US and Commit a Violent Act
☐	[2]	ⓘ	Terrorists bomb stock exchange building
☐	[3]	ⓘ	Criminal Network Smuggles Illegal Drugs Into US
☐	[4]	ⓘ	Criminal Network Smuggles Counterfeit Goods into the US
☐	[5]	ⓘ	Unauthorized Migrants Enter the US

Sorting done by clicking the column headings on the Events Grid is only temporary and can be reset using the  button.

	ID	Infor...	Events
☐	[4]	ⓘ	Criminal Network Smuggles Counterfeit Goods into the US
☐	[3]	ⓘ	Criminal Network Smuggles Illegal Drugs Into US
☐	[2]	ⓘ	Terrorists bomb stock exchange building
☐	[1]	ⓘ	Terrorists Smuggle WMD into US and Commit a Violent Act
☐	[5]	ⓘ	Unauthorized Migrants Enter the US

Note: Sorting by drag-drop is hidden when the grid is sorted by column since it will just re-sort back the list by column.

# Add, Edit, and Delete Threats

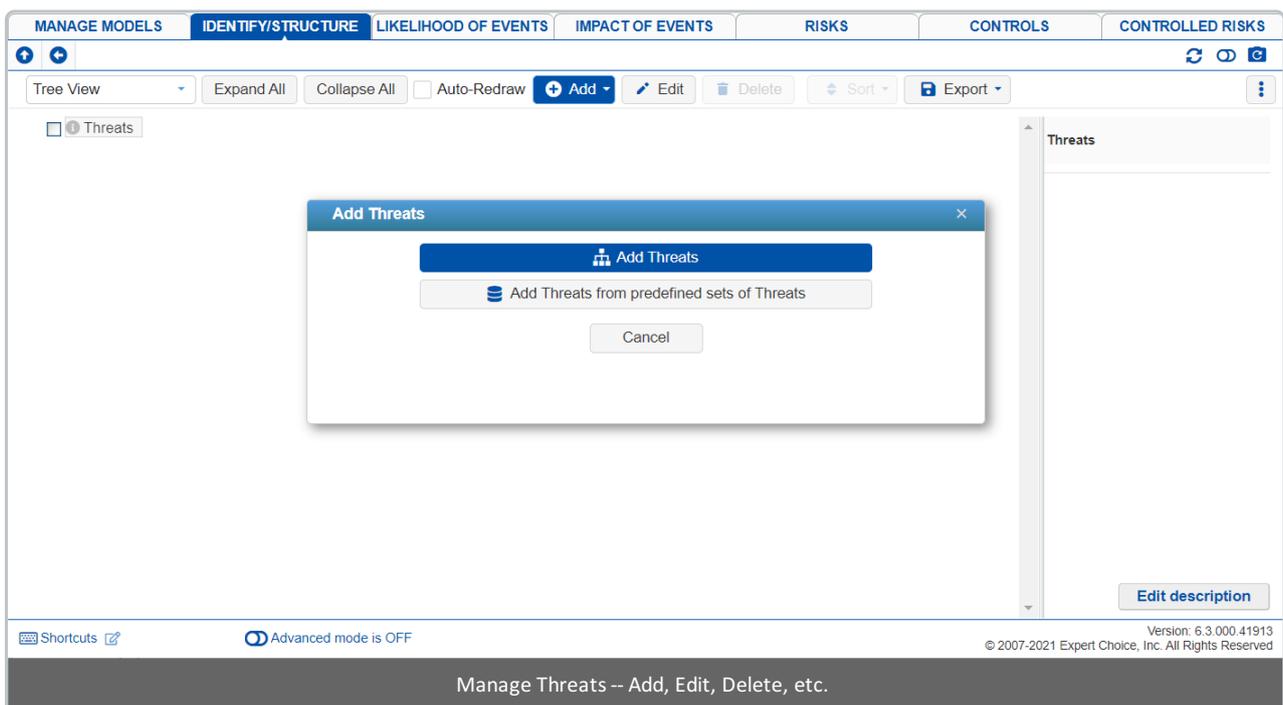
The Threats hierarchy can be created, viewed, and edited from any of the following pages:

- **IDENTIFY/STRUCTURE > IDENTIFY > Threats;** or
- **IDENTIFY/STRUCTURE > Threats > Hierarchy** or
- **LIKELIHOOD OF EVENTS > STRUCTURE > EVENTS SOURCES > Threats.**

In Riskion, we refer to **threats**, **causes**, **hazards**, and **sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

The default wording can be defined on the Workgroup Template; or from Default Option Sets. You can also change the wording for each model on the Judgments Options page of the model.

Before adding Threats, we suggest you read how Riskion defines Threats -- [Riskion Taxonomy \(Risk Elements and Risk Measures\)](#).

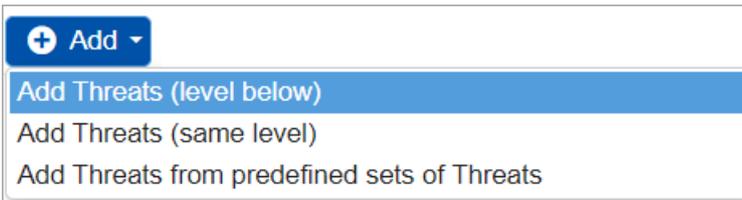


Depending on the Default Option Sets wording used when creating a model, the overall statement will be shown, in this case, "Threat" and can be edited. A prompt to add threats will pop out as shown above.

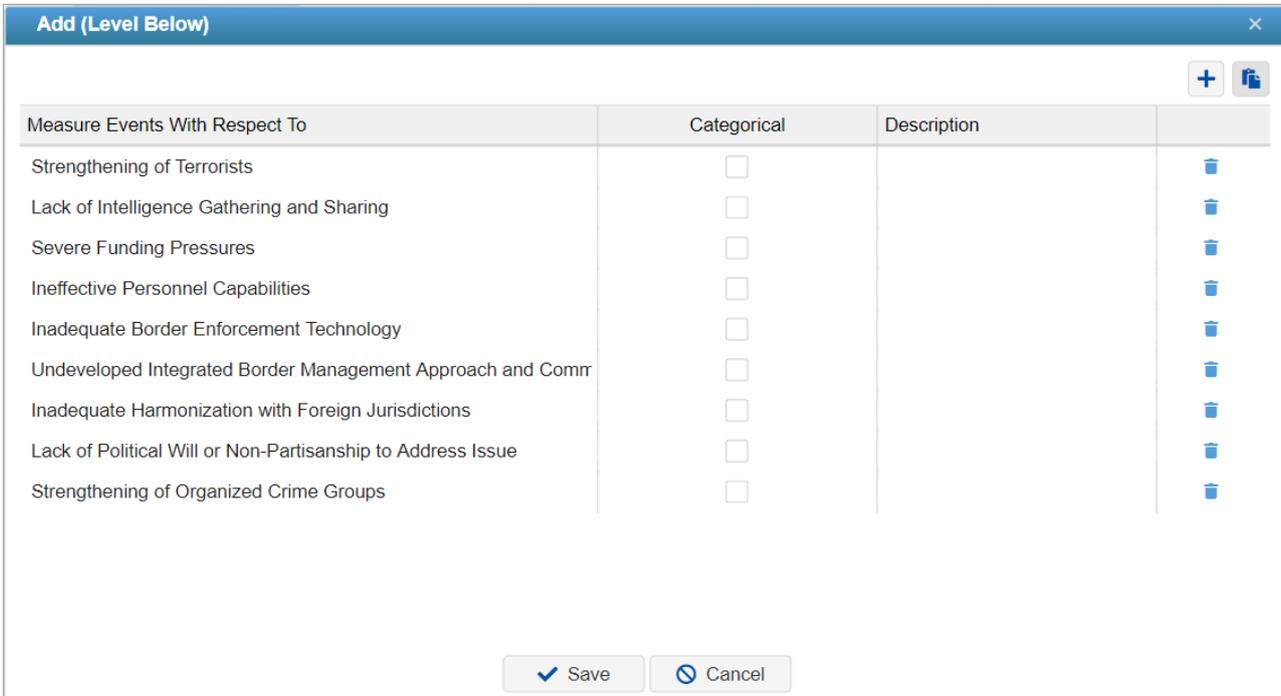
## Add Threats (*same level or below*)

You can add threats **below** the Threats node.

Additional elements (threats, sub-threats) can be added either at the same level of the currently selected node by pressing **Add Threats (same level)** button, or below the currently selected button, by pressing **Add Threats (level below)** button.



Pressing either of the first two options above will open a dialog:



Here you can either:

a) enter one or more elements, along with brief descriptions (a simple form of an information document which you can modify later using the Edit description or buttons). Adding one or more spaces before an element name will indicate that the element should be added at a lower level in the hierarchy.

b) The **Paste from Clipboard** button will paste elements that have been previously placed on the clipboard into the hierarchy. These elements can be placed on the clipboard in a variety of ways:

1. By copying from adjacent rows/columns in an Excel spreadsheet
2. By copying from adjacent row/s columns in a Word document
3. By copying from a tab delimited text file, where the tab is used to separate the element name from the element description.

The Threat and the threat names can be **edited** by selecting them and clicking the Edit button or by double-clicking the node name.

Checking the Categorical checkbox to the right of the threat will add a threat as a category. A category won't be part of the evaluation, it is only used to categorize or group similar threats. A category threat is shown with the **blue** font in the Threat hierarchy.

## Add Threats from predefined sets of Threats

The **Add Threats from predefined sets of Threats** allows you to add new threats from predefined threats determined by

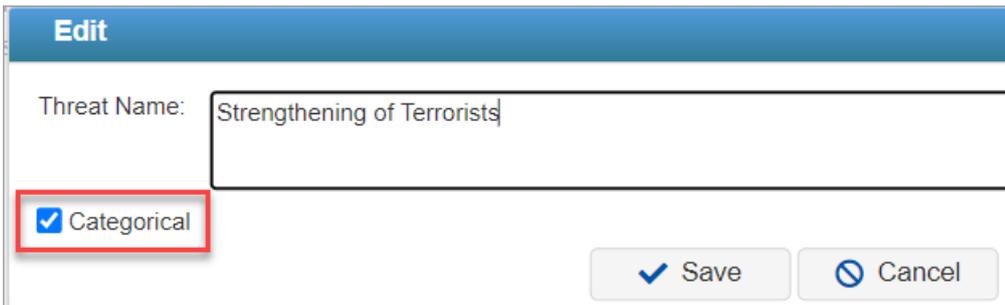
the site administrator.

## Add/Edit Threat as Categorical

Threats can be defined as Categorical when you want to group threats of the same category. The category will serve as a container to the threats below it. Categorical threats will not be evaluated.

You can add a categorical attribute from the Add Threat modal and then check the categorical checkbox to the right of the categorical threat you want to add.

You can also edit an existing set threat by double-clicking on it and then checking the Categorical checkbox.



The image shows an 'Edit' modal window. At the top, the title 'Edit' is in a blue bar. Below it, there is a text input field labeled 'Threat Name:' containing the text 'Strengthening of Terrorists'. Below the input field, there is a checkbox labeled 'Categorical' which is checked. This checkbox is highlighted with a red rectangular box. At the bottom right of the modal, there are two buttons: 'Save' with a checkmark icon and 'Cancel' with a circle and slash icon.

Alternatively, you can right-click a threat and then select **Set as a Category**.



## Delete Threats

You can **delete** one or more threats by selecting them and clicking the Delete button.

You can also right-click a threat to see a set of commands, and then select Delete.

**HINT:** It is advisable to [save a copy of the model](#) before deleting many elements in case you want to save a copy of your model before the deletion. You can also use the **Model Snapshots** feature to revert to what you had.

## Threats right-click commands

Some commands already explained above and more are available by right-clicking a Threat node:



- Set as a Category - set a node as Category. If a node is currently a Category, this command will be Set as an Uncertainty.
- Add Threats (level below) - add nodes below the selected node
- Add Threats (same level) - add nodes same level as the selected node
- Add Threats from predefined sets of Threats - Open the predefined sets modal
- Edit - edit the selected node
- Edit description - open the rich text editor to edit the description of the selected node
- Delete - delete the selected node
- Copy judgments - copy judgments of the selected node
- Paste judgments - paste the copied judgments from another node to the selected node
- Erase node-s judgments for all participants - delete the judgments of the selected node

# Expand, Collapse and Auto-Redraw the Threats Hierarchy

**Expand All** will expand all branches of the hierarchy.

**Collapse All** will collapse the hierarchy and show only the goal and the first level of elements (threats).

You can also expand/collapse **sections** of the hierarchy by clicking the same icons at the left of the threat node.

When the **Auto-Redraw** box is checked, clicking on the *name* of any element will not only expand the branches below that element but will automatically contract the branches in other parts of the hierarchy. This is useful to be able to focus on a part of the hierarchy, see all of its ancestries, but not be distracted from details in other parts of the hierarchy.

The screenshot displays a user interface for a threat hierarchy. At the top, there is a control bar with the following elements from left to right: a dropdown menu set to 'Tree View', an 'Expand All' button, a 'Collapse All' button, an unchecked 'Auto-Redraw' checkbox, a blue '+ Add' button, and an 'Edit' button with a pencil icon. Below the control bar is a tree view of threats. The root node is 'Threats', which is expanded. It contains five main categories, each with a square icon and an information icon (i): 'Human Factor', 'Environmental', 'Infrastructure', 'Terrorism', and 'Technology'. Each category is further expanded to show its sub-threats. A mouse cursor is visible over the 'Environmental' category node.

- Threats
  - Human Factor
    - Inadequately Trained Staff
    - Disregarding or Not Following Proper Policies, Processes, or Procedures
    - Lack of Situational Awareness
    - Engineers Failure to Properly Install Equipment
  - Environmental
    - Flooding of Intelligent Event Monitoring Infrastructure
    - Lightning Striking Signaling Infrastructure
  - Infrastructure
    - Minor Electrical Power Shortage
    - Major Electrical Power Loss
    - Mechanical Failure of Sensors
    - Mechanical Failure of Signals
    - Mechanical Failure of Cables
  - Terrorism
    - Conventional Attack on the Signalling Infrastructure
    - Cyber Attack on the Intelligent Event Monitoring Network Itself
    - Cyber Attach on the Telephony and Broadband Infrastructure of the Service Provider
  - Technology
    - System Software Technology Obsolescence
    - System Hardware Technology Obsolescence
    - New Cutting Edge Software Technology Available
    - Intelligent Monitoring System Software Failure

# Sort (Re-order) Threats

Elements can be moved or copied from one position/level in the hierarchy to another by drag/dropping to the desired position in the hierarchy.

In Tree View, you can move or copy a node from one position to another by dragging and dropping. Simply select a node and hold on to the left button of your mouse and then drag to the position you want the node to be moved/copied (you will see a blue arrow as a pointer). Once you release the mouse's left key, you will then see a dialog asking whether to copy or move the node. Select and click OK to confirm.

Tree View   Expand All   Collapse All    Auto-Redraw   + Add   Edit

- Threats
  - Human Factor
    - Inadequately Trained Staff
    - Disregarding or Not Following Proper Policies, Processes, or Procedures
    - Lack of Situational Awareness
    - Engineers Failure to Properly Install Equipment
  - Environmental
    - Flooding of Intelligent Event Monitoring Infrastructure
    - Lightning Striking Signaling Infrastructure
  - Infrastructure
    - Minor Electrical Power Shortage
    - Major Electrical Power Loss
    - Mechanical Failure of Sensors
    - Mechanical Failure of Signals
    - Mechanical Failure of Cables
  - Terrorism
    - Conventional Attack on the Signalling Infrastructure
    - Cyber Attack on the Intelligent Event Monitoring Network Itself
    - Cyber Attach on the Telephony and Broadband Infrastructure of the Service Provider
  - Technology
    - System Software Technology Obsolescence
    - System Hardware Technology Obsolescence
    - New Cutting Edge Software Technology Available
    - Intelligent Monitoring System Software Failure

You can also **sort** elements in the cluster below the **selected** threat or sub-threat by name ascending/descending:

Sort

- By Name Ascending
- By Name Descending

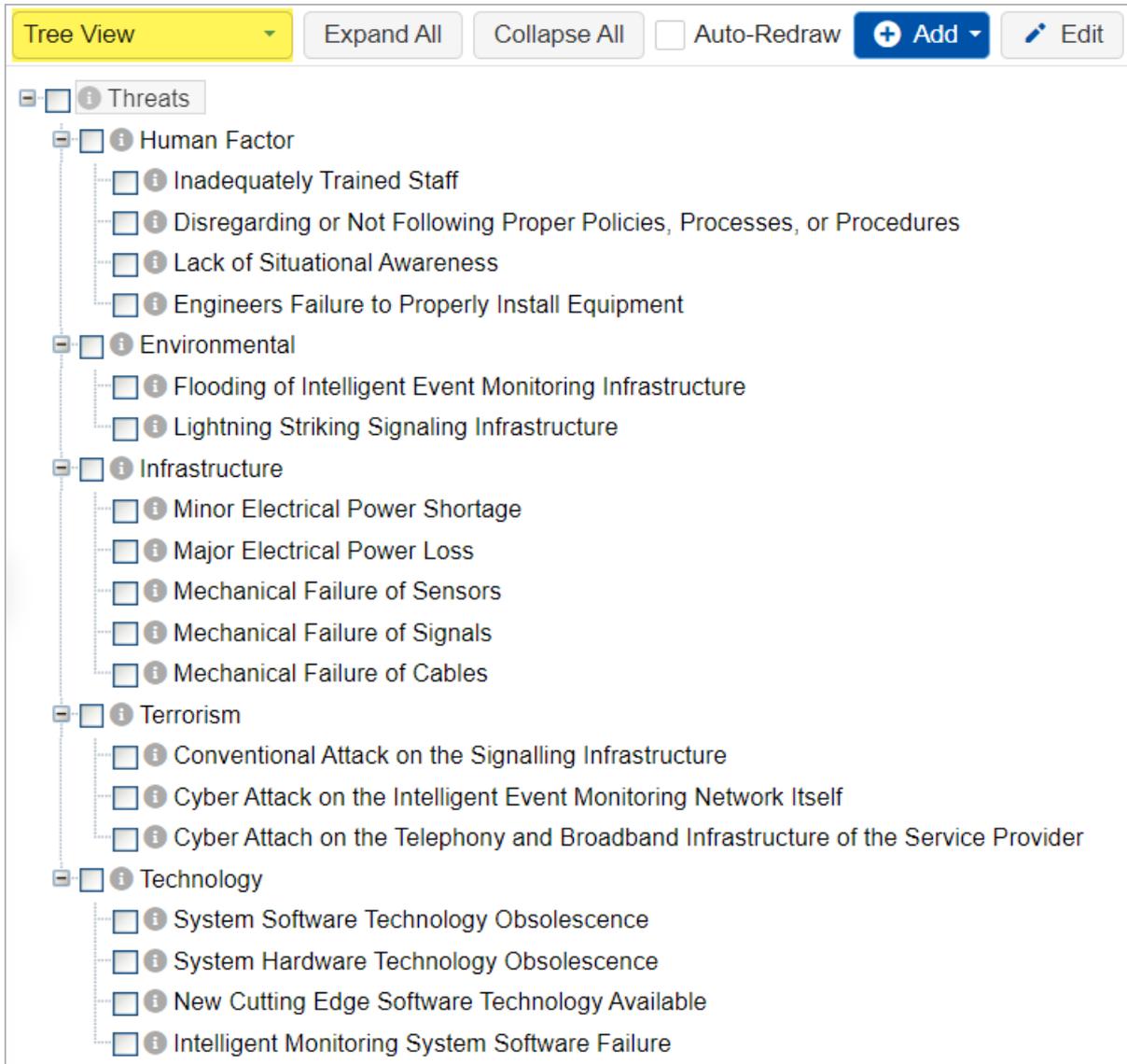
Sorting by name can be done both in Tree View and Hierarchy View.

**HINT:** You can use the **Model Snapshots** feature in case you want to revert to what you had before the sorting.

---

# View Threats (Tree or Hierarchy)

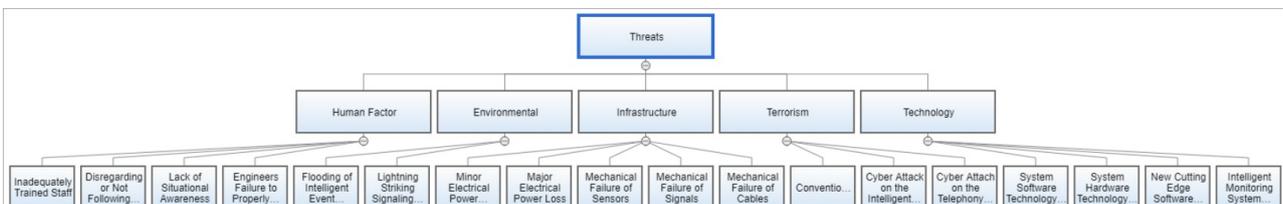
Threats can be viewed in **Tree View** or **Hierarchical View**. By default, the Tree View is displayed as shown below:



You can use the drop-down to select the Hierarchy View:

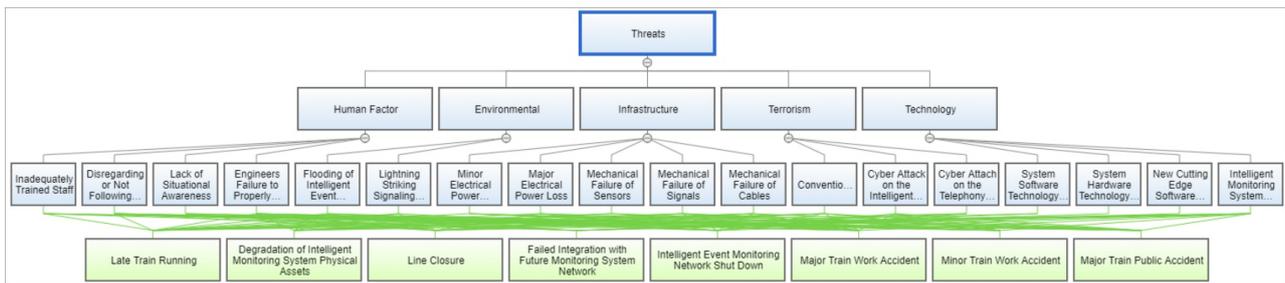


The Hierarchy View of Threats is shown below:



You can do similar actions such as adding threats, editing, sort by name, and export as you can do in the Tree View.

Additionally, you can show/hide the Events in the Hierarchy view by checking the  Show Events check box.



You can specify the rectangle length and width by clicking the gear icon Preferences

**Preferences** [X]

Rectangle Height [50] 20 200

Rectangle Width [75 .. 159] 20 500

**HINT:** For smaller screens, some of the buttons may be hidden. You may see the hidden buttons by clicking the ellipses icon at the top right.

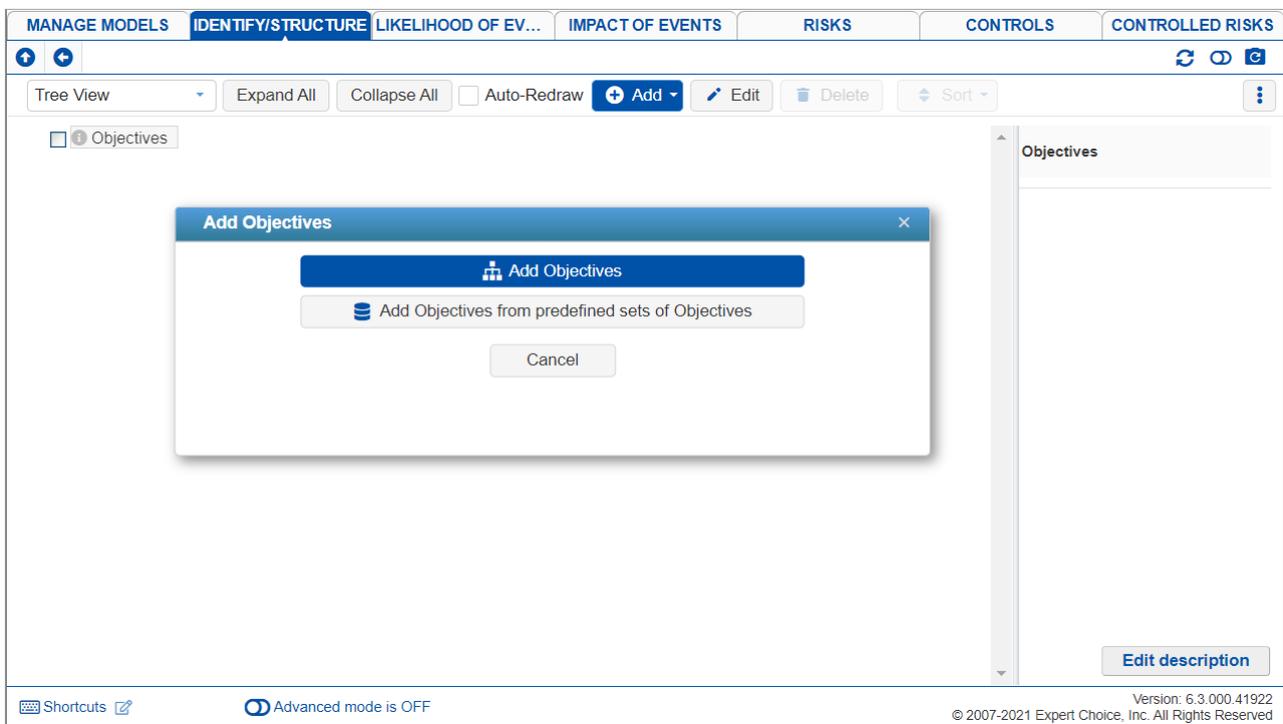
# Add, Edit, and Delete Objectives

The Objectives hierarchy can be created, viewed, and edited from any of the following pages:

- IDENTIFY/STRUCTURE > IDENTIFY > **Objectives**;
- IDENTIFY/STRUCTURE > OBJECTIVES > **Hierarchy**;
- IMPACT OF EVENTS > STRUCTURE > EVENTS OBJECTIVES > **Objectives**.

The default wording can be defined on the Workgroup Template; or from Default Option Sets. You can also change the wording for each model on the Judgments Options page of the model.

Before adding Objectives, we suggest you read how Riskion defines Objectives-- [Riskion Taxonomy \(Risk Elements and Risk Measures\)](#).

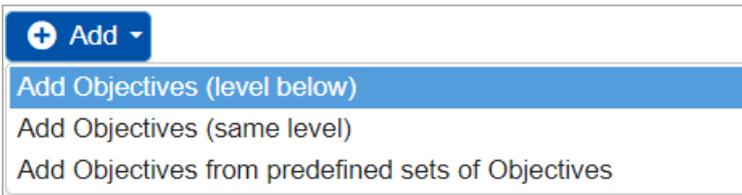


Depending on the Default Option Sets wording used when creating a model, the overall statement will be shown, in this case, "Objectives" and can be edited. A prompt to add objectives will pop-out as shown above.

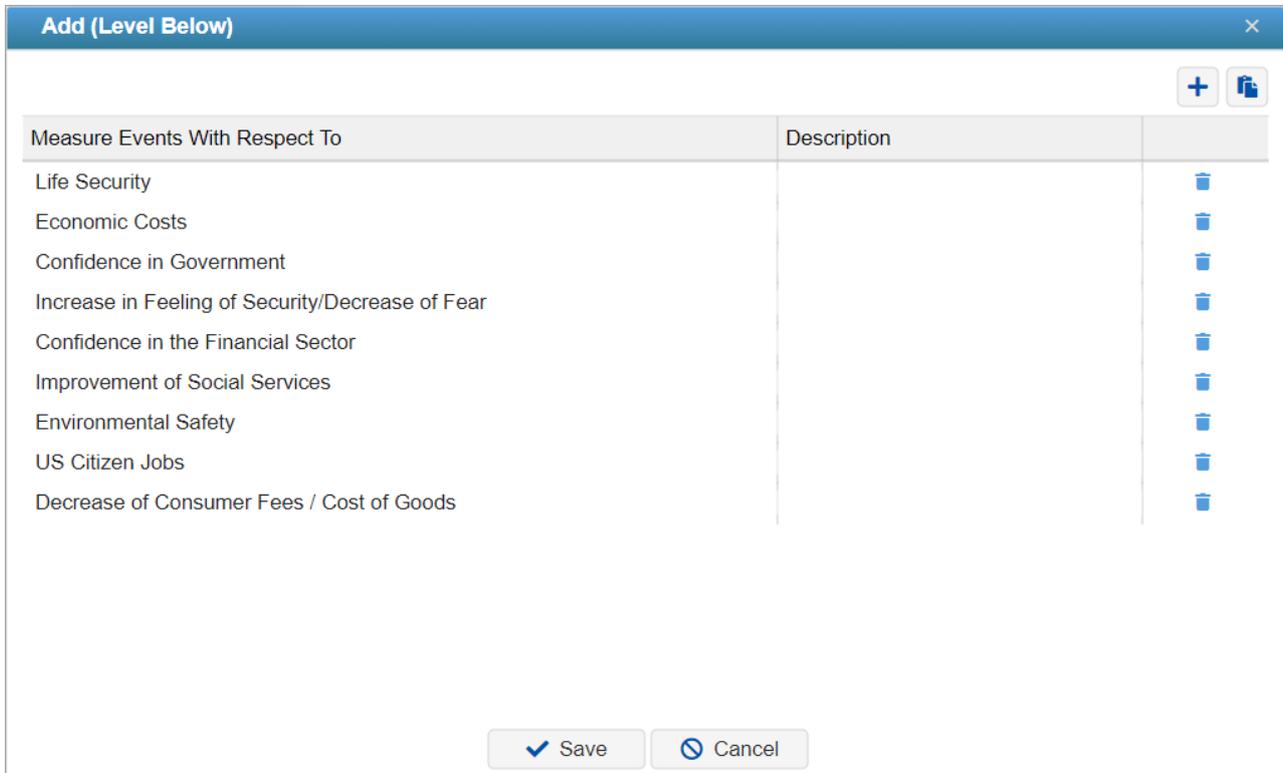
## Add Objectives (same level or below)

You can add objectives **below** the Objectives node.

Additional elements (objectives, sub-objectives) can be added either at the same level of the currently selected node by pressing **Add Objectives (same level)** button, or below the currently selected button, by pressing **Add Objectives (level below)** button.



Pressing either of the first two options above will open a dialog:



Here you can either:

a) enter one or more elements, along with brief descriptions (a simple form of an information document which you can modify later using the Edit description or buttons). Adding one or more spaces before an element name will indicate that the element should be added at a lower level in the hierarchy.

b) The **Paste from Clipboard** button will paste elements that have been previously placed on the clipboard into the hierarchy. These elements can be placed on the clipboard in a variety of ways:

1. By copying from adjacent rows/columns in an Excel spreadsheet
2. By copying from adjacent row/s columns in a Word document
3. By copying from a tab delimited text file, where the tab is used to separate the element name from the element description.

The Objective and the objective names can be **edited** by selecting them and clicking the Edit button or by double-clicking the node name.

## Add Objectives from predefined sets of Objectives

The **Add Objectives from predefined sets of Objectives** allows you to add new objectives from predefined objectives determined by the site administrator.

## Delete Objectives

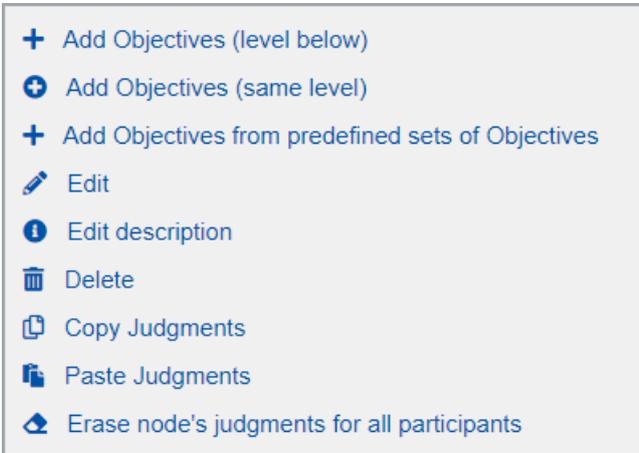
You can **delete** one or more objectives by selecting them and clicking the Delete button.

You can also right-click an objective to see a set of commands, and then select Delete.

**HINT:** It is advisable to [save a copy of the model](#) before deleting many elements in case you want to save a copy of your model before the deletion. You can also use the **Model Snapshots** feature to revert to what you had.

## Objectives right-click commands

Some commands already explained above and more are available by right-clicking an Objective node:

- 
- + Add Objectives (level below)
  - + Add Objectives (same level)
  - + Add Objectives from predefined sets of Objectives
  - ✎ Edit
  - ℹ Edit description
  - 🗑 Delete
  - 📄 Copy Judgments
  - 📄 Paste Judgments
  - 🗑 Erase node's judgments for all participants

- Add Objectives (level below) - add nodes below the selected node
- Add Objectives (same level) - add nodes same level as the selected node
- Add Objectives from predefined sets of Objectives - Open the predefined sets modal
- Edit - edit the selected node
- Edit description - open the rich text editor to edit the description of the selected node
- Delete - delete the selected node
- Copy judgments - copy judgments of the selected node
- Paste judgments - paste the copied judgments from another node to the selected node
- Erase node-s judgments for all participants - delete the judgments of the selected node

# Expand, Collapse and Auto-Redraw the Objectives Hierarchy

**Expand All** will expand all branches of the hierarchy.

**Collapse All** will collapse the hierarchy and show only the goal and the first level of elements (objectives).

You can also expand/collapse **sections** of the hierarchy by clicking the same icons at the left of the objective node.

When the **Auto-Redraw** box is checked, clicking on the *name* of any element will not only expand the branches below that element but will automatically contract the branches in other parts of the hierarchy. This is useful to be able to focus on a part of the hierarchy, see all of its ancestries, but not be distracted from details in other parts of the hierarchy.

Tree View  Expand All  Collapse All  Auto-Redraw  Add

- Objectives
  - Financial
    - Loss of Customers
    - Financial Loss
    - Financial Liability Due to Accident
  - Reliability, Availability, Maintainability
    - Loss of Maintenance Efficiency
    - Disruption/Damage to Service Line Infrastructure
    - Repair to Service Line Infrastructure
  - Performance
    - Temporary Line Closure
    - Loss of Reliability and Network Efficiency
    - Loss of Wider Monitoring System Program Efficiency
    - Loss of Train Service
  - Human Factors
    - Death
    - Injury
  - Safety
    - Loss of Safety
  - Public Relations
    - Customer/Business Dissatisfaction with the Service/Network Efficiency
    - Loss of Company Reputation

# Sort (Re-order) Objectives

Elements can be moved or copied from one position/level in the hierarchy to another by drag/dropping to the desired position in the hierarchy.

In Tree View, you can move or copy a node from one position to another by dragging and dropping. Simply select a node and hold on to the left button of your mouse and then drag to the position you want the node to be moved/copied (you will see a blue arrow as a pointer). Once you release the mouse's left key, you will then see a dialog asking whether to copy or move the node. Select and click OK to confirm.

Tree View   Expand All   Collapse All    Auto-Redraw  

- Objectives
  - Financial
    - Loss of Customers
    - Financial Loss
    - Financial Liability Due to Accident
  - Reliability, Availability, Maintainability
    - Loss of Maintenance Efficiency
    - Disruption/Damage to Service Line Infrastructure
    - Repair to Service Line Infrastructure
  - Performance
    - Temporary Line Closure
    - Loss of Reliability and Network Efficiency
    - Loss of Wider Monitoring System Program Efficiency
    - Loss of Train Service
  - Human Factors
    - Death
    - Injury
  - Safety
    - Loss of Safety
  - Public Relations
    - Customer/Business Dissatisfaction with the Service/Network Efficiency
    - Loss of Company Reputation

You can also **sort** elements in the cluster below the **selected** objective or sub-objective by name ascending/descending:

Sort

- By Name Ascending
- By Name Descending

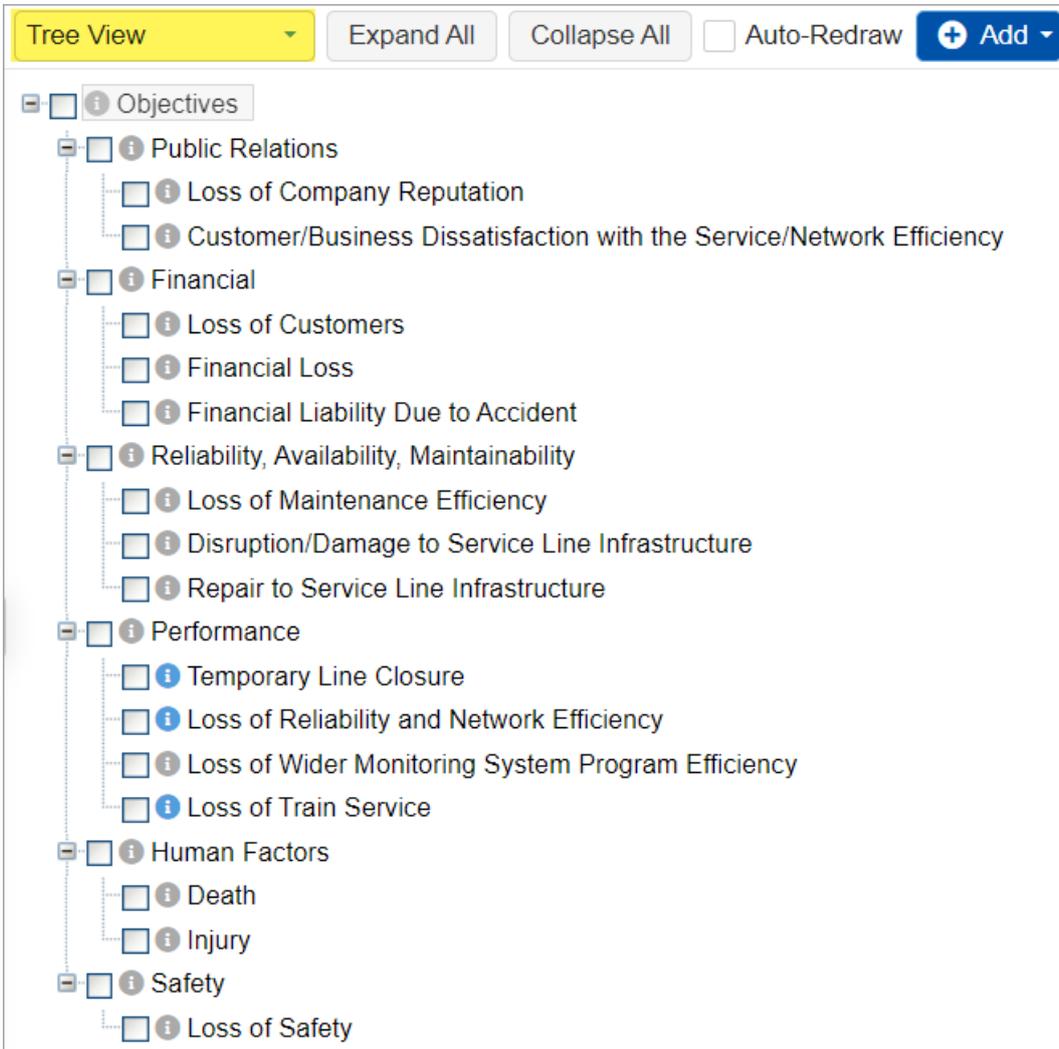
Sorting by name can be done both in Tree View and Hierarchy View.

**HINT:** You can use the **Model Snapshots** feature in case you want to revert to what you had before the sorting.

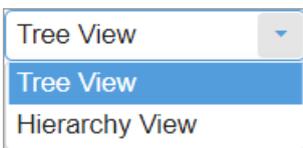
---

# View Objectives (Tree or Hierarchy)

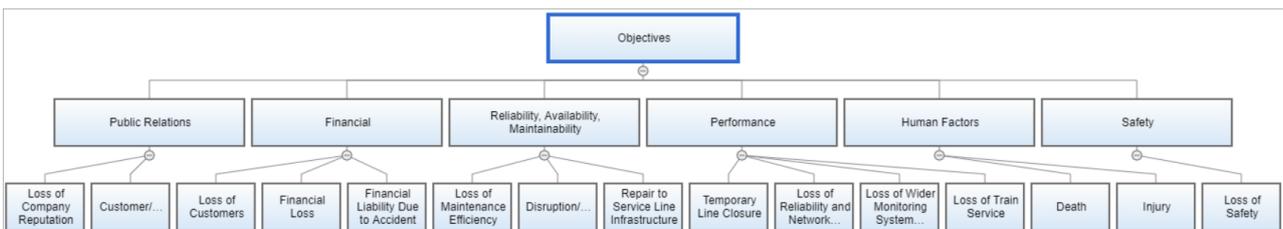
Objectives can be viewed in **Tree View** or **Hierarchical View**. By default, the Tree View is displayed as shown below:



You can use the drop-down to select the Hierarchy View:



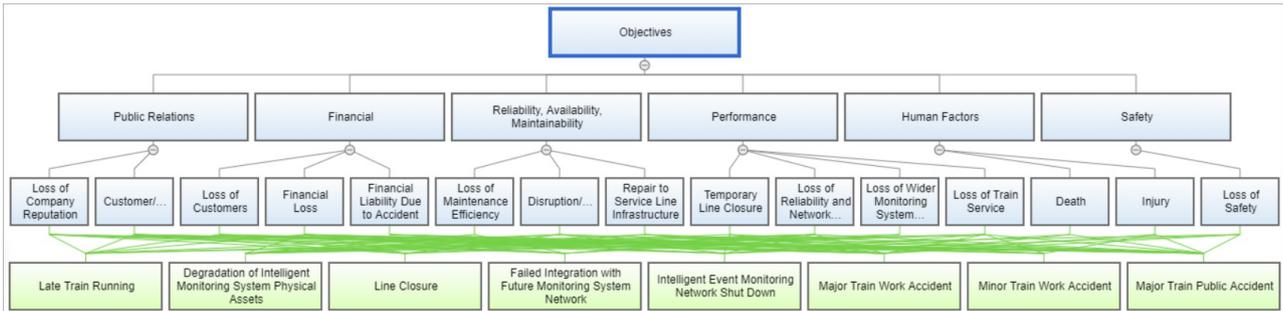
The Hierarchy View of Objectives is shown below:



You can do similar actions such as adding objectives, editing, sort by name, and export as you can do in the Tree View.

Additionally, you can show/hide the Events in the Hierarchy view by checking the  **Show Events** checkbox. The

Events those with green boxes.



You can specify the rectangle length and width by clicking the gear icon



The 'Preferences' dialog box has a blue header with the title 'Preferences' and a close button (X). It contains two sliders. The first slider is for 'Rectangle Height [50]' with a range from 20 to 200. The second slider is for 'Rectangle Width [75 .. 159]' with a range from 20 to 500. Below the sliders is a 'Reset To Defaults' button. At the bottom are two buttons: 'Save' with a checkmark icon and 'Cancel' with a circle and slash icon.

**HINT:** For smaller screens, some of the options may be hidden. You may see the hidden options by clicking the ellipses  icon at the top right.

# Events as Threats

An Event can be a Threat of another Event(s) -- this can be set from **IDENTIFY/STRUCTURE > IDENTIFY > Events as Threats.**

Event As Threat	Target Event				
	Terrorists Smuggle WMD into US and Commit a Violent Act	Terrorists bomb stock exchange building	Criminal Network Smuggles Illegal Drugs Into US	Criminal Network Smuggles Counterfeit Goods into the US	Unauthorized Migrants Enter the US
Terrorists Smuggle WMD into US and Commit a Violent Act					
Terrorists bomb stock exchange building	✓				
Criminal Network Smuggles Illegal Drugs Into US				✓	
Criminal Network Smuggles Counterfeit Goods into the US					
Unauthorized Migrants Enter the US					

The Events in the first column are the "Events as Threat", and the Events at the column heading at the top are the Target Event.

To set an Event as a Threat of the Event at the heading, simply check the cells corresponding to the intersection, and then click again to uncheck.

In the example above, the event "Terrorist bomb stock exchange building" is a threat of the Event "Terrorists Smuggle WMD into US and Commit a Violent Act". Similarly, the event "Criminal Network Smuggles Illegal Drugs into the US" is a threat of the Event "Criminal Network Smuggles Counterfeit Goods into the US".

# Participants Grid Overview

MANAGE MODELS		IDENTIFY/STRUCTURE	LIKELIHOOD OF EVENTS	IMPACT OF EVENTS	RISKS	CONTROLS	CONTROLLED RISKS			
<div style="display: flex; justify-content: space-between; align-items: center;"> <span> <a href="#">Add New</a> <a href="#">Edit</a> <a href="#">Set Permissions</a> <a href="#">Remove</a> <a href="#">Manage Groups</a> <a href="#">Manage Attributes</a> <a href="#">Send Mail</a> </span> <span> <a href="#">Reload</a> <a href="#">On-line</a> <a href="#">Snapshots</a> </span> </div>										
Participants										
Email	Participant Name	Permission	Evaluation Status			Disabled?	Actions	Attributes		Groups
			Has Data	Evaluation Progress	Last Judgment Time			Gender	EvaluateWhat	
<input type="checkbox"/> ceo@gwu.edu	Chief Engineering Officer	Evaluator	Yes	98.3% (170/173)	9/13/2018, 1:36 PM	<input type="checkbox"/>	<a href="#">🔑</a> <a href="#">🔗</a> <a href="#">👤</a> <a href="#">👁</a>	Male	Threats/Objec...	<input checked="" type="checkbox"/>
<input type="checkbox"/> che@gwu.edu	Chief Executive Officer	Evaluator	Yes	97.1% (134/138)	11/11/2020, 9:37 AM	<input type="checkbox"/>	<a href="#">🔑</a> <a href="#">🔗</a> <a href="#">👤</a> <a href="#">👁</a>	Female		<input type="checkbox"/>
<input type="checkbox"/> cro@gwu.edu	Chief Risk Officer	Evaluator	Yes	97.4% (147/151)	9/30/2014, 12:10 PM	<input type="checkbox"/>	<a href="#">🔑</a> <a href="#">🔗</a> <a href="#">👤</a> <a href="#">👁</a>	Male		<input type="checkbox"/>
<input type="checkbox"/> denisrisman@gwu.edu	Denis Risman	Evaluator		0.0% (0/211)		<input type="checkbox"/>	<a href="#">🔑</a> <a href="#">🔗</a> <a href="#">👤</a> <a href="#">👁</a>	Male		<input type="checkbox"/>
<input type="checkbox"/> devinnagy@gwu.edu	Devin Nagy	Evaluator		0.0% (0/211)		<input type="checkbox"/>	<a href="#">🔑</a> <a href="#">🔗</a> <a href="#">👤</a> <a href="#">👁</a>	Male		<input type="checkbox"/>
<input type="checkbox"/> its@gwu.edu	IT Supervisor	Evaluator	Yes	96.6% (114/118)	11/11/2020, 9:33 AM	<input type="checkbox"/>	<a href="#">🔑</a> <a href="#">🔗</a> <a href="#">👤</a> <a href="#">👁</a>	Female		<input type="checkbox"/>
<input type="checkbox"/> j.doe@eci.com	<b>John Doe</b>	<b>Project Manager</b>		<b>0.0% (0/211)</b>		<input type="checkbox"/>	<a href="#">🔑</a> <a href="#">🔗</a> <a href="#">👤</a> <a href="#">👁</a>		<b>Both</b>	<input type="checkbox"/>
<input type="checkbox"/> mmankowski@gwu.edu	Michael Mankowski	Evaluator		0.0% (0/211)		<input type="checkbox"/>	<a href="#">🔑</a> <a href="#">🔗</a> <a href="#">👤</a> <a href="#">👁</a>	Male		<input type="checkbox"/>
<input type="checkbox"/> quigleybf@gwu.edu	Brian Quigley	Evaluator	Yes	50.7% (107/211)	10/9/2018, 12:42 PM	<input type="checkbox"/>	<a href="#">🔑</a> <a href="#">🔗</a> <a href="#">👤</a> <a href="#">👁</a>	Male		<input type="checkbox"/>
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>10 15 20 50 100 200 500</span> <span>Page 1 of 1 (9 items) &lt; 1 &gt;</span> </div>										
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>Shortcuts</span> <span>Advanced mode is OFF</span> <span>Ping...</span> </div>										
<small>Version: 6.3.000.41926 © 2007-2021 Expert Choice, Inc. All Rights Reserved</small>										

The Participants Grid consists of the following columns:

- Participant Email - unique identifier and can't be modified
- Participant Name - participant name and can be modified
- **Permission** - Evaluator, Project Manager, Viewer, Evaluator/Viewer
- **User Priority** - user weights used in the Synthesize Results, this column is hidden by default. Use the column choose to show.
- Evaluation Status:
  - Has Data - Yes if the user has judgments, No if none.
  - Evaluation Progress - percentage; the number of judgments evaluated / total of judgments to evaluate
  - Last Judgment Type - date/time the last judgment was made
- **Staus (Disabled?)** - checkbox to enable or disable a participant from the model
- **Actions** - reset password, get link, login as participant, view only pipe
- **Participant Attributes** - attributes are used to assign participants to groups dynamically. Participant Attributes can be dynamic or non-dynamic

Attributes	
Gender	EvaluateWhat
Male	Threats/Objec...
Female	
Male	
Male	
Male	
Female	
	<b>Both</b>
Male	
Male	

- Non-dynamic Participant Attributes - are assigned to the participants manually in the Participants grid. These attributes have a white background color and are editable (Gender)
- Dynamic Participant Attributes - are specified to the participants based on their insight survey answers. These attributes have a gray background color and non-editable (EvaluateWhat)
- Participant Groups

Groups				
C-Level Exec...	Experts	Threats/Objec...	Events Only	Both
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Non-dynamic Groups - participants are assigned to non-dynamic groups manually in the Participants grid by checking the checkboxes. Non-dynamic groups have a white background
- Dynamic Groups - participants are assigned to dynamic groups, as specified by their attributes. Dynamic groups columns have a gray background and the checkboxes are disabled

You can search by typing in the participant name or email:

Search...

If there are many participants in the list, you can use the pagination at the bottom of the grid.

10 15 20 50 100 200 500 Page 1 of 1 (9 items) < 1 >

You can hide or show columns using the column chooser:

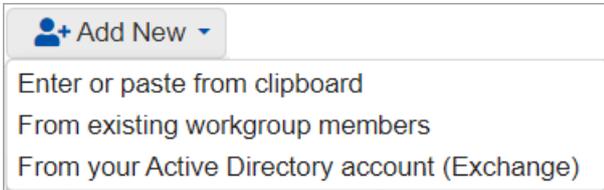
The screenshot shows a user interface for a data grid. At the top, there is a search bar with the placeholder text "Search...". Below the search bar is a pagination bar with options for 10, 15, 20, 50, 100, 200, and 500 items per page. On the right side of the pagination bar, it says "Page 1 of 1 (9 items)" and has navigation arrows. Below the pagination bar, there are three column headers: "Threats/Objects", "Events Only", and "Both". A red box highlights the "Column Chooser" icon in the top toolbar, and a red arrow points to the "Threats/Objects" column header. The "Column Chooser" dialog is open, showing a list of columns with checkboxes to toggle their visibility. The columns listed are: Email (checked), Participant Name (checked), Permission (checked), User Priority (unchecked), Evaluation Status (checked), Has Data (checked), Evaluation Progress (checked), Last Judgment Time (checked), Disabled? (checked), Actions (checked), Attributes (checked), Gender (checked), EvaluateWhat (checked), and Groups (checked).

Click  to export the participants' list in .xlsx format.

# Add Participants

Participants can be added to a model in a variety of ways.

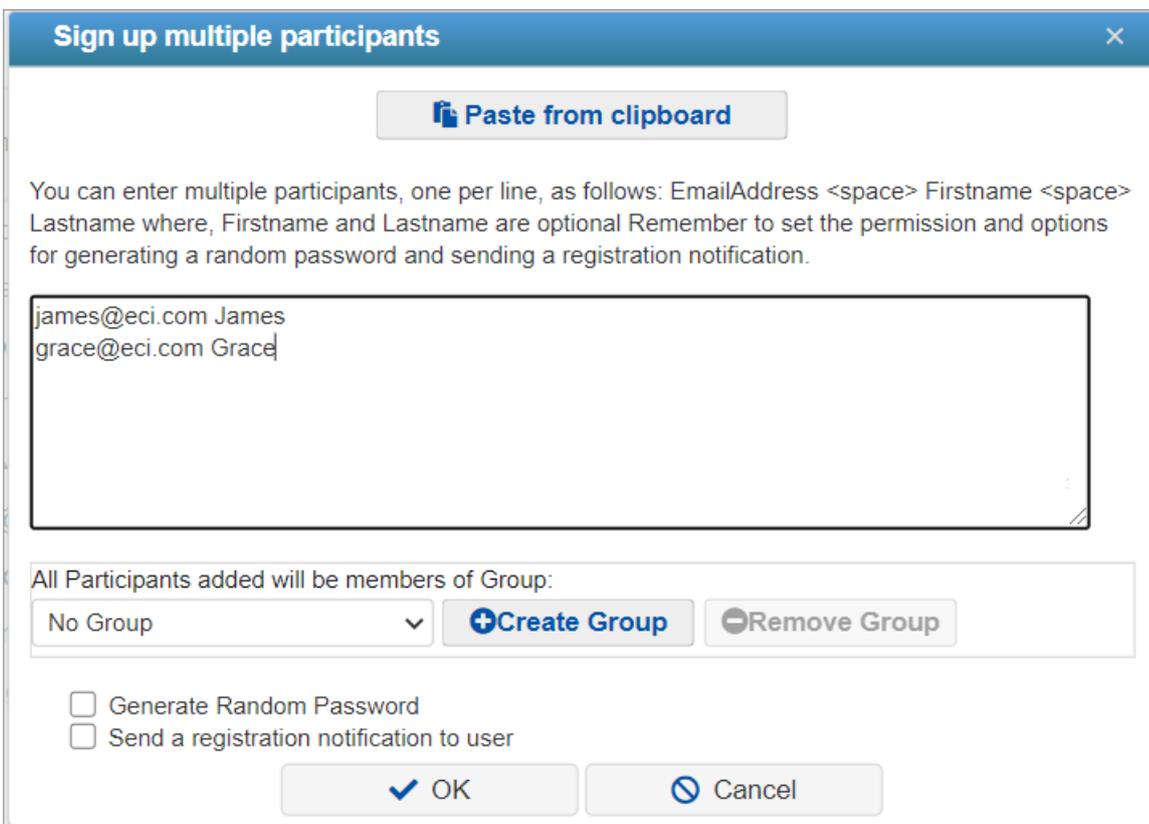
This can be done on **IDENTIFY/STRUCTURE > IDENTIFY > Participants** page.



The screenshot shows a dropdown menu with the following options:

- + Add New
- Enter or paste from clipboard
- From existing workgroup members
- From your Active Directory account (Exchange)

## 1. Enter or paste from the clipboard



The dialog box titled "Sign up multiple participants" contains the following elements:

- A "Paste from clipboard" button.
- Instructions: "You can enter multiple participants, one per line, as follows: EmailAddress <space> Firstname <space> Lastname where, Firstname and Lastname are optional Remember to set the permission and options for generating a random password and sending a registration notification."
- A text area containing:  
james@eci.com James  
grace@eci.com Grace
- A section for group assignment: "All Participants added will be members of Group:" with a dropdown menu set to "No Group", a "+ Create Group" button, and a "- Remove Group" button.
- Two checkboxes: "Generate Random Password" and "Send a registration notification to user".
- "OK" and "Cancel" buttons at the bottom.

a) Choose to enter one or more email addresses and corresponding participant names, or

b) Paste one or more email addresses/Names from the clipboard after placing this information on the clipboard from another source, such as an Excel spreadsheet, Word table, or Microsoft Outlook Contact Group.

**NOTE:** If you have a Microsoft Outlook Contact Group, you can place the names and email addresses in the Contact Group on the clipboard by composing an email to the group, expand the group name to have the individual entries displayed, copying them to the clipboard and discarding the email.

If the email of any participant added in 1a or 1b above already exists in the Workgroup, the Name field is ignored.

Options include:

- Adding participants as a member of a group. The roles assigned to the new users will be determined by the roles

assigned to "All Participants" as well as the group to which they are made a member. Note that participants added via invitations with access code or meeting ID will also be assigned to the selected group. The default group for general links can be defined from the Invite Participants page. By default, participants will be added to the "No Group". The participant is added to the default group that is currently set at the time he/she accesses the invite link. You can also add or remove groups from this screen.

- Generating a random password, and
- Sending a registration notification to new participants. Note: Some mail spam filters may block the reception of such notifications.

## 2. From existing workgroup members

A dialog will appear in which you can select from a list of participants in the Workgroup.

## 3. From your Active Directory account (Exchange)

Applicable only if your site organization has a Microsoft Exchange Active Directory that is accessible via the internet. You may have to ask your IT administrator if this is the case and request a login name and password.

After entering the LDAP Server URL, the Username, and Password, you can enter a search string and click Search. The search string can be part or all of a name or any part of a name or email.

---

# Edit Participant Name

You can edit the participant's name in **IDENTIFY/STRUCTURE > IDENTIFY > Participants** screen.

Simply click on the name of the participant you want to modify, do your changes and then press Enter to save.

<input type="checkbox"/>	Email	↑	Participant Name
<input type="checkbox"/>	ceo@gwu.edu		Chief Engineering Officer
<input type="checkbox"/>	che@gwu.edu		Chief Executive Officer
<input type="checkbox"/>	cro@gwu.edu		Chief Risk Officer
<input type="checkbox"/>	denisrisman@gwu.edu		Denis Risman
<input type="checkbox"/>	devinnagy@gwu.edu		Devin Nagy
<input type="checkbox"/>	grace@eci.com		Grace
<input type="checkbox"/>	its@gwu.edu		IT Supervisor
<input type="checkbox"/>	<b>j.doe@eci.com</b>		<b>John Doe</b>

Note: Email addresses are unique identifiers and cannot be modified.

# Participants List Actions (Reset Password, Get link etc.)

There are four icons under the Actions column of the Participants table:

<input type="checkbox"/>	Email	↑	Participant Name	Permission	Evaluation Status			Disabled?	Actions
					Has Data	Evaluation Progress	Last Judgment Time		
<input type="checkbox"/>	ceo@gwu.edu		Chief Engineering Officer	Evaluator	Yes	98.3% (170/173)	9/13/2018, 1:36 PM	<input type="checkbox"/>	   
<input type="checkbox"/>	che@gwu.edu		Chief Executive Officer	Evaluator	Yes	97.1% (134/138)	11/11/2020, 9:37 AM	<input type="checkbox"/>	   
<input type="checkbox"/>	cro@gwu.edu		Chief Risk Officer	Evaluator	Yes	97.4% (147/151)	9/30/2014, 12:10 PM	<input type="checkbox"/>	   
<input type="checkbox"/>	denisrisman@gwu.edu		Denis Risman	Evaluator		0.0% (0/211)		<input type="checkbox"/>	   
<input type="checkbox"/>	devinnagy@gwu.edu		Devin Nagy	Evaluator		0.0% (0/211)		<input type="checkbox"/>	   

1. **Reset Password** sets/resets the password for the participant. Gold  key indicates that the user has a password, blue  key indicates that the user has no password.
2. **Copy the evaluator's anytime link** on the clipboard 
3. **Log out and log back in** with another user's anytime link 
4. **View the evaluation steps** and judgments for any evaluator. This is a 'view only' mode so while you can enter or change judgments, they will not be saved. 

Note: Actions 2-4 are also available from the Evaluation Progress screen.

# Remove Participants

You can remove or delete participants from IDENTIFY/STRUCTURE > IDENTIFY > Participants page.

Email	Participant Name	Permission	Has Data	Evaluation Progress	Last Judgment Time	Disabled?	Actions	Attributes	
								Gender	EvaluateW
<input type="checkbox"/> Admin	Administrator	Project Manager		0.0% (0/209)					
<input type="checkbox"/> ceo@gwu.edu	Chief Engineering Officer	Evaluator	Yes	98.8% (169/171)	9/13/2018, 1:36 PM	<input type="checkbox"/>		Male	Threats/Ot
<input type="checkbox"/> che@gwu.edu	Chief Executive Officer	Evaluator	Yes	97.8% (133/136)	11/11/2020, 9:37 AM	<input type="checkbox"/>		Female	
<input type="checkbox"/> cro@gwu.edu	Chief Risk Officer	Evaluator	Yes	98.0% (146/149)	9/30/2014, 12:10 PM	<input type="checkbox"/>		Male	
<input type="checkbox"/> denisrisman@gwu.edu	Denis Risman	Evaluator		0.0% (0/209)		<input type="checkbox"/>		Male	
<input type="checkbox"/> devinnagy@gwu.edu	Devin Nagy	Evaluator		0.0% (0/209)		<input type="checkbox"/>		Male	
<input checked="" type="checkbox"/> grace@eci.com	Grace	Evaluator		0.0% (0/209)		<input type="checkbox"/>			
<input checked="" type="checkbox"/> its@gwu.edu	IT Supervisor	Evaluator	Yes	97.4% (113/116)	11/11/2020, 9:33 AM	<input type="checkbox"/>		Female	
<input type="checkbox"/> j.doe@eci.com	John Doe	Project Manager		0.0% (0/209)				Male	Both
<input checked="" type="checkbox"/> james@eci.com	James	Evaluator		0.0% (0/209)		<input type="checkbox"/>			
<input type="checkbox"/> mmankowski@gwu.edu	Michael Mankowski	Evaluator		0.0% (0/209)		<input type="checkbox"/>		Male	
<input type="checkbox"/> quigleybf@gwu.edu	Brian Quigley	Evaluator	Yes	50.7% (106/209)	10/9/2018, 12:42 PM	<input type="checkbox"/>		Male	

Clicking the Remove button displays 3 options to remove the participant(s):

- Remove selected participants. This option is grey out until one or more participants are selected using the checkboxes to the right of the participants.
- Remove all participants who have not completed their judgments, and
- Remove all participants who have no judgments

# Erase Participant's Judgments

You can erase the participant's judgments in IDENTIFY/STRUCTURE > IDENTIFY > Participants screen.

Simply check the checkboxes to the left of the participant(s) you want to delete judgments, click Edit > Erase Judgments.

The screenshot shows the 'IDENTIFY/STRUCTURE' interface with a list of participants. A context menu is open over the 'Edit' button, with 'Erase Judgments' highlighted. The participant list includes columns for checkboxes, Email, Participant Name, and Permission. Two checkboxes are checked and highlighted with a red box.

<input type="checkbox"/>	Email	Participant Name	Permission
<input type="checkbox"/>	<b>Admin</b>	<b>Administrator</b>	<b>Project Manager</b>
<input type="checkbox"/>	ceo@gwu.edu	Chief Engineering Officer	Evaluator
<input type="checkbox"/>	che@gwu.edu	Chief Executive Officer	Evaluator
<input type="checkbox"/>	cro@gwu.edu	Chief Risk Officer	Evaluator
<input type="checkbox"/>	denisrisman@gwu.edu	Denis Risman	Evaluator
<input type="checkbox"/>	devinnagy@gwu.edu	Devin Nagy	Evaluator
<input checked="" type="checkbox"/>	grace@eci.com	Grace	Evaluator
<input checked="" type="checkbox"/>	its@gwu.edu	IT Supervisor	Evaluator
<input type="checkbox"/>	j.doe@eci.com	<b>John Doe</b>	<b>Project Manager</b>

A prompt to delete judgments for Likelihood, Impact, and controls will be displayed.

You can select to delete only the judgments for Events, for Threats/Objectives, or both from the radio buttons.

Select as desire and click OK.

**Erase Judgments** ×

**Erase judgments for:**

- Likelihood hierarchy
  - For Events
  - For Threats
  - Both
- Impact hierarchy
  - For Events
  - For Objectives
  - Both
- Controls

Select all

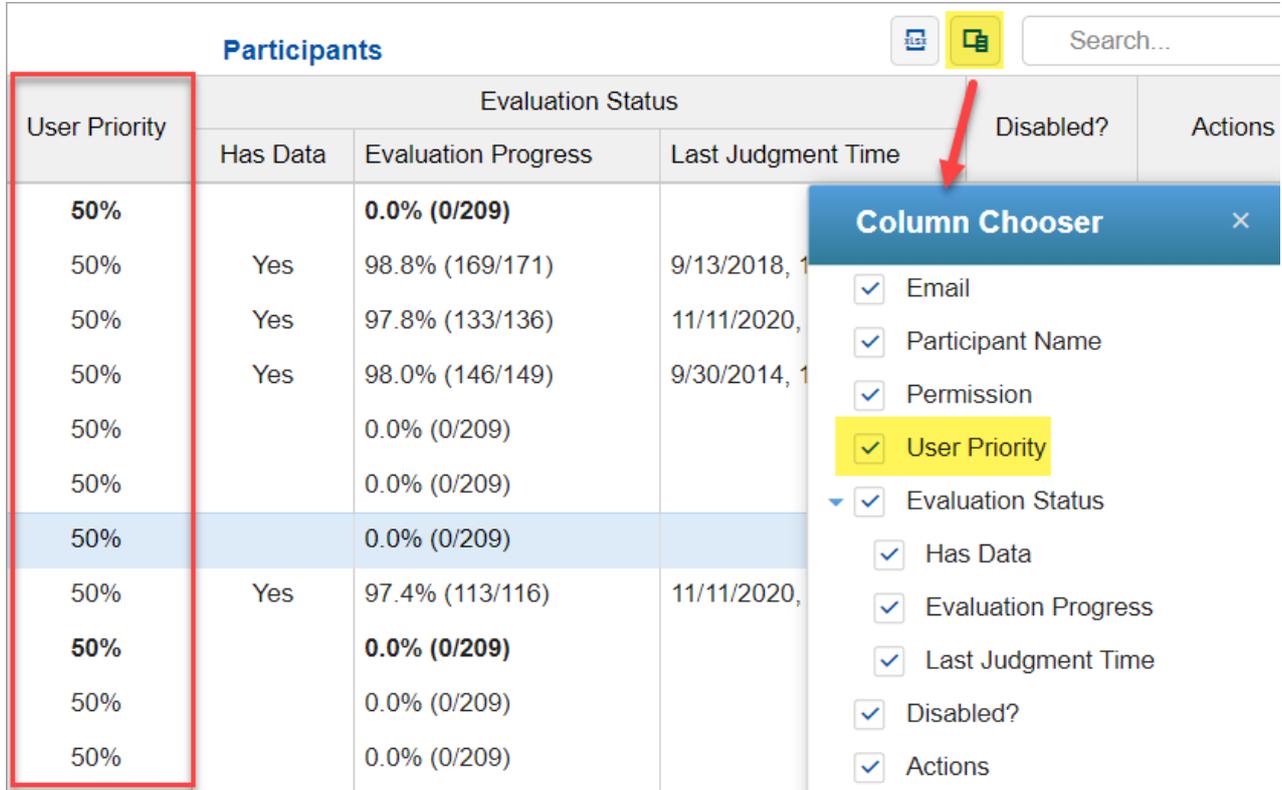
OK Cancel

---

# User Priorities

You can set and edit participant priorities (that will be used to weigh the participant's judgments).

By default the User Priorities is hidden, use the column choose to show it:



User Priority	Evaluation Status			Disabled?	Actions
	Has Data	Evaluation Progress	Last Judgment Time		
<b>50%</b>		<b>0.0% (0/209)</b>			
50%	Yes	98.8% (169/171)	9/13/2018, 1		
50%	Yes	97.8% (133/136)	11/11/2020,		
50%	Yes	98.0% (146/149)	9/30/2014, 1		
50%		0.0% (0/209)			
50%		0.0% (0/209)			
50%		0.0% (0/209)			
50%	Yes	97.4% (113/116)	11/11/2020,		
<b>50%</b>		<b>0.0% (0/209)</b>			
50%		0.0% (0/209)			
50%		0.0% (0/209)			

**Column Chooser** ×

- Email
- Participant Name
- Permission
- User Priority**
- Evaluation Status
- Has Data
- Evaluation Progress
- Last Judgment Time
- Disabled?
- Actions

When the User Priority check box is enabled, the User Priority column is displayed as shown above.

You can then set the relative priorities by typing in a value from 0 to 100% in a cell:

By default, all of the participant priorities are the same value of 50% so that you can easily either increase or decrease the priority of one participant.

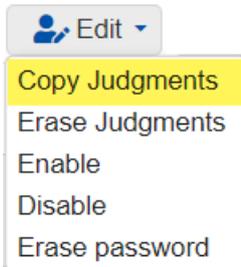
You can specify to see results with or without participant priorities when viewing results in the Synthesize screens, by clicking the User Priorities check box in Advanced mode.

 User Priorities

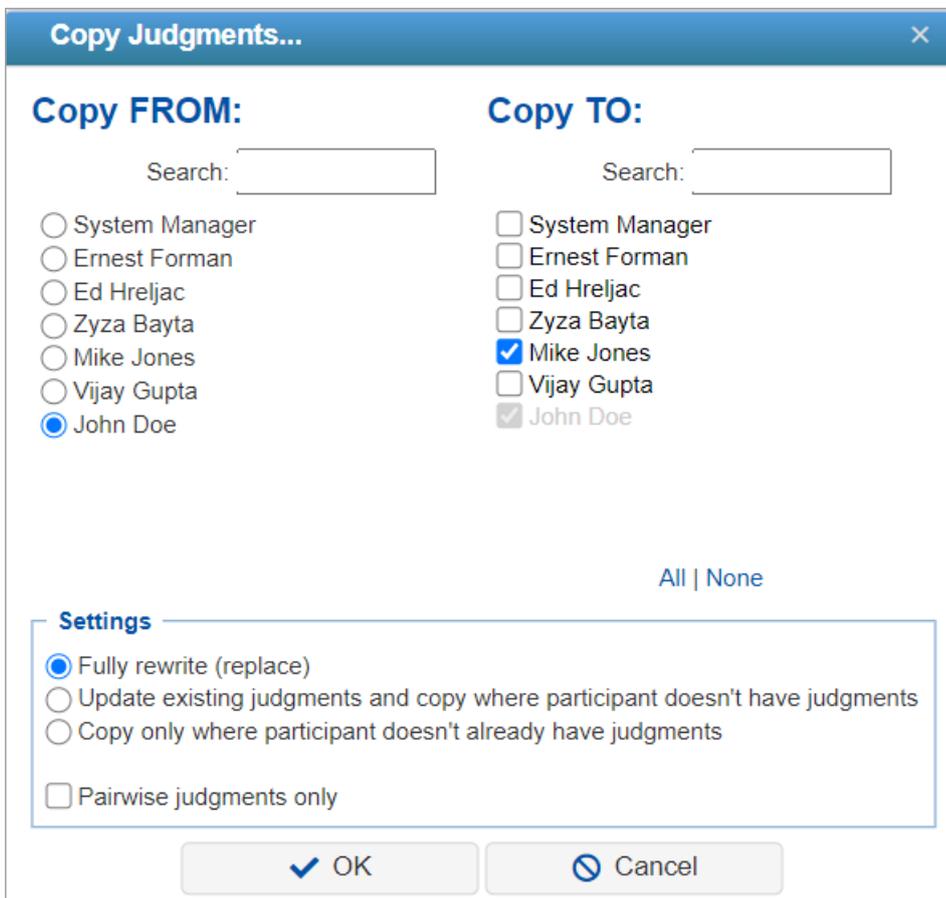
# Copy Judgments to Selected Participants

Judgments can be copied from one participant to another participant(s). This can be done on **IDENTIFY/STRUCTURE > IDENTIFY > Participants** page.

Select Edit > Copy Judgments:



This will open a window where you can select the participant from where the judgments will be copied from (left) and the participant(s) where the judgments will be copied to (right):



The dialog box is titled 'Copy Judgments...' and has a close button (X) in the top right corner. It is divided into two main sections: 'Copy FROM:' and 'Copy TO:'. Each section has a search input field and a list of participants with radio buttons. In the 'Copy TO:' section, 'Mike Jones' and 'John Doe' are selected. Below these sections is a link 'All | None'. At the bottom, there is a 'Settings' section with four radio button options: 'Fully rewrite (replace)' (selected), 'Update existing judgments and copy where participant doesn't have judgments', 'Copy only where participant doesn't already have judgments', and 'Pairwise judgments only'. At the very bottom are 'OK' and 'Cancel' buttons.

# Add, Edit, Delete Participant Groups

You can add, edit and delete the participants' groups from IDENTIFY/STRUCTURE > IDENTIFY > Participants page.

Participant Groups can be used when:

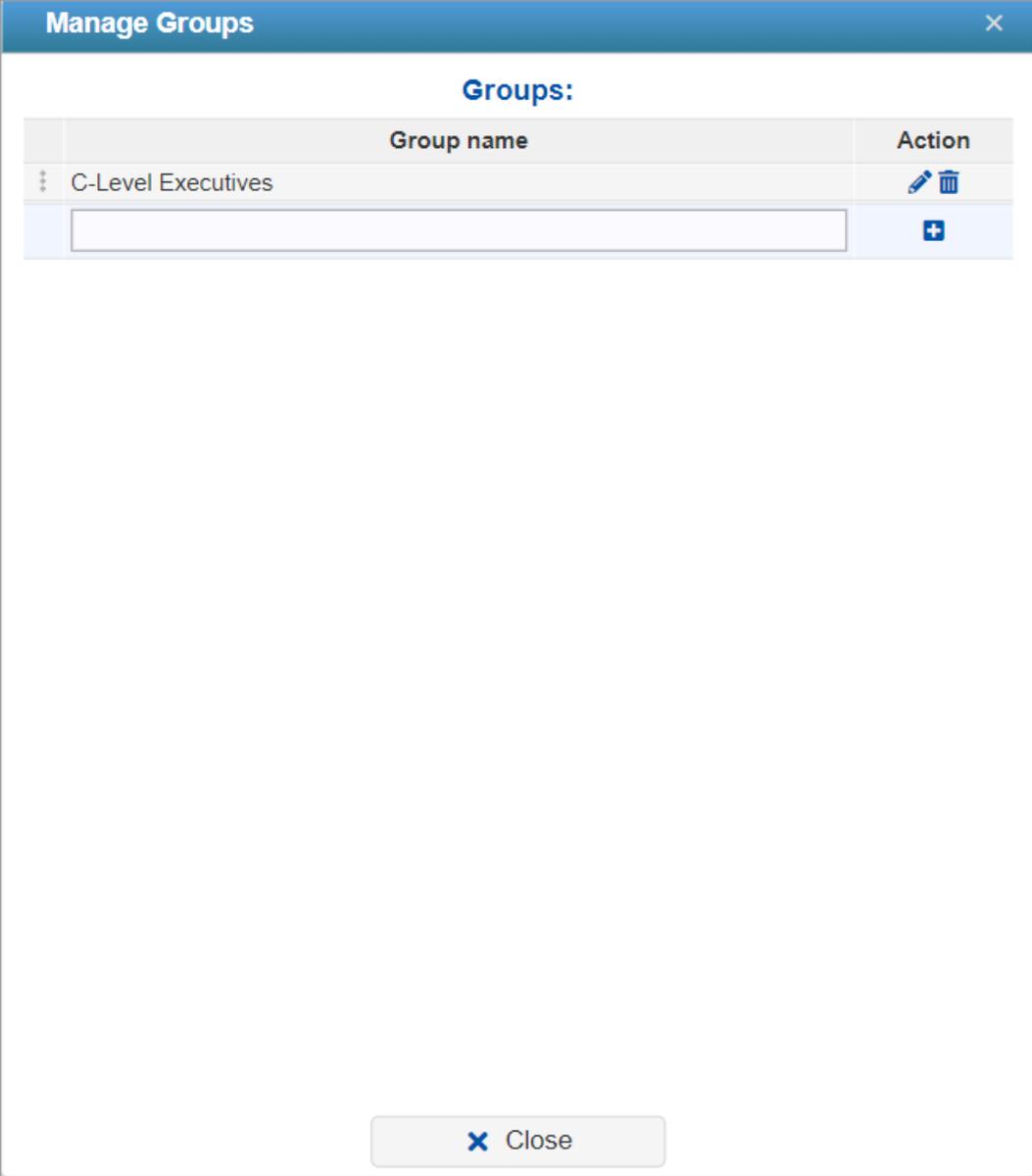
- Setting up roles and
- Displaying results

Participants' Groups can be:

- **Dynamic** - in which membership is determined based on the **Participant's attributes**.
- **Non-dynamic** - membership is manually assigned by the Project Manager, or as specified when getting the AnyTime General Invitation link.

Click the  button.

The Manage Groups window will be displayed where you can add, edit and delete groups.



The screenshot shows a window titled "Manage Groups" with a close button (X) in the top right corner. Below the title bar, the word "Groups:" is centered. A table with two columns, "Group name" and "Action", is displayed. The "Group name" column contains a list item "C-Level Executives" with a three-dot menu icon to its left. The "Action" column contains edit and delete icons for the "C-Level Executives" group. Below the table, there is a text input field and a plus sign icon (+) for adding a new group. At the bottom center of the window, there is a "Close" button with an X icon.

Group name	Action
⋮ C-Level Executives	 
<input type="text"/>	

To add a new one, type in the Group name in the text box and then press the plus icon:

Groups:	
Group name	Action
C-Level Executives	 
Experts	

Groups are displayed as columns on the Participants table.

Participants										Search...	
Email	Participant Name	Permission	User Priority	Evaluation Status			Disabled?	Actions	Groups		
				Has Data	Evaluation Progress	Last Judgment Time			C-Level Execu...	Experts	
<input type="checkbox"/> Admin	Administrator	Project Manager	50%		0.0% (0/209)			  	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> ceo@gwu.edu	Chief Engineering Officer	Evaluator	50%	Yes	98.8% (169/171)	9/13/2018, 1:36 PM	<input type="checkbox"/>	  	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> che@gwu.edu	Chief Executive Officer	Evaluator	50%	Yes	97.8% (133/136)	11/11/2020, 9:37 AM	<input type="checkbox"/>	  	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> cro@gwu.edu	Chief Risk Officer	Evaluator	50%	Yes	98.0% (146/149)	9/30/2014, 12:10 PM	<input type="checkbox"/>	  	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> denisrisman@gwu.edu	Denis Risman	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>	  	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> devinnagy@gwu.edu	Devin Nagy	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>	  	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> grace@eci.com	Grace	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>	  	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> its@gwu.edu	IT Supervisor	Evaluator	50%	Yes	97.4% (113/116)	11/11/2020, 9:33 AM	<input type="checkbox"/>	  	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/> j.doe@eci.com	John Doe	Project Manager	50%		0.0% (0/209)		<input type="checkbox"/>	  	<input type="checkbox"/>	<input type="checkbox"/>	

Groups added from the Manage Groups window have a **white** background color. You can manually assign the participants to the groups by checking the corresponding checkboxes on the Groups columns.

Participants' Groups can also be **Dynamic** -- in which membership is determined based on the **Participant's attributes**. Dynamic Groups columns have a **gray** background and the checkboxes are disabled.

Managing Participants groups is also available on the Participants Group page.

# Participants Attributes

Participants Attributes can be managed in the **IDENTIFY / STRUCTURE > IDENTIFY > [Participants](#)** page.

## Overview

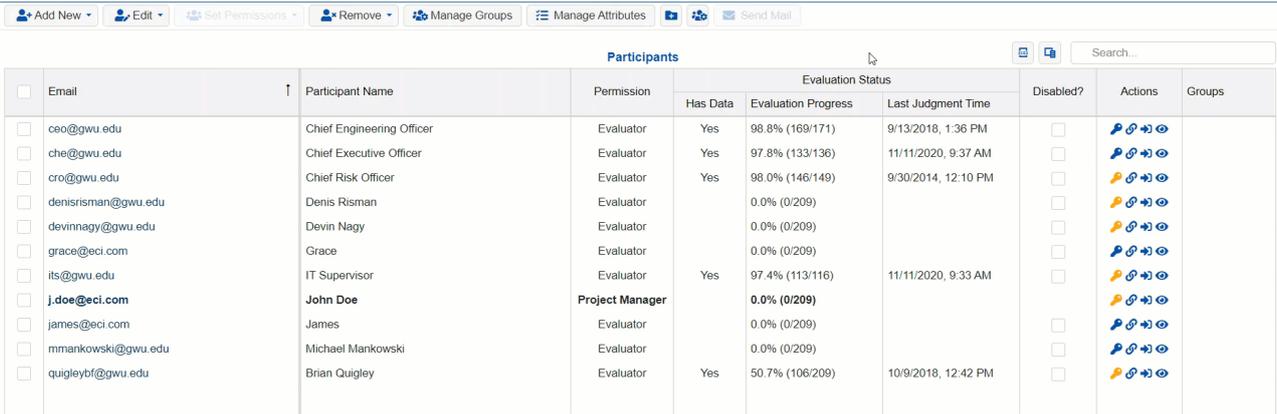
Participant attributes are the attributes or properties that are assigned to the participants. Participant Attributes are used to:

- Create **Dynamic Groups**,
- Filter Alternatives in the Synthesize Results pages.

You can add participants' attributes in two ways:

## Manage Participants Attributes

Clicking the Manage Participants Attributes  opens a window where you can add, edit, or delete participants' attributes.



Email	Participant Name	Permission	Evaluation Status			Disabled?	Actions	Groups
			Has Data	Evaluation Progress	Last Judgment Time			
<input type="checkbox"/> ceo@gwu.edu	Chief Engineering Officer	Evaluator	Yes	98.8% (169/171)	9/13/2018, 1:36 PM	<input type="checkbox"/>		
<input type="checkbox"/> che@gwu.edu	Chief Executive Officer	Evaluator	Yes	97.8% (133/136)	11/11/2020, 9:37 AM	<input type="checkbox"/>		
<input type="checkbox"/> cro@gwu.edu	Chief Risk Officer	Evaluator	Yes	98.0% (146/149)	9/30/2014, 12:10 PM	<input type="checkbox"/>		
<input type="checkbox"/> denisrisman@gwu.edu	Denis Risman	Evaluator		0.0% (0/209)		<input type="checkbox"/>		
<input type="checkbox"/> devinnagy@gwu.edu	Devin Nagy	Evaluator		0.0% (0/209)		<input type="checkbox"/>		
<input type="checkbox"/> grace@eci.com	Grace	Evaluator		0.0% (0/209)		<input type="checkbox"/>		
<input type="checkbox"/> its@gwu.edu	IT Supervisor	Evaluator	Yes	97.4% (113/116)	11/11/2020, 9:33 AM	<input type="checkbox"/>		
<input type="checkbox"/> j.doe@eci.com	<b>John Doe</b>	<b>Project Manager</b>		<b>0.0% (0/209)</b>		<input type="checkbox"/>		
<input type="checkbox"/> james@eci.com	James	Evaluator		0.0% (0/209)		<input type="checkbox"/>		
<input type="checkbox"/> mmankowski@gwu.edu	Michael Mankowski	Evaluator		0.0% (0/209)		<input type="checkbox"/>		
<input type="checkbox"/> quigleybf@gwu.edu	Brian Quigley	Evaluator	Yes	50.7% (106/209)	10/9/2018, 12:42 PM	<input type="checkbox"/>		

The added participants' attributes are displayed as new columns on the Participants' table.

The attribute values are pre-populated if the 'Default Value' is specified, otherwise, the cells will be blank. The Project Manager can update the values by clicking on the cell, and then typing in the value as desired. Participant's attributes added in this manner have a white background to indicate that it is editable.

## Add Attributes Using Insight Question

Participants' Attributes can be added from Insight Questionnaires by clicking 

Participants' Attributes added from Insight Questions are also displayed on the Participants table, but the cells are not editable (greyed out). The attribute values are populated based on the participants' answers to the linked insight question.

Participants											
Email	Participant Name	Permission	User Priority	Evaluation Status			Disabled?	Actions	Attributes		
				Has Data	Evaluation Progress	Last Judgment Time			Department	C-Level Exec...	
<input type="checkbox"/> ceo@gwu.edu	Chief Engineering Officer	Evaluator	50%	Yes	98.8% (169/171)	9/13/2018, 1:36 PM	<input type="checkbox"/>		Engineering	<input type="checkbox"/>	
<input type="checkbox"/> che@gwu.edu	Chief Executive Officer	Evaluator	50%	Yes	97.8% (133/136)	11/11/2020, 9:37 AM	<input type="checkbox"/>		Executive	<input checked="" type="checkbox"/>	
<input type="checkbox"/> cro@gwu.edu	Chief Risk Officer	Evaluator	50%	Yes	98.0% (146/149)	9/30/2014, 12:10 PM	<input type="checkbox"/>		Risk Manage...	<input type="checkbox"/>	
<input type="checkbox"/> denisrisman@gwu.edu	Denis Risman	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		Engineering	<input type="checkbox"/>	
<input type="checkbox"/> devinnagy@gwu.edu	Devin Nagy	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		Risk Manage...	<input type="checkbox"/>	
<input type="checkbox"/> grace@eci.com	Grace	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		IT	<input type="checkbox"/>	
<input type="checkbox"/> its@gwu.edu	IT Supervisor	Evaluator	50%	Yes	97.4% (113/116)	11/11/2020, 9:33 AM	<input type="checkbox"/>		IT	<input type="checkbox"/>	
<input type="checkbox"/> j.doe@eci.com	<b>John Doe</b>	<b>Project Manager</b>	<b>50%</b>		<b>0.0% (0/209)</b>		<input type="checkbox"/>		<b>Executive</b>	<input checked="" type="checkbox"/>	
<input type="checkbox"/> james@eci.com	James	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		Executive	<input checked="" type="checkbox"/>	
<input type="checkbox"/> mmankowski@gwu.edu	Michael Mankowski	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		Engineering	<input type="checkbox"/>	
<input type="checkbox"/> quigleyb@gwu.edu	Brian Quigley	Evaluator	50%	Yes	50.7% (106/209)	10/9/2018, 12:42 PM	<input type="checkbox"/>		IT	<input type="checkbox"/>	

By default, the attribute name is the same as the insight question, you can edit it as desired, we recommend making it shorter. In the example above, the Attribute is renamed to "EvaluateWhat".

The attribute values are populated based on the participants' answers to the question "What do you want to Evaluate?".

From above, the user named "John Doe" has an insight answer thus it shows "Objectives Only" on the attribute value that corresponds to this user.

This attribute assignment gets updated whenever John Doe modifies his answer to this insight survey question.

The Project Manager can create [Dynamic Groups](#) by checking the "Create dynamic groups check box". See more details about Dynamic Groups [here](#).

# Dynamic Participants Groups

You can create Dynamic Groups in the **IDENTIFY/STRUCTURE > IDENTIFY > Participants** page.

A **Dynamic group** is defined as a [participants' group](#) in which membership is determined by the participants' attributes. This allows the Project Manager to define the participants' evaluation roles in terms of their attributes.

There are two ways to create Dynamic Groups:

## 1. Create Dynamic Groups from Participant Attributes Filter

Click  to open a modal where we can filter the participant's list by participants attributes:

**Filter by participant attributes and create dynamic groups**

AND   

Search...

Email Address	Participant Name	Department
denisrisman@gwu.edu	Denis Risman	Engineering
quigleybf@gwu.edu	Brian Quigley	IT
cro@gwu.edu	Chief Risk Officer	Risk Management
ceo@gwu.edu	Chief Engineering Officer	Engineering
its@gwu.edu	IT Supervisor	IT
che@gwu.edu	Chief Executive Officer	Executive
devinnagy@gwu.edu	Devin Nagy	Risk Management
mmankowski@gwu.edu	Michael Mankowski	Engineering
j.doe@eci.com	John Doe	Executive
james@eci.com	James	Executive
grace@eci.com	Grace	IT

 Create Dynamic Group  Cancel

Here you can specify one or more conditional statement(s) and then create a Dynamic Group based on the created filter.

Click  to add a conditional statement:

AND   

 Department  Equal 

From above, "**Department**" is the participant attribute name, when there are more participant attributes in the model, you can click on it to expand the dropdown

"**Equal**" is the conditional statement. Other conditions are available depending on the attribute type (string, bool, int, long).

For string, the following conditions are available:

Equal  
Contains  
Equal  
Not Equal  
Starts With

The last text box is where you will enter the attribute value, for example, "Engineering".

Click  to see the filtered list.

**Filter by participant attributes and create dynamic groups**

AND   

 Department Equal Engineering

Search...

Email Address	Participant Name	Department
denisrisman@gwu.edu	Denis Risman	Engineering
ceo@gwu.edu	Chief Engineering Officer	Engineering
mmankowski@gwu.edu	Michael Mankowski	Engineering

 Create Dynamic Group  Cancel

You can add more conditions as needed and specify if:

- **AND** - all conditions must be satisfied
- **OR** - at least one should be satisfied

Click  Create Dynamic Group to create a group based on the current condition.

A prompt will open where you will specify the group name, in our example, we will enter "Engineering"

**Create Group**

Group name:

The new dynamic group is added as a new column on the participant's grid, under the "Groups" section.

Notice below that the participants with "Department" as Engineering belongs to the group Engineering as shown on the checkmark on the Engineering group.

Email	Participant Name	Permission	User Priority	Evaluation Status			Disabled?	Actions	Groups		
				Has Data	Evaluation Progress	Last Judgment Time			Department	C-Level Exec...	Engineering
<input type="checkbox"/> ceo@gwu.edu	Chief Engineering Officer	Evaluator	50%	Yes	98.8% (169/171)	9/13/2018, 1:36 PM	<input type="checkbox"/>		Engineering	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> che@gwu.edu	Chief Executive Officer	Evaluator	50%	Yes	97.8% (133/136)	11/11/2020, 9:37 AM	<input type="checkbox"/>		Executive	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> cro@gwu.edu	Chief Risk Officer	Evaluator	50%	Yes	98.0% (146/149)	9/30/2014, 12:10 PM	<input type="checkbox"/>		Risk Manage...	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> denisrisman@gwu.edu	Denis Risman	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		Engineering	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> devinmagy@gwu.edu	Devin Nagy	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		Risk Manage...	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> grace@eci.com	Grace	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		IT	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> its@gwu.edu	IT Supervisor	Evaluator	50%	Yes	97.4% (113/116)	11/11/2020, 9:33 AM	<input type="checkbox"/>		IT	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> j.doe@eci.com	John Doe	Project Manager	50%		0.0% (0/209)		<input type="checkbox"/>		Executive	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The Dynamic Groups cells/checkboxes in the Participants table are disabled (greyed out) since its assignment is based on the participants' attributes conditional statement(s), thus it can't be edited.

Non-dynamic groups (C-Level Executives in the example above) have a white background and can be edited by checking/unchecking their checkboxes.

The Dynamic group assignment is being updated automatically each time the attribute assignment is changed or modified.

## 2. Create Dynamic Groups based on Insight Questionnaires

Dynamic Groups can also be added when creating a Participants' Attribute from an Insight Question.

For example, we have an insight question:

**1. Select what you want to evaluate**

Threats/Objectives Only

Events Only

Both

A Participant Attribute can be created from this insight question, and the possible answers or choices are the dynamic groups the participants can be assigned to, as determined by their answer to the questions

To add dynamic groups from an Insight Question, click the button.

This will open a modal listing the insight questions of the model.

Simply select the question you want to link to a participant attribute and then check the check box to create groups using the answers on the selected survey question.

Participants											
Email	Participant Name	Permission	User Priority	Evaluation Status			Disabled?	Actions	Attributes		Groups
				Has Data	Evaluation Progress	Last Judgment Time			Department	C-Level Exec...	
<input type="checkbox"/> ceo@gwu.edu	Chief Engineering Officer	Evaluator	50%	Yes	98.8% (169/171)	9/13/2018, 1:36 PM	<input type="checkbox"/>		Engineering		<input type="checkbox"/>
<input type="checkbox"/> che@gwu.edu	Chief Executive Officer	Evaluator	50%	Yes	97.8% (133/136)	11/11/2020, 9:37 AM	<input type="checkbox"/>		Executive		<input checked="" type="checkbox"/>
<input type="checkbox"/> cro@gwu.edu	Chief Risk Officer	Evaluator	50%	Yes	98.0% (146/149)	9/30/2014, 12:10 PM	<input type="checkbox"/>		Risk Manage...		<input type="checkbox"/>
<input type="checkbox"/> denisrisman@gwu.edu	Denis Risman	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		Engineering		<input type="checkbox"/>
<input type="checkbox"/> devinnagy@gwu.edu	Devin Nagy	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		Risk Manage...		<input type="checkbox"/>
<input type="checkbox"/> grace@eci.com	Grace	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		IT		<input type="checkbox"/>
<input type="checkbox"/> its@gwu.edu	IT Supervisor	Evaluator	50%	Yes	97.4% (113/116)	11/11/2020, 9:33 AM	<input type="checkbox"/>		IT		<input type="checkbox"/>
<input type="checkbox"/> j.doe@eci.com	<b>John Doe</b>	<b>Project Manager</b>	<b>50%</b>		<b>0.0% (0/209)</b>		<input type="checkbox"/>		<b>Executive</b>		<input checked="" type="checkbox"/>
<input type="checkbox"/> james@eci.com	James	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		Executive		<input checked="" type="checkbox"/>
<input type="checkbox"/> mmankowski@gwu.edu	Michael Mankowski	Evaluator	50%		0.0% (0/209)		<input type="checkbox"/>		Engineering		<input type="checkbox"/>
<input type="checkbox"/> quigleyb@gwu.edu	Brian Quigley	Evaluator	50%	Yes	50.7% (106/209)	10/9/2018, 12:42 PM	<input type="checkbox"/>		IT		<input type="checkbox"/>

From above, a participant attribute was named "EvaluateWhat" was created. The dynamic groups were also created based on the following answers:

- Threats/Objectives Only
- Events Only
- Both

When dynamic groups are created, roles can be assigned to the participants dynamically by setting up roles for the dynamic groups.

For example, for the Dynamic Groups added from Insight Survey above, the Project Manager can assign the roles as follows:

- Threats/Objectives Only -- assign roles to evaluate only the Threats (Likelihood) and Objectives (Impact)
  - (EvaluateWhat equals "Threats/Objectives Only")
- Events Only -- assign roles to evaluate only the Events
  - (EvaluateWhat equals "Events Only")
- Both -- assign roles to evaluate both Threats/Objectives and Events
  - (EvaluateWhat equals "Both")
- All Participants -- Undefined or Drop All

When a participant answered the insight question with "Events Only" and then clicked the Next button, the participant will be added to the "Events Only" group, thus the evaluation will be created according to the "Events Only" and "All Participants" roles, that is, to evaluate only the events.

# Define Participant Permission in a Model

You can update the model user permission on the **IDENTIFY/STRUCTURE > IDENTIFY > [Participants](#)** page.

A model user can be a **Project Manager, Evaluator, Viewer, and Evaluator/Viewer.**

- Project Manager - has overall control over the model
- Evaluator - are participants to evaluate the decision model
- Viewer - can view the structure and results of the decision model
- Evaluator/Viewer - has evaluator and viewer permission

Project Managers are displayed in **bold** font in the project's participants list.

Read the table below to see more of what each role can do!

## Model Level Permission

Permission	Project Manager	Evaluator	Evaluator/Viewer	Viewer
Modify model hierarchy	Y			
Modify alternatives list	Y			
Modify alternatives' contributions	Y			
Set specific viewing roles	Y			
Set specific evaluation roles	Y			
Download Model	Y			
Delete Model	Y			
Evaluate Model	Y	Y	Y	
Perform Sensitivity Analysis	Y		Y	Y
View Overall Results	Y		Y	Y
View Model	Y		Y	Y
Use predefined models	Y		Y	Y
Manage Model Participants	Y			
Manage Model options	Y			

Assigning a **Project Manager** permission depends on the Workgroup Permissions (System Manager, Workgroup Manager, Project Organizers, Workgroup Members) of a user.

All Workgroup Users except Workgroup Members can be Project Manager.

Workgroup Permission	Can be a Project Manager?
System Manager	Y*
Workgroup Manager	Y*

Project Organizer Workgroup Permission	Y** Can be a Project Manager?
Workgroup Member	N

\* user automatically becomes a Project Manager once he/she accessed the project.

\*\* Optional as assigned by the Project Manager. A Project Organizer who created a model is a Project Manager of that model.

When you try to set a Project Manager permission to an Evaluator that is only a Workgroup Member, a confirmation prompt asking to make him/her a Project Organizer will be displayed, click OK to agree.

Note also that a Workgroup Manager in a Workgroup is always a Project Manager in each model.

# Enable or Disable Participants

You can enable or disable model participants from **IDENTIFY/STRUCTURE > IDENTIFY > Participants** page:

To enable/disable model participants:

- check (disable) or uncheck (enable) the check box on the 'Disabled?' column, or..
- select the participant(s) you want to enable or disable, and then click the Edit button and select Enable or Disable.

Participants								
Email	Participant Name	Permission	Evaluation Status			Disabled?	Actions	
			Has Data	Evaluation Progress	Last Judgment Time			
<input type="checkbox"/> ceo@gwu.edu	Chief Engineering Officer	Evaluator	Yes	98.8% (169/171)	9/13/2018, 1:36 PM	<input type="checkbox"/>		
<input type="checkbox"/> che@gwu.edu	Chief Executive Officer	Evaluator	Yes	97.8% (133/136)	11/11/2020, 9:37 AM	<input type="checkbox"/>		
<input type="checkbox"/> cro@gwu.edu	Chief Risk Officer	Evaluator	Yes	98.0% (146/149)	9/30/2014, 12:10 PM	<input type="checkbox"/>		
<input type="checkbox"/> denisrisman@gwu.edu	Denis Risman	Evaluator		0.0% (0/209)		<input type="checkbox"/>		
<input type="checkbox"/> devinnagy@gwu.edu	Devin Nagy	Evaluator		0.0% (0/209)		<input type="checkbox"/>		
<input type="checkbox"/> grace@eci.com	Grace	Evaluator		0.0% (0/209)		<input type="checkbox"/>		
<input type="checkbox"/> its@gwu.edu	IT Supervisor	Evaluator	Yes	97.4% (113/116)	11/11/2020, 9:33 AM	<input type="checkbox"/>		
<input type="checkbox"/> j.doe@eci.com	<b>John Doe</b>	<b>Project Manager</b>		<b>0.0% (0/209)</b>		<input type="checkbox"/>		
<input type="checkbox"/> james@eci.com	James	Evaluator		0.0% (0/209)		<input type="checkbox"/>		
<input type="checkbox"/> mmankowski@gwu.edu	Michael Mankowski	Evaluator		0.0% (0/209)		<input type="checkbox"/>		
<input type="checkbox"/> quigleybf@gwu.edu	Brian Quigley	Evaluator	Yes	50.7% (106/209)	10/9/2018, 12:42 PM	<input type="checkbox"/>		

Disabled participants are displayed in grey font color. Disabled participants will not be able to enter judgments but judgments they previously entered will be included in computing results. If you want to not have this be the case, you can restrict roles for the disabled participant or delete their judgments as described above.

## Add, Edit and Delete Threats

---

# Expand, Collapse and Auto-Redraw the Threats Hierarchy

**Expand All** will expand all branches of the hierarchy.

**Collapse All** will collapse the hierarchy and show only the goal and the first level of elements (threats).

You can also expand/collapse **sections** of the hierarchy by clicking the same icons at the left of the threat node.

When the **Auto-Redraw** box is checked, clicking on the *name* of any element will not only expand the branches below that element but will automatically contract the branches in other parts of the hierarchy. This is useful to be able to focus on a part of the hierarchy, see all of its ancestries, but not be distracted from details in other parts of the hierarchy.

The screenshot displays a user interface for a threat hierarchy. At the top, there is a control bar with the following elements from left to right: a dropdown menu set to 'Tree View', an 'Expand All' button, a 'Collapse All' button, an unchecked 'Auto-Redraw' checkbox, a blue '+ Add' button, and an 'Edit' button with a pencil icon. Below the control bar is a tree view of threats. The root node is 'Threats', which is expanded. It contains five main categories, each with a square icon and an information icon (i): 'Human Factor', 'Environmental', 'Infrastructure', 'Terrorism', and 'Technology'. Each category is further expanded to show its sub-threats. A mouse cursor is visible over the 'Environmental' category node.

- Threats
  - Human Factor
    - Inadequately Trained Staff
    - Disregarding or Not Following Proper Policies, Processes, or Procedures
    - Lack of Situational Awareness
    - Engineers Failure to Properly Install Equipment
  - Environmental
    - Flooding of Intelligent Event Monitoring Infrastructure
    - Lightning Striking Signaling Infrastructure
  - Infrastructure
    - Minor Electrical Power Shortage
    - Major Electrical Power Loss
    - Mechanical Failure of Sensors
    - Mechanical Failure of Signals
    - Mechanical Failure of Cables
  - Terrorism
    - Conventional Attack on the Signalling Infrastructure
    - Cyber Attack on the Intelligent Event Monitoring Network Itself
    - Cyber Attach on the Telephony and Broadband Infrastructure of the Service Provider
  - Technology
    - System Software Technology Obsolescence
    - System Hardware Technology Obsolescence
    - New Cutting Edge Software Technology Available
    - Intelligent Monitoring System Software Failure

# Sort (Re-order) Threats

Elements can be moved or copied from one position/level in the hierarchy to another by drag/dropping to the desired position in the hierarchy.

In Tree View, you can move or copy a node from one position to another by dragging and dropping. Simply select a node and hold on to the left button of your mouse and then drag to the position you want the node to be moved/copied (you will see a blue arrow as a pointer). Once you release the mouse's left key, you will then see a dialog asking whether to copy or move the node. Select and click OK to confirm.

Tree View   Expand All   Collapse All    Auto-Redraw   + Add   Edit

- Threats
  - Human Factor
    - Inadequately Trained Staff
    - Disregarding or Not Following Proper Policies, Processes, or Procedures
    - Lack of Situational Awareness
    - Engineers Failure to Properly Install Equipment
  - Environmental
    - Flooding of Intelligent Event Monitoring Infrastructure
    - Lightning Striking Signaling Infrastructure
  - Infrastructure
    - Minor Electrical Power Shortage
    - Major Electrical Power Loss
    - Mechanical Failure of Sensors
    - Mechanical Failure of Signals
    - Mechanical Failure of Cables
  - Terrorism
    - Conventional Attack on the Signalling Infrastructure
    - Cyber Attack on the Intelligent Event Monitoring Network Itself
    - Cyber Attach on the Telephony and Broadband Infrastructure of the Service Provider
  - Technology
    - System Software Technology Obsolescence
    - System Hardware Technology Obsolescence
    - New Cutting Edge Software Technology Available
    - Intelligent Monitoring System Software Failure

You can also **sort** elements in the cluster below the **selected** threat or sub-threat by name ascending/descending:

Sort

- By Name Ascending
- By Name Descending

Sorting by name can be done both in Tree View and Hierarchy View.

**HINT:** You can use the **Model Snapshots** feature in case you want to revert to what you had before the sorting.

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# View Threats (Tree or Hierarchy)

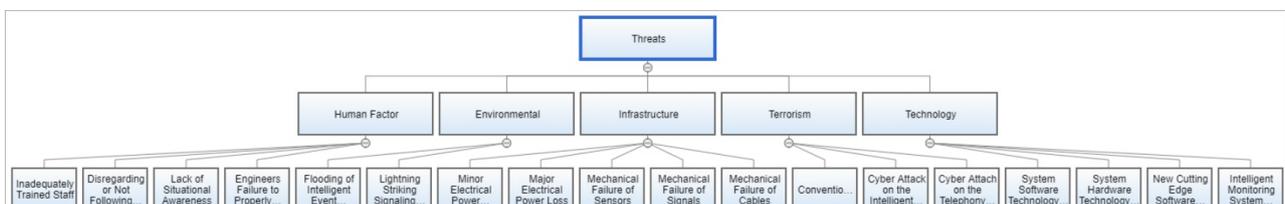
Threats can be viewed in **Tree View** or **Hierarchical View**. By default, the Tree View is displayed as shown below:

- Threats
  - Human Factor
    - Inadequately Trained Staff
    - Disregarding or Not Following Proper Policies, Processes, or Procedures
    - Lack of Situational Awareness
    - Engineers Failure to Properly Install Equipment
  - Environmental
    - Flooding of Intelligent Event Monitoring Infrastructure
    - Lightning Striking Signaling Infrastructure
  - Infrastructure
    - Minor Electrical Power Shortage
    - Major Electrical Power Loss
    - Mechanical Failure of Sensors
    - Mechanical Failure of Signals
    - Mechanical Failure of Cables
  - Terrorism
    - Conventional Attack on the Signalling Infrastructure
    - Cyber Attack on the Intelligent Event Monitoring Network Itself
    - Cyber Attach on the Telephony and Broadband Infrastructure of the Service Provider
  - Technology
    - System Software Technology Obsolescence
    - System Hardware Technology Obsolescence
    - New Cutting Edge Software Technology Available
    - Intelligent Monitoring System Software Failure

You can use the drop-down to select the Hierarchy View:

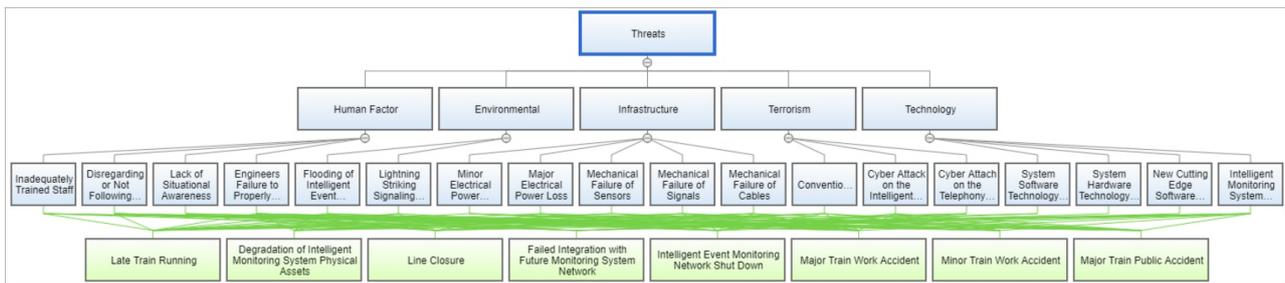
Tree View  
Tree View  
Hierarchy View

The Hierarchy View of Threats is shown below:



You can do similar actions such as adding threats, editing, sort by name, and export as you can do in the Tree View.

Additionally, you can show/hide the Events in the Hierarchy view by checking the  Show Events check box.



You can specify the rectangle length and width by clicking the gear icon Preferences

**Preferences** [X]

Rectangle Height [50] 20 200

Rectangle Width [75 .. 159] 20 500

**HINT:** For smaller screens, some of the buttons may be hidden. You may see the hidden buttons by clicking the ellipsis icon at the top right.

# Vulnerabilities Grid (Contributions)

All Threats may contribute to all Events. In most cases, particularly when the hierarchy represents a broad range of organizational/categorical threats, threats may contribute to only some of the Events. It may also be possible that an event won't have any Threats. You can specify which covering threats contribute to each of the Events on this page.

You can set up which threats contribute to events on the Vulnerability Grid (Contributions) page which can be found on:

- IDENTIFY/STRUCTURE > THREATS > Contributions, or
- LIKELIHOOD OF EVENTS > STRUCTURE > EVENT THREATS > Vulnerabilities Grid

<input type="button" value="Select all"/> <input type="button" value="Deselect all"/> <input type="button" value="Select Columns"/>									
Vulnerability Of Events To Sources									
Events	Sources								
	Strength of Terrorists	Lack of Intelligenc Gathering and Sharing	Severe Funding Pressures	Ineffective Personnel Capabilitie	Inadequat Border Enforcem: Technolog	Border Managem Approach and Communi Plan	Inadequat Harmoniz: with Foreign Jurisdictio	Political Will or Non-Partis to Address Issue	Strengthe of Organizec Crime Groups
<input type="checkbox"/> [1] Terrorists Smuggle WMD into US and Comr	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> [6] Terrorists bomb stock exchange building	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> [3] Criminal Network Smuggles Illegal Drugs Int	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> [4] Criminal Network Smuggles Counterfeit Goo	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> [5] Unauthorized Migrants Enter the US	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Clicking on the row/column heading boxes will select/de-select all of the elements in that row/column.

A  box in a column or row header means that all cells in the column or row contribute.

A  half box means that some but not all contribute.

A  blank means that no cells in the column or row contribute.

You can click on specific boxes to assign contributions for the Event (row) given the Threat (column).

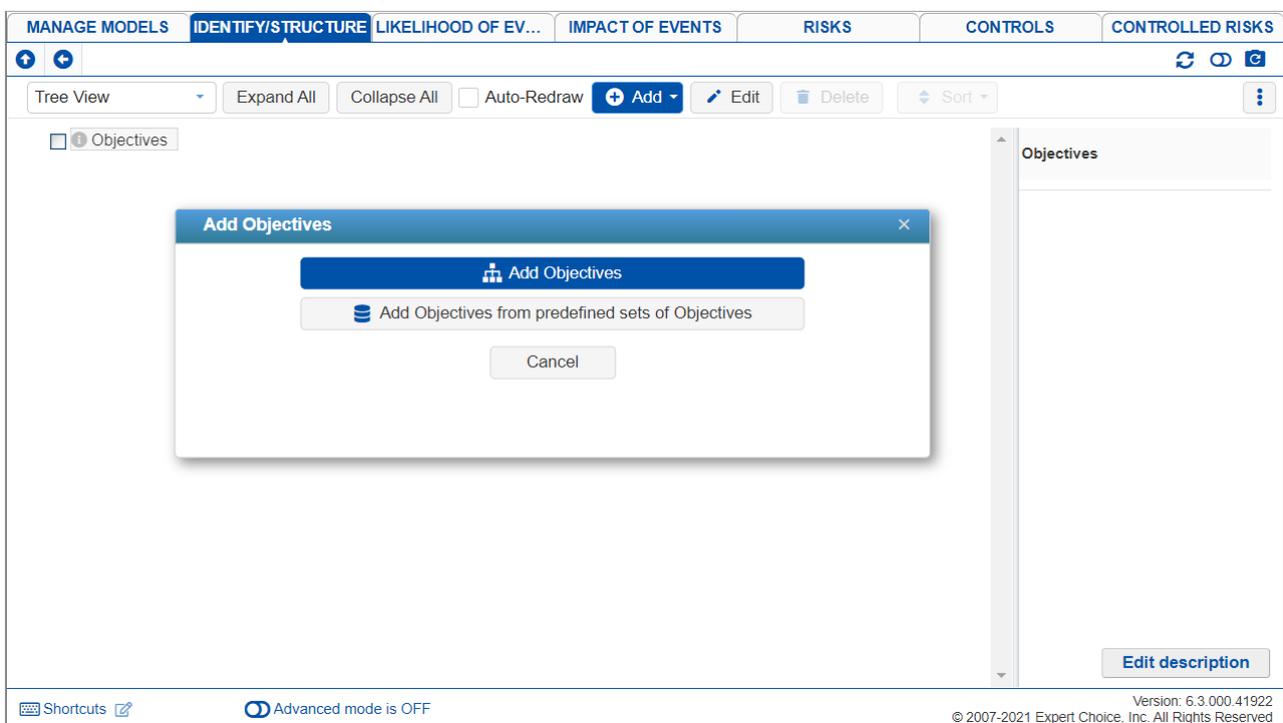
# Add, Edit and Delete Objectives

The Objectives hierarchy can be created, viewed, and edited from any of the following pages:

- IDENTIFY/STRUCTURE > IDENTIFY > Objectives;
- IDENTIFY/STRUCTURE > OBJECTIVES > Hierarchy;
- IMPACT OF EVENTS > STRUCTURE > EVENTS OBJECTIVES > Objectives.

The default wording can be defined on the Workgroup Template; or from Default Option Sets. You can also change the wording for each model on the Judgments Options page of the model.

Before adding Objectives, we suggest you read how Riskion defines Objectives-- [Riskion Taxonomy \(Risk Elements and Risk Measures\)](#).

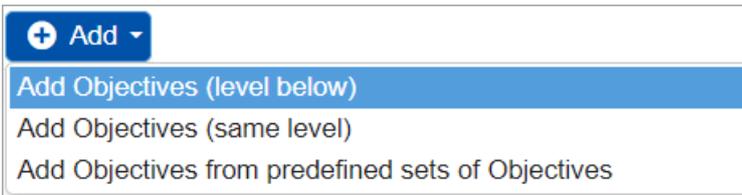


Depending on the Default Option Sets wording used when creating a model, the overall statement will be shown, in this case, "Objectives" and can be edited. A prompt to add objectives will pop-out as shown above.

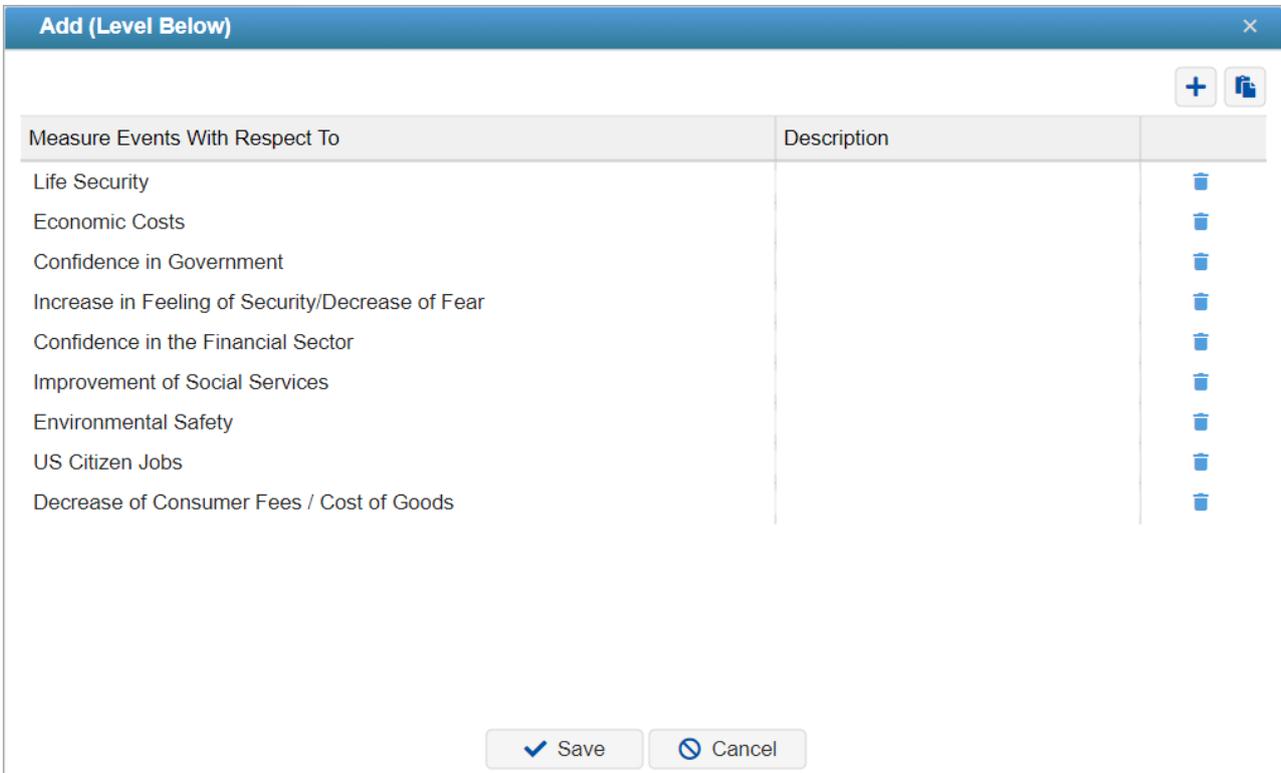
## Add Objectives (same level or below)

You can add objectives **below** the Objectives node.

Additional elements (objectives, sub-objectives) can be added either at the same level of the currently selected node by pressing **Add Objectives (same level)** button, or below the currently selected button, by pressing **Add Objectives (level below)** button.



Pressing either of the first two options above will open a dialog:



Here you can either:

a) enter one or more elements, along with brief descriptions (a simple form of an information document which you can modify later using the Edit description or buttons). Adding one or more spaces before an element name will indicate that the element should be added at a lower level in the hierarchy.

b) The **Paste from Clipboard** button will paste elements that have been previously placed on the clipboard into the hierarchy. These elements can be placed on the clipboard in a variety of ways:

1. By copying from adjacent rows/columns in an Excel spreadsheet
2. By copying from adjacent row/s columns in a Word document
3. By copying from a tab delimited text file, where the tab is used to separate the element name from the element description.

The Objective and the objective names can be **edited** by selecting them and clicking the Edit button or by double-clicking the node name.

## Add Objectives from predefined sets of Objectives

The **Add Objectives from predefined sets of Objectives** allows you to add new objectives from predefined objectives determined by the site administrator.

## Delete Objectives

You can **delete** one or more objectives by selecting them and clicking the Delete button.

You can also right-click an objective to see a set of commands, and then select Delete.

**HINT:** It is advisable to [save a copy of the model](#) before deleting many elements in case you want to save a copy of your model before the deletion. You can also use the **Model Snapshots** feature to revert to what you had.

## Objectives right-click commands

Some commands already explained above and more are available by right-clicking an Objective node:

- + Add Objectives (level below)
- + Add Objectives (same level)
- + Add Objectives from predefined sets of Objectives
- ✎ Edit
- ℹ Edit description
- 🗑 Delete
- 📄 Copy Judgments
- 📄 Paste Judgments
- 🗑 Erase node's judgments for all participants

- Add Objectives (level below) - add nodes below the selected node
- Add Objectives (same level) - add nodes same level as the selected node
- Add Objectives from predefined sets of Objectives - Open the predefined sets modal
- Edit - edit the selected node
- Edit description - open the rich text editor to edit the description of the selected node
- Delete - delete the selected node
- Copy judgments - copy judgments of the selected node
- Paste judgments - paste the copied judgments from another node to the selected node
- Erase node-s judgments for all participants - delete the judgments of the selected node

# Sort (Re-order) Objectives

Elements can be moved or copied from one position/level in the hierarchy to another by drag/dropping to the desired position in the hierarchy.

In Tree View, you can move or copy a node from one position to another by dragging and dropping. Simply select a node and hold on to the left button of your mouse and then drag to the position you want the node to be moved/copied (you will see a blue arrow as a pointer). Once you release the mouse's left key, you will then see a dialog asking whether to copy or move the node. Select and click OK to confirm.

Tree View   Expand All   Collapse All    Auto-Redraw  

- Objectives
  - Financial
    - Loss of Customers
    - Financial Loss
    - Financial Liability Due to Accident
  - Reliability, Availability, Maintainability
    - Loss of Maintenance Efficiency
    - Disruption/Damage to Service Line Infrastructure
    - Repair to Service Line Infrastructure
  - Performance
    - Temporary Line Closure
    - Loss of Reliability and Network Efficiency
    - Loss of Wider Monitoring System Program Efficiency
    - Loss of Train Service
  - Human Factors
    - Death
    - Injury
  - Safety
    - Loss of Safety
  - Public Relations
    - Customer/Business Dissatisfaction with the Service/Network Efficiency
    - Loss of Company Reputation

You can also **sort** elements in the cluster below the **selected** objective or sub-objective by name ascending/descending:

Sort

- By Name Ascending
- By Name Descending

Sorting by name can be done both in Tree View and Hierarchy View.

**HINT:** You can use the **Model Snapshots** feature in case you want to revert to what you had before the sorting.

---

# Expand, Collapse and Auto-Redraw the Objectives Hierarchy

**Expand All** will expand all branches of the hierarchy.

**Collapse All** will collapse the hierarchy and show only the goal and the first level of elements (objectives).

You can also expand/collapse **sections** of the hierarchy by clicking the same icons at the left of the objective node.

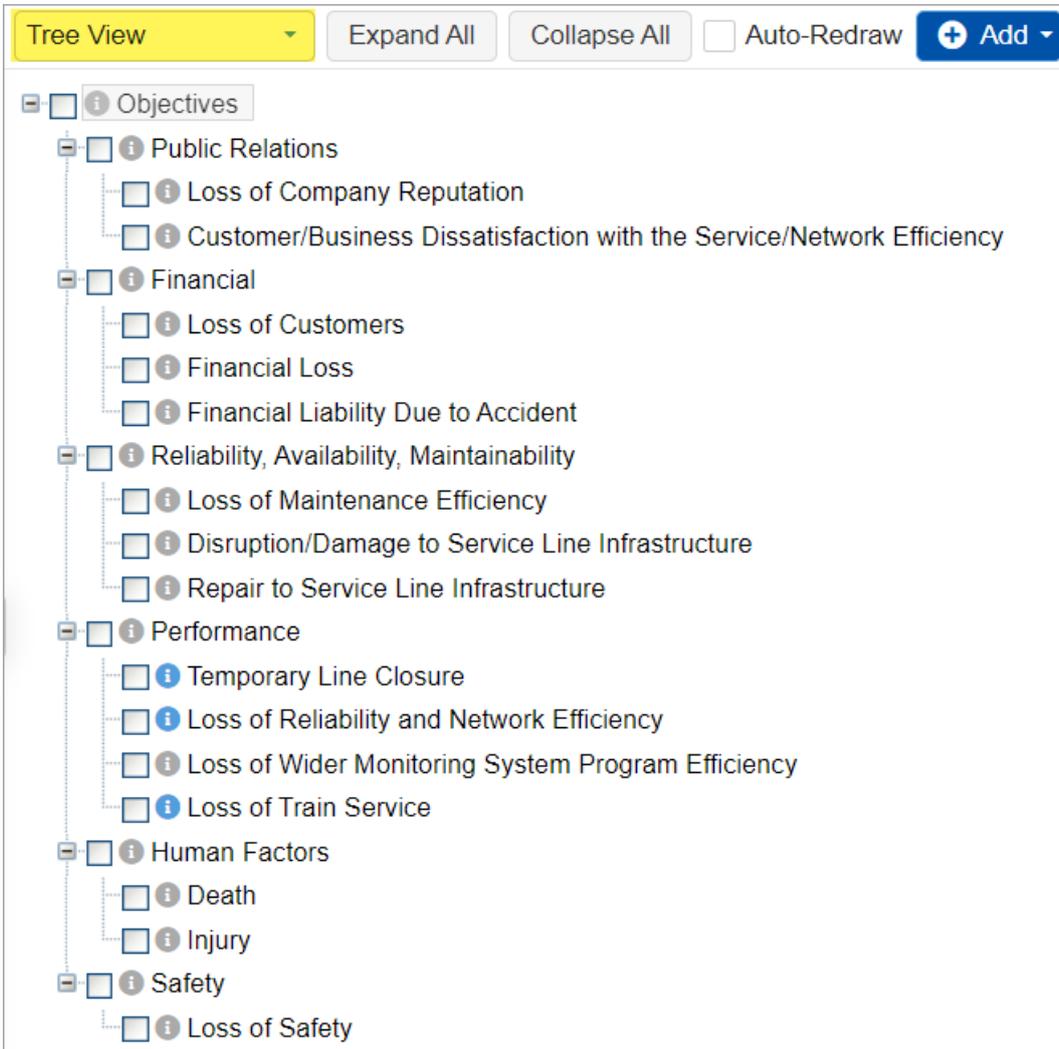
When the **Auto-Redraw** box is checked, clicking on the *name* of any element will not only expand the branches below that element but will automatically contract the branches in other parts of the hierarchy. This is useful to be able to focus on a part of the hierarchy, see all of its ancestries, but not be distracted from details in other parts of the hierarchy.

Tree View  Expand All  Collapse All  Auto-Redraw  Add

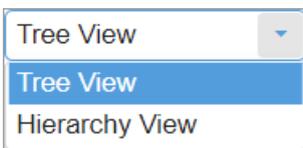
- [-]  Objectives
  - [-]  Financial
    - Loss of Customers
    - Financial Loss
    - Financial Liability Due to Accident
  - [-]  Reliability, Availability, Maintainability
    - Loss of Maintenance Efficiency
    - Disruption/Damage to Service Line Infrastructure
    - Repair to Service Line Infrastructure
  - [-]  Performance
    - Temporary Line Closure
    - Loss of Reliability and Network Efficiency
    - Loss of Wider Monitoring System Program Efficiency
    - Loss of Train Service
  - [-]  Human Factors
    - Death
    - Injury
  - [-]  Safety
    - Loss of Safety
  - [-]  Public Relations
    - Customer/Business Dissatisfaction with the Service/Network Efficiency
    - Loss of Company Reputation

# View Objectives (Tree or Hierarchy)

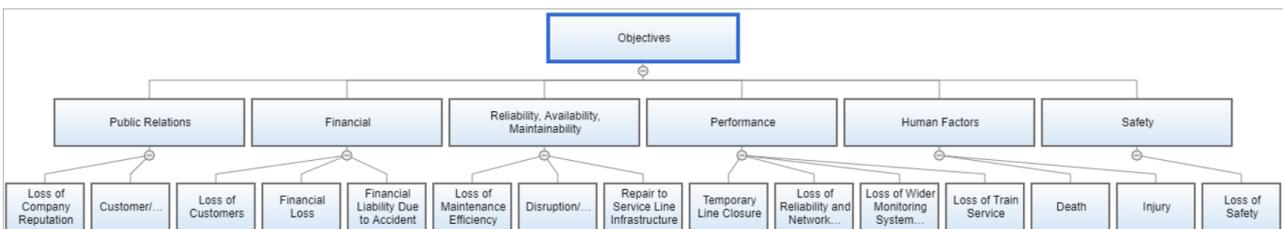
Objectives can be viewed in **Tree View** or **Hierarchical View**. By default, the Tree View is displayed as shown below:



You can use the drop-down to select the Hierarchy View:



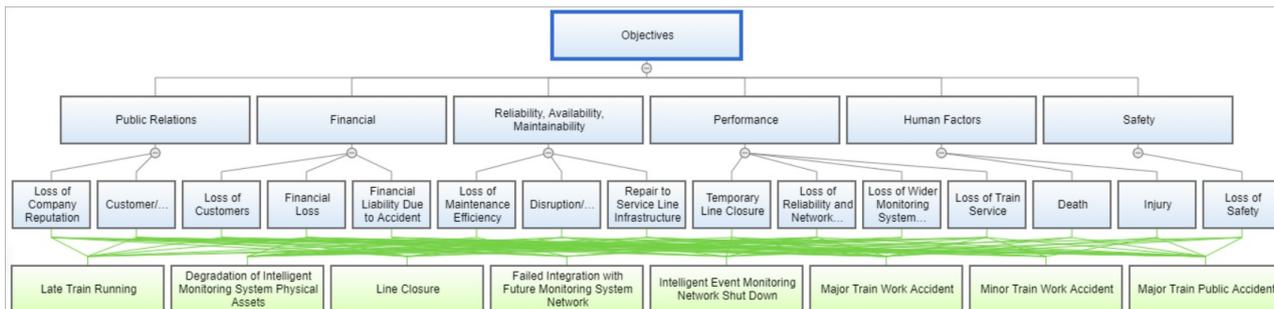
The Hierarchy View of Objectives is shown below:



You can do similar actions such as adding objectives, editing, sort by name, and export as you can do in the Tree View.

Additionally, you can show/hide the Events in the Hierarchy view by checking the  **Show Events** checkbox. The

Events those with green boxes.



You can specify the rectangle length and width by clicking the gear icon



The 'Preferences' dialog box has a blue header with the title 'Preferences' and a close button (X). It contains two sliders. The first slider is for 'Rectangle Height [50]' with a range from 20 to 200. The second slider is for 'Rectangle Width [75 .. 159]' with a range from 20 to 500. Below the sliders is a 'Reset To Defaults' button. At the bottom are two buttons: 'Save' with a checkmark icon and 'Cancel' with a circle and slash icon.

**HINT:** For smaller screens, some of the options may be hidden. You may see the hidden options by clicking the ellipses  icon at the top right.

# Consequences Grid (Contributions)

All events may contribute to all Objectives. In most cases, particularly when the hierarchy represents a broad range of organizational/categorical objectives, objectives may contribute to only some of the Events. It may also be possible that an event won't have any Threats. You can specify which covering objectives contribute to each of the Events on this page.

You can set up which events contribute to objectives on the Consequences Grid (Contributions) page which can be found on:

- IDENTIFY/STRUCTURE > OBJECTIVES > Contributions, or
- IMPACT OF EVENTS > STRUCTURE > EVENT OBJECTIVES > Consequences Grid

Consequence Of Events On Objectives									
Events	Objectives/Consequences								
	Life Security	Economic Co	Confidence in	Increase in F	Confidence in	Improvement	Environment	US Citizen Jo	Decrease of
[1] Terrorists Smuggle WMD into US and Commit a Violent Act	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
[6] Terrorists bomb stock exchange building	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
[3] Criminal Network Smuggles Illegal Drugs Into US	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
[4] Criminal Network Smuggles Counterfeit Goods into the US	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
[5] Unauthorized Migrants Enter the US	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

An event that does not contribute to a covering objective does not receive any priority for that covering objective. This is equivalent to, for example, saying that it does contribute and then evaluating it with a zero priority rating. If there is some disagreement about whether or not an event contributes to a covering objective, it is better to designate it as contributing and allowing the evaluators to decide if the priority is zero or not.

Clicking on the row/column heading boxes will select/de-select all of the elements in that row/column.

- A  box in a column or row header means that all cells in the column or row contribute.
- A  half box means that some but not all contribute.
- A  blank means that no cells in the column or row contribute.

You can click on specific boxes to assign contributions for the Event (row) given the objectives (column).

# Add, Edit and Delete Threats

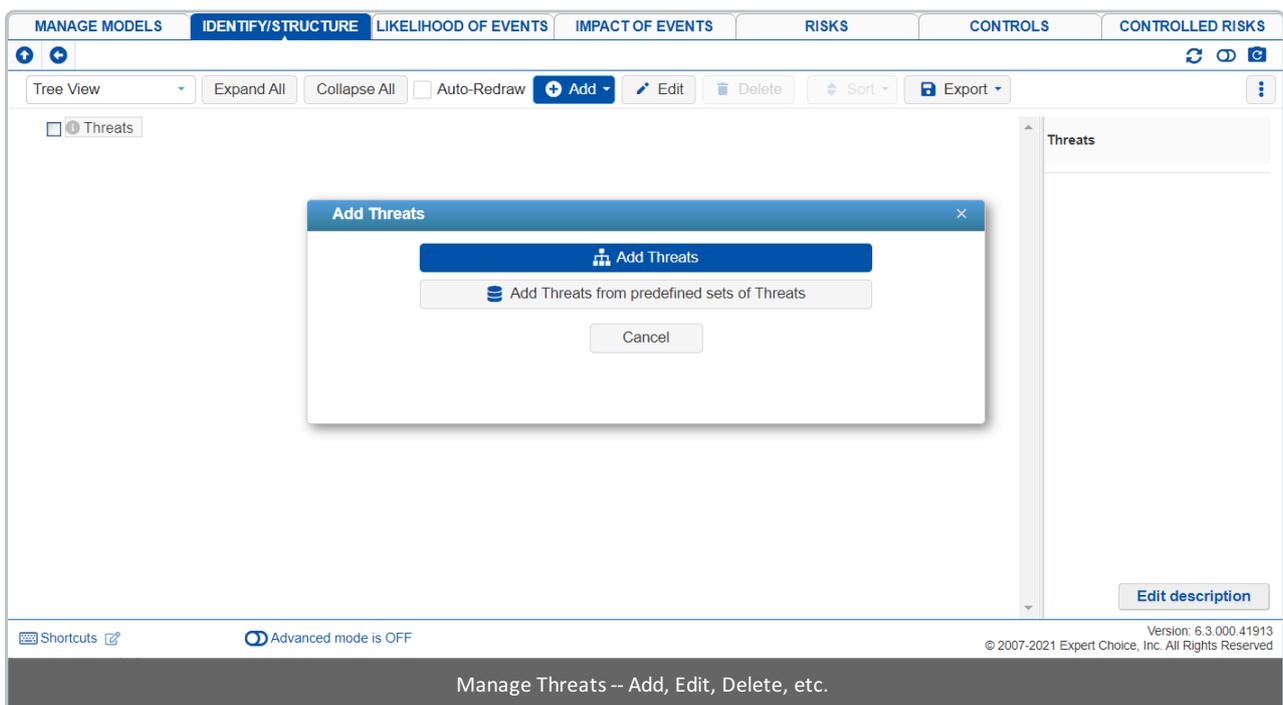
The Threats hierarchy can be created, viewed, and edited from any of the following pages:

- **IDENTIFY/STRUCTURE > IDENTIFY > Threats;** or
- **IDENTIFY/STRUCTURE > Threats > Hierarchy** or
- **LIKELIHOOD OF EVENTS > STRUCTURE > EVENTS SOURCES > Threats.**

In Riskion, we refer to **threats**, **causes**, **hazards**, and **sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

The default wording can be defined on the Workgroup Template; or from Default Option Sets. You can also change the wording for each model on the Judgments Options page of the model.

Before adding Threats, we suggest you read how Riskion defines Threats -- [Riskion Taxonomy \(Risk Elements and Risk Measures\)](#).

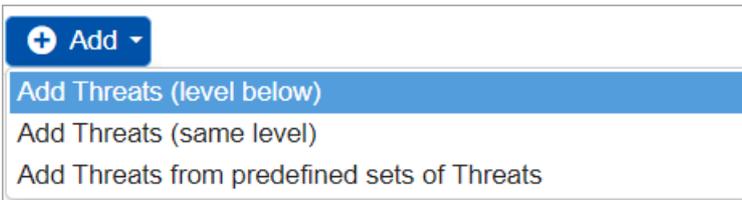


Depending on the Default Option Sets wording used when creating a model, the overall statement will be shown, in this case, "Threat" and can be edited. A prompt to add threats will pop out as shown above.

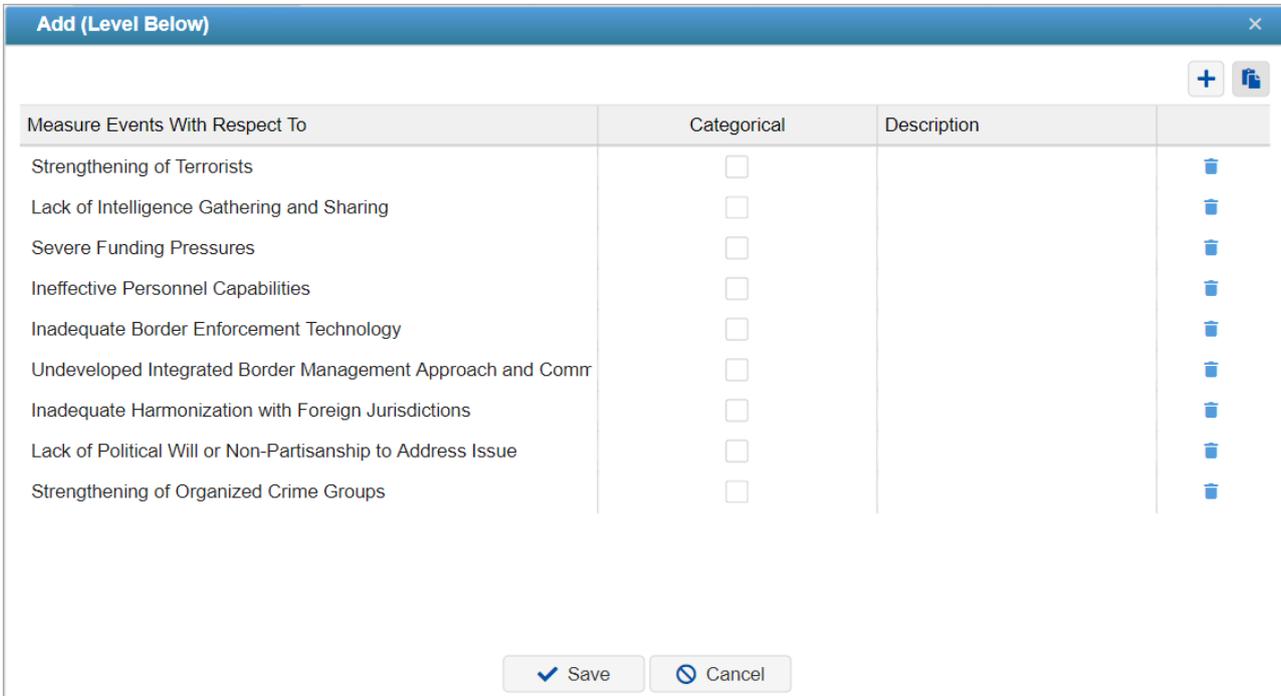
## Add Threats (*same level or below*)

You can add threats **below** the Threats node.

Additional elements (threats, sub-threats) can be added either at the same level of the currently selected node by pressing **Add Threats (same level)** button, or below the currently selected button, by pressing **Add Threats (level below)** button.



Pressing either of the first two options above will open a dialog:



Here you can either:

a) enter one or more elements, along with brief descriptions (a simple form of an information document which you can modify later using the Edit description or buttons). Adding one or more spaces before an element name will indicate that the element should be added at a lower level in the hierarchy.

b) The **Paste from Clipboard** button will paste elements that have been previously placed on the clipboard into the hierarchy. These elements can be placed on the clipboard in a variety of ways:

1. By copying from adjacent rows/columns in an Excel spreadsheet
2. By copying from adjacent row/s columns in a Word document
3. By copying from a tab delimited text file, where the tab is used to separate the element name from the element description.

The Threat and the threat names can be **edited** by selecting them and clicking the Edit button or by double-clicking the node name.

Checking the Categorical checkbox to the right of the threat will add a threat as a category. A category won't be part of the evaluation, it is only used to categorize or group similar threats. A category threat is shown with the **blue** font in the Threat hierarchy.

## Add Threats from predefined sets of Threats

The **Add Threats from predefined sets of Threats** allows you to add new threats from predefined threats determined by

the site administrator.

## Add/Edit Threat as Categorical

Threats can be defined as Categorical when you want to group threats of the same category. The category will serve as a container to the threats below it. Categorical threats will not be evaluated.

You can add a categorical attribute from the Add Threat modal and then check the categorical checkbox to the right of the categorical threat you want to add.

You can also edit an existing set threat by double-clicking on it and then checking the Categorical checkbox.



The image shows a modal window titled "Edit". Inside, there is a text input field labeled "Threat Name:" containing the text "Strengthening of Terrorists". Below this field is a checkbox labeled "Categorical" which is checked. The checkbox and its label are enclosed in a red rectangular box. At the bottom right of the modal, there are two buttons: "Save" with a checkmark icon and "Cancel" with a circular arrow icon.

Alternatively, you can right-click a threat and then select **Set as a Category**.



## Delete Threats

You can **delete** one or more threats by selecting them and clicking the Delete button.

You can also right-click a threat to see a set of commands, and then select Delete.

**HINT:** It is advisable to [save a copy of the model](#) before deleting many elements in case you want to save a copy of your model before the deletion. You can also use the **Model Snapshots** feature to revert to what you had.

## Threats right-click commands

Some commands already explained above and more are available by right-clicking a Threat node:



- Set as a Category - set a node as Category. If a node is currently a Category, this command will be Set as an Uncertainty.
- Add Threats (level below) - add nodes below the selected node
- Add Threats (same level) - add nodes same level as the selected node
- Add Threats from predefined sets of Threats - Open the predefined sets modal
- Edit - edit the selected node
- Edit description - open the rich text editor to edit the description of the selected node
- Delete - delete the selected node
- Copy judgments - copy judgments of the selected node
- Paste judgments - paste the copied judgments from another node to the selected node
- Erase node-s judgments for all participants - delete the judgments of the selected node

# Expand, Collapse and Auto-Redraw the Threats Hierarchy

**Expand All** will expand all branches of the hierarchy.

**Collapse All** will collapse the hierarchy and show only the goal and the first level of elements (threats).

You can also expand/collapse **sections** of the hierarchy by clicking the same icons at the left of the threat node.

When the **Auto-Redraw** box is checked, clicking on the *name* of any element will not only expand the branches below that element but will automatically contract the branches in other parts of the hierarchy. This is useful to be able to focus on a part of the hierarchy, see all of its ancestries, but not be distracted from details in other parts of the hierarchy.

The screenshot displays a user interface for a threat hierarchy. At the top, there is a control bar with the following elements from left to right: a dropdown menu set to 'Tree View', an 'Expand All' button, a 'Collapse All' button, an unchecked 'Auto-Redraw' checkbox, a blue '+ Add' button, and an 'Edit' button with a pencil icon. Below the control bar is a tree view of threats. The root node is 'Threats', which is expanded. It contains five main categories, each with a square icon and an information icon (i): 'Human Factor', 'Environmental', 'Infrastructure', 'Terrorism', and 'Technology'. Each category is further expanded to show its sub-threats. A mouse cursor is visible over the 'Environmental' category node.

- Threats
  - Human Factor
    - Inadequately Trained Staff
    - Disregarding or Not Following Proper Policies, Processes, or Procedures
    - Lack of Situational Awareness
    - Engineers Failure to Properly Install Equipment
  - Environmental
    - Flooding of Intelligent Event Monitoring Infrastructure
    - Lightning Striking Signaling Infrastructure
  - Infrastructure
    - Minor Electrical Power Shortage
    - Major Electrical Power Loss
    - Mechanical Failure of Sensors
    - Mechanical Failure of Signals
    - Mechanical Failure of Cables
  - Terrorism
    - Conventional Attack on the Signalling Infrastructure
    - Cyber Attack on the Intelligent Event Monitoring Network Itself
    - Cyber Attach on the Telephony and Broadband Infrastructure of the Service Provider
  - Technology
    - System Software Technology Obsolescence
    - System Hardware Technology Obsolescence
    - New Cutting Edge Software Technology Available
    - Intelligent Monitoring System Software Failure

# Sort (Re-order) Threats

Elements can be moved or copied from one position/level in the hierarchy to another by drag/dropping to the desired position in the hierarchy.

In Tree View, you can move or copy a node from one position to another by dragging and dropping. Simply select a node and hold on to the left button of your mouse and then drag to the position you want the node to be moved/copied (you will see a blue arrow as a pointer). Once you release the mouse's left key, you will then see a dialog asking whether to copy or move the node. Select and click OK to confirm.

Tree View   Expand All   Collapse All    Auto-Redraw   + Add   Edit

- Threats
  - Human Factor
    - Inadequately Trained Staff
    - Disregarding or Not Following Proper Policies, Processes, or Procedures
    - Lack of Situational Awareness
    - Engineers Failure to Properly Install Equipment
  - Environmental
    - Flooding of Intelligent Event Monitoring Infrastructure
    - Lightning Striking Signaling Infrastructure
  - Infrastructure
    - Minor Electrical Power Shortage
    - Major Electrical Power Loss
    - Mechanical Failure of Sensors
    - Mechanical Failure of Signals
    - Mechanical Failure of Cables
  - Terrorism
    - Conventional Attack on the Signalling Infrastructure
    - Cyber Attack on the Intelligent Event Monitoring Network Itself
    - Cyber Attach on the Telephony and Broadband Infrastructure of the Service Provider
  - Technology
    - System Software Technology Obsolescence
    - System Hardware Technology Obsolescence
    - New Cutting Edge Software Technology Available
    - Intelligent Monitoring System Software Failure

You can also **sort** elements in the cluster below the **selected** threat or sub-threat by name ascending/descending:

Sort

- By Name Ascending
- By Name Descending

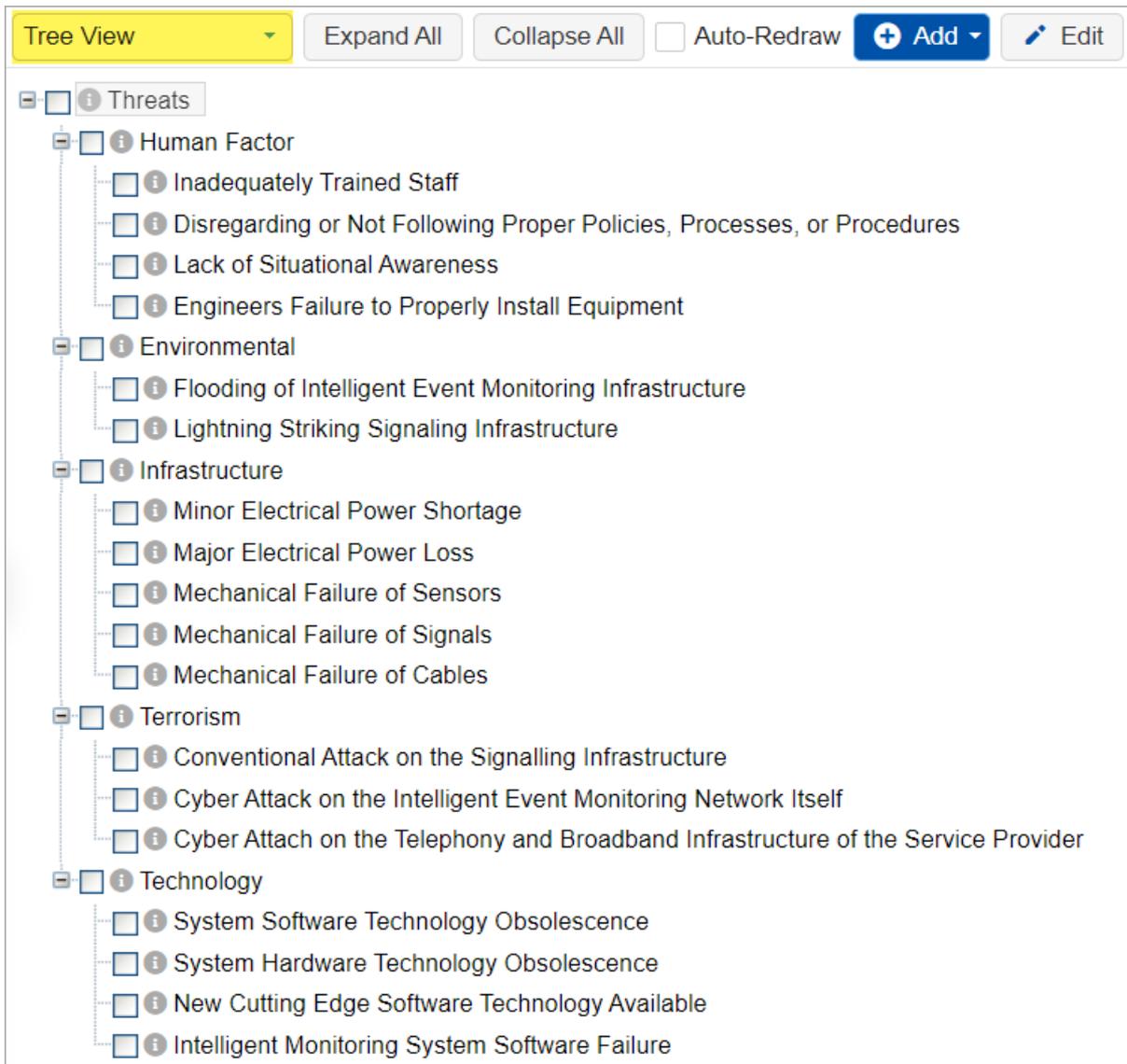
Sorting by name can be done both in Tree View and Hierarchy View.

**HINT:** You can use the **Model Snapshots** feature in case you want to revert to what you had before the sorting.

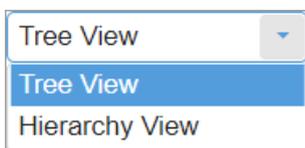
---

# View Threats (Tree or Hierarchy)

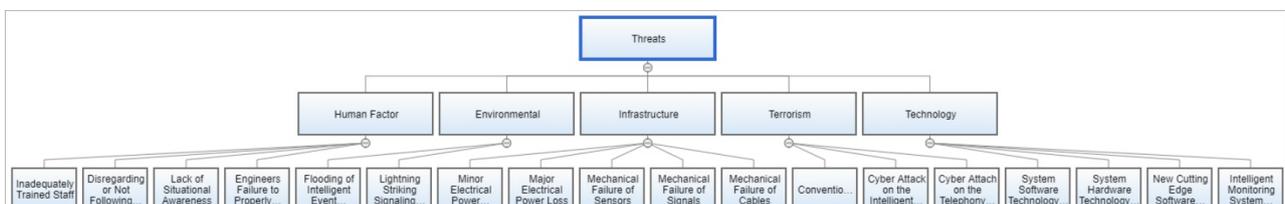
Threats can be viewed in **Tree View** or **Hierarchical View**. By default, the Tree View is displayed as shown below:



You can use the drop-down to select the Hierarchy View:

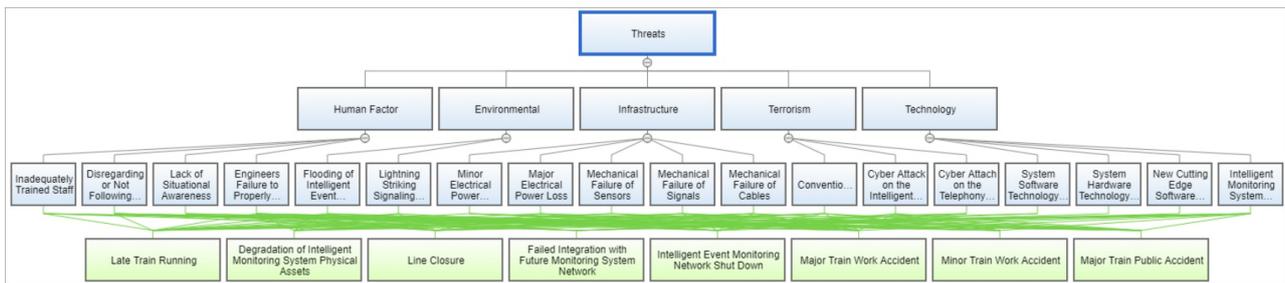


The Hierarchy View of Threats is shown below:



You can do similar actions such as adding threats, editing, sort by name, and export as you can do in the Tree View.

Additionally, you can show/hide the Events in the Hierarchy view by checking the  Show Events check box.



You can specify the rectangle length and width by clicking the gear icon Preferences

**Preferences** [X]

Rectangle Height [50] 20 200

Rectangle Width [75 .. 159] 20 500

**HINT:** For smaller screens, some of the buttons may be hidden. You may see the hidden buttons by clicking the ellipses icon at the top right.

# Vulnerabilities Grid (Contributions)

All Threats may contribute to all Events. In most cases, particularly when the hierarchy represents a broad range of organizational/categorical threats, threats may contribute to only some of the Events. It may also be possible that an event won't have any Threats. You can specify which covering threats contribute to each of the Events on this page.

You can set up which threats contribute to events on the Vulnerability Grid (Contributions) page which can be found on:

- IDENTIFY/STRUCTURE > THREATS > Contributions, or
- LIKELIHOOD OF EVENTS > STRUCTURE > EVENT THREATS > Vulnerabilities Grid

<input type="button" value="Select all"/> <input type="button" value="Deselect all"/> <input type="button" value="Select Columns"/>									
Vulnerability Of Events To Sources									
Events	Sources								
	Strength of Terrorists	Lack of Intelligenc Gathering and Sharing	Severe Funding Pressures	Ineffective Personnel Capabilitie	Inadequat Border Enforcem: Technolog	Border Managem Approach and Communi Plan	Inadequat Harmoniz: with Foreign Jurisdictio	Political Will or Non-Partis to Address Issue	Strengthe of Organizec Crime Groups
<input type="checkbox"/> [1] Terrorists Smuggle WMD into US and Comr	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> [6] Terrorists bomb stock exchange building	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> [3] Criminal Network Smuggles Illegal Drugs Int	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> [4] Criminal Network Smuggles Counterfeit Goo	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> [5] Unauthorized Migrants Enter the US	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Clicking on the row/column heading boxes will select/de-select all of the elements in that row/column.

A  box in a column or row header means that all cells in the column or row contribute.

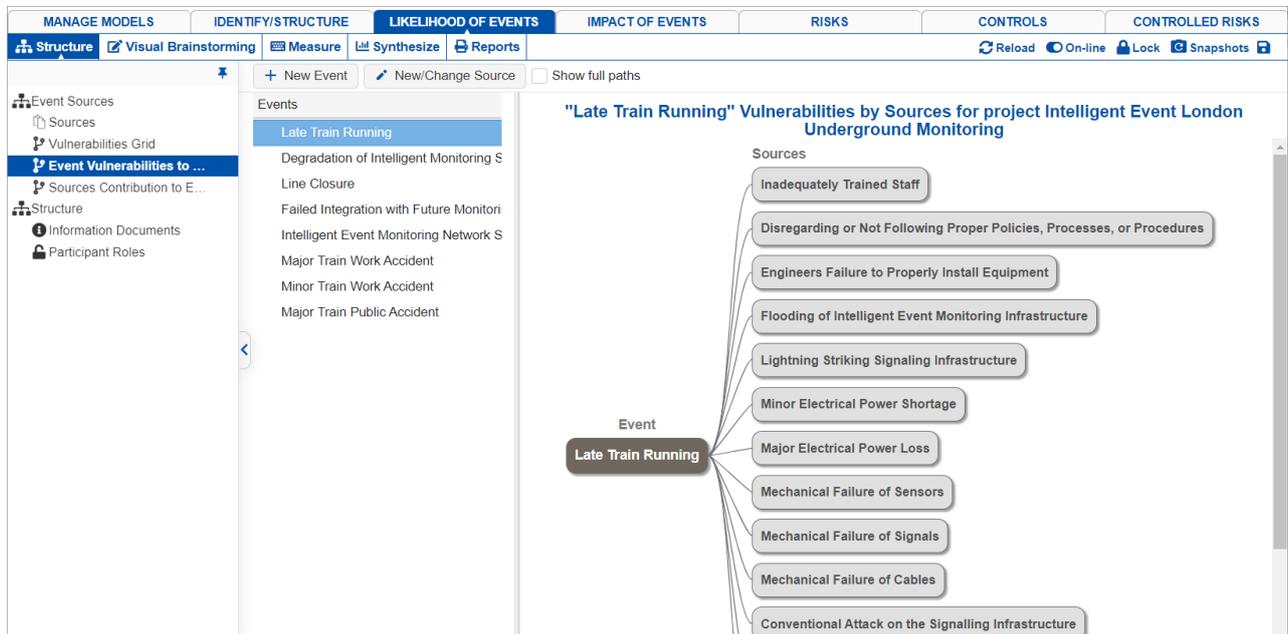
A  half box means that some but not all contribute.

A  blank means that no cells in the column or row contribute.

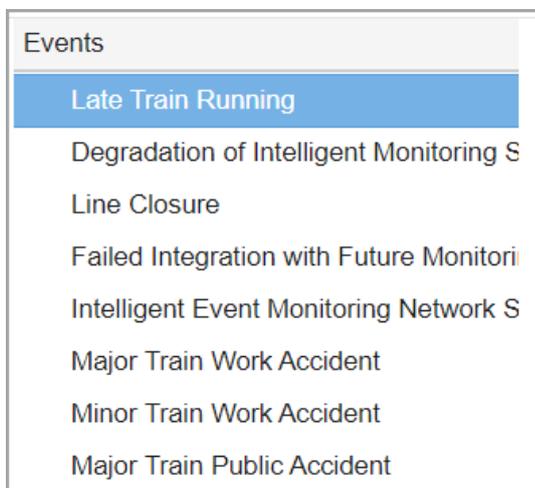
You can click on specific boxes to assign contributions for the Event (row) given the Threat (column).

# Event Vulnerabilities to Threats

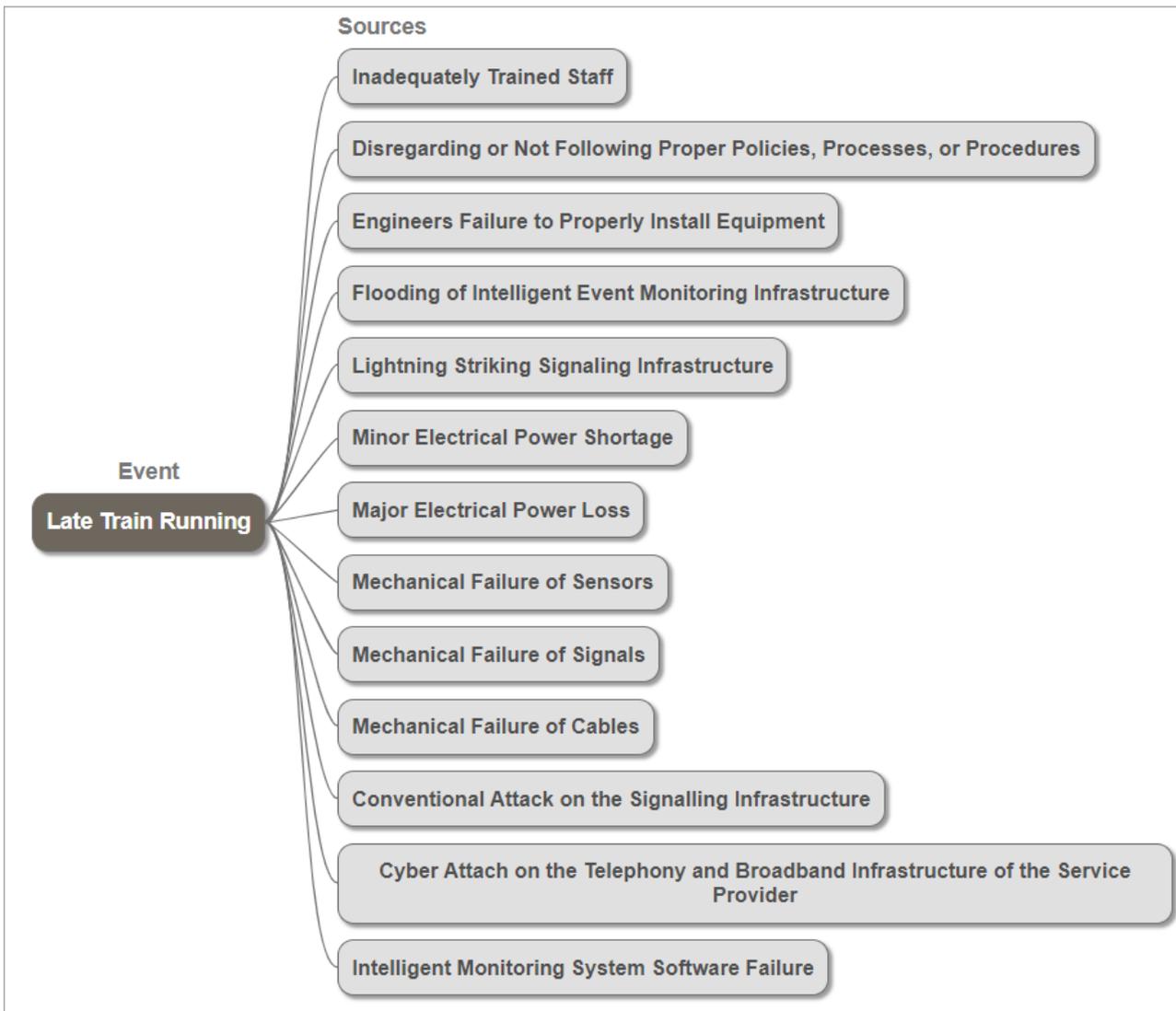
The Event Vulnerabilities to Threats page allows you to define the contributions ([Vulnerabilities Grid](#)) in a mindmap or chart format.



You can select the event by clicking on the events list:



The connected source nodes to the event node are the sources the event is vulnerable to.

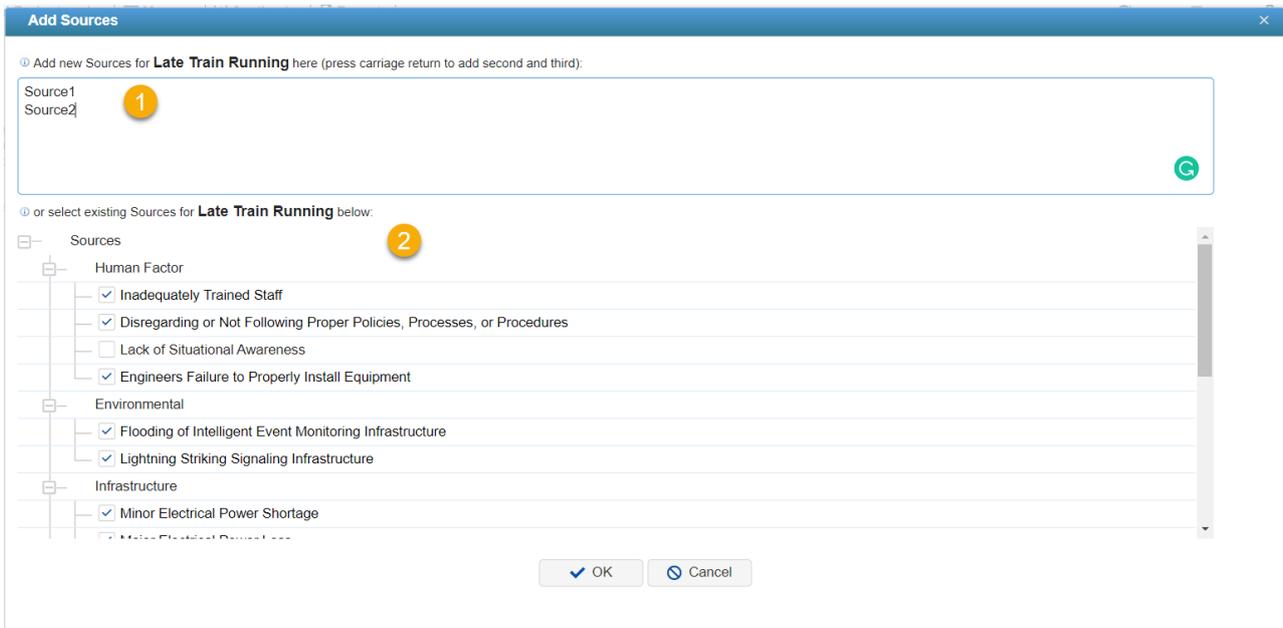


You can add a new event by clicking [+ New Event](#)

A modal will pop out where you will enter the event names -- one event per line.

The screenshot shows a modal window with a blue header 'Add Events' and a close button (X). Below the header is an information icon and the text 'Add new events here (press carriage return to add second and third):'. A large text input area contains two lines of text: 'Event1' and 'Event2'. At the bottom of the modal are two buttons: 'OK' with a checkmark icon and 'Cancel' with a circle-slash icon.

You can assign the selected event to a (1) new or (2) existing threats/sources by clicking [New/Change Source](#)

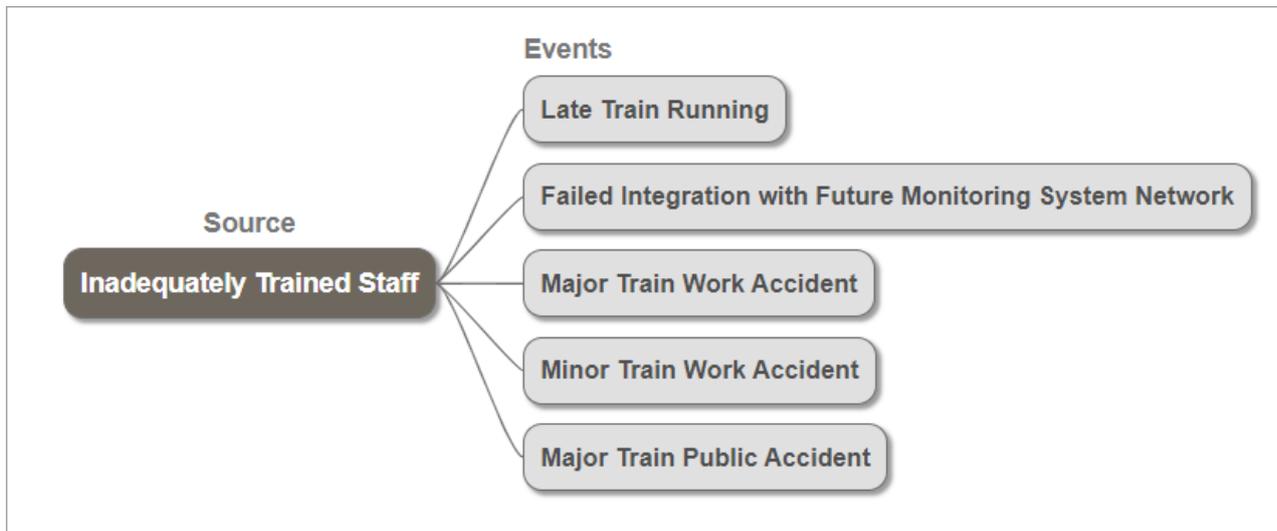


(1) For new sources, simply add one source per line

(2) For existing sources, check the checkbox to the left of the sources the selected event is vulnerable to.

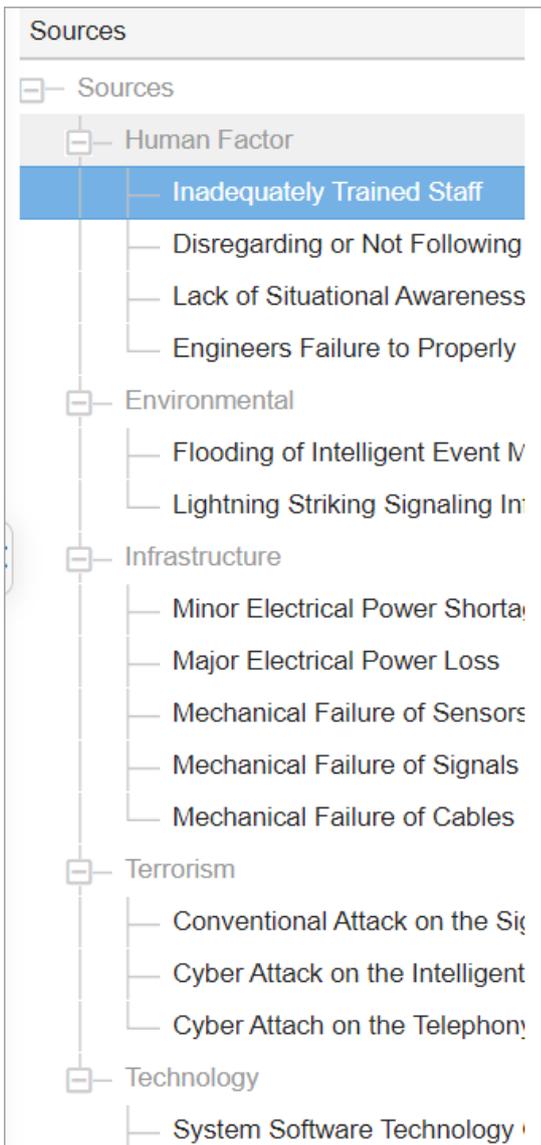
# Sources Contribution to Events

The Threats Contribution to Events page allows you to define the contributions ([Vulnerabilities Grid](#)) in a mindmap or chart format.



This is similar to [Event Vulnerabilities to Threats](#), but instead of selecting the event, we select the source node and then specify all the events the selected source is contributing to.

You can select a source from the Likelihood Hierarchy:



You can only assign contributions to covering sources, this is why the non-covering nodes are disabled.

You can add a new event by clicking + New Event

A modal will pop out where you will enter the event names -- one event per line.

**Add Events**
×

① Add new events here (press carriage return to add second and third):

Event1

Event2

✓ OK

⊘ Cancel



# Likelihood: Information Documents

You can define Likelihood's Information Documents in the **LIKELIHOOD OF EVENTS > STRUCTURE > Information Documents** page.

This screen allows you to create and/or edit information documents for:

- The Threats (top node)
- Threats
- Sub-threats
- Covering Threats
- And Events Given Covering Threats

Select Columns		Threats																	
		Human Factor				Enviro		Infrastructure					Terrorism		Technology				
Events		Inadequately	Disregarding	Lack of Situational	Engineers Fa	Flooding of In	Lightning Stri	Minor Electric	Major Electric	Mechanical F	Mechanical F	Mechanical F	Conventional	Cyber Attack	Cyber Attach	System Softw	System Hard	New Cutting t	Intelligent Mo
[01] Late Train Running																			
[02] Degradation of Intelligent Monitoring System Physical Assets																			
[05] Line Closure																			
[06] Failed Integration with Future Monitoring System Network																			
[07] Intelligent Event Monitoring Network Shut Down																			
[08] Major Train Work Accident																			
[09] Minor Train Work Accident																			
[10] Major Train Public Accident																			

Clicking any Edit Information Document button will open the [Rich text editor](#), where the Project Manager can add/edit the **information document** -- which may consist of texts, rich texts, and images.

The blue information document icon pertains that it has content, while gray pertains it is empty.

When there is no information document icon in a given cell, it means that the threat is not contributing to the event (or the event is not vulnerable to the threat)

**NOTE:** Due to security reasons, only images are allowed to be attached to the information documents. You can add hyperlinks to link to any external files. Just upload your PDF (or any other file) to any external servers such as Dropbox, GoogleDrive, OneDrive, Amazon, etc., and put the link to this file in the information documents.

# Likelihood: Participant and Group Roles Overview

Participants roles can be defined when evaluating:

- the **Likelihoods** of:
  - threats,
  - events given threats
  - events with no threats
- the **Impacts** of:
  - events with respect to objectives
  - objectives, and
- the **Effectiveness** of
  - Controls

On this page, we will focus on participants' roles for evaluating the Likelihoods.

This can be found on **LIKELIHOOD OF EVENTS > STRUCTURE > Participants roles:**

The Participant Roles page for Likelihoods consists of:

Participants		Groups		For Event Vulnerabilities		For Source Likelihoods		Sources																			
Search								NO THREATS	Human Factor	Environn	Infrastructure	Terrorism	Technology														
Select All									Inadequately	Disregarding	Lack of Situational	Engineers Fa	Flooding of In	Lightning Stri	Minor Electric	Major Electric	Mechanical F	Mechanical F	Mechanical F	Conventional	Cyber Attack	Cyber Attack	System Softw	System Hard	New Cutting t	Intelligent Mo	
<input checked="" type="checkbox"/>	Kris																										
<input type="checkbox"/>	Chief Risk Officer																										
<input type="checkbox"/>	Chief Engineering ...																										
<input type="checkbox"/>	IT Supervisor																										
<input type="checkbox"/>	Chief Executive Off...																										
<input type="checkbox"/>	Michael Mankowski																										
<input type="checkbox"/>	John Doe																										
<input type="checkbox"/>	Project Manager																										

1. The **For Events Vulnerabilities/For Threats Likelihoods** tabs to assign roles for evaluating events vulnerability given threats and for threats likelihoods respectively
2. The **Participants/Groups** tabs toggle between the participant's list and the group's list of the model.
3. The first column of the grid displays the **Events list**
4. The grid headings (next to the Events) displays the **NO THREATS** column and the **Hierarchy of Threats**
5. The intersecting cells were to assign roles for **evaluating the event (row) given the covering threats (column)**, and the **NO THREATS** column.
6. **Toolbar** options

**Roles can be set for:**

- The "All Participants Group" (every participant belongs to "All Participants")
- Any Defined Participant Groups (non-dynamic and dynamic groups)
- Each individual Participant Roles

**How Roles are processed -- Three rules:**

1. A role explicitly assigned for a participant **OVERRIDES** any role defined for:
  - The 'All Participants' Group
  - Any defined groups to which the participant belongs
2. Roles for the 'All Participants' Group and any Defined Groups have the same priority
3. A restrict role overrides an Allow role

**Roles can be assigned for:**

- Sub-threats with respect to their parent Threat and
- Events with respect to covering threats

**Assigning roles without groups** is a simpler way of setting up roles. **Setting up roles with groups** is a very flexible and powerful method, but somewhat more complex.

---

# Likelihood: Setting Up Roles without Groups

Roles can be assigned to Participant Groups ([custom groups](#) or a pre-defined group called 'All Participants') as well as to individual participants. The resultant role for a participant is a combination of the roles assigned to any group to which the participant belongs (including the pre-defined 'All Participants' group) and any role explicitly assigned to the individual participant.

In this topic, we will focus on **Setting up roles without groups**. For the purpose of setting roles without using participant groups, all we need to know now is that a participant will have a role for every node (as defined by the "All Participants" group which by default is Allowed) unless they are explicitly restricted for one or more nodes.

Since each participant has an **implicit** allow role for every node, the easiest way to set roles is to restrict nodes for which a participant should not have a role. (There is no need to explicitly allow roles when participant groups are not being used.)

## Roles for Evaluating the Threats Likelihoods

Click the **"For Threat Likelihoods"** tab to assign roles for evaluating threats. Roles for evaluating the threats are represented by the colored boxes on the non-covering threats as below:

For Event Vulnerabilities		For Source Likelihoods																
Events	NO SOURCES	Sources																
		Human Factor				Environ		Infrastructure			Terrorism		Technology					
	Inadequately Trained	Disregarding or Ignoring	Lack of Situation Awareness	Engineers Failures	Flooding of Intelligence	Lightning Striking	Minor Electrical Failures	Major Electrical Failures	Mechanical Failures	Mechanical Failures	Mechanical Failures	Conventional Attacks	Cyber Attacks on	Cyber Attacks on	System Software	System Hardware	New Cutting Edge	Intelligent Monitoring

The headers are arranged according to the threats hierarchy/leveling. For example, the Sources is the top-most node and its top-level children are the Human Factor, Environmental, and so on...

An 'Allow' role for the top node means that the participant will have the role of evaluating the top-level threats. The allow role for a threat node means that the participant will have the role of evaluating the sub-threats given that Threat.

You will notice that all of the cells in the figure above have a background of light green because by default, the "All Participants" group has an 'allow role' for everything, and we have not defined any custom groups that might have had one or more 'restrict' roles.

In addition to the implicit assignment of roles based on participant groups, an explicit role can be specified for a participant (either allow or restrict). If this is the case, there will also be an interior color for the node and the background color will appear as a border.



The 'Environmental' node has an explicitly restricted role in the figure above and thus appears as a red interior with a green background or border. Since restrict overrides allow ([roles three rules](#)), the participant would not have a role in evaluating the sub-threats of "Environmental" given their parent (Environmental).

## Roles for Evaluating the Events Vulnerabilities

Click the **"For Event Vulnerabilities"** tab to assign roles for evaluating the vulnerabilities of events given threats (or no

source events). Roles for evaluating the events are represented by the boxes on the intersecting cells of the events (row) with respect to the covering threats (column) -- see below.

All of the intersecting cells in the figure below have a background of green because by default, the "All Participants" group has an 'allow role' for everything.

For Event Vulnerabilities		For Source Likelihoods		Sources															
Events	NO SOURCES	Human Factor				Environ		Infrastructure			Terrorism		Technology						
		Inadequately	Disregarding	Lack of Situational	Engineers Fa	Flooding of In	Lightning Stri	Minor Electric	Major Electric	Mechanical F	Mechanical F	Mechanical F	Conventional	Cyber Attack	Cyber Attack	System Softw	System Hardw	New Cutting t	Intelligent Mo
1 Late Train Running	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
2 Degradation of Intelligent Monitoring System Physical Asse	Green				Green	Green	Green			Green	Green	Green	Green			Green			
3 Line Closure	Green		Green	Green	Green	Green	Green		Green	Green	Green	Green	Green		Green				
4 Failed Integration with Future Monitoring System Network	Green	Green	Green		Green											Green	Green	Green	Green
5 Intelligent Event Monitoring Network Shut Down	Green		Green		Green	Green	Green		Green	Green	Green	Green	Green	Green	Green				
6 Major Train Work Accident	Green	Green	Green	Green	Green			Green	Green	Green	Green	Green	Green	Green					
7 Minor Train Work Accident	Green	Green	Green		Green	Green		Green		Green	Green	Green	Green	Green					
8 Major Train Public Accident	Green	Green	Green	Green	Green			Green	Green	Green	Green	Green	Green	Green					

In addition to the implicit assignment of roles based on groups, an explicit role can be specified for a participant (either allow or restrict). If this is the case, there will also be an interior color for the cell and the background color will appear as a border.

Events	NO SOURCES	Sources	
		Inadequately	Disregarding
1 Late Train Running	Green	Yellow	Green
2 Degradation of Intelligent Monitoring System Physical Assets			
3 Line Closure			Green

"Late Train Running" in the figure above that has an explicit restrict role -- and is shown as a red interior with a green background or border -- when evaluating given the covering source "Inadequately Trained Staff".

The yellow interior color on the "Late Train Running" represents that the participant has different explicit roles for evaluating "Late Train Running" given the covering sources -- from above, one is restricted while others are "undefined" (no interior color). Same reason for the yellow interior color for the "Inadequately Trained Staff" cell.

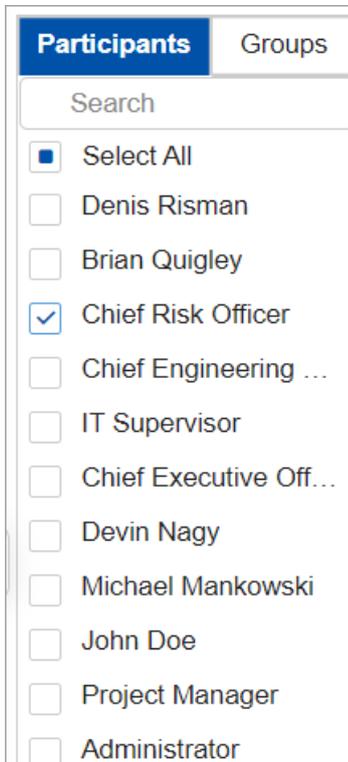
The blank cells mean that the event is not vulnerable to the covering source.

Note: If there is a blank cell, this means that the event doesn't contribute to the covering threat.

## How Participant Roles are Assigned?

We can assign roles explicitly while in Edit mode. Edit mode is the mode selected by default.

To assign roles to a participant, simply check the check box to the right of the participant name on the left pane:



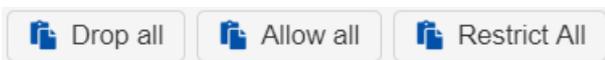
Participants	Groups
Search	
<input checked="" type="checkbox"/>	Select All
<input type="checkbox"/>	Denis Risman
<input type="checkbox"/>	Brian Quigley
<input checked="" type="checkbox"/>	Chief Risk Officer
<input type="checkbox"/>	Chief Engineering ...
<input type="checkbox"/>	IT Supervisor
<input type="checkbox"/>	Chief Executive Off...
<input type="checkbox"/>	Devin Nagy
<input type="checkbox"/>	Michael Mankowski
<input type="checkbox"/>	John Doe
<input type="checkbox"/>	Project Manager
<input type="checkbox"/>	Administrator

You can also select **multiple participants** at a time for assigning roles using the Shift and Control keys.

By successively clicking on a cell, the **interior** color of the cell will change to:

-  dark green (indicating a role that is allowed explicitly)
-  dark red (indicating a role that is restricted explicitly), or
-  light green (indicating a role that is allowed implicitly, based on participant group roles).

You can set the roles for **all events or threats at once** by using the:



- **Allow All** (explicit allow)
- **Drop All**, or (no explicit specification)
- **Restrict All** (explicit restrict)

buttons, and then selectively click other nodes as desired.

Copy Roles Paste Roles Drop all Allow all Restrict All Select Columns Edit Mode

**Participants** Groups

Search

- Select All
- Kris
- Chief Risk Officer
- Chief Engineering ...
- IT Supervisor
- Chief Executive Off...
- Michael Mankowski
- John Doe
- Project Manager

**For Event Vulnerabilities** For Source Likelihoods

Events	Sources										
	NO SOURCES	Human Factor			Environn			Infrastructure			
		Inadequately	Disregarding	Lack of Situational	Engineers Fa	Flooding of In	Lightning Stri	Minor Electric	Major Electric	Mechanical F	
1 Late Train Running											
2 Degradation of Intelligent Monitoring System Physical Assets											
3 Line Closure											
4 Failed Integration with Future Monitoring System Network											
5 Intelligent Event Monitoring Network Shut Down											
6 Major Train Work Accident											
7 Minor Train Work Accident											
8 Major Train Public Accident											

For events, you can also define the role for:

- (1) one event given all covering threats; or
- (2) all the events given one covering threat at once,

by clicking the box on the event or covering threat names.

Events	Sources																	
	NO SOURCES	Human Factor			Environn			Infrastructure			Terrorism		Technology					
		Inadequately	Disregarding	Lack of Situational	Engineers Fa	Flooding of In	Lightning Stri	Minor Electric	Major Electric	Mechanical F	Mechanical F	Mechanical F	Conventional	Cyber Attack	Cyber Attach	System Softw	System Hard	New Cutting t
1 Late Train Running																		
2 Degradation of Intelligent Monitoring System Physical Assets																		
3 Line Closure																		
4 Failed Integration with Future Monitoring System Network																		
5 Intelligent Event Monitoring Network Shut Down																		
6 Major Train Work Accident																		
7 Minor Train Work Accident																		
8 Major Train Public Accident																		

The yellow interior on the event names (rows) and covering threats (columns) represents that the participant has different explicit roles for evaluating the event given each of the covering threats; or that the participant has different explicit roles for evaluating the covering threat given each of the events.

# Likelihood: Setting Up Roles with Groups

Setting up roles with groups is a very flexible and powerful method, but somewhat more complex.

Every participant belongs to a Participant Group called "All Participants".

The All Participants group initially has an "allow" role for all cells as seen below.

You can create additional [Participant Groups](#) from the Participants page.

There are three types of roles that can be specified for groups:

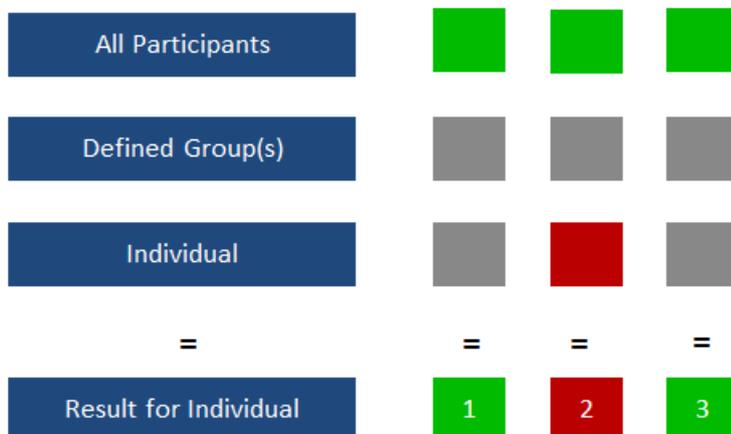
- Allow 
- Restricted 
- Undefined (Neither Allowed or Restricted) 

The role of a participant for any node depends on:

- Roles for the "All Participants" Group
- Roles for any defined Participant Group to which the participant belongs
- Roles explicitly assigned for the participant

Similar to [Setting up roles without groups](#), you can also assign roles to groups by clicking on the cells individually, by entire row/column, or by using the Allow/Restrict/Drop all buttons.

Each Column in the following figures represents a Case Illustrating the Above Rules



**Case 1** is the default. The result is Allow.

**Case 2** is a simple way to restrict individual roles.

**Case 3** is equivalent to case 1.

All Participants	Grey	Grey	Grey	Grey	Grey
Defined Group(s)	Grey	Grey	Green/Red	Grey	Red
Individual	Green	Red	Grey	Grey	Green
=	=	=	=	=	=
Result for Individual	4	5	6	7	8

To use roles with groups, we recommend that you start with No Specifications for the 'All Participants' group.

Cases 4 and 5 are obvious.

Case 6 shows a restricted group specification overrides an allowed group specification (Rule 3).

Case 7 illustrates if no roles are allowed for All Participants and Any Groups, then the Individual's role is Restricted.

Case 8 shows an Individual Participant's role overrides any group roles (Rule 1).

All Participants	Red	Red	Green
Defined Group(s)	Red	Green	Red
Individual	Green	Grey	Grey
=	=	=	=
Result for Individual	9	10	11

Case 9 An Individual's specification overrides any group specifications (Rule 1).

Cases 10 and 11 show a restricted group specification overrides an allow specification (Rule 3).

# Likelihood: Copy and Paste Roles

You can copy roles from one participant to another:

1. Select the participant you want roles to be copied
2. Click Copy Roles
3. Select the participant(s) where you want to paste the roles
4. Click Paste Roles

You can also select multiple participants to whom you want the roles to be copied.

---

# Likelihood: Participant Roles Edit vs View Mode

## Edit Mode

The **Edit Mode** is a mode where the Project Manager can assign roles by clicking on the cells or using the Drop/Allow/Restrict All options.

Two participants are selected in the example below. The border of the node (in this case light green for all nodes) reflects the roles implicitly assigned to the participants based on the roles assigned to the groups they are in. The interior represents the role, if any, explicitly assigned to the selected participants.

If they are not the same, yellow is displayed as for Human Factor and Environmental see below.

To better understand what the yellow means, let's look at the roles assigned for objectives for Chief Risk Officer and Chief Engineering Officer, one at a time.

**First for Chief Risk Officer:** As we see below, the interior of the nodes "Chief Risk Officer" is a light green, the same as the border, meaning that neither allow nor restrict was specified for any node for Chief Risk Officer (if a role had been previously specified, it has been 'dropped'). Thus, Chief Risk Officer has a role for every threat and sub-threat based on the roles assigned to groups to which Chief Risk Officer belongs.

Now let's look at Chief Engineering Officer roles:

As can be seen above, the Chief Engineering Officer has been explicitly ■ assigned a role for Human Factor and explicitly ■ restricted a role for Environmental. The explicit assignment for Human Factor doesn't have any impact since, as can be seen from the border of that node, Chief Engineering Officer would have had that role based on the roles of the groups to which the Chief Engineering Officer belongs. However, if later, the role for Human Factor for one of the groups to which Chief Engineering Officer belongs is changed to 'restrict', this explicit assignment would override it since an explicit assignment for an individual overrides any group role assignments. If that were the case, then the Chief Engineering Officer node for Human Factor would have looked like this:



Let's now return our attention to the display when we look at the roles with both Chief Risk Officer and Chief Engineering Officer selected on the first image above.

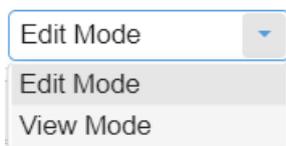
A node is displayed as yellow ■ in the Edit Mode if the individual role explicitly assigned to all of the selected participants is not the same. Human Factor is yellow because Chief Engineering Officer has an explicit role assigned for this node, but Chief Risk Officer does not -- so they are not the same. Environmental is yellow because Chief Engineering Officer has an explicitly restricted role while Chief Risk Officer has no explicit role -- so again, they are not the same.

From the example, above we can see that in the Edit mode, we can only determine whether the individual roles for the selected participants are the same or different, but we can not determine their resulting roles.

## View Mode

As discussed above, the 'Edit mode' is the mode used to assign roles. We can not determine whether the resulting role for all the selected participants is the same or not from this display. The resulting roles can be determined using another mode called '**View mode**'.

You can switch to the View mode using the menu as shown below:



If we look at the display for the same example above for the "View mode", we would see the following:

Copy Roles Paste Roles Drop all Allow all Restrict All Select Columns View Mode

Participants Groups For Event Vulnerabilities For Source Likelihoods

Search

Select All

Kris

Chief Risk Officer

Chief Engineering ...

IT Supervisor

Chief Executive Off...

Michael Mankowski

John Doe

Project Manager

Sources

Human Factor Envirc Infrastructure

NO SOURCES

Inadequately Tra Disregarding or ↑ Lack of Situation Engineers Failur Flooding of Intell Lightning Striking Minor Electrical F Major Electrical F Mechanical Failu Mechanical Failu

Events

1 Late Train Running

2 Degradation of Intelligent Monitoring System Phy

3 Line Closure

4 Failed Integration with Future Monitoring System

Since both Chief Risk Officer and Chief Engineering Officer have the same resulting role (allowed) for the Human Factor, even though they have different explicit assignments, the node is shown as green. The Environmental node is still yellow because one of the participants has the role and the other does not. We would have to look at each participant individually to see which one has that role and which one does not.

## Examining roles for all participants in the View mode

It is advisable to select all participants in the 'View' mode to see if there are any nodes that are red, meaning that no participant has been assigned the role for that node.

# Likelihood: Selecting Multiple Participants for Roles

You can select multiple participants or groups at a time for assigning roles. You can check one or more participants or groups in the left pane and then click a node on the right to allow or restrict roles for the highlighted participant.

You have the following options to select multiple participants (or groups) from the list. These options work on Windows and Macintosh.

1. **Using CTRL key**

**Hold the CTRL key and click the participants or groups** in the list to choose them. Click all the items you want to select. They don't have to be next to each other.

**Click any item again to deselect it**, e.g. if you have made a mistake. Remember to keep the CTRL key pressed.

2. **Using SHIFT key**

If you want to **select items that are adjacent**, you can use the **SHIFT key**. Click the first item, then press the SHIFT key and hold it. Click the last item and release the SHIFT key.

3. **Both SHIFT and CTRL Keys**

You can also use both SHIFT and CTRL keys together. For example, you can deselect an item from a row selection that you have created with the SHIFT key when you hold the CTRL key and click the item you want to deselect

---

# Likelihood: Participant Roles Statistics

You can view the number of participants that have an allowed role by checking the **Show Statistics** check box.

<input type="button" value="Copy Roles"/> <input type="button" value="Paste Roles"/> <input type="button" value="Drop all"/> <input type="button" value="Allow all"/> <input type="button" value="Restrict All"/> <input type="button" value="Select Columns"/> <input type="text" value="View Mode"/> <input checked="" type="checkbox"/> Show statistics																				
Participants	Groups	For Event Vulnerabilities	For Source Likelihoods																	
<input type="text" value="Search"/>		Events	8 Sources																	
<input checked="" type="checkbox"/> Select All <input type="checkbox"/> Kris <input checked="" type="checkbox"/> Chief Risk Officer <input checked="" type="checkbox"/> Chief Engineering ... <input type="checkbox"/> IT Supervisor <input type="checkbox"/> Chief Executive Off... <input type="checkbox"/> Michael Mankowski <input type="checkbox"/> John Doe <input type="checkbox"/> Project Manager			NO SOURCES	8 Human Factor	5 Envirc	6 Infrastructure				6 Terrorism		7 Technology								
			Inadequately	Disregarding	Lack of Situational	Engineers Fa	Flooding of In	Lightning Stri	Minor Electric	Major Electric	Mechanical F	Mechanical F	Mechanical F	Conventional	Cyber Attack	Cyber Attach	System Softw	System Hard	New Cutting i	Intelligent Mo
1 Late Train Running			7	7	7	7	7	7	8	6	6	6	6	6	8					8
2 Degradation of Intelligent Monitoring System Physical /						6	7	7			6	6	6	6			7			8
3 Line Closure				8	8	7	7	7		7		6	6	6	8					8
4 Failed Integration with Future Monitoring System Netw			7	7		7											8	8	8	8
5 Intelligent Event Monitoring Network Shut Down				8		7	7	7		8		6	7	7	8	8				8
6 Major Train Work Accident			8	8	7	7			6	7	7	6	6	6	8					8
7 Minor Train Work Accident			8	8		7	7		6			6		6	8					8
8 Major Train Public Accident			8	8	7	7			6	6	7	6	6	6	8					8

# Recommended Approaches for Setting Roles for the 'All Participants' Group

Assigning roles to participants can be without using groups as well as with groups. In the former case, we advised leaving all roles allowed for the All Participants Group as they are set by default. In the case of assigning roles using groups, we advised starting by dropping all roles for the All Participants Group. There is one additional contingency to take into consideration: If new participants are added to the model after roles have been assigned to existing participants, what do we want the roles for the new participants to be? We describe three cases:

**Case 1)** If you want the roles for 'new' participants to be 'allowed' for everything, then leave the 'All Participants' group roles set to 'Allow' as they are by default.

**Case 2)** If you want the roles for 'new' participants to be 'allowed' for *almost* everything, then leave the 'All Participants' group roles set to 'Allow' as they are by default and 'restrict' roles for the new individuals as desired or add them to groups that have roles restricted for the desired nodes. (The latter can be done via a survey containing a question that is used to assign new participants to a group).

**Case 3)** If you want the roles for 'new' participants to be 'restricted' unless the new participant is in a group or groups that have specific roles enabled, or only if you explicitly allow roles for the participant, then 'Drop All' roles from the 'All Participants' group.

---

# Likelihood: Evaluation Progress

The Likelihood's Evaluation Progress page can be found in **LIKELIHOOD OF EVENTS > MEASURE > Evaluation Progress**.

The Overall Likelihood Evaluation Progress bar and its equivalent percentage are displayed.

By default, All Participants' overall evaluation progress is displayed.

Participant Name	Email Address	Evaluation Progress	Last Judgment Time	Actions
Ed Hreljac	ed.hreljac@processpower.ca	81.2% (39/48)	10/7/2014, 4:05 AM	
<b>John Doe</b>	<b>j.doe@eci.com</b>	<b>79.2% (38/48)</b>	<b>2/18/2021, 2:26 AM</b>	
Ernest Forman	forman@gwu.edu	73.5% (25/34)	10/7/2014, 4:06 AM	
Mike Jones	mjones@expertchoice.com	0.0% (0/40)		
Vijay Gupta	vijaygupta2607@gmail.com	0.0% (0/48)		
Risk Expert	expert@eci.com	0.0% (0/48)		

You can also see the evaluation progress for a [participant group](#) by selecting from the groups dropdown.

- [All Participants]
- [Risk Experts]
- [C-Level Executives]

This page lists all of the evaluators for the model as well as the percentage of their input that has already been provided.

The display can be sorted by Name, E-mail, Evaluation progress, or Last judgment time by clicking on the table headers.

**There are three icons under the Actions column:**

1. **Copy an evaluator's anytime link** on the clipboard
2. **Log out and log back in** with another user's anytime link
3. **View the evaluation steps** and judgments for any evaluator. This is a 'view only' mode so while you can enter or change judgments, they will not be saved.

# Likelihood: Define Measurement Methods Overview

You can manage the Likelihood's Measurement Methods on the **LIKELIHOOD OF EVENTS > MEASURE > Measurement Methods** page:

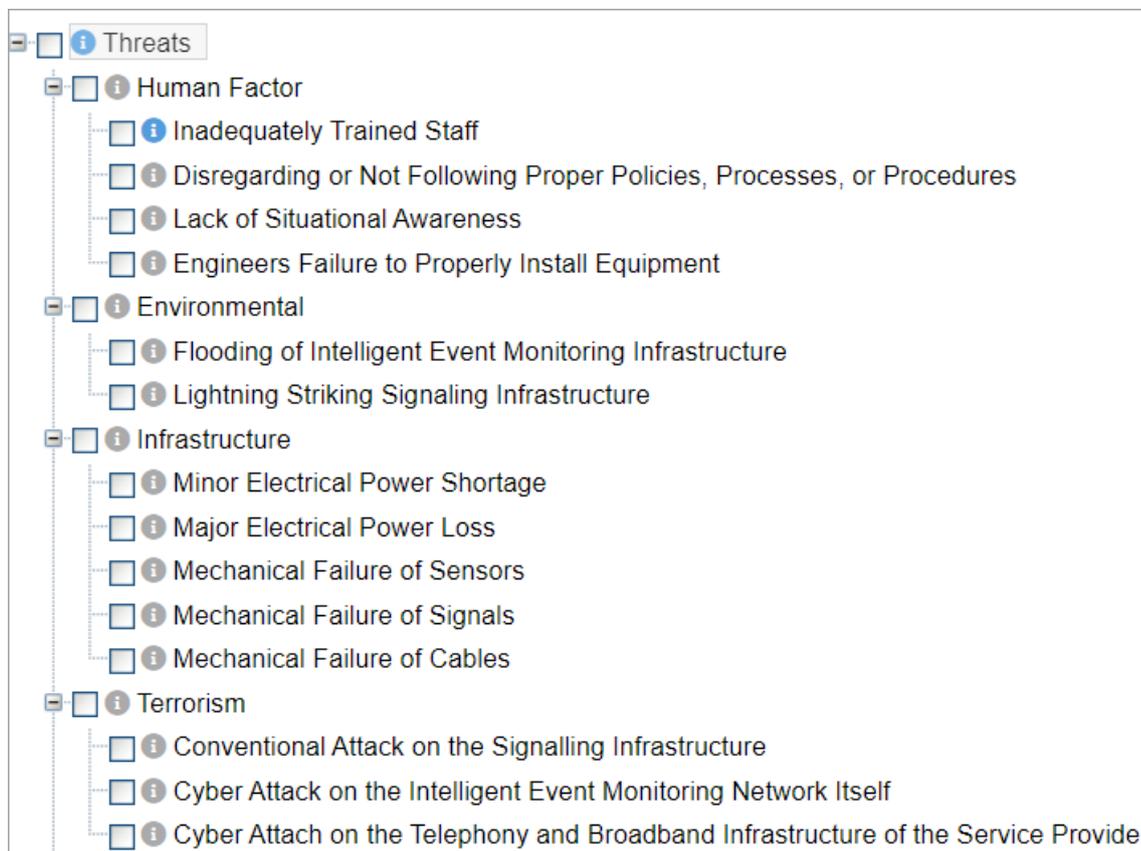
The Measurement Methods for Likelihoods page is where we designate how likelihoods are to be derived or assigned:

1. **For threats** given the **parent threat**
2. **For events** given the **covering threats**
3. **For events** with no **threats**

You can assign the measurement options For Threats and For Events on separate pages, or the same page by selecting from the three tabs:



For example, in the model with threats hierarchy as shown below:



The nodes that have children are the non-covering threats. (e.g. Human Factor, Environmental, ..).

The nodes that have no children are the covering threats (e.g. Inadequately Trained Staff, Disregarding or Not Following Proper Politics., ..)

Depending on the selected tab, the measurement options (Measurement Type, Scale, and other Advanced Options) will be displayed to the right of the threat elements (first column).

- **For Threats** - measurement options are available for the **non-covering threats** to define how to measure the threats below the given non-covering threat.

- **For Events** - measurement options are available for the covering threats to define how to measure the events given the covering threat, and the events with no threats.
- **All** - measurement options are available both for non-covering and covering threats which allow defining the two mentioned above on the same page.

For Threats		For Events		All	Manage Scales
Measurement Methods					
Measure Threats/Events With Respect To	Measurement Type Default (E): Rating Scale	Measurement Scale	Action	Cat...	
Threats	Rating Scale	IEM Likelihood Scale	Copy	<input type="checkbox"/>	
Human Factor	Rating Scale	IEM Likelihood Scale	Copy	<input type="checkbox"/>	
Inadequately Trained Staff	Rating Scale	IEM Likelihood Scale	Copy	<input type="checkbox"/>	
Disregarding or Not Following Proper Policies, Processes, or Procedures	Rating Scale	IEM Likelihood Scale	Copy	<input type="checkbox"/>	
Lack of Situational Awareness	Rating Scale	IEM Likelihood Scale	Copy	<input type="checkbox"/>	
Engineers Failure to Properly Install Equipment	Rating Scale	IEM Likelihood Scale	Copy	<input type="checkbox"/>	
Environmental	Rating Scale	Environmental (Wea	Copy	<input type="checkbox"/>	
Flooding of Intelligent Event Monitoring Infrastructure	Rating Scale	Environmental (Wea	Copy	<input type="checkbox"/>	
Lightning Striking Signaling Infrastructure	Rating Scale	Environmental (Wea	Copy	<input type="checkbox"/>	
Infrastructure	Rating Scale	IEM Likelihood Scale	Copy	<input type="checkbox"/>	
Minor Electrical Power Shortage	Rating Scale	IEM Likelihood Scale	Copy	<input type="checkbox"/>	
Major Electrical Power Loss	Rating Scale	IEM Likelihood Scale	Copy	<input type="checkbox"/>	
Mechanical Failure of Sensors	Rating Scale	IEM Likelihood Scale	Copy	<input type="checkbox"/>	

The following measurement types are available for evaluating Threats and the Events given Threat:

- Rating
- Direct
- Step Function
- Utility Curve
- Pairwise Comparisons
- Pairwise with Given Likelihood
- Pairwise of Probability

For Likelihood evaluation, we recommend using Pairwise with Given Likelihood instead of Pairwise unless the elements being evaluated are the entire set of possible outcomes (which may not be the case) since the resulting likelihoods will be adjusted to add to 100%.

Depending on the selected tab, the Total Judgments is displayed at the bottom of the page.

Total Judgments: 107

# Measurement Methods for Evaluating Threats

Measurement Methods for evaluating threats can be found on the **LIKELIHOOD OF EVENTS > MEASURE > Measurement Methods > For Threats** tab.

This is where we designate how threat likelihoods are to be derived or assigned for those threats (elements) in the threats hierarchy given their parent threat (non-covering threat).



**NOTE:** You can also define Measurement Methods for Threats in **All** mode where the measurement methods options For Threats and For Events options are available.

When the **For Threats** tab is selected, only the non-covering threats have available measurement options to the right.

<span>For Threats</span> <span>For Events</span> <span>All</span> <span style="float: right;">Manage Scales</span>				
Measurement Methods				
Measure Threats With Respect To	Measurement Type	Measurement Scale	Action	Cat...
Threats	Rating Scale	IEM Likelihood Scal	Copy	<input type="checkbox"/>
Human Factor	Rating Scale	IEM Likelihood Scal	Copy	<input type="checkbox"/>
Inadequately Trained Staff				
Disregarding or Not Following Proper Policies, Processes, or Procedures				
Lack of Situational Awareness				
Engineers Failure to Properly Install Equipment				
Environmental	Rating Scale	Environmental (Wea	Copy	<input type="checkbox"/>
Flooding of Intelligent Event Monitoring Infrastructure				
Lightning Striking Signaling Infrastructure				
Infrastructure	Rating Scale	IEM Likelihood Scal	Copy	<input type="checkbox"/>
Minor Electrical Power Shortage				
Major Electrical Power Loss				
Mechanical Failure of Sensors				
Mechanical Failure of Signals				

In our example, "Threats" (non-covering threat) children: Human Factor, Environmental, and Infrastructure are to evaluate using Rating Scale (IEM Likelihood Scale), as specified on the options to the right of the "Threats" node or their parent.

Measure Threats With Respect To	Measurement Type
[-] Threats	Rating Scale ▼
[-] Human Factor	Rating Scale ▼
Inadequately Trained Staff	
Disregarding or Not Following Proper Policies, Processes, or Procedures	
Lack of Situational Awareness	
Engineers Failure to Properly Install Equipment	
[-] Environmental	Rating Scale ▼
Flooding of Intelligent Event Monitoring Infrastructure	
Lightning Striking Signaling Infrastructure	
[-] Infrastructure	Rating Scale ▼
Minor Electrical Power Shortage	
Major Electrical Power Loss	

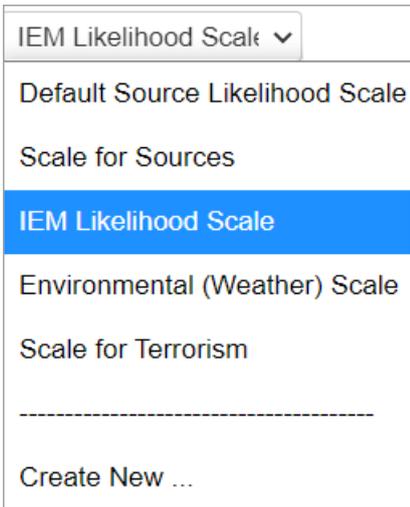
Similarly, the children below "Human Factor" will also be evaluated using the Rating Scale, as specified on the measurement options to the right of Human Factor.

[-] Human Factor	Rating Scale ▼
Inadequately Trained Staff	
Disregarding or Not Following Proper Policies, Processes, or Procedures	
Lack of Situational Awareness	
Engineers Failure to Properly Install Equipment	

You can change the Measurement Type by selecting from the pull-down menu:

Rating Scale ▼
Pairwise with Given Likelihood
Direct
<b>Rating Scale</b>
Step Function
Utility Curve
Pairwise Comparisons
Pairwise of Probabilities

You can change or create a new measurement scale (if applicable) by selecting from the pull-down:

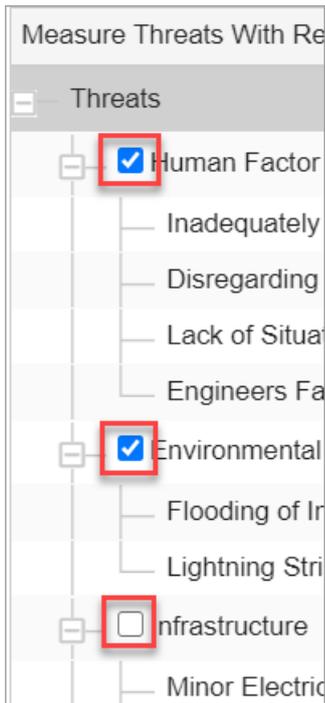


You can edit the currently selected scale by clicking  under the Action column.

You can also copy the measurement options from one non-covering threat to one or more non-covering threats.

Simply click  to the right of the non-covering threat you want to copy.

Checkboxes will appear to the left of the other non-covering nodes. Check the nodes you want to paste the measurement options to.



You can also check all the nodes at the bottom of the page.

Once done, click Proceed.



You can also make a non-covering threat a Category by checking the Category check box.

You can jump to the specific evaluation step of the given covering threat by clicking .

---

# Measurement Methods for Evaluating Events Given Threats

Measurement Methods for evaluating events given threats can be found on the **LIKELIHOOD OF EVENTS > MEASURE > Measurement Methods > For Events** tab.

This is where we designate how likelihoods are to be derived or assigned for the events given the covering threats in the threats hierarchy.

**NOTE:** You can also define Measurement Methods for Events given Threats in **All** mode where measurement methods options For Threats and For Events options are available.

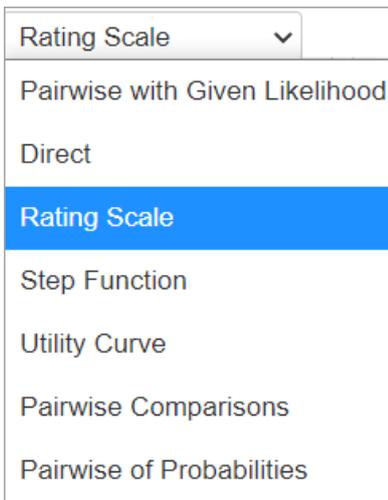
When the **For Events** tab is selected, only the covering threats have available measurement options to the right.

For Threats		For Events	All	Manage Scales	
Measurement Methods					
Measure Events With Respect To		Measurement Type Default: Rating Scale	Measurement Scale	Action	Cat...
Threats					
Human Factor					
— Inadequately Trained Staff		Rating Scale	IEM Likelihood Scal	Copy	<input type="checkbox"/>
— Disregarding or Not Following Proper Policies, Processes, or Procedures		Rating Scale	IEM Likelihood Scal	Copy	<input type="checkbox"/>
— Lack of Situational Awareness		Rating Scale	IEM Likelihood Scal	Copy	<input type="checkbox"/>
— Engineers Failure to Properly Install Equipment		Rating Scale	IEM Likelihood Scal	Copy	<input type="checkbox"/>
Environmental					
— Flooding of Intelligent Event Monitoring Infrastructure		Rating Scale	Environmental (Wea	Copy	<input type="checkbox"/>
— Lightning Striking Signaling Infrastructure		Rating Scale	Environmental (Wea	Copy	<input type="checkbox"/>
Infrastructure					
— Minor Electrical Power Shortage		Rating Scale	IEM Likelihood Scal	Copy	<input type="checkbox"/>
— Major Electrical Power Loss		Rating Scale	IEM Likelihood Scal	Copy	<input type="checkbox"/>
— Mechanical Failure of Sensors		Rating Scale	IEM Likelihood Scal	Copy	<input type="checkbox"/>

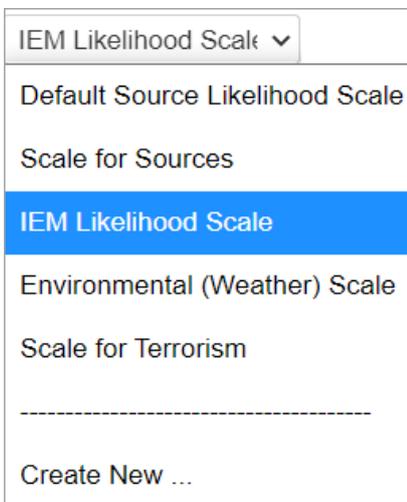
From above, the events given "Inadequately Trained Staff" will be evaluated using the Rating Scale (IEM Likelihood Scale) as specified on the options to the right of this covering threat.

— Inadequately Trained Staff	Rating Scale	IEM Likelihood Scal
------------------------------	--------------	---------------------

You can change the Measurement Type by selecting from the pull-down menu:



You can change or create a new measurement scale (if applicable) by selecting from the pull-down:



You can edit the currently selected scale by clicking 

You can also copy the measurement options from one covering threat to one or more covering threat(s).

Simply click  to the right of the covering threat you want to copy.

Checkboxes will appear to the left of the other covering nodes. Check the nodes you want to paste the measurement options to.

Threats

- Human Factor
  - Inadequately Trained Staff
    - Disregarding or Not Following P
    - Lack of Situational Awareness
    - Engineers Failure to Properly In
- Environmental
  - Flooding of Intelligent Event Mo
  - Lightning Striking Signaling Infra
- Infrastructure
  - Minor Electrical Power Shortage
  - Major Electrical Power Loss
  - Mechanical Failure of Sensors
  - Mechanical Failure of Signals

You can also check all the nodes at the bottom of the page.

Once done, click Proceed.

Copy To: [Select one or more covering Threats and click Proceed.](#)    Select: [All](#) | [None](#)    [Cancel](#)    [Proceed](#)

You can also make a covering threat a Category by checking the Category check box.

You can jump to the specific evaluation step of the given covering threat by clicking 

# Likelihood: Judgment Options Overview

The Likelihood's Judgment options page consists of the judgment options for evaluating the Threats and the Events given Threats.

The page has three sections:

- **Evaluate Threats Options** - left section (blue), which consists of options to evaluate Threats. Unchecking the Evaluate Threats check box at the top will hide all the options related to evaluating the Threats.
- **Evaluate Events Options** -right section (light green), which consists of the options to evaluate Events given Threats. Unchecking the Evaluate Threats checkbox will also hide the other events options below it.
- **Common Options** - the bottom section (white background-color) which is the options applicable for both Threats and Events.

[Copy all settings to Impact](#)

Likelihood Judgment Options	
<input checked="" type="checkbox"/> <b>Evaluate Threats</b> <b>Order for evaluating Threats within hierarchy:</b> <input checked="" type="radio"/> Top down <input type="radio"/> Bottom up	<input checked="" type="checkbox"/> <b>Evaluate Events</b> <b>Default measurement type:</b> Rating Scale
<b>When prioritizing Threats on each screen, evaluate:</b> <input checked="" type="radio"/> One pair of Threats with respect to parent threat <input type="radio"/> All pairs of Threats with respect to parent threat (AnyTime Evaluation only)	<b>When prioritizing Events on each screen, evaluate:</b> <b>IF Pairwise:</b> <input type="radio"/> One pair of Events with respect to a covering threat <input checked="" type="radio"/> All pairs of Events with respect to a covering threat (AnyTime Evaluation only) <b>IF Ratings or Direct:</b> <input checked="" type="radio"/> One threat and all Events (AnyTime Evaluation only) <input type="radio"/> One event with respect to all covering Threats (AnyTime Evaluation only) <input type="radio"/> One event with respect to a covering threat, followed by the next event with respect to that covering threat <input type="radio"/> One event with respect to a covering threat, followed by that event with respect to the next covering threat <input checked="" type="checkbox"/> Show Event Numbers: ID
<b>Trade-off between accuracy and # of comparisons:</b> (Number of pairs) <input checked="" type="radio"/> All pairs (maximum accuracy) <input type="radio"/> Two diagonals <input type="radio"/> One diagonal (least time) <input checked="" type="checkbox"/> Force most comparisons if fewer than 4 elements in the cluster <b>Select the type for pairwise comparison:</b> <input type="radio"/> Graphical/numerical <input type="radio"/> 1-9 <input checked="" type="radio"/> 1-99 <input type="radio"/> unlimited <input type="radio"/> Verbal <input checked="" type="checkbox"/> Force graphical/numerical for 2 or 3 elements	<b>Trade-off between accuracy and # of comparisons:</b> (Number of pairs) <input checked="" type="radio"/> All pairs (maximum accuracy) <input type="radio"/> Two diagonals <input type="radio"/> One diagonal (least time) <input checked="" type="checkbox"/> Force most comparisons if fewer than 4 elements in the cluster <b>Select the type for pairwise comparison:</b> <input type="radio"/> Graphical/numerical <input type="radio"/> 1-9 <input checked="" type="radio"/> 1-99 <input type="radio"/> unlimited <input type="radio"/> Verbal <input checked="" type="checkbox"/> Force graphical/numerical for 2 or 3 elements
<b>Change the wording when making pairwise comparisons for Threats and sub-Threats:</b> Which of the two Threats below is more likely	<b>Change the wording when making pairwise comparisons for Events:</b> Which of the two Events below is more likely
<b>Order of evaluation (top down or bottom up):</b> <input checked="" type="radio"/> Evaluate Threats first (top down) <input type="radio"/> Evaluate Events first (bottom up) <b>Extra measurement options</b> <input type="checkbox"/> Apply values from names automatically	

# Turn ON/OFF Evaluation for Threats or Events given Threats

The Project Manager can turn ON or OFF the evaluation for Threats/Objectives or for Events given Threats/Objectives.

The default option is to evaluate:

- threats,
- events given threats
- objectives
- events with respect to objectives

Although a Project Manager might want to do the evaluation in stages over a period of time, and turn off the evaluation of threats/objectives and evaluate only events, or vice versa, during one of these phases (for both Anytime and TeamTime evaluations).

This can be done on **LIKELIHOOD OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Judgments Options** for the evaluation for Threats and for Events given Threats.

Here you can check/uncheck the options to evaluate the Threats and the Events.

Manage Models	Identify/Structure	Likelihood of Eve...	Impact of Events	Risks	Controls	Controlled Risks
Structure	Visual Brainstorming	Measure	Synthesize	Reports		
<b>Likelihood Judgment Options</b>						Copy all settings to Impact
<input checked="" type="checkbox"/> Evaluate Threats			<input checked="" type="checkbox"/> Evaluate Events			

Similarly, you can turn ON/OFF the evaluation for Objectives or for Events with respect to Objectives on **IMPACT OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Judgments Options**.

Manage Models	Identify/Structure	Likelihood of Eve...	Impact of Events	Risks	Controls	Controlled Risk
Structure	Visual Brainstorming	Measure	Synthesize	Reports		
<b>Impact Judgment Options</b>						Copy all settings to Likelihood
<input checked="" type="checkbox"/> Evaluate Objectives			<input checked="" type="checkbox"/> Evaluate Events			

Unchecking these options will hide the respective options below them since they will not be applicable once the evaluation for Threats, Objectives or for Events is disabled.

# Order for evaluating within the Threats or Objectives hierarchy

When there is more than one level of threats/objectives, it is customary to proceed from the **top-down** -- that is, evaluating the relative importance of the main threats/objectives, then the relative importance of the sub-threats/objectives with respect to the threats/objectives, and so on.

However, for reasons similar to the above where it was recommended to proceed **bottom-up** -- evaluating events before the threats/objectives -- it is also recommended to evaluate the various levels in the threats/objectives hierarchy bottom-up as well. Doing so will enable the evaluators to have a better idea of the significance of the elements contained within the higher-level threats/objectives when they are evaluated.

Depending on the hierarchy you are working, you can specify the order of evaluation on:

- **LIKELIHOOD OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Judgments Options.**

**Order for evaluating Threats within hierarchy:**

- Top down
- Bottom up

- **IMPACT OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Judgments Options.**

**Order for evaluating Objectives within hierarchy:**

- Top down
  - Bottom up
-

# Default Pairwise Display: One or All pairs on the display

When prioritizing Threats, Objectives, or Events on each screen using Pairwise Comparisons, the Project Manager can select to display one pair or all pairs elements.

For Likelihood, this can be set on **LIKELIHOOD OF EVENTS > MEASURE < SET MEASUREMENT OPTIONS > Judgment Options:**

MANAGE MODELS	IDENTIFY/STRUCTURE	LIKELIHOOD OF EVENTS	IMPACT OF EVENTS	RISKS	CONTROLS	CONTROLLED RISKS		
Structure	Visual Brainstorming	Measure	Synthesize	Reports	Reload	On-line	Lock	Snapshots
<b>When prioritizing Threats on each screen, evaluate:</b> <input checked="" type="radio"/> One pair of Threats with respect to parent threat <input type="radio"/> All pairs of Threats with respect to parent threat (AnyTime Evaluation only)			<b>When prioritizing Events on each screen, evaluate:</b> <b>IF Pairwise:</b> <input type="radio"/> One pair of Events with respect to a covering threat <input checked="" type="radio"/> All pairs of Events with respect to a covering threat (AnyTime Evaluation only)					

For Impact, this can be set on **IMPACT OF EVENTS > MEASURE < SET MEASUREMENT OPTIONS > Judgment Options:**

MANAGE MODELS	IDENTIFY/STRUCTURE	LIKELIHOOD OF EVENTS	IMPACT OF EVENTS	RISKS	CONTROLS	CONTROLLED RISKS		
Structure	Visual Brainstorming	Measure	Synthesize	Reports	Reload	On-line	Snapshots	
<b>When prioritizing Objectives on each screen, evaluate:</b> <input checked="" type="radio"/> One pair of Objectives with respect to parent objective <input type="radio"/> All pairs of Objectives with respect to parent objective (AnyTime Evaluation only)			<b>When prioritizing Events on each screen, evaluate:</b> <b>IF Pairwise:</b> <input type="radio"/> One pair of Events with respect to a covering objective <input checked="" type="radio"/> All pairs of Events with respect to a covering objective (AnyTime Evaluation only)					

Note: The All pairs setting is only applicable for AnyTime Evaluation.

Note: The setting in this page is the default and can be overridden per cluster from the Measurement Methods page.

# Default Question Wording for Pairwise Comparison

The model elements terminologies for **Events**, **Causes**, **Objectives**, and **Controls** -- both singular and plural, are defined from the **IDENTIFY/STRUCTURE > Model Properties > Model Details** page.

In addition, you can also specify the wording to use during the evaluation, specifically for pairwise comparison (and rating, see explanation below) evaluation. This can be found on the **MEASURE > SET MEASUREMENT OPTIONS > Judgment Options** page.

Depending on the model you are working on (Likelihood or Impact), you can see the following options on the Judgments Options page:

## Likelihood

<b>Change the wording when making pairwise comparisons for Causes and sub-Causes:</b> Which of the two <input type="text" value="Causes"/> below <input type="text" value="is more likely"/> ▼	<b>Change the wording when making pairwise comparisons for Events:</b> Which of the two <input type="text" value="Events"/> below <input type="text" value="is more likely"/> ▼
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Impact

<b>Change the wording when making pairwise comparisons for Objectives and sub-Objectives:</b> Which of the two <input type="text" value="Objectives"/> below <input type="text" value="is more important"/> ▼	<b>Change the wording when making pairwise comparisons for Events:</b> Which of the two <input type="text" value="Events"/> below <input type="text" value="is more consequential"/> ▼
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

After "Which of the two" is the name of the element being compared. These terminologies (Causes, Objectives, Events) are the same and in sync with what's on the [Model Wording](#) page (plural). To edit, simply type in the desired wording on the text box

When changing the plural terminologies from the Judgments option page, keep in mind to also update the corresponding singular terminologies on the Wording Template page to make sure that the singular-plural wordings are consistent.

The pairwise evaluation phrase is defined from the second dropdown:

## Likelihood

### For Causes

<b>Change the wording when making pairwise comparisons for Causes and sub-Causes:</b> Which of the two <input type="text" value="Causes"/> below <input type="text" value="is more likely"/> ▼ <input type="text" value="is more likely"/> <input type="text" value="has more impact"/> <input type="text" value="has more influence"/> <input type="text" value="is more influential"/> <input type="text" value="— Custom —"/>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### For Events Given Causes

Change the wording when making pairwise comparisons for Events:

Which of the two  below

- is more likely
- is more influential
- Custom —

### Impact

#### For Objectives

Change the wording when making pairwise comparisons for Objectives and sub-Objectives:

Which of the two  below

- is more important
- has more impact
- has more influence
- Custom —

#### For Events wrt Objectives

Change the wording when making pairwise comparisons for Events:

Which of the two  below

- is more consequential
- has more impact
- is more likely
- has more influence
- Custom —

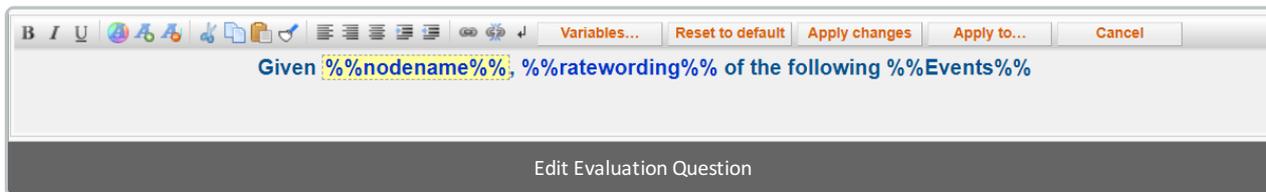
Simply select the phrase that best suits your model.

Selecting a predefined phrase will apply a similar phrase for Rating evaluation. For example, if you selected "**is more likely**", the Rating wording will be "**Rate the likelihood**".

You can also select --Custom-- and type in a custom phrase (e.g. is more influential, has more importance, etc.).

Custom wording will not be applicable for Rating evaluation -- the default will be used.

If in case you want to fully customize the evaluation questions, you can [edit the question](#) from the evaluation page itself.



# Likelihood: Evaluation Settings Overview

The Evaluation Settings screen consists of the navigation options **during** and **after** the evaluation.

**MANAGE MODELS**   **IDENTIFY/STRUCTURE**   **LIKELIHOOD OF EVENTS**   **IMPACT OF EVENTS**

Structure   Visual Brainstorming   **Measure**   Synthesize   Reports

### Likelihood evaluation settings

- Hide navigation box/Evaluation progress
  - Hide navigation step buttons
- Show next unassessed
- Don't allow going to 'next' step unless input is provided

Auto advance options:

- Auto advance on
- Auto advance off, and ask evaluator (once) if they want to turn it on
- Auto advance off, and don't ask evaluator if they want to turn it on

**After collect input:**

- Stay on the evaluation pipe
- Close browser window (tab)
- Join evaluation pipes (*Likelihood, Impact*)
- Redirect to URL:
- Open another model:
- Perform user log-off

Likelihood's Evaluation Settings Page

# Show or Hide the Navigation box and buttons

The Project Manager can show or hide navigation buttons during the evaluation.

<input type="checkbox"/> Hide navigation box/Evaluation progress
<input type="checkbox"/> Hide navigation step buttons
<input checked="" type="checkbox"/> Show next unassessed
<input type="checkbox"/> Don't allow going to 'next' step unless input is provided

Depending on the model you are working on, this can be set on:

- **LIKELIHOOD OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Evaluation settings.**
- **IMPACT OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Evaluation settings.**

By default, the navigation available on the evaluation are as follows:

<b>Navigation Box</b>	<input type="checkbox"/> Auto advance <input type="checkbox"/> View as Evaluator	<b>Next Unassessed</b>
Steps: 1 ... 15 16 17 18 19 20 21 22 23 ... 60 Evaluated: 0/114		<b>Previous</b> <b>Next</b>

The Project Manager has options to show/hide some buttons and more:

- **Hide navigation box/Evaluation progress** - hide the navigation box at the left which shows the buttons to move to a specific step, current cluster, and steps list.
  - **Hide navigation step buttons** - hide the navigation box but show the evaluation progress. Note: When the "Hide navigation box/Evaluation progress" is checked, this option is disabled since it will be overridden.

Step: <b>4/60</b> Evaluated: <b>0/114</b>
-------------------------------------------

- **Show next unassessed** - show or hide the "Next unassessed" button. The next unassessed button allows the evaluator to skip the results/information/evaluated steps and jump to a specific step that is not yet evaluated, and skip results or information steps.
- **Don't allow going to 'next' step unless input is provided** - disable the Next button and the number steps when the evaluator hasn't provided judgment for the current step.

# Auto-advance to Next Step

**Auto-advance** can be used to make the evaluation for single pairwise verbal and single rating faster by auto-advancing to the next step after the judgment was made.

Depending on the model you are working on, the Auto-Advanced option can be set on:

- **LIKELIHOOD OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Evaluation settings.**
- **IMPACT OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Evaluation settings.**

- Auto advance on
  - Auto advance off, and ask evaluator (once) if they want to turn it on
  - Auto advance off, and don't ask evaluator if they want to turn it on

There are three options for the auto-advance feature:

- Auto-advance on
- Auto-advance off, and ask the evaluator (once) if they want to turn on - a prompt will be displayed during the evaluation suggesting to turn on the auto-advance feature if the evaluator already entered five(5) single pairwise verbal or single rating judgments
- Auto-advance off, and don't ask evaluator if they want to turn it on

Note: The evaluators can turn on/off the auto-advance during the evaluation.

# After collect input options

The Project Manager can choose where to redirect the evaluators after the evaluation.

Depending on the model you are working on, the Auto-Advanced option can be set on:

- LIKELIHOOD OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Evaluation settings.
- IMPACT OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Evaluation settings.

**After collect input:**

Stay on the evaluation pipe

Close browser window (tab)

Join evaluation pipes (*Likelihood, Impact*)

Redirect to URL:

Open another model:

Perform user log-off

The following options are available:

- **Stay on the evaluation pipe** - stay on the last step of the evaluation, commonly the "Thank you" page. The evaluator can close the tab or go back to the previous steps.
- **Close browser window (tab)** - add a Finish button on the last step of evaluation which will close the browser tab
- **Join evaluation pipe (Likelihood, Impact)** - on the last step of the likelihood model evaluation, a next button will be available which will redirect to the impact evaluation; clicking previous from the first step of impact will go back to the likelihood evaluation.
- **Redirect to URL** - will take the evaluator to the URL specified by the Project Manager following their completion of the evaluation
- **Open another model** - select and open another Riskion model on the workgroup where the evaluator will be redirected to collect input
- **Perform user log-off** - automatically log the evaluator off after completing their input.

# Participant Display Options Overview

The Participant Display Options page is where the Project Manager determines what evaluators will see during their evaluation session -- this includes the Welcome and Thank You page, Results, Information Documents, and more.

Depending on the hierarchy that you are working on, the Participants Display Options page can be found on:

## Likelihood

LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > Participant display options.

The screenshot shows the 'LIKELIHOOD OF EVENTS' navigation menu. The 'MEASURE' tab is active. In the left sidebar, 'Participant display options' is highlighted with a red box. In the main content area, under 'SET MEASUREMENT OPTIONS', 'Participant display options' is also highlighted with a red box.

The screenshot shows the 'Likelihood participant display options' configuration page. It includes a 'Copy all settings to Impact' button and several sections of settings:

- Intermediate Results:**
  - Hide
  - Individual (AnyTime Evaluation only)
  - Combined (AnyTime Evaluation only)
  - Both
  - Display 'expected value' if applicable
  - Show index
- Intermediate results sorting:**
  - No sorting
  - Sort by name
  - Sort by individual Likelihood
  - Sort by combined Likelihood
- Overall Results:**
  - Hide
  - Individual (AnyTime Evaluation only)
  - Combined (AnyTime Evaluation only)
  - Both
  - Display 'expected value' if applicable
  - Show index
- Overall results sorting:**
  - No sorting
  - Sort by name
  - Sort by individual Likelihood
  - Sort by combined Likelihood
- Display Options:**
  - Show welcome page (Edit...)
  - Show thank you page (Edit...)
  - Show "Reward" page instead when participant completes all their judgments (Edit...)
  - Show full threat path:  Never  Always  Auto-collapse
  - Question Text-to-Speech:  Disabled  Auto-play (when available)  Play on demand
  - Show inconsistency ratio (An inconsistency ratio cannot be computed if there are more than fifteen elements or if there are no redundant judgments)
  - Show information documents
    - Hide information documents captions
    - Display information documents as frame (uncheck to display as tooltip)
    - Auto-fit information document images
  - Show/allow comments entry
  - Use combined input sources for individual results
  - Suppress warning when judgments are not made
- Sensitivity analysis:**
  - Display dynamic analysis
  - Display gradient analysis
  - Display performance analysis
- Which results do you want to use in the sensitivity analysis?**
  - Individual
  - Combined
- Synthesis:**
  - Distributive mode
  - Ideal mode

The footer of the page reads: 'Likelihood's Participant Display Options Page'.

## Impact

IMPACT OF EVENTS > MEASURE > Set Measurement Options > Participant display options.

The screenshot shows the 'IMPACT OF EVENTS' interface. The top navigation bar includes 'MANAGE MODELS', 'IDENTIFY/STRUCTURE', 'LIKELIHOOD OF EVENTS', and 'IMPACT OF EVENTS'. Under 'IMPACT OF EVENTS', there are sub-tabs: 'Structure', 'Visual Brainstorming', 'Measure', 'Synthesize', and 'Reports'. The 'Measure' sub-tab is active. On the left, a navigation menu lists various options, with 'Participant display options' under 'Set Measurement Options' highlighted with a red box. The main content area shows the 'MEASURE' section with sub-sections for 'Evaluation status' and 'Measurement Methods'. Below this is the 'SET MEASUREMENT OPTIONS' section, which includes 'Judgment Options', 'Surveys settings', 'Evaluation settings', 'Default Scales', and 'Participant display options' (highlighted with a red box).

The screenshot shows the 'Impact participant display options' configuration page. The title is 'Impact participant display options' and there is a 'Copy all settings to Likelihood' button. The page is divided into several sections:

- Intermediate Results:**
  - Hide
  - Individual (AnyTime Evaluation only)
  - Combined (AnyTime Evaluation only)
  - Both
  - Display 'expected value' if applicable
  - Show index
- Intermediate results sorting:**
  - No sorting
  - Sort by name
  - Sort by individual Impact
  - Sort by combined Impact
- Overall Results:**
  - Hide
  - Individual (AnyTime Evaluation only)
  - Combined (AnyTime Evaluation only)
  - Both
  - Display 'expected value' if applicable
  - Show index
- Overall results sorting:**
  - No sorting
  - Sort by name
  - Sort by individual Impact
  - Sort by combined Impact
- Display Options:**
  - Show welcome page (Edit...)
  - Show thank you page (Edit...)
  - Show "Reward" page instead when participant completes all their judgments (Edit...)
  - Show full objective path:  Never  Always  Auto-collapse
  - Question Text-to-Speech:  Disabled  Auto-play (when available)  Play on demand
  - Show inconsistency ratio (An inconsistency ratio cannot be computed if there are more than fifteen elements or if there are no redundant judgments)
  - Show information documents
    - Hide information documents captions
    - Display information documents as frame (unchecked to display as tooltip)
    - Auto-fit information document images
  - Show/allow comments entry
  - Use combined input sources for individual results
  - Suppress warning when judgments are not made
- Sensitivity analysis:**
  - Display dynamic analysis
  - Display gradient analysis
  - Display performance analysis
- Which results do you want to use in the sensitivity analysis?**
  - Individual
  - Combined
- Synthesis:**
  - Distributive mode
  - Ideal mode
- Embed extra content as pipe step(s):**
  - Show Overall Risk Results
  - Show Overall Risk Map

The footer of the page reads 'Impact's Participant Display Options Page'.

# Show or Hide Intermediate and Overall Results

The Project Manager can show or hide the Intermediate and/or Overall Results, and decide how these results will be sorted.

Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

## Intermediate Results

**Overall Results**

Hide

Individual (AnyTime Evaluation only)

Combined  (AnyTime Evaluation only)

Both

Display 'expected value' if applicable

Show index

**Overall results sorting**

No sorting

Sort by name

Sort by individual priority

Sort by combined priority

Intermediate results, such as the likelihoods/impacts for elements in a cluster derived from pairwise comparisons, can be shown to or hidden from evaluators. If shown, their individual results can be shown, or the combined results, or both.

Intermediate results can be sorted by name, individual results, or combined results.

The Hide option applies to both Anytime and TeamTime. The Individual and Combined apply only to Anytime.

TeamTime will display both individual and combined results unless the "Hide" option is ticked in which case you get no results steps at all.

To hide the combined results in TeamTime, the Project Manager can click the gear icon and then check the "Hide Combined Results" checkbox during the meeting.

You can show the 'expected value' if the node names are numeric.

You can also hide or show the index in the results grid.

## Overall Results

**Overall Results**

- Hide
- Individual (AnyTime Evaluation only)
- Combined  (AnyTime Evaluation only)
- Both
- Display 'expected value' if applicable
- Show index

**Overall results sorting**

- No sorting
- Sort by name
- Sort by individual priority
- Sort by combined priority

Overall Results has similar options as with the Intermediate results.

Overall results for the events can be shown to or hidden from evaluators. If shown, their individual results can be shown, or the combined results, or both.

The Hide option applies to both Anytime and TeamTime. The Individual and Combined apply only to Anytime.

TeamTime will display both individual and combined results unless the "Hide" option is ticked in which case you get no results steps at all.

To hide the combined results in TeamTime, the Project Manager can click the gear icon and then check the "Hide Combined Results" checkbox during the meeting.

Overall results can be sorted by name, individual priority, or combined priority.

You can show the 'expected value' if the node names are numeric.

You can also hide or show the index in the results grid.

---

# Edit Welcome, Thank You or Rewards pages

The Evaluation's Welcome, Thank you, or Reward pages of the evaluation can be shown or hidden.

Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

<input checked="" type="checkbox"/> Show welcome page	<a href="#">Edit...</a>
<input checked="" type="checkbox"/> Show thank you page	<a href="#">Edit...</a>
<input type="checkbox"/> Show "Reward" page instead when participant completes all their judgments	<a href="#">Edit...</a>

A **welcome page** is shown at the beginning of the evaluation and/or a **thank you page** at the end of the evaluation.

You can display a **reward page** instead of the thank you page when participants completed their judgments.

Each of these pages can be edited. Simply click the **Edit...** button to open the [rich text editor](#) where you can add texts, images, URLs, etc.

---

# Show Threats/Objectives Full Path

You can show or hide the threats/objectives full path in the evaluation heading.

Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

Show full threat path:  Never  Always  Auto-collapse

- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

Show full objective path:  Never  Always  Auto-collapse

Options include:

- **Never** - not to show the threats/objectives full path at all
  - **Always** - always show the threats/objectives full path
  - **Auto-collapse** - show the threats/objectives full path for 5 seconds and then collapsed it. Clicking the threats/objective name will show again the full path.
-

## Show or Hide Inconsistency ratio

Inconsistency Ratio can be shown or hidden in the Intermediate Results pages.

Depending on the model you are working on, this can be turned on/off on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

The inconsistency ratio can be shown when judgments are entered using pairwise comparisons. The evaluators can also see various options to improve the inconsistency.

Show inconsistency ratio (*An inconsistency ratio cannot be computed if there are more than fifteen elements or if there are no redundant judgments*)

---

# Information Documents Settings (Hide or Show, Tooltip or Frame View)

[Information Documents](#) can be shown or hidden and displayed as a tooltip or as a frame in the Collect Input process.

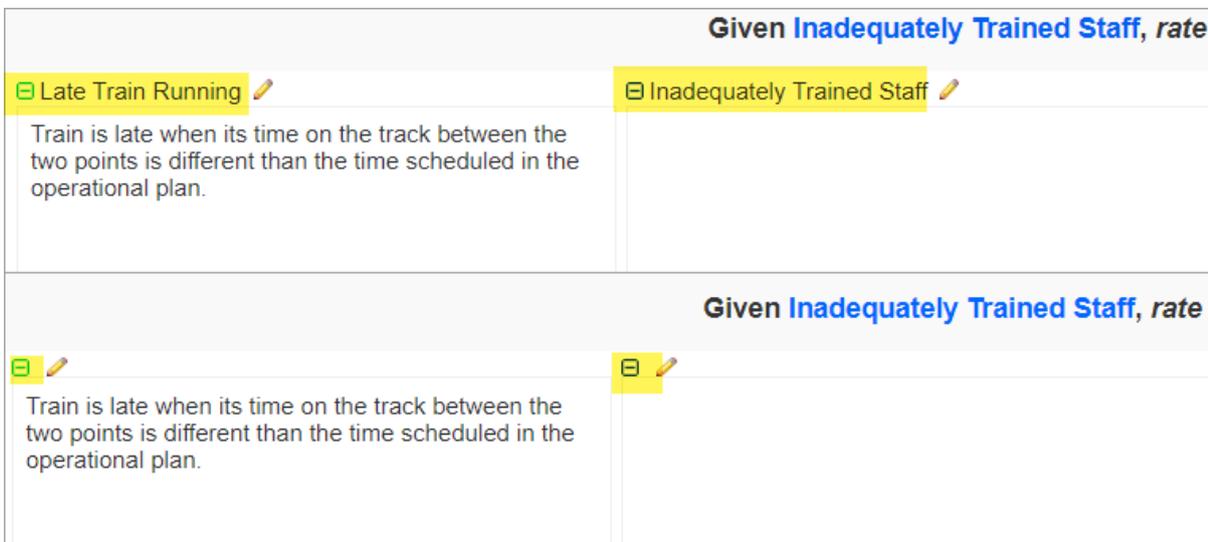
Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

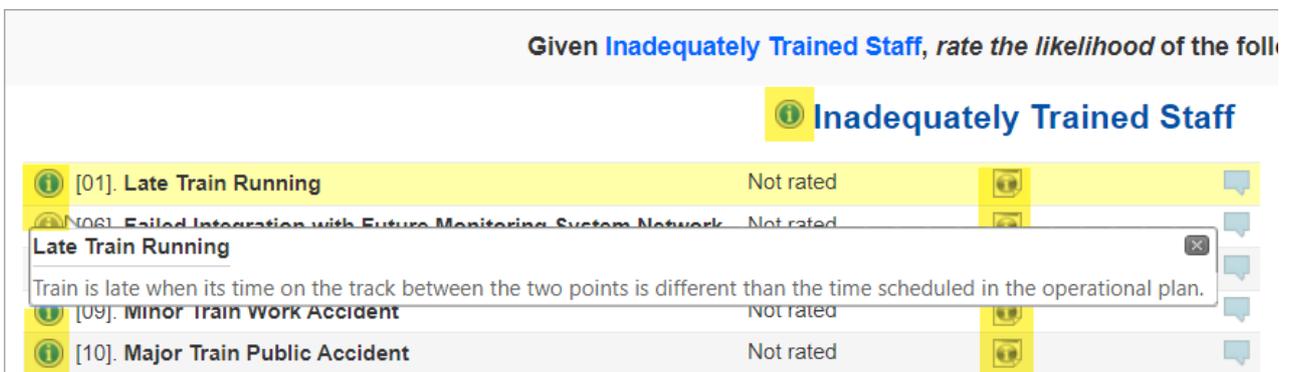
Simply check the "Show information documents" checkbox to show the information documents on the Evaluation.

<input checked="" type="checkbox"/> Show information documents
<input type="checkbox"/> Hide information documents captions
<input checked="" type="checkbox"/> Display information documents as frame <i>(uncheck to display as tooltip)</i>

The Hide information document captions option hides the element name for the frame view infodocs.



The information documents can be displayed in the **frame** as shown above or as a **tooltip** shown below:



Simply hover on the "i" icon to display its content, or click it to open the [rich text editor](#) for editing.

# Allow or Disable Comments Entry

Evaluators can add comments during the evaluation.

A comment allows the evaluator to add a note for his/her specific judgment which the Project Manager can review later on the Judgments Overview Reports.

The comments Entry can be enabled or disabled.

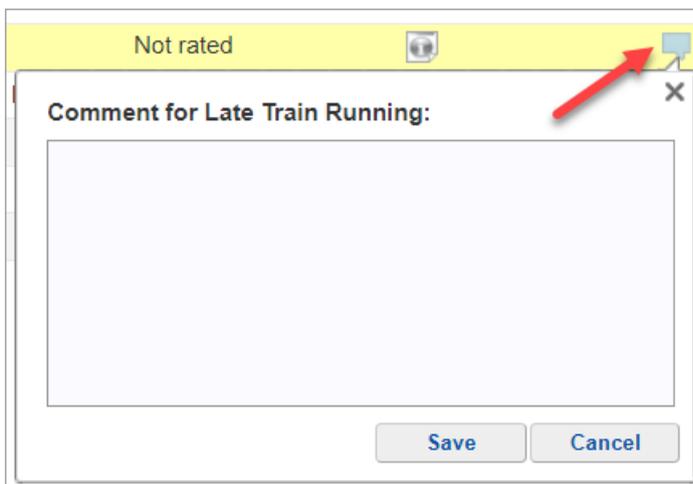
Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

Simply check or uncheck the Show/allow comments entry.

 Show/allow comments entry

Depending on the evaluation (multi or single), comments are displayed as a tooltip by clicking the blue icon.



or in the expandable frame:

 Comment

# Show Sensitivity analysis on the Evaluation

Sensitivity analysis (Dynamic, Performance, and Gradient) can be shown to the evaluators. If shown, either the individual or combined sensitivities can be shown.

Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

**Sensitivity analysis**

Display dynamic analysis

Display gradient analysis

Display performance analysis

**Which results do you want to use in the sensitivity analysis?**

Individual

Combined

---

# Show Expected Values

If applicable, you can show the Expected Values on Intermediate and Overall Results.

Expected value (also known as EV, expectation, average, or mean value) is a long-run average value of random variables. It also indicates the probability-weighted average of all possible values.

Depending on the model you are working on, this can be turned on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

### participant display options

<b>Intermediate Results</b> <input type="radio"/> Hide <input checked="" type="radio"/> Individual (AnyTime Evaluation only) <input type="radio"/> Combined (AnyTime Evaluation only) <input type="radio"/> Both <input type="checkbox"/> Display 'expected value' if applicable <input checked="" type="checkbox"/> Show index	<b>Overall Results</b> <input type="radio"/> Hide <input checked="" type="radio"/> Individual (AnyTime Evaluation only) <input type="radio"/> Combined (AnyTime Evaluation only) <input type="radio"/> Both <input type="checkbox"/> Display 'expected value' if applicable <input checked="" type="checkbox"/> Show index
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Display "Expected Value" checkbox

No ▲	Name	Participant results	
1	none	13.81%	<div style="width: 13.81%; height: 10px; background-color: #76b82a;"></div>
2	75	20.21%	<div style="width: 20.21%; height: 10px; background-color: #76b82a;"></div>
3	90	33.00%	<div style="width: 33.00%; height: 10px; background-color: #76b82a;"></div>
4	100	27.49%	<div style="width: 27.49%; height: 10px; background-color: #76b82a;"></div>
5	110	3.95%	<div style="width: 3.95%; height: 10px; background-color: #76b82a;"></div>
6	125	1.41%	<div style="width: 1.41%; height: 10px; background-color: #76b82a;"></div>
7	150 or more	0.13%	<div style="width: 0.13%; height: 10px; background-color: #76b82a;"></div>

Expected value (Participant) = 238.35

  
Inconsistency ratio: 0.95

Judgments matrix

The "Expected Value" displayed on the ntermediate Results page

# Send AnyTime Invitation (from Riskion or Local Mail Client)

Depending on the model you are working on, you can invite participants to AnyTime Evaluation on:

- **LIKELIHOOD OF EVENTS > MEASURE > AnyTime Evaluation > Send Invitations**
- **IMPACT OF EVENTS > MEASURE > AnyTime Evaluation > Send Invitations**

The **Send Email(s)** tab is one of the send invitation options for AnyTime Evaluation.

It displays a participants list table as shown below where the Project Manager will select the participant/s that will receive the AnyTime invitation.

The screenshot shows the 'Send Email(s)' interface. At the top, there are tabs for 'Send Email(s)', 'General Link', 'Participant Specific Links', and 'Group Specific Links'. Below the tabs is a search bar. The main area is divided into two sections: a table of participants on the left and an email composition area on the right.

<input type="checkbox"/>	NAME	E-mail	Has Data	Progress
<input type="checkbox"/>	System Manager	Admin	No	0.0%
<input type="checkbox"/>	Ernest Forman	forman@gwu.edu	Yes	100.0%
<input type="checkbox"/>	Ed Hreljac	ed.hreljac@processpower.ca	Yes	100.0%
<input type="checkbox"/>	Mike Jones	mjones@expertchoice.com	No	0.0%
<input type="checkbox"/>	Vijay Gupta	vijaygupta2607@gmail.com	No	0.0%
<input type="checkbox"/>	John Doe	j.doe@eci.com	No	0.0%
<input type="checkbox"/>	Risk Expert	expert@eci.com	No	0.0%

The email composition area on the right has the following fields:

- From:** "Expert Choice Comparion" <donotreply@expertchoice.com>
- Subject:** Riskion®: Please join our Evaluation
- Body:** Dear System Manager,  
Please join our Riskion® assessment for risk event Impacts in the model: DHS Border Security example with controls  
by clicking in the following link:  
(A hyperlink customized for each participant will appear HERE when the 'Send Invite' button is pressed)  
If you need additional help, please email Admin.  
Thank you,  
System Manager  
This is an automatically generated email, please do not reply.

At the bottom of the interface, there are buttons for 'Add Participants...', 'Download MS-Word MailMerge', 'Edit Invite', 'Reset', and 'Send Invite'.

You can add participants from the [Identify/Structure > Identify > Participants page](#) by navigating through the menus or by simply clicking the **Add Participants** button at the bottom of the table.

A template for the email is provided at the right which can be edited to explain the purpose of the evaluation and provide any other information or hyperlinks that you want to convey to the evaluators.

You can edit the email Subject by typing on the Subject Field.

Clicking the **Edit Invite** button will open a [rich text editor](#) where you can edit the body of the invitation. You can add variables that Riskion will replace with the appropriate information as desired. After returning from editing you can then view what the email will look like.

Click the **Reset** button to reset the invitation to the default.

The **Send Invite** button is disabled until you select at least one participant from the left. You can select some or all of the participants to receive the email. You can also re-invite or remind participants if they are not making progress. You can select all participants without judgments or sort by the Evaluation Progress column and select those with a small percentage of judgments to re-invite or remind.

By default, the invitation email is being sent by Riskion, you can choose to send the invitation using your local mail client (e.g Outlook, Thunderbird, etc.) by selecting "User Your Local Mail Client" under the "From:" field.

Note that using this option, you can only send invitations to one selected participant at a time. If you want to send to multiple participants at once using your local mail client, you can use the Mail Merge option.

Simply select the participants you want to send the invitation to and then click the Download MS-MailMerge button at the bottom.

 [Download MS-Word MailMerge](#)

A .zip file will be downloaded, extracting the zip file will uncompress the ff:

- Your\_Model\_Name.docx - the MS mail merge file
- Your\_Model\_Name.mdb - MS database
- README.docx

Read the README.docx for the instructions.

---

# Invite Participants using General Links (Anonymous, Signing in, Login)

Depending on the model you are working on, you can invite participants to AnyTime Evaluation on:

- **LIKELIHOOD OF EVENTS > MEASURE > AnyTime Evaluation > [Send Invitations](#)**
- **IMPACT OF EVENTS > MEASURE > AnyTime Evaluation > [Send Invitations](#)**

The General Link tab provides hyperlink and invitation instructions that can be used **both by registered and unregistered participants**.

The General Link page is divided into three sections:

- **General Link type** - Anonymous, Signing in and Evaluation and Log in, these are explained in detail below
- **Options** - Options can be enabled or disabled as applicable to the selected General Link type
- **Invite Link and Invite Instructions** - where the invite link and instructions based on the general link type and options specified are displayed. The Project Manager can copy and send the link/instruction via email, post it to a website, or transmit it via a chat window or any other communications vehicle. You can also see a hint text below the invite instruction explaining briefly how the link works.

Send Email(s) **General Link** Participant Specific Links Group Specific Links

A hyperlink will be created that can be sent to people for them to evaluate this model. You can send the link to those who are not registered in this Comparison workgroup as well as those who are already registered.

Link for Anonymous Evaluation  
 Link for Signing In and Evaluation  
 Link for going to normal Riskion® login screen

**Options:**

Sign-up form fields:  
 E-mail  
 Name  
 Phone number  
 Password

Required form fields:  
 E-mail  
 Name  
 Phone number  
 Password

Sign-up page title:  
  
[Edit Sign-up page message](#)

Users accessing the model with this link will be assigned to:  
No Group  
 Assign as Project Manager when user has workgroup permission to manage model(s)

New users who access the model with this link will be assigned the permissions of a(n):  
Evaluator

Invite Link: <https://riskbeta.expertchoice.com/?hash=8a7e4c0645ff6f688bd520e2b95bfc86> [Copy](#)

Invite Instruction: To join a Riskion® evaluation anonymously in the model 'DHS Border Security example with controls', please go to <https://riskbeta.expertchoice.com/?hash=132daf99df71f4fb6b1eb6b1a876b18c> for the Likelihood evaluation, and then go to <https://riskbeta.expertchoice.com/?hash=8a7e4c0645ff6f688bd520e2b95bfc86> for the Impact evaluation. (No login or registration required) [Copy](#)

Use invitations for both hierarchies (Likelihood, Impact)  
**Please note:** Regular evaluation pipes in this model (not joined). [\[Change options\]](#)

The evaluator will begin the evaluation without entering any information about their email or name or password. If they exit the evaluation and execute the link at a subsequent time, they will be returned to the same point at which they left off.

There are three General Link types as shown by the radio buttons on this screen.

Link for Anonymous Evaluation  
 Link for Signing In and Evaluation  
 Link for going to normal Riskion® login screen

# 1. Link for Anonymous Evaluation

Generates a link that, when used, will allow the respondent to enter judgments anonymously. If they exit the evaluation and execute the link at a subsequent time, they will be returned to the same point at which they left off. Anonymous users will have dummy names and emails.

Link for Anonymous Evaluation  
 Link for Signing In and Evaluation  
 Link for going to normal Riskion® login screen

**Options:**

Sign-up form fields:	Required form fields:	Sign-up page title:
<input checked="" type="checkbox"/> E-mail <input checked="" type="checkbox"/> Name <input type="checkbox"/> Phone number <input checked="" type="checkbox"/> Password	<input checked="" type="checkbox"/> E-mail <input type="checkbox"/> Name <input type="checkbox"/> Phone number <input checked="" type="checkbox"/> Password	<input type="text"/> <input type="button" value="Edit Sign-up page message"/>

Users accessing the model with this link will be assigned to: 

Assign as Project Manager when user has workgroup permission to manage model(s)

New users who access the model with this link will be assigned the permissions of a(n):

Invite Link:

Invite Instruction:

Use invitations for both hierarchies (Likelihood, Impact)  
**Please note:** Regular evaluation pipes in this model (not joined). [\[Change options\]](#)

The evaluator will begin the evaluation without entering any information about their email or name or password. If they exit the evaluation and execute the link at a subsequent time, they will be returned to the same point at which they left off.

The options available for Anonymous Evaluation invitation are as follows, and are also available for the Signing Up and Evaluation tab:

- **Group Assignment** - assign the invited users to a specific participant group when executing the link.

Users accessing the model with this link will be assigned to: 

By default, "No group" is selected, meaning they will not be assigned to any group. You can select a group, if available, by clicking on the dropdown. You can click the Manage Groups  icon to redirect you to the Add Participants screen and open the Manage Groups modal where you can add groups.

**TIP:** The invite/instruction link section at the bottom has a generated link that is based on the currently selected group on the dropdown. If you want to get the links for all the existing groups at once, go to the fourth tab, **Group-Specific Links** tab lists, where you can copy/download the links.

- **Permission Assignment** - assign permission (Evaluator, Viewer, Evaluator/Viewer, and Project Manager) to non-registered participants when executing the link.

New users who access the model with this link will be assigned the permissions of a(n):

Evaluator

Evaluator

Viewer

Evaluator/Viewer

Project Manager

A Riskion model composes of Likelihood and Impact evaluation (and Control), an additional option can be found below the invitation instruction section:

- **Use invitation for both hierarchies (Likelihood and Impact)** - checking this option will indicate both the Likelihood and Impact invitation links on the Invite Instruction. Please note that this is only applicable if the Likelihood and Impact pipes are not joined as specified from the [Evaluation Settings page](#).

Invite Instruction: To join a Riskion® evaluation in the model 'DHS Border Security example with controls', please do the following:

1. Go to <https://riskbeta.expertchoice.com/?passcode=4463-2607> for the Likelihood evaluation
2. Enter your email address and your password to login
3. Click on "Log in"
4. After finishing the Likelihood evaluation, go to <https://riskbeta.expertchoice.com/?passcode=5384-0367> for the Impact evaluation

Use invitations for both hierarchies (Likelihood, Impact)

This option is available for the three general links type.

## 2. Link for Signing In and Evaluation

The Link for Signing In and Evaluation is applicable for **registered** and **non-registered** users. Executing the link will redirect the users to a page with two forms, where user can either sign up or log in:

### DHS Border Security

Please join our Risk Assessment. For new users, please sign up using the form at the left. For registered users, use the login form at the right.

<p style="text-align: center;"><b>New users login here:</b></p> <p>E-mail*: <input type="text"/></p> <p>Full name: <input type="text"/></p> <p>Password*: <input type="password"/></p> <p>Confirm password*: <input type="password"/></p> <p style="text-align: center;"><input type="button" value="Sign up"/></p>	<p style="text-align: center;"><b>Existing user login:</b></p> <p>E-mail*: <input type="text"/></p> <p>Password: <input type="password"/></p> <p style="text-align: center;"><input type="button" value="Log in"/></p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

In addition to the options available for the Anonymous Evaluation described above, more options are available for Link for Signing In and Evaluation:

**Options:**

<p>Sign-up form fields:</p> <input checked="" type="checkbox"/> E-mail <input checked="" type="checkbox"/> Name <input type="checkbox"/> Phone number <input checked="" type="checkbox"/> Password	<p>Required form fields:</p> <input checked="" type="checkbox"/> E-mail <input type="checkbox"/> Name <input type="checkbox"/> Phone number <input checked="" type="checkbox"/> Password	<p>Sign-up page title:</p> <input type="text"/> <input type="button" value="Edit Sign-up page message"/> <input type="button" value="Q"/>
<p>Users accessing the model with this link will be assigned to:</p> <input type="button" value="No Group"/>	<input type="button" value="Assign as Project Manager when user has workgroup permission to manage model(s)"/>	<p>New users who access the model with this link will be assigned the permissions of a(n):</p> <input type="button" value="Evaluator"/>

- **Sign-up form fields and required fields** - select the fields (E-mail, Name, Phone number, Password) that will be displayed for the non-registered users form when the link is executed and indicate if responses are required or not. At least one of the fields must be selected (checked) to appear.

**Note:** You cannot specify a required password unless the email is required. If all selected fields are designated as optional (not required) and the user chooses not to enter any information, then the link functions the same as the anonymous evaluation.

- **Assign a Project Manager permission to the registered user** - if this option is checked, a registered user that has a Project Organizer Workgroup Permission will be a Project Manager of the model. (Note: A Workgroup Manager will always be a Project Manager of a model)
- **Specify the signup page title and message** - this is the (1) heading and (2) custom message that will appear at the top of the signing up/login page. A default heading is provided in case you did not specify it, on the other hand, the custom message can be blank.



### 3. Link for going to normal Riskion login screen

When executing the link generated from this option, the user will be taken to the normal Riskion login screen with an **access code** for this model. The registered user needs to provide his/her email and password and click Log in.



E-mail: \*

Password:

Access Code:

Remember me

[Log in](#)

— OR —

[Join TeamTime™ Session](#)

[? I forgot my password](#)

# Invite Participants using Participant Specific Links

The Participant Specific Links tab provides a (unique) link and email address generated for every **registered participant** in the model. The Project Manager can use these links in any way that they desire.

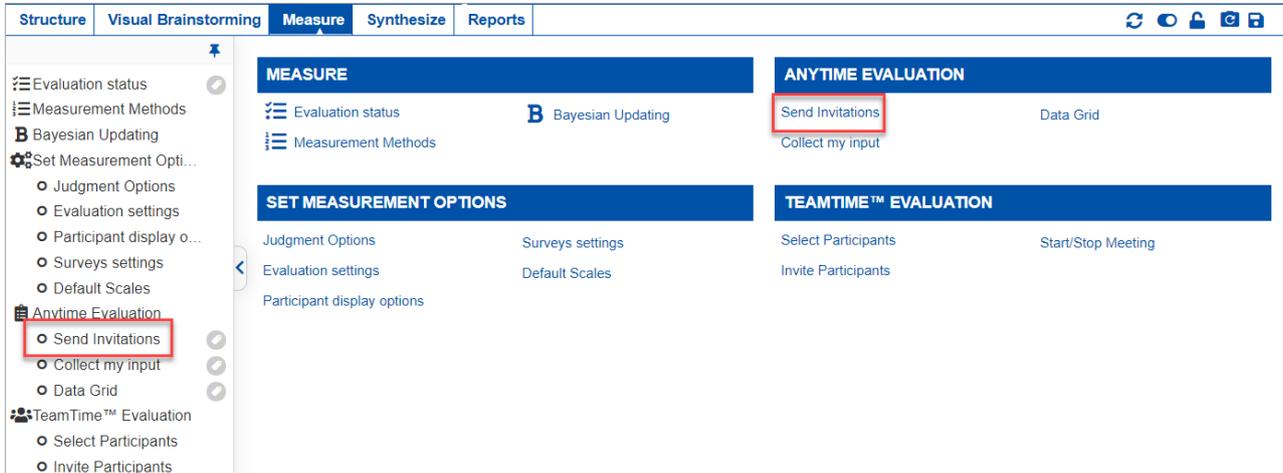
The screenshot shows a software interface with four tabs: 'Send Email(s)', 'General Link', 'Participant Specific Links' (which is active and highlighted in blue), and 'Group Specific Links'. Below the tabs is a list of five unique links and email addresses for participants. At the bottom right of the interface, there are two buttons: 'Copy' and 'Download Excel file'.

Link	Email Address
<a href="https://riskbeta.expertchoice.com?hash=0d5cd31a81797958a367eb3ebb1389e5">https://riskbeta.expertchoice.com?hash=0d5cd31a81797958a367eb3ebb1389e5</a>	mjones@expertchoice.com
<a href="https://riskbeta.expertchoice.com?hash=4c68213a38d3830fda2d2f3e3bc83959">https://riskbeta.expertchoice.com?hash=4c68213a38d3830fda2d2f3e3bc83959</a>	vijaygupta2607@gmail.com
<a href="https://riskbeta.expertchoice.com?hash=1033703b8103ad1b611ef4b69fbcc41e">https://riskbeta.expertchoice.com?hash=1033703b8103ad1b611ef4b69fbcc41e</a>	j.doe@eci.com
<a href="https://riskbeta.expertchoice.com?hash=95b806c8a621056ad98a031853025678">https://riskbeta.expertchoice.com?hash=95b806c8a621056ad98a031853025678</a>	expert@eci.com
<a href="https://riskbeta.expertchoice.com?hash=29d07349643ef6d55ee26626c3e4e018">https://riskbeta.expertchoice.com?hash=29d07349643ef6d55ee26626c3e4e018</a>	Anonym-4463-2607_ednlsomq

# Invite Participants using Group Specific links

Depending on the model you are working on, you can get the Group-Specific Invite links on:

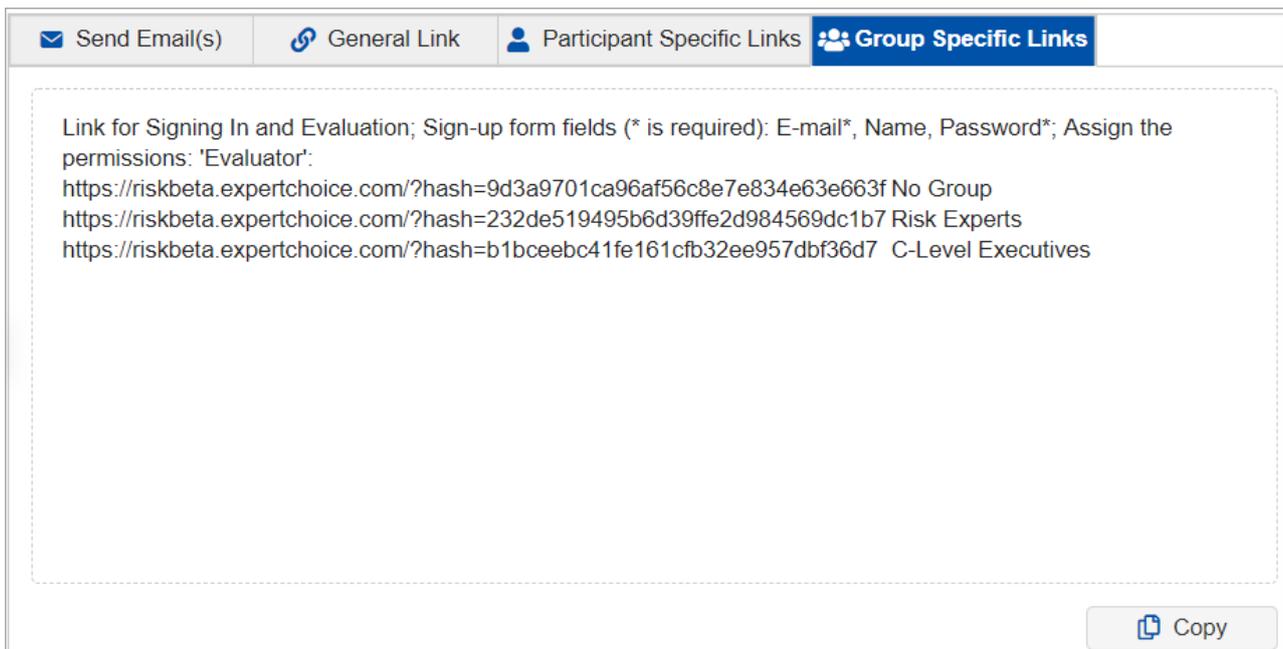
- LIKELIHOOD > MEASURE > ANYTIME EVALUATION > [Send Invitations](#) page
- IMPACT > MEASURE > ANYTIME EVALUATION > [Send Invitations](#) page:



The Group-Specific Links tab provides a link that will assign both **registered** and **unregistered** participants to a specific group.

In the General Link tab, you can only select a group and copy the invitation link one at a time. Here in the Groups-specific tab, we take into account the currently selected options from the General links tab (e.g. general link type, permission, etc.) and generate a link with those definitions for each existing participants groups.

For example:



The invitation link details are indicated at the first line as shown above: "Signing In and Evaluation" invite links with sign-up form fields: Email\*, Name, and Password\*, users will be assigned to an "Evaluator" permission.

Three invite links were generated. When a user executed the first link, he/she will be redirected to the "Signing in and Evaluation" page and will be not be assigned to any group after he/she signed-up or logged-in.

The second link will assign the users to the "Risk Experts" group, and the third to the "C-Level Executives" group.

Participants Groups can be added from **IDENTIFY/STRUCTURE > IDENTIFY > Participants groups** page. Each group has a unique link as shown below.

---

# Welcome Page

The Riskion Evaluation process usually starts with the Welcome Page where the Project Manager can give an introduction and instructions to the Evaluators.

Depending on the model you are currently evaluating, the welcome page can be for Likelihood or Impact evaluation.

### Welcome to Expert Choice Riskion®

Riskion® is a collaborative decision tool on the web where a team can come together to evaluate risks, and ways to reduce risk.

Please click 'Next' to answer a series of questions.

If you need help, click the help icon  near the top right of the screen.

After completing the task on a page, you simply need to click 'Next' to continue. You may be alerted along the way of specific things to keep in mind.

**Navigation Box** 

Steps: 1 2 3 4 5 6 7 8 9 10 11 ... 49  Evaluated: 107/107

Next Unassessed

Previous **Next**

 Shortcuts

Version: 6.3.000.42452  
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# How to Navigate in the Evaluation pipe?

The Project Manager decides the navigation options available during the evaluation.

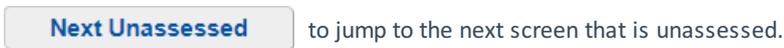
By default, the navigation box, and buttons can be available at the bottom of each of the evaluation steps. *(Note: A button can be disabled if not applicable to the step)*



## Sequential Navigation

The easiest and most common way to proceed through the evaluation is sequential -- by clicking the **Next** button after entering any information requested on each page. You can go back to a previous step using the **Previous** button.

If you have previously entered judgments and requested to go back to an earlier step (see below) you click

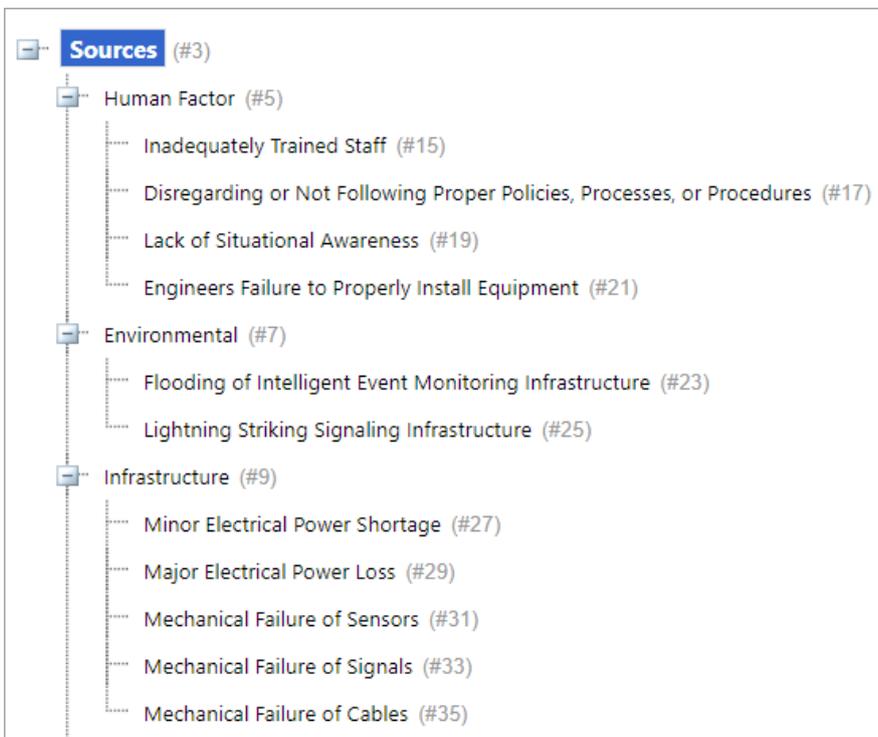


to jump to the next screen that is unassessed.

## Non-Sequential Navigation

Depending on options set by the Project Manager, you may have considerable flexibility in navigating through the evaluation without sequentially going step by step. We recommend that you do this only if you have used Riskion before.

The 'Current Step' icon  at the bottom left of the screen can be used to display a pop-up view of the hierarchy. By clicking on any element in the hierarchy, you will jump to the first screen that elicits judgments' with respect to that element. The 'with respect to' for the current step is shown in blue.



If the Project Manager enables displaying the navigation box, you can click on any step to move either forward or backward.

## Navigation Box

Steps: **1** 2 3 4 **5** 6 7 8 9 10 11 ... 92  Evaluated: 3/262

The current step is displayed with a dark background. The step numbers are colored as follows:

- **Red:** judgment has not yet been made
- **Black:** judgment has been made
- **Blue:** Results or information steps

The number of steps (pages shown during the evaluation) is **NOT** the same as the number of evaluations because:

- some pages show information or results
- some pages may have multiple evaluations.

If you want to navigate directly to a step (assuming you remember what is at that step), you can click on the numbered step button, or you can click on the ellipses and be prompted for the step:



Click the 'Current Step' 



#1: 'Welcome' page

#2: Insight™ survey: Page 1

#3: Estimate the likelihood of each of the following Sources

#4: Likelihood of "Sources"

**#5: Given Human Factor, estimate the likelihood of each of the following Sources**

#6: Likelihood of Sources given "Human Factor"

#7: Given Environmental, estimate the likelihood of each of the following Sources

#8: Likelihood of Sources given "Environmental"

#9: Given Infrastructure, estimate the likelihood of each of the following Sources

#10: Likelihood of Sources given "Infrastructure"

#11: Given Terrorism, estimate the likelihood of each of the following Sources

#12: Likelihood of Sources given "Terrorism"

#13: Given Technology, estimate the likelihood of each of the following Sources

#14: Likelihood of Sources given "Technology"

#15: Given Inadequately Trained Staff, rate the likelihood of the following Events

#16: Likelihood of Events given "Inadequately Trained Staff"

#17: Given Disregarding or Not Following Proper Policies, Processes, or Procedures, rate the likelihood of the following Events

#18: Likelihood of Events given "Disregarding or Not Following Proper Policies, Processes, or Procedures"

#19: Given Lack of Situational Awareness, rate the likelihood of the following Events

#20: Likelihood of Events given "Lack of Situational Awareness"

 Evaluated: 7/107

This option is very useful if you want to have a quick look at all the steps of the evaluation with their short descriptions which enables you to know on which step you want to jump to. We recommend that you use this option for better navigation, especially on large structured models. Note that the color-coding is the same as for navigation box steps.

## Likelihood and Impact Joined Evaluation

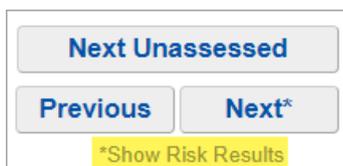
When the Project Manager sets it up to join the **Likelihood and Impact evaluation**, the Next button on the last step of the Likelihood Evaluation will redirect you to the first step of the Impact evaluation;



and then the Previous button at the first step of the Impact Evaluation will redirect you to the last step of the Likelihood Evaluation.



The Next button on the last step of the Impact evaluation will redirect you to the risk results.



and clicking the Previous button from the Risk Results will then revert you back to the Impact Evaluation's last step.

---

# Edit or Customize Evaluation Question

The Project Manager can edit the evaluation phrase to make it more suitable to the model or clearer to the evaluators.

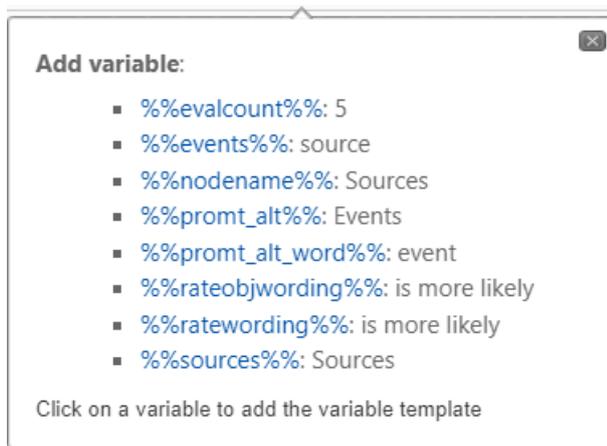


This is done by clicking the **Edit** button.

The wording phrase will be in edit mode as shown below:



Click **Variables...** to view the available templates that can be inserted:

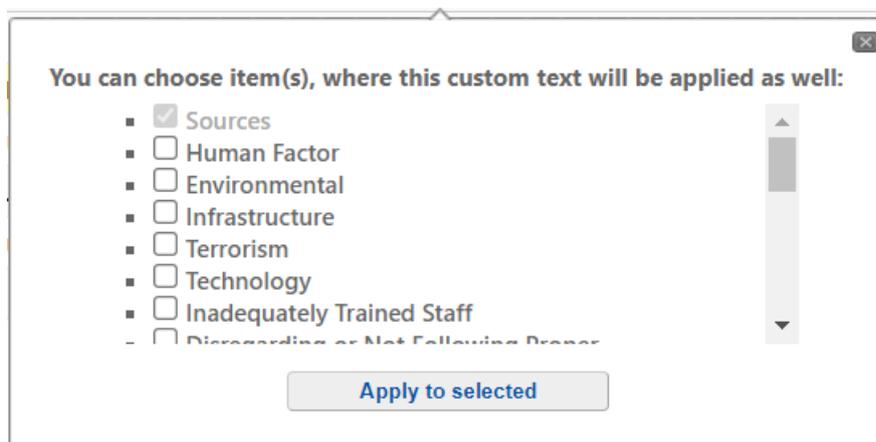


Click **Reset to default** to reset the wording.

The customized wording will be applied to the cluster where the element/s being evaluated belongs.

Click **Apply changes** to save your changes for the specific step.

Click the **Apply to...** button if you want to list other clusters with similar measurement method where you can select to apply the wording:





## How to Save Judgments?

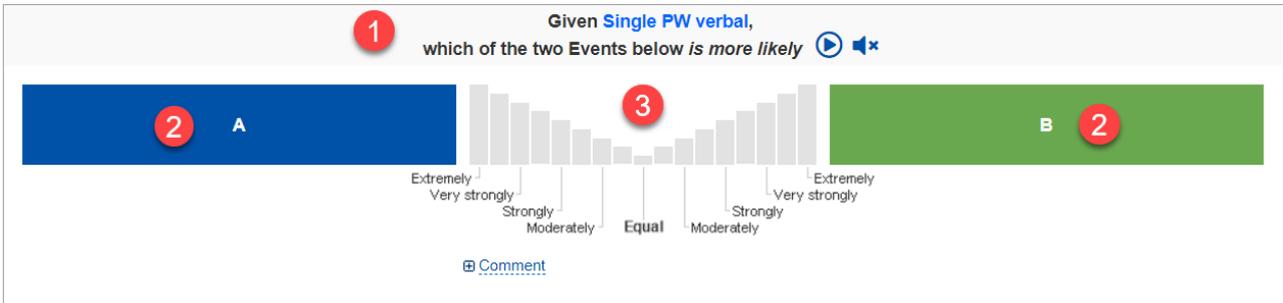
Your judgment will be automatically recorded when you go to another step, such as by clicking  button.

After doing so, you can leave the evaluation and be assured that all your previous judgments are saved. You will return to the step where you left off once you return the evaluation.

---

# Single Pairwise Verbal Comparisons

Pairwise Verbal can be used to express your judgment about the likelihoods or impacts of the two elements.



For Likelihood evaluation, we recommend using Pairwise with Given Likelihood instead of Pairwise unless the elements being evaluated are the entire set of possible outcomes (which may not be the case) since the resulting likelihoods will be adjusted to add to 100%.

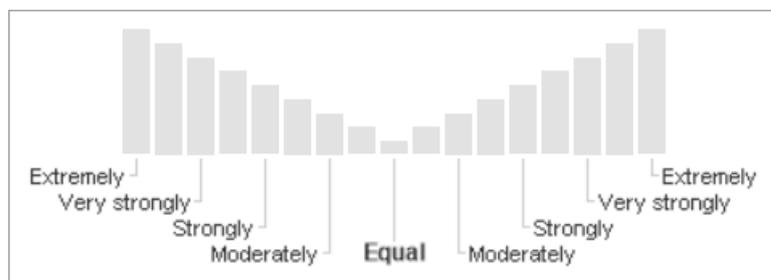
The single-pairwise verbal comparison composes of:

1. The question for the evaluation is indicated at the top of the page. This states something like: **Given Threat/Objective, which of the two Events (or Threats or Objectives) is more likely (or has more impact).**



The question can be read automatically using the text-to-speech functionality. The text-to-speech can play on-demand or auto-play as you click the play or speaker buttons respectively.

2. The **two elements** being compared are displayed on the left (blue) and right (green) boxes. The names of the elements being compared are indicated inside the boxes, in our example, we just use A and B -- but normally these are the event, threat, or objective names.
3. The clickable **intensity bars** at the center. A word below the bar expresses the judgment about the likelihood/impact of one element over another. The intensity between any of the words, such as between moderately and strongly is also available. Hovering your mouse over any bar will display the verbal intensity that it represents.

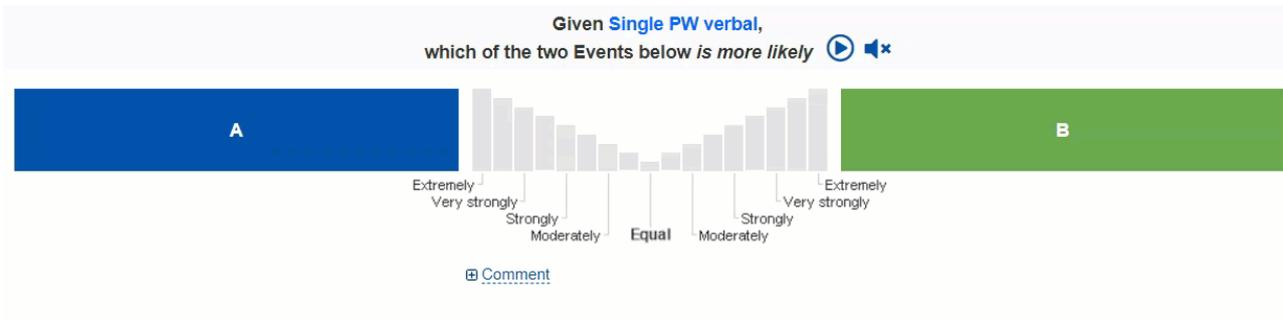


There are three ways to enter judgment for single pairwise verbal comparisons:

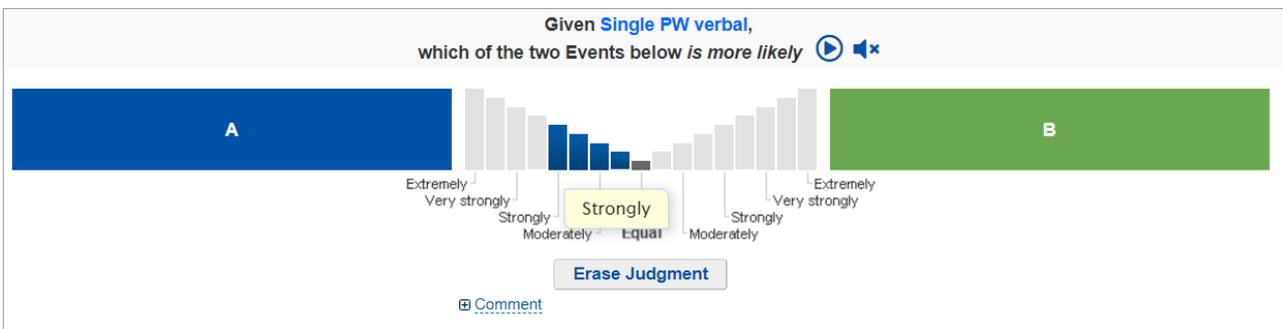
1. By clicking on the bar
2. By clicking a word below the bar
3. By clicking on the blue and green boxes, each click will increment the shaded bar one bar higher to the direction of

the clicked box.

The three ways to enter judgment are demonstrated below:



See sample judgment:



To interpret above, the judgment is made that element A is **strongly** more likely than element B.

If added and set to be displayed by the Project Manager, you will see [information documents](#) of the elements being evaluated.

Information documents are displayed either in frame or tooltip.

# Multi-pairwise Verbal Comparison Evaluation

Pairwise Verbal can be used to express your judgment about the relative importance or preference or likelihoods of the two elements. The Multi-Pairwise Verbal evaluation is just similar to Single Pairwise Evaluation, but multiple pairs are displayed on the page.

The AHP pairwise relative verbal scale consists of the following words:

Ex	Extremely — an order of magnitude (10 to 1) or more
VS	Very strongly
S	Strongly
M	Moderately
Eq	Equal

The words are not precise, but because of the way Riskion computes priorities from redundant pairwise comparisons, it is possible to derive accurate ratio scale priorities from what are ordinal judgments.

For Likelihood evaluation, we recommend using Pairwise with Given Likelihood instead of Pairwise unless the elements being evaluated are the entire set of possible outcomes (which may not be the case) since the resulting likelihoods will be adjusted to add to 100%.

**Given: Multi PW verbal, evaluate the *relative likelihood* of the two Events in each pair below.**

<b>A</b>		Ex	VS	S	M	Eq	M	S	VS	Ex		<b>B</b>
		<input style="width: 100%;" type="text"/>										
<b>B</b>		<input style="width: 100%;" type="text"/>										
<b>A</b>		<input style="width: 100%;" type="text"/>										

Ex	Extremely — an order of magnitude (10 to 1) or more
VS	Very strongly
S	Strongly
M	Moderately
Eq	Equal

The multi-pairwise verbal comparison composes of:

1. The question for the evaluation is indicated at the top of the page. This states something like: **Given Threat/Objective, which of the two Events (or Threats or Objectives) is more likely (or has more impact).**

**Given Human Factor,**  
**which of the two Sources below is more likely**

The question can be read automatically using the text-to-speech functionality. The text-to-speech can play on-demand or auto-play as you click the play or speaker buttons respectively.

2. The **pair of elements** being compared are displayed on each row. The elements being compared for each pair are displayed on the left (blue) and left (green) boxes. The names of the elements being compared are indicated inside the boxes, in our example, we just use A, B, and C -- but normally these are the event, threat, or objective names. The currently selected pair has a light yellow background, in our example above, the A and B elements being compared.
3. The clickable **intensity bars** at the center. of each pair. For the currently selected pair, the intensity name shortcuts (Ex, VS, S, etc.) are displayed above the bar it corresponds to. The intensity between any of the words, such as between moderately and strongly is also available. Hovering your mouse over any bar will display the verbal

intensity that it represents. The intensity legend is displayed at the right.

The screenshot shows a comparison interface with three pairs of elements. The first pair is A vs B, the second is B vs C, and the third is A vs C. Each pair has a horizontal bar with 11 segments and a 'x' icon. A legend on the right defines the intensity levels: Ex (Extremely — an order of magnitude (10 to 1) or more), VS (Very strongly), S (Strongly), M (Moderately), and Eq (Equal).

For each pair, you can enter a judgment by clicking on the bar that expresses your judgment about the likelihood or impact of one element over the element.

As you enter judgment for one pair, the selected element automatically advances to the next pair where you can continue entering your judgment.

Given: **Multi PW verbal**, evaluate the *relative likelihood* of the two Events in each pair below.  

The screenshot shows the same comparison interface as above. The first pair (A vs B) is highlighted in yellow. A mouse cursor is pointing at the 5th segment of the bar for the second pair (B vs C). The legend on the right is the same as in the previous screenshot.

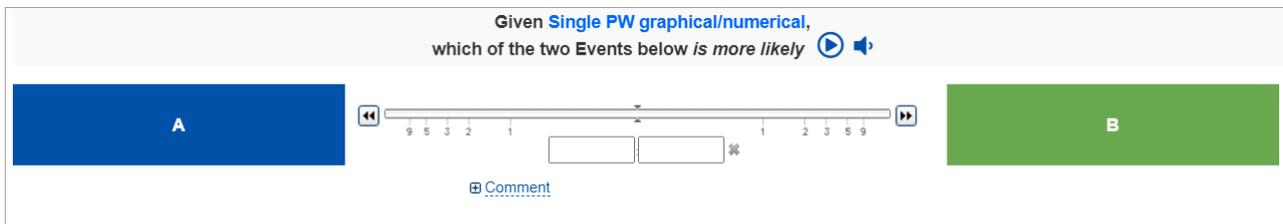
If added and set to be displayed by the Project Manager, you will see [information documents](#) of the elements being evaluated.

Information documents are displayed either in frame or tooltip.

The information document displayed may be depending on the currently selected pair of elements.

# Single Pairwise Graphical/Numerical Comparisons

Pairwise graphical/numerical comparisons can be used to express your judgment about the likelihood or impact of the two elements.



For Likelihood evaluation, we recommend using Pairwise with Given Likelihood instead of Pairwise unless the elements being evaluated are the entire set of possible outcomes (which may not be the case) since the resulting likelihoods will be adjusted to add to 100%.

The single-pairwise verbal comparison composes of:

1. The question for the evaluation is indicated at the top of the page. This states something like: **Given Threat/Objective, which of the two Events (or Threats or Objectives) is more likely (or has more impact).**



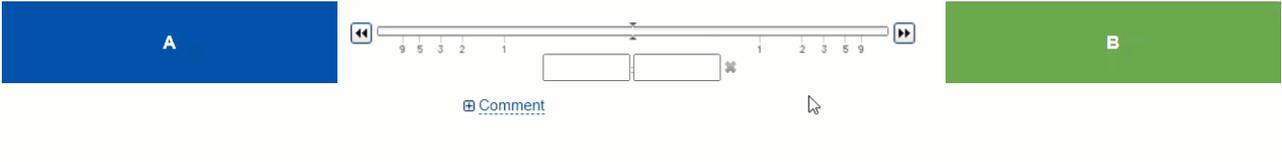
The question can be read automatically using the text-to-speech functionality. The text-to-speech can play on-demand or auto-play as you click the play  or speaker  buttons respectively.

2. The **two elements** being compared are displayed on the left (blue) and left (green) boxes. The names of the elements being compared are indicated inside the boxes, in our example, we just use A and B -- but normally these are the event, threat, or objective names.
3. The **slider and input box** at the center. There are small numbers below the slider that corresponds to the numerical ratio of the slider. The corresponding numerical value is also displayed on the input box at the bottom.

There are four ways to enter judgment for single pairwise graphical/numerical comparisons:

1. By clicking on or dragging the slider bar. You can drag the bar only up to ratio 9:1 (or 1:9) as the extreme. Corresponding numerical data will be reflected on the input box.
2. By clicking on the chevron icons  or  . If the mouse is held down on either of these two icons, the slider will continue to move in the appropriate direction with increasing increments the longer the mouse is depressed.
3. By clicking on the blue and green boxes, each click will increment 0.01 higher to the direction of the clicked box.
4. By entering the ratio on the input boxes. Judgments with ratios greater than 9 to 1 can be entered numerically on the input boxes which will move the slider on the extra white spaces from 9. Entered ratios such as 10:20 will be simplified to 1:2.

Given **Single PW graphical/numerical**,  
which of the two Events below *is more likely*  



A Likelihood Scale interface for comparing two events, A and B. Event A is represented by a blue box on the left and Event B by a green box on the right. A horizontal scale from 9 to 1 on both sides is shown, with a vertical line at 1. Below the scale are two input boxes and a "Comment" button.

If you realize that your judgment is inverted, you can click on the  icon.

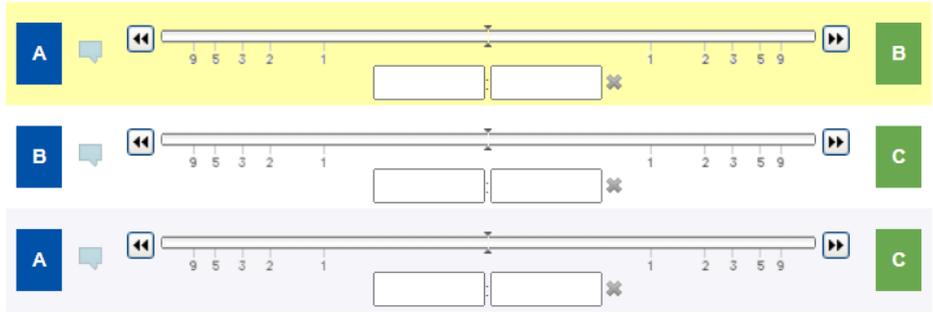
Your judgment will be automatically recorded when you go to another step, such as by clicking [Next](#)

---

# Multi-pairwise Graphical/Numerical Comparisons

Pairwise graphical/numerical comparisons can be used to express your judgment about the relative importance or preference or likelihoods of the two elements shown on each line.

**Given: Multi PW graphical/numerical, evaluate the *relative likelihood* of the two Events in each pair below.**  



The multi-pairwise verbal comparison composes of:

1. The question for the evaluation is indicated at the top of the page. This states something like: **Given Threat/Objective, which of the two Events (or Threats or Objectives) is more likely (or has more impact).**

**Given Human Factor,**  
**which of the two Sources below is more likely**  

The question can be read automatically using the text-to-speech functionality. The text-to-speech can play on-demand or auto-play as you click the play  or speaker  buttons respectively.

2. The **pair of elements** being compared are displayed on each row. The elements being compared for each pair are displayed on the left (blue) and left (green) boxes. The names of the elements being compared are indicated inside the boxes, in our example, we just use A, B, and C -- but normally these are the event, threat, or objective names. The currently selected pair has a light yellow background, in our example above, the A and B elements being compared.
3. The **slider and input boxes** at the center of each pair. For selected pair is highlighted with light yellow.

For each pair, you can enter a judgment:

1. By clicking on or dragging the slider bar. You can drag the bar only up to ratio 9:1 (or 1:9) as the extreme. Corresponding numerical data will be reflected on the input box.
2. By clicking on the chevron icons  or . If the mouse is held down on either of these two icons, the slider will continue to move in the appropriate direction with increasing increments the longer the mouse is depressed.
3. By entering the ratio on the input boxes. Judgments with ratios greater than 9 to 1 can be entered numerically on the input boxes which will move the slider on the extra white spaces from 9. Entered ratios such as 10:20 will be simplified to 1:2.

As you enter judgment for one pair, the selected element automatically advances to the next pair where you can continue entering your judgment.

If added and set to be displayed by the Project Manager, you will see [information documents](#) of the elements being evaluated.

Information documents are displayed either in frame or tooltip.

The information document displayed may be depending on the currently selected pair of elements.

---

# Rating Evaluation

Depending on how the Project Manager set up the evaluation, you will be asked to rate one event with respect to one threat/objective on each screen, or all events with respect to one threat/objective on each screen, or one event with respect to all threat/objectives on each screen.

Given **Human Factor**, estimate the likelihood of each of the following Sources  

Human Factor	Not rated	
<b>Inadequately Trained Staff</b>	Not rated	
Human Factor <b>Disregarding or Not Following Proper Policies, Processes, or Procedures</b>	Not rated	
Human Factor <b>Lack of Situational Awareness</b>	Not rated	
Human Factor <b>Engineers Failure to Properly Install Equipment</b>	Not rated	

• Human Factor

**estimate the likelihood of Inadequately Trained Staff**

Intensity Name	Likelihood
<input checked="" type="radio"/> <b>Not rated</b>	
<input type="radio"/> Certain	100.00% 
<input type="radio"/> Very likely	72.40% 
<input type="radio"/> Significantly likely	57.52% 
<input type="radio"/> Moderately likely	27.96% 
<input type="radio"/> Possible but not likely	10.47% 
<input type="radio"/> Negligible	5.36% 
<input type="radio"/> Direct Value	<input type="text"/>

The question for the evaluation is indicated at the top of the page.

In the example above, each row shown is the sources to be evaluated given one source, **Human Factor**.

The yellow highlight indicates which of the source is being evaluated given Human Factor.

The fastest way to enter a rating is to click on an intensity name, such as "Very Likely" on the right side of the page.

After clicking the intensity name, the highlight advances to the next source.

The likelihood (or impact or priority) corresponding to the verbal intensities are shown also (Very Likely - 72.40%)

If you would like to enter a rating other than those corresponding to the intensities, you can enter a direct value between and including 0 and 1.

The judgments will then be displayed beside the source name with the corresponding bar presentation.

# Direct Entry Evaluation

The Direct Input method can be used when evaluating threats/objectives with respect to another threat/objective or when evaluating events with respect to a threat/objective.

In the example below, we are asked to evaluate all the sources given Human Factor using the direct input method.

**Given Human Factor, estimate the likelihood of each of the Sources below**  

 <b>Inadequately Trained Staff</b>	<input type="text"/>	<input type="range"/>	
 <b>Disregarding or Not Following Proper Policies, Processes, or Procedures</b>	<input type="text"/>	<input type="range"/>	
 <b>Lack of Situational Awareness</b>	<input type="text"/>	<input type="range"/>	
 <b>Engineers Failure to Properly Install Equipment</b>	<input type="text"/>	<input type="range"/>	

The question for the evaluation is indicated at the top of the page.

You can enter a judgment by dragging the slider on the bar or by entering a number from 0 to 1 in the text box.

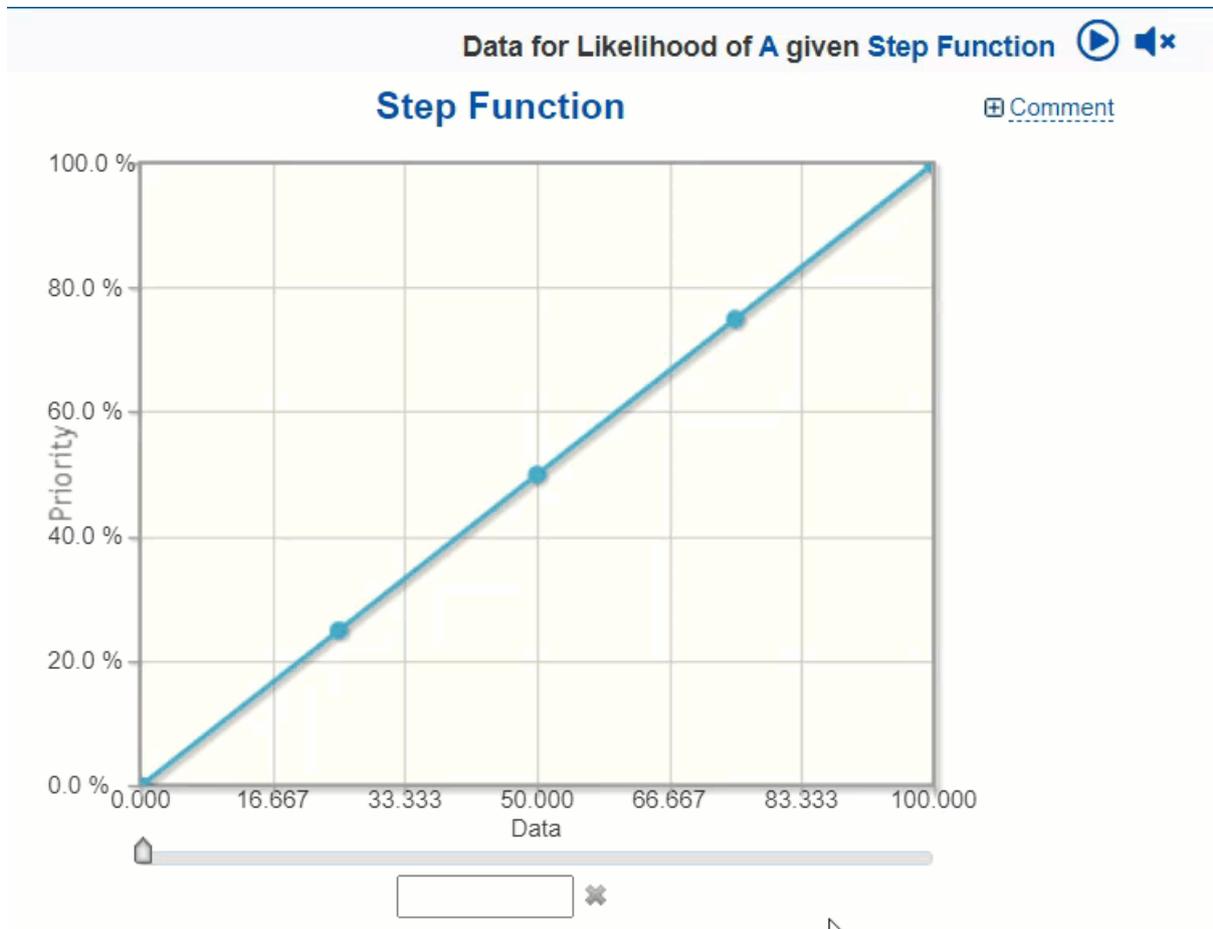
Your judgment will be automatically recorded when you go to another step, such as by clicking Next.

Depending on how the Project Manager set up the evaluation, you will be asked to evaluate one event with respect to one threat/objective on each screen, or all events with respect to one threat/objective on each screen, or one event with respect to all threats/objectives on each screen.

# Step Function Evaluation

Depending on the settings made by the Project Manager, the Step Function graph and the resulting likelihood or impact may vary depending on whether the Piecewise Linear option is enabled or not.

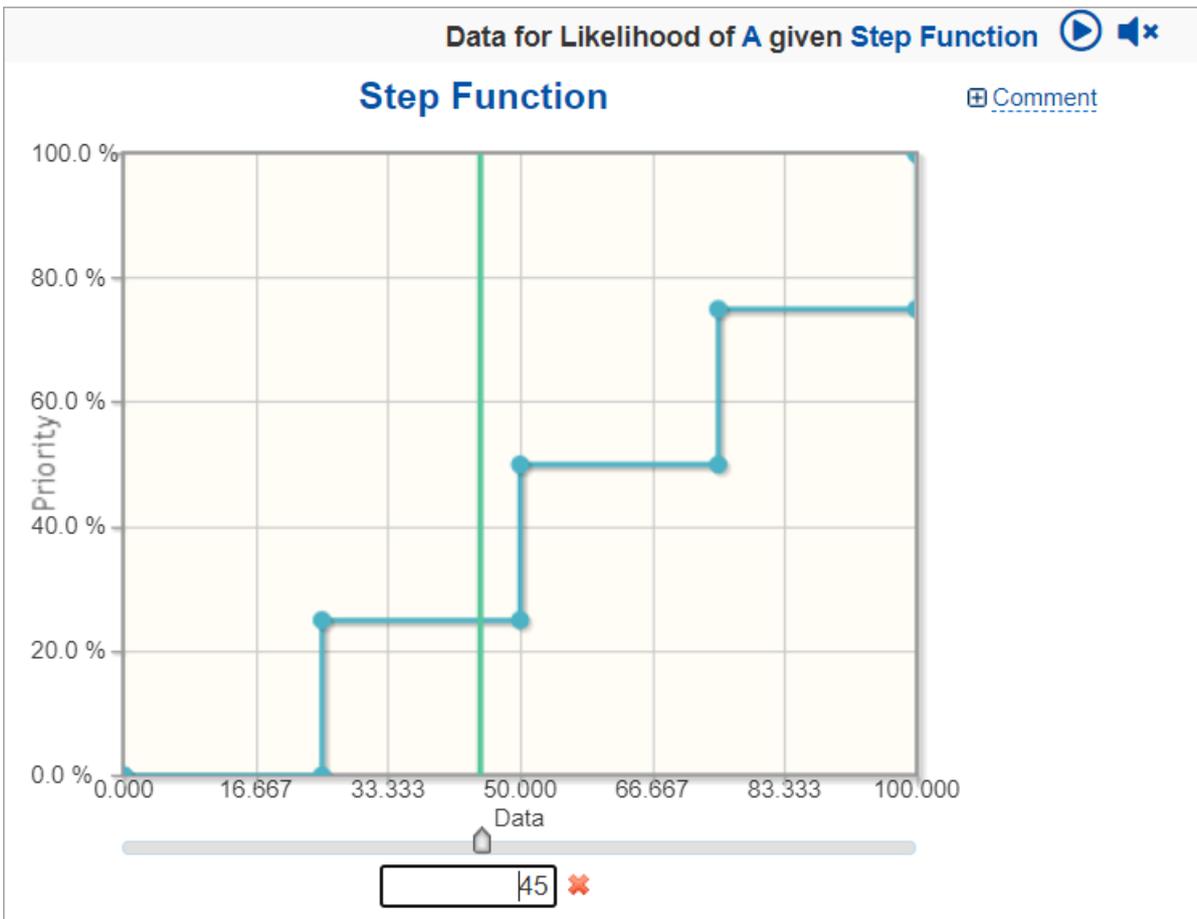
The graph below shows the Step Function when the Piecewise Linear option is enabled.



- The question for the evaluation is indicated at the top of the page. The question can be read automatically using the text-to-speech functionality. The text-to-speech can play on-demand or auto-play as you click the play  or speaker  buttons respectively.
- The x-axis is the data for the event (or data for threat given another threat) being evaluated
- The y-axis is the corresponding likelihood or impact given the entered data

The data can be entered by dragging the handle of the vertical slider or typing on the textbox provided, the corresponding likelihood (or impact) will be shown in the graph. From our example, the data entered is **45** and the resulting priority is **45%**.

When the Piecewise Linear option is disabled on the same Step function scale used above, the graph will be:

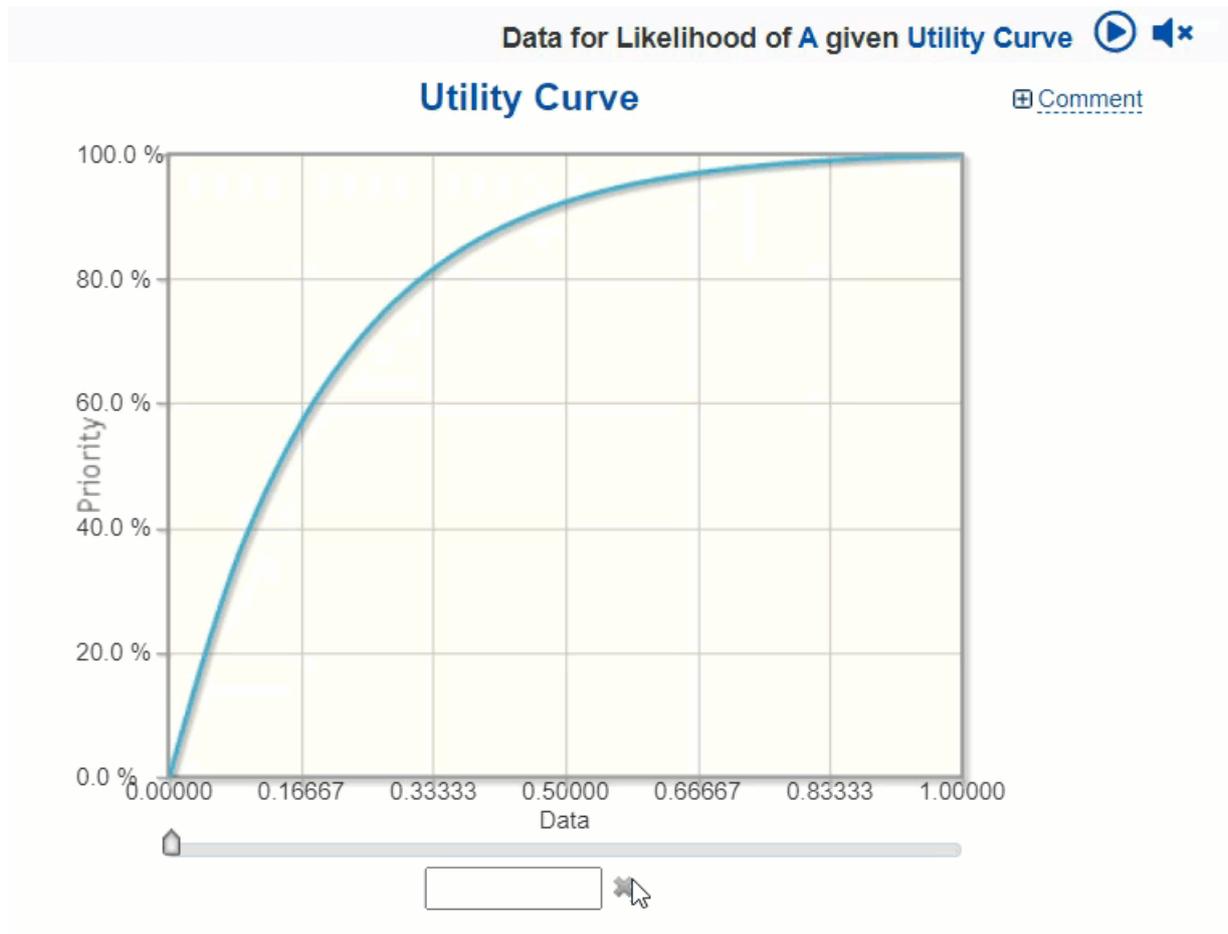


The Step Function graph is now different from the first one, the slope from one point to the next is now equal to zero.

Having the same data: 45, the resulting priority is now **25%** (this was 45% when the Piecewise Linear is enabled).

# Utility Curve Evaluation

Utility curves can be increasing or decreasing, linear or non-linear.



- The question for the evaluation is indicated at the top of the page. The question can be read automatically using the text-to-speech functionality. The name of the event being evaluated is indicated, in our example, we just use A - but normally this is the event name. The "Utility Curve" is the threat or objective name to which the event data is being evaluated. The text-to-speech can play on-demand or auto-play as you click the play  or speaker  buttons respectively.
- The x-axis is the data for the event (or threat given another threat) being evaluated
- The y-axis is the corresponding likelihood or impact given the entered data

The data can be entered by dragging the handle of the vertical slider or typing on the textbox provided.

# Local Results

The likelihoods/impacts for elements in each cluster of the threats/objectives hierarchy, and as the likelihoods/impacts derived for the events with respect to each covering threat/objective, are referred to as 'local' likelihoods/impacts.

The options available on the Local Results page is depending on if the **inconsistency ratio** is **hidden** or **shown**.

## Local Results when Inconsistency Ration is hidden

If the Project Manager has specified that the inconsistency ratio for your judgments not be shown, you will see the likelihoods/impacts/priorities for the elements you have just made judgments on a screen that looks like:



Above are the local results for the objectives priorities.

You can click on any heading to sort by that column.

If you think the priorities are not reasonable (i.e. are not intuitive), then click the

[Click here if you would like to redo a judgment for one pair of elements](#) button.

You can then (1) select a pair of elements for you to think one may have too high a priority and the other too low a priority.

You have completed prioritizing the priority of the Objectives  

Importance of "Objectives"

No ▲	Name	Impact of ... due to "Objectives"
<input checked="" type="checkbox"/>	1 Public Relations	9.28%
<input type="checkbox"/>	2 Financial	7.13%
<input checked="" type="checkbox"/>	3 Reliability, Availability, Maintainability	29.02%
<input type="checkbox"/>	4 Performance	20.00%
<input type="checkbox"/>	5 Human Factors	11.61%
<input type="checkbox"/>	6 Safety	22.95%

Select a pair of elements (by clicking the checkbox on left) for which you think: One has too high a priority, and the other has too low of a priority

Cancel  
Re-Evaluate

(2) After selecting the pair and clicking 'Re-evaluate', you will be taken to the screen where you can enter or revise the judgment comparing these two elements.

After doing so and clicking 'next', you will be taken back to the screen showing the revised cluster priorities.

## Local Results when Inconsistency Ration is shown

If the Project Manager has specified that the inconsistency ratio of your judgments is shown the priorities of the elements, as well as the inconsistency ratio, will be displayed on a screen such as the following:

You have completed prioritizing the priority of the Objectives  

Importance of "Objectives"

No ▲	Name	Impact of ... due to "Objectives"
1	Public Relations	9.28%
2	Financial	7.13%
3	Reliability, Availability, Maintainability	29.02%
4	Performance	20.00%
5	Human Factors	11.61%
6	Safety	22.95%

Inconsistency ratio: 0.08

Click here if these priorities or the inconsistency are not satisfactory

As a very rough rule of thumb, the inconsistency ratio should be .10 or less. However, there are reasons for accepting results even if the inconsistency ratio is as high as .2 or .3. (See *Inconsistencies*, or *Decision by Objectives* on [Professor Forman's Website](#) or at [Amazon](#)) It is more important that the priorities be reasonable to you than to have a low inconsistency ratio. You should NOT change judgments just because of inconsistencies. You *should* re-examine judgments because of high inconsistency and change only those judgments that you feel were incorrectly recorded or for which you

have a change of opinion -- regardless of inconsistency.

If you feel that either the priorities are not satisfactory or would like to review the judgments to address a high inconsistency ratio, click the above button. Doing so will produce the following screen:

Click here to review all your judgments

Click here if you think the inconsistency is too high

If you think the priorities are not reasonable then:

Click here if you would like to redo a judgment for one pair of elements

Cancel

Clicking the "Click here to review your judgments" will take you through the first page of the evaluation for the given cluster.

Clicking the 'Click here if you think the inconsistency is too high' button will result in a screen showing the judgment matrix (discussed below).

Clicking the "Click if you would like to redo a judgment for one pair of elements" will take you through the sequence explained at the top of this page.

## Judgment Matrix

The judgment matrix will be displayed when you click the second button

Click here if you think the inconsistency is too high

The judgments shown in the cells of the matrix indicate how much more important or preferable the row element corresponding to a judgment cell is than the column element corresponding to the judgment cell.

**Red** judgments mean that judgments for which an element in the column is more important or preferable than an element in a row.

Blank cells in the upper diagonal of the matrix represent judgments that were not elicited or entered.

The radio button  Review all judgments in cluster makes the intersecting cells clickable. Clicking on any one of the cells will redirect you to the step displaying the pairwise comparison for the row and column elements corresponding to that cell.

By default, the elements (objectives or alternatives) are sorted by original order in the model as shown above.

You can sort the elements by priority (descending) by clicking  Sort by priority

You can easily notice that elements are sorted by priority by looking at the priority bars below the elements

You can hover on the element cell to see its priority as shown above.

You can sort back the elements based on their original order by clicking  Sort by original order

## Make changes on the judgment matrix

If you wish to make or investigate possible changes to judgments in the matrix itself, click on the

**Make changes on this screen** button and enter or change the judgment.

The judgments are shown numerically in this matrix regardless of whether they were made in the verbal or numerical/graphical modes.

You can type in judgments and then press enter to save.

To invert judgments (change from black to red or red to black, press either the - or i keys. Inverting is saving automatically.

You can then click again the sort by priority to see how the sorting changed after altering the judgments.

### Conditions for consistent judgments when the matrix is sorted by priority.

If the judgments were perfectly consistent, they would be increasing (or more precisely non-decreasing) as you look at them:

a) from left to right in each row, and

b) from bottom-up in each column

## Rank and Best Fit

You can display the inconsistency rank and the best fit by checking  **Rank** and  **Best Fit** respectively.

This will show small numbers on each cell with judgments.

The inconsistency rank is the small number with blue color, while the best fit is red.

The **inconsistency rank** is the order of inconsistency of that judgment with the other judgments. So, for example, the cell with a judgment of 5 (strong in the verbal mode) and a 1 in the upper right corner of the cell is the most inconsistent judgment and the judgment of 2 with a 2 in the upper right of the cell is the second most inconsistent judgment.

The **best-fit** judgment is not necessarily the best, rather it is the judgment that fits best with all of the other judgments that were made. It is not advisable to change judgments to the 'best fit' values, but rather use the 'best fit' values to give you an idea of which judgments you might want to reconsider to reduce the inconsistency.

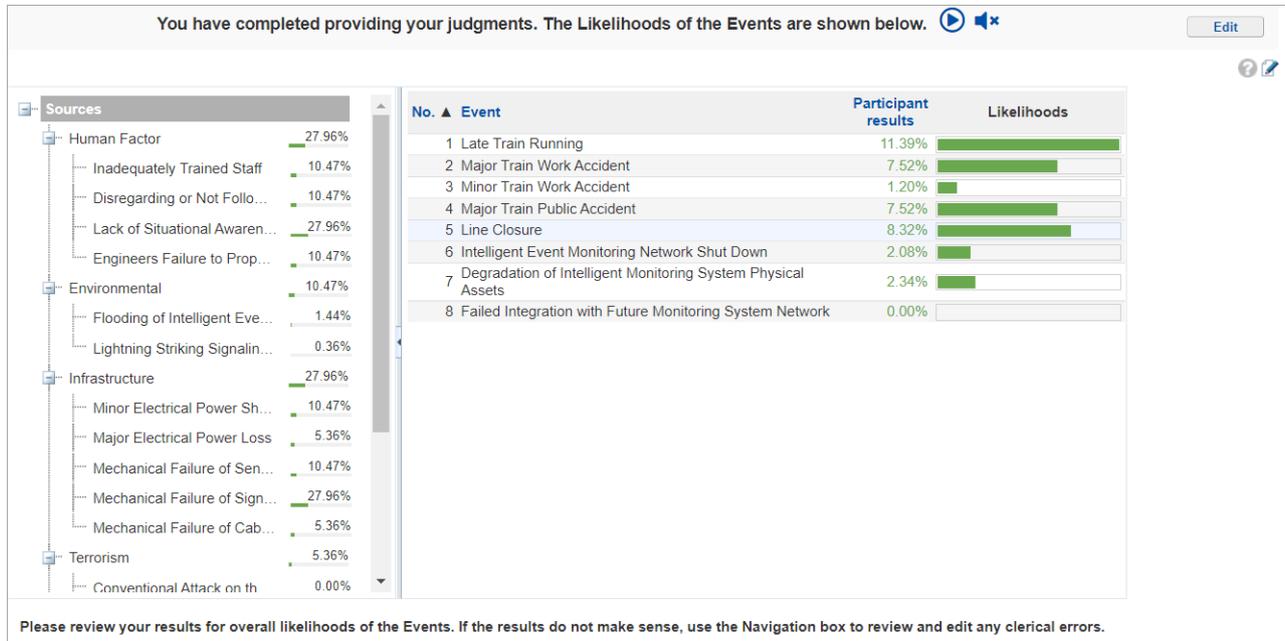
---

# Overall Results

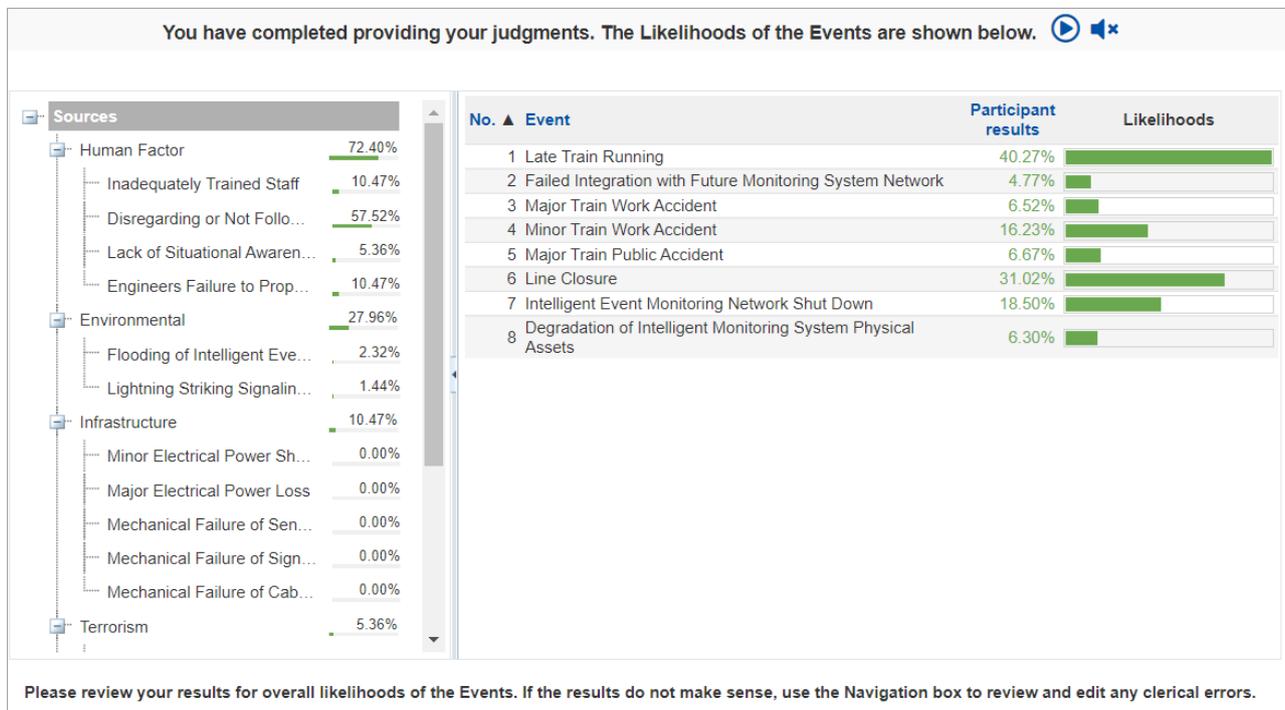
Depending on the Project Manager, the overall results page for a participant and/or combined can be displayed.

The likelihoods/impacts of the events with respect to the overall Source/Objective are shown on this screen:

## Likelihood



## Impact



Clicking on a lower level node in the sources/objectives hierarchy will display the events' likelihoods/impacts with respect to that node.

You can view the information document by clicking on the  icon. The blue information document icon means that it has content, otherwise, the icon is hidden for the evaluators. For the Project Manager, a gray information document icon is displayed for empty information document which is clickable for editing.

---

# Select Participants for TeamTime Evaluation

Depending on the model you are working on, you can select participants for Likelihood and Impact Teamtime Evaluation on:

## Likelihood

**Select TeamTime™ Participants**

Meeting ID: [622-765-565](#)

Use keypads (requires TeamTime™ Assistant)  
 Display keypad numbers in front of participant names  
 Allow new users to join the TeamTime™ meeting using Meeting ID

Drag a column header here to group by that column

<input checked="" type="checkbox"/>	E-mail	Name	Has Data	Access Mode
<input checked="" type="checkbox"/>	Admin	Administrator	No	On-line
<input checked="" type="checkbox"/>	ceo@gwu.edu	Chief Engineering Officer	Yes	On-line
<input checked="" type="checkbox"/>	che@gwu.edu	Chief Executive Officer	Yes	On-line
<input checked="" type="checkbox"/>	cro@gwu.edu	Chief Risk Officer	Yes	On-line
<input checked="" type="checkbox"/>	denisrisman@gwu.edu	Denis Risman	No	On-line
<input checked="" type="checkbox"/>	devinnagy@gwu.edu	Devin Nagy	No	On-line
<input checked="" type="checkbox"/>	grace@eci.com	Grace	No	On-line
<input checked="" type="checkbox"/>	its@gwu.edu	IT Supervisor	Yes	On-line
<input checked="" type="checkbox"/>	j.doe@eci.com	John Doe	No	On-line
<input checked="" type="checkbox"/>	james@eci.com	James	No	On-line

Page 1 of 2 (12 items)

## Impact

**Select TeamTime™ Participants**

Meeting ID: [304-702-906](#)

Use keypads (requires TeamTime™ Assistant)  
 Display keypad numbers in front of participant names  
 Allow new users to join the TeamTime™ meeting using Meeting ID

Drag a column header here to group by that column

<input checked="" type="checkbox"/>	E-mail	Name	Has Data	Access Mode
<input checked="" type="checkbox"/>	Admin	Administrator	Yes	On-line
<input checked="" type="checkbox"/>	ceo@gwu.edu	Chief Engineering Officer	Yes	On-line
<input checked="" type="checkbox"/>	che@gwu.edu	Chief Executive Officer	Yes	On-line
<input checked="" type="checkbox"/>	cro@gwu.edu	Chief Risk Officer	Yes	On-line
<input checked="" type="checkbox"/>	denisrisman@gwu.edu	Denis Risman	No	On-line
<input checked="" type="checkbox"/>	devinnagy@gwu.edu	Devin Nagy	No	On-line
<input checked="" type="checkbox"/>	grace@eci.com	Grace	No	On-line
<input checked="" type="checkbox"/>	its@gwu.edu	IT Supervisor	Yes	On-line
<input checked="" type="checkbox"/>	j.doe@eci.com	John Doe	No	On-line
<input checked="" type="checkbox"/>	james@eci.com	James	No	On-line

Page 1 of 2 (12 items)

All participants that have been added to the model are listed. You can select all or only some of them to participate in the TeamTime evaluation session by clicking the check box to the left or their names:

Participants can evaluate the threats, objectives, and/or events in an Online mode from any location, and/or in the meeting room (in which the meeting facilitator has set up a keypad receiver) using keypads. The use of keypads and receiver requires a TeamTime Assistant license and the **Use keypads** check-box must be selected.

When **Allow new users to join TeamTime meeting using Meeting ID** is enabled, unregistered participants and the unselected participants in the table above will be allowed to join the TeamTime meeting using the meeting ID and [general](#)

[links.](#)

---

# Setting Keypad mode in TeamTime Evaluation

You can enable Keypads on TeamTime evaluation on:

- [LIKELIHOOD OF EVENTS > MEASURE > TeamTime Evaluation > Select TeamTime Participants](#)
- [IMPACT OF EVENTS > MEASURE > TeamTime Evaluation > Select TeamTime Participants](#)

The use of keypads and receiver requires a TeamTime Assistant license and the **Use keypads** check-box must be selected.

Use keypads (requires TeamTime™ Assistant)  
 Display keypad numbers in front of participant names

If keypads are used, you can choose to display the keypad numbers in front of participant names for those that are using keypads, as shown on the second checkbox above.

You can assign keypad mode and keypad number to each participant from the Access Mode and Keypad columns respectively:

Drag a column header here to group by that column		Set "Keypad" mode for selected participants		Search...	
<input checked="" type="checkbox"/>	E-mail	Name	Has Data	Access Mode	
<input checked="" type="checkbox"/>	Admin	Administrator	No	Keypad	1
<input checked="" type="checkbox"/>	ceo@gwu.edu	Chief Engineering Officer	Yes	Keypad	2
<input checked="" type="checkbox"/>	che@gwu.edu	Chief Executive Officer	Yes	On-line	
<input checked="" type="checkbox"/>	cro@gwu.edu	Chief Risk Officer	Yes	On-line	
<input checked="" type="checkbox"/>	denisrisman@gwu.edu	Denis Risman	No	Keypad	
<input checked="" type="checkbox"/>				View only	

You can set keypad mode for all selected participants:

Set "Keypad" mode for selected participants

This will automatically assign keypad mode and keypad numbers to the selected participants.

The keypad icon  will be available on the TeamTime meeting evaluation page when the Use Keypad option is checked. (This turns green  when you hover over it). See Instructions for [Using TeamTime Keypad Assistant](#).

# Instructions for Receiver and Keypads with TeamTime Evaluation

Plug the receiver into the USB port of the computer being used by the Facilitator.

The drivers should be loaded automatically.

## Downloading and Installation of the TeamTime Keypad Assistant

To download and use the TeamTime Keypad Assistant, make sure that you enabled the Use Keypads option in the [TeamTime Select Participants](#) setting.

When TeamTime evaluation is started, click on the keypad  icon to launch the Team Time Keypad Assistant (the keypad icon turns green  when you hover over it).

---

# Invite Participants for TeamTime Evaluation

After having **selected participants** to evaluate the model and assigning them roles to evaluate threats, objectives, and/or events, you can invite the participants into TeamTime Evaluation.

Depending on the model you are working on, you can select participants for Likelihood and Impact Teamtime Evaluation on:

## Likelihood

The screenshot shows the 'LIKELIHOOD OF EVENTS' tab in the software interface. The 'Measure' sub-tab is active, and the 'Invite Participants' option is selected in the left-hand navigation menu. The main content area displays an email invitation form. The form fields are: From: "Expert Choice Companion" <donotreply@expertchoice.com>; Subject: Riskion®: Please join our TeamTime™ Meeting; Body: Dear John Doe, Please join our Riskion® TeamTime™ meeting. \* When: \* Where: (A hyperlink customized for each participant will appear HERE when the 'Send Invite' button is pressed) Sincerely, John Doe. This is an automatically generated email, please do not reply. At the bottom of the form, there are buttons for 'Edit Invite', 'Send Invite', a participant count '(11)', 'Reset', 'Add Participants', and 'Download MS Word Mail Merge'.

## Impact

The screenshot shows the 'IMPACT OF EVENTS' tab in the software interface. The 'Measure' sub-tab is active, and the 'Invite Participants' option is selected in the left-hand navigation menu. The main content area displays an email invitation form, identical in structure to the one shown in the Likelihood section. The form fields are: From: "Expert Choice Companion" <donotreply@expertchoice.com>; Subject: Riskion®: Please join our TeamTime™ Meeting; Body: Dear John Doe, Please join our Riskion® TeamTime™ meeting. \* When: \* Where: (A hyperlink customized for each participant will appear HERE when the 'Send Invite' button is pressed) Sincerely, John Doe. This is an automatically generated email, please do not reply. At the bottom of the form, there are buttons for 'Edit Invite', 'Send Invite', a participant count '(11)', 'Reset', 'Add Participants', and 'Download MS Word Mail Merge'.

In addition to two ways of inviting participants to a TeamTime session from the **Select Participants** screen, you can invite participants in four ways from this screen:

A horizontal row of four buttons: 'Invite by email' (with an envelope icon), 'Invite by phone' (with a telephone handset icon), 'Copy and paste' (with a document and arrows icon), and 'Participant specific links' (with a chain link icon).

## (1) Invite by email

A template for the email is provided which can be edited to explain the purpose of the evaluation and provide any other information or hyperlinks that you want to convey to the evaluators.

You can edit the invitation, as well as add variables that Riskion will replace with the appropriate information before the email is sent. You can add links to any information that you would like the participants to see before the meeting, such as an agenda stored on a Website or in a Dropbox file.

## (2) Invite by phone

Instructions are provided that you can give to a participant over the phone. The instructions include the URL of the site hosting the TeamTime meeting and the meeting ID. The participant must have already been added to the project and selected to participate beforehand.

## (3) Copy and paste

Instructions are copied to the clipboard so you can send them to a participant via email, instant message, etc. The instructions include the URL of the site hosting the TeamTime meeting and the meeting ID. The participant must have already been added to the project and selected to participate beforehand.

## (4) Participant Specific Links

The Participant Specific Links tab provides a (unique) teamtime link and an email address is generated for every **registered participant** in the model. The Project Manager can use these links in any way that they desire.

---

# Start or Stop TeamTime Evaluation

After [selecting](#) and [inviting](#) participants to a TeamTime evaluation session, you can start the meeting (which can consist of both keypad users in the same room as well as remote users from any location).

Depending on the model you are working on, you can select participants for Likelihood and Impact Teamtime Evaluation on:

## Likelihood

The screenshot shows the 'LIKELIHOOD OF EVENTS' tab in the software interface. The left sidebar contains a tree view with 'Start/Stop Meeting' selected. The main content area displays a 'Start/Stop Meeting' dialog with the following settings:

- Display users with "View only" access
- Hide judgments
- Anonymous mode
- Hide Project Manager
- Hide off-line users

At the bottom of the dialog are two buttons: 'Start Session' (green) and 'Stop Session' (grey). The text 'All | None' is visible in the bottom right corner of the settings box.

## Impact

The screenshot shows the 'IMPACT OF EVENTS' tab in the software interface. The left sidebar contains a tree view with 'Start/Stop Meeting' selected. The main content area displays a 'Start/Stop Meeting' dialog with the following settings:

- Display users with "View only" access
- Hide judgments
- Anonymous mode
- Hide Project Manager
- Hide off-line users

At the bottom of the dialog are two buttons: 'Start Session' (green) and 'Stop Session' (grey). The text 'All | None' is visible in the bottom right corner of the settings box.

Before we a TeamTime session, we can choose from various option as shown below:

## Start/Stop Meeting

**Settings**

- Display users with "View only" access
- Hide judgments
- Anonymous mode
- Hide Project Manager
- Hide off-line users

[All](#) | [None](#)

▶ Start Session

■ Stop Session

- **Display users with 'View Only' access** - whether to display the participants that are designated as "View Only" or not. The 'View only' access is set to the participants from the [TeamTime Evaluation | Select Participants](#) screen.
- **Hide Judgments** - to hide the judgments of the participants. The Project Manager can also hide/unhide judgments while the TeamTime session is ongoing
- **Anonymous mode** - hide the evaluator's names
- **Hide Project Manager** - hide the Project Manager in the TeamTime session participants list
- **Hide off-line users** - hide the offline users in the TeamTime session participants list. The variances and results will not consider the judgments of the offline users when the offline users are hidden. The Project Manager can also hide or show the offline users from TeamTime settings.

Once you made your settings simply click the 'Start Session' button which will open a new window/tab and start the TeamTime evaluation session.

The TeamTime Session will open in a new browser window. Each participant that logs in will see a TeamTime Session specific to their judgments.

Note: When doing a Team Time Evaluation, the evaluation steps that are shown during the evaluation are determined by a combination of the what to evaluate option (threats, objectives, events, or both) as well as the roles for the Project Manager. You can therefore control which evaluation steps are to be displayed during a Team Time session by adjusting the Project Manager's roles for evaluating threats, objectives, and/or events.

# TeamTime Evaluation Welcome

The welcome screen has been prepared by the Project Manager and typically contains instructions and possibly links for you to explore.

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# Likelihood: Events Charts

## Overview

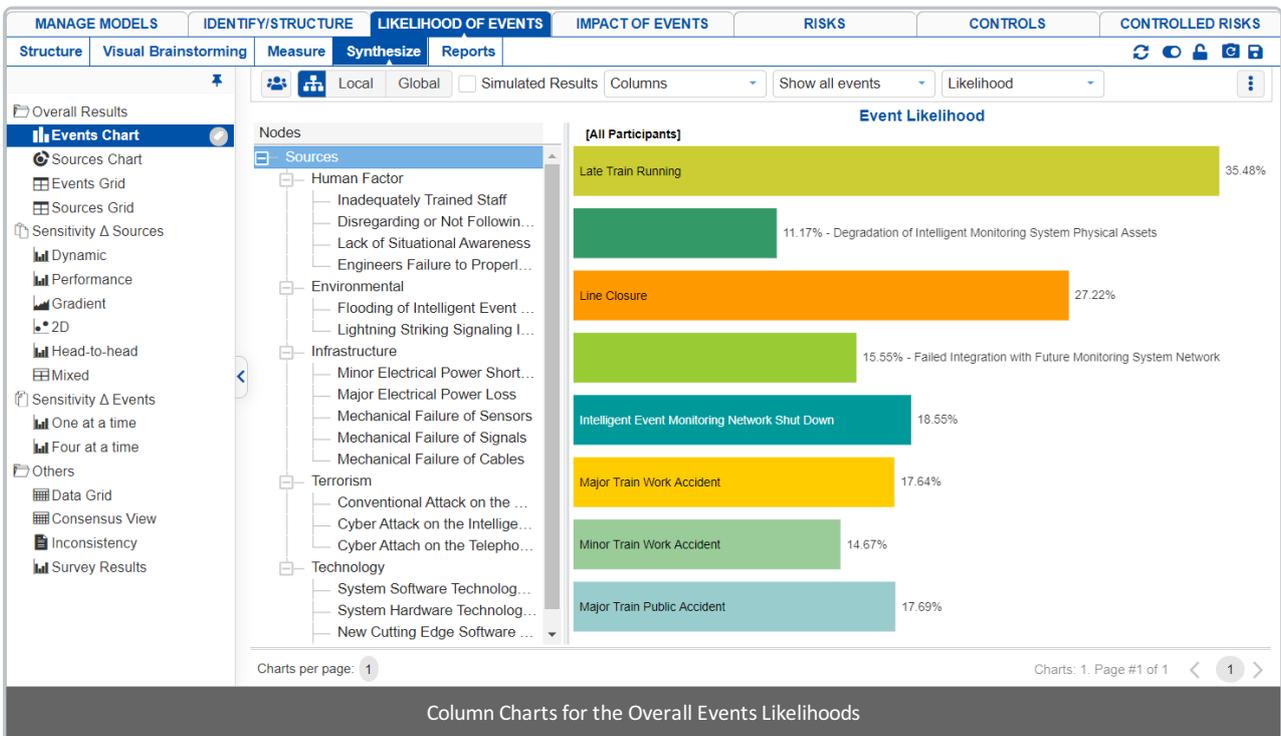
The Likelihood's Events Chart page displays the same results as in the Likelihood's [Events Grid](#).

Depending on the Riskion model you are working on, charts can display:

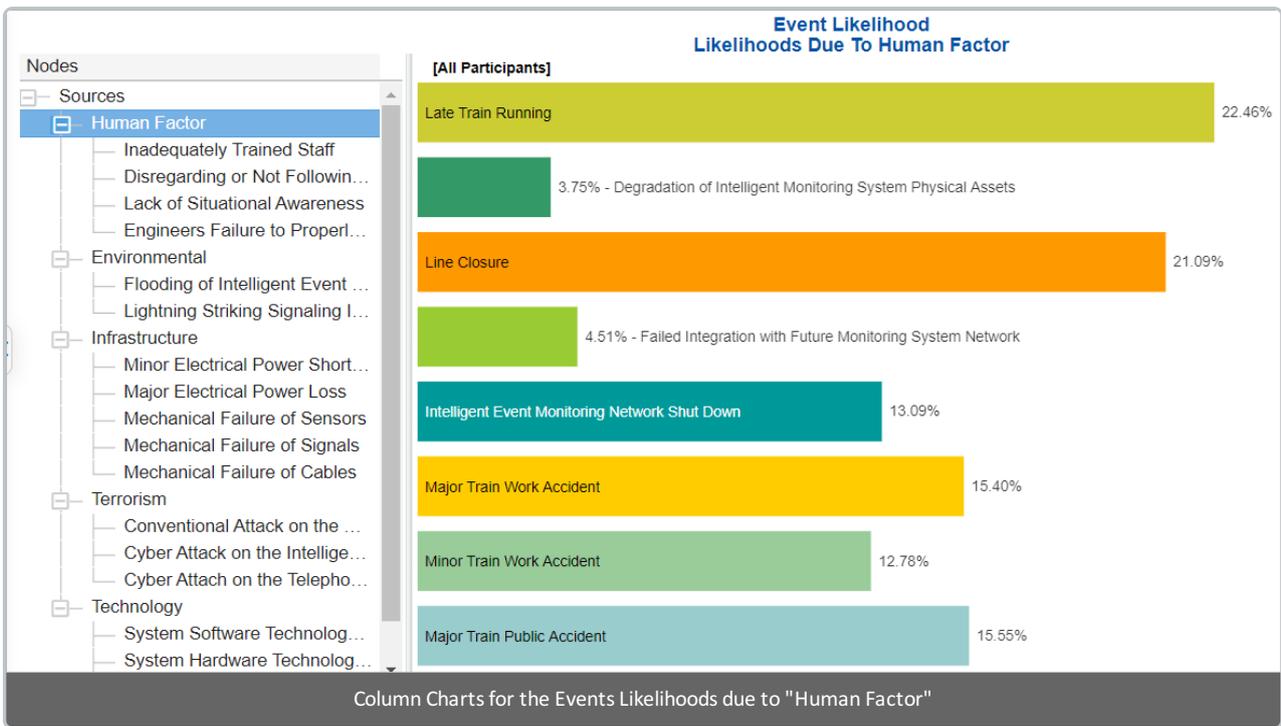
- the likelihoods or vulnerabilities of the events for Risk Events,
- the likelihoods or applicability for Opportunity Events,

By default, the Columns chart is displayed. The column chart below shows the events' likelihoods due to the overall Threat/Source.

You can view other different chart formats when the Advanced-mode is enabled.



Clicking another source node on the Sources hierarchy at the left will show the chart for the events due to that node.



The chart above shows the Events likelihoods due to "Human Factor".

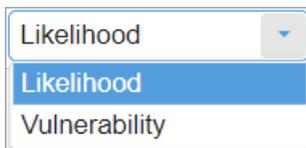
You can show the local and global source's likelihoods on the Source Hierarchy at the right using the Local-Global buttons:

Sources	All Participants	
	Local	Global
Sources		
Human Factor	59.58%	59.58%
Inadequately T...	10.47%	6.24%
Disregarding o...	45.18%	26.92%
Lack of Situati...	15.42%	9.19%
Engineers Fail...	13.97%	8.32%
Environmental	19.94%	19.94%
Flooding of Int...	2.03%	0.4%
Lightning Striki...	1.08%	0.22%
Infrastructure	23.38%	23.38%
Minor Electrica...	19.22%	4.49%
Major Electrica...	7.91%	1.85%

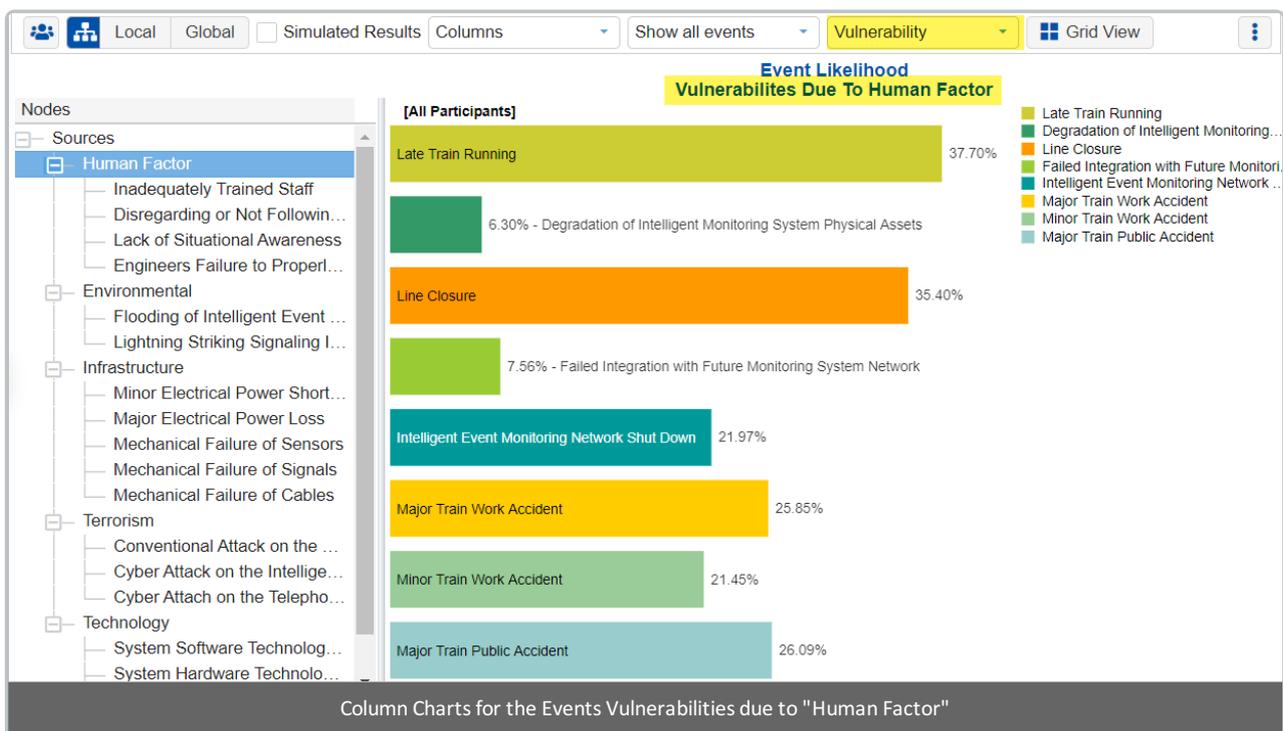
You can hide the Sources Hierarchy at the left using 

## Show Likelihood or Vulnerability

In addition to showing the event likelihoods, you can select to show the events' vulnerabilities due to the selected source node from the dropdown menu:



Below is the Column Charts for Events Vulnerabilities due to the source "Human Factor".



You can select one or more participants or groups using the 

If more than one chart is available, pagination is displayed at the bottom of the page:

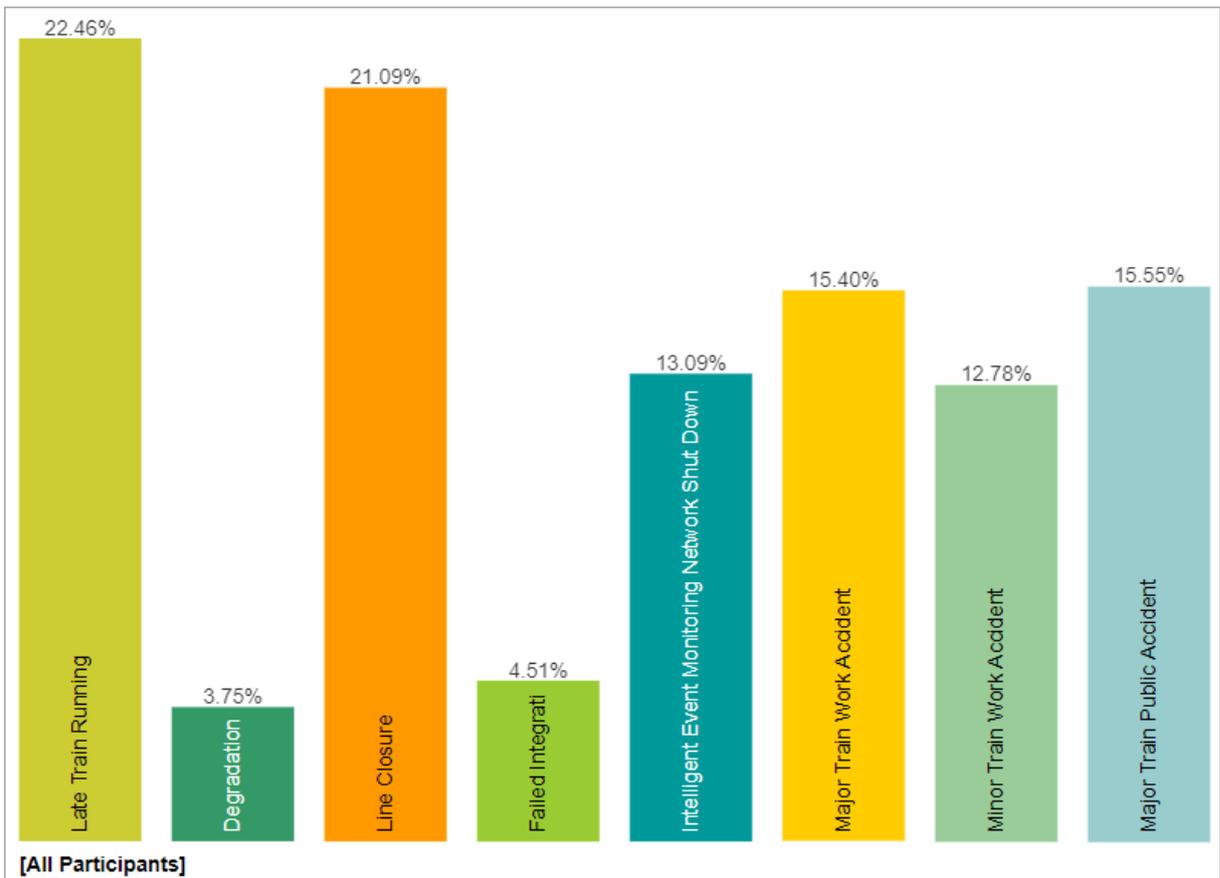


- Charts per page (left) - select how many charts to display per page
- Pagination (right) - paginate or select the page to display

## Non-advanced Mode Chart options (Rotate, Legend, Sort, etc.)

Various options are displayed on the toolbar at the top of the charts. Depending on a chart type, options may only be available only a specific chart type.

- **Rotate** - turn on/off rotate chart by 90 degrees (this is ON by default)



- **Legend** - show or hide the Legend

 Legend

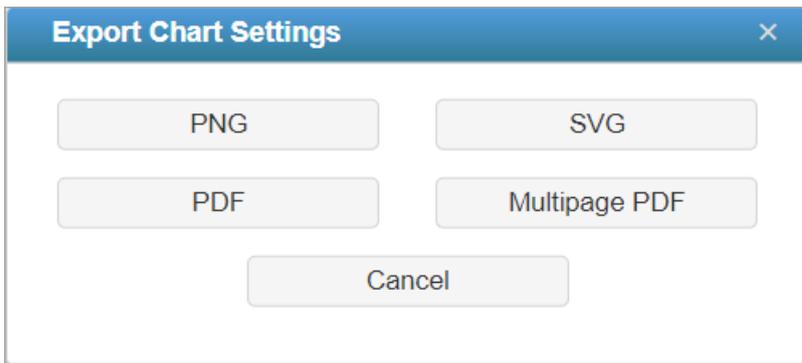
	Late Train Running
	Degradation of Intelligent Monitoring System Physical Assets
	Line Closure
	Failed Integration with Future Monitoring System Network
	Intelligent Event Monitoring Network Shut Down
	Major Train Work Accident
	Minor Train Work Accident
	Major Train Public Accident

- **Components** - Show or hide the event components.

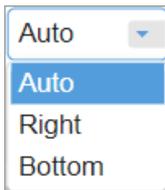
 Components

- **Sort** - sort chart by likelihoods, name, or none (default: none)
- **Export** - export as png, svg, pdf or multiple pdf

 Export



- **Legend Position** - can be auto, right, or bottom of the chart (default: Auto). Legend position is only enabled when the Legend is displayed.



- **Decimals**



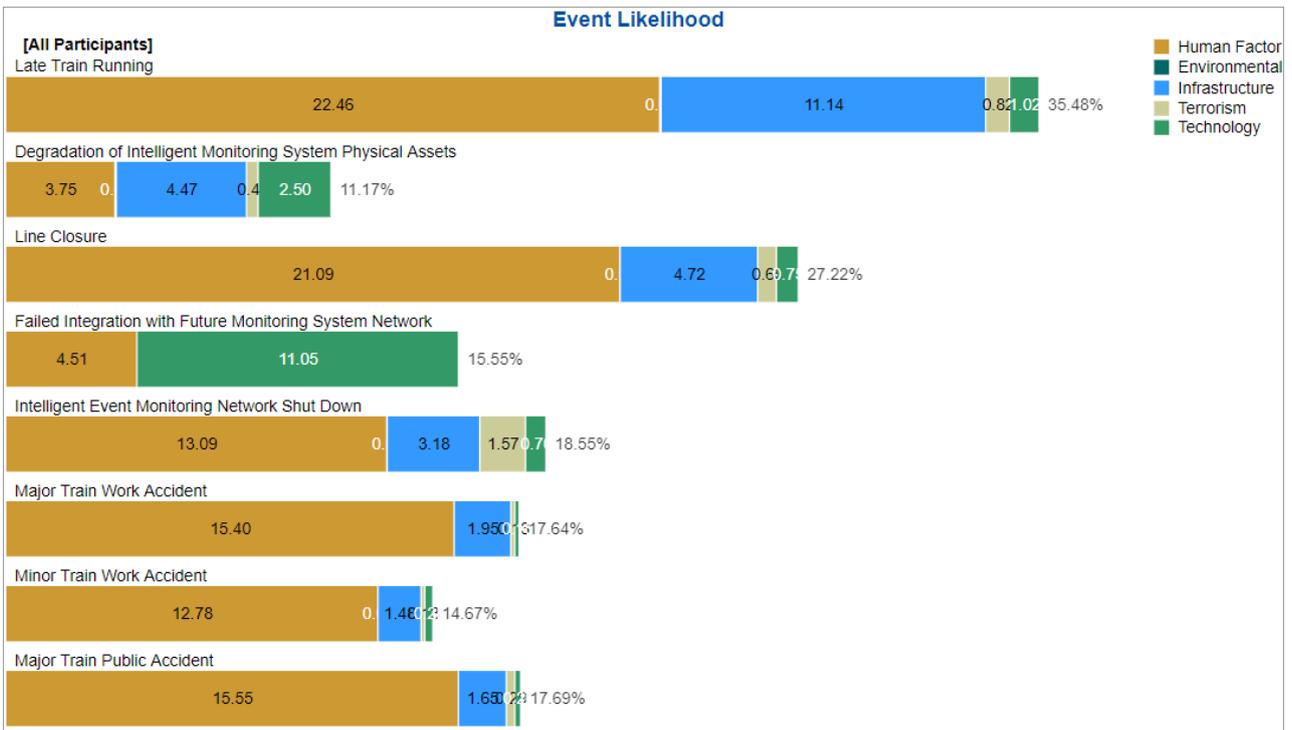
**TIP:** All chart types have the same common options as above for non-advanced mode -- except for Components which is only available for Columns.

**HINT:** For smaller screens, some of the options may be hidden. You may see the hidden options by clicking the ellipses  icon at the top right.

## Events Chart with Components

You can show the column charts with components by toggling the  button.

Events Charts with Components show the likelihoods of each event divided into sections showing how much of the likelihood is due to each of the sources.



Hovering on a specific component will highlight that element for all the event bars, a tooltip will also be displayed to see its details -- ([Participant or Group Name]: %Likelihood Event Name.

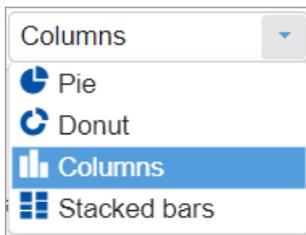
## Advanced Mode Options

When Advanced mode is ON, you will see the advanced options on this page (see highlighted):

Events Charts Advanced Mode Options

### 1. Chart Types

More chart formats are available in the advanced mode.



The Columns chart is selected by default, you can select from other chart types available. The selected chart format on the advanced mode will be remembered when you switched back to the non-advanced mode.

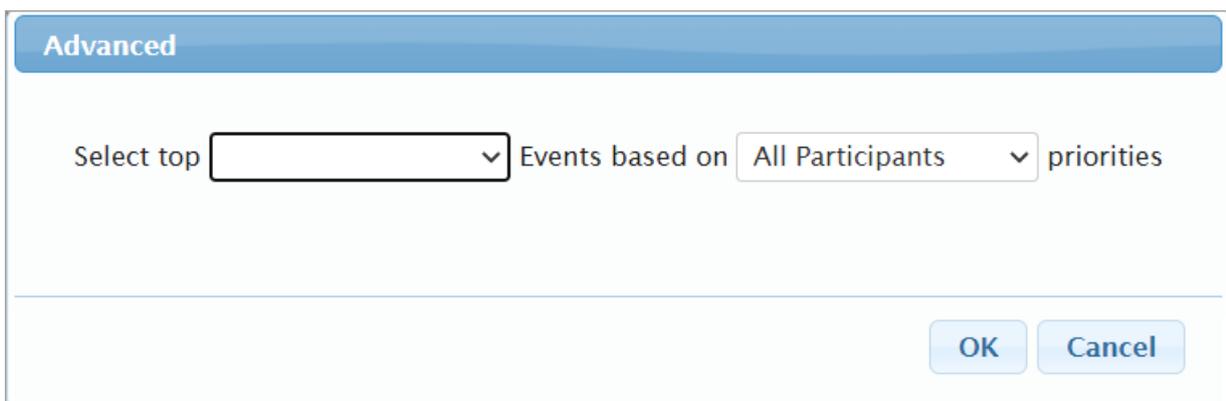
## 2. Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



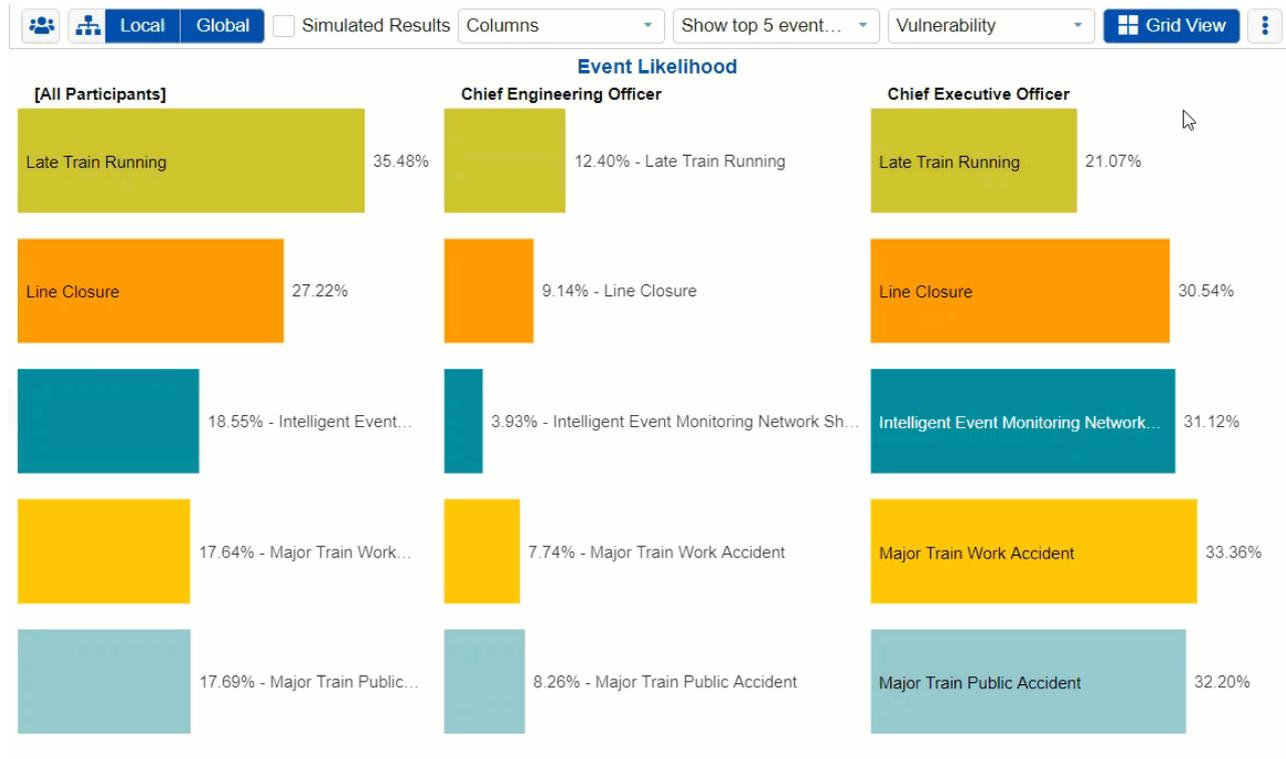
The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

### 3. Grid View (Multiple Rows or Single Row)

This option is available for all chart types except for Stack when more than one participant/group is displayed. This allows you to display the charts in grid view (**multiple rows**) when ON, or a **single row** when OFF.



### 4. Labels

Show or hide chart labels or the threat/source names on the chart. This will only show the % priority on the chart. You can then show the legend instead. 

### 5. Group by Users

Available for Columns chart when multiple users/groups are selected. By default, this option is ON, so the chart is grouped by Users. When this is OFF, the chart will be grouped by elements or nodes.



### 6. Combined Input Option (CIS)

If the Combined Input Option (CIS) is ON, then results for individuals are computed by combining the priorities derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.



### 7. Apply User Priorities

If priorities (weights) have been specified for participants, you can use the "User Priorities" check box which enables you to apply or ignore these priorities in calculating the results.

User priorities

### 8. Include Ideal Event

Include the Ideal Event on the Chart Results

### 9. Font Size

Decrease or increase the font size, or reset

 Decrease font size  
 Increase size  
 Reset font

**HINT:** For smaller screens, some of the options may be hidden. You may see the hidden options by clicking the ellipses  icon at the top right.

# Likelihood: Threats/Sources Chart

## Overview

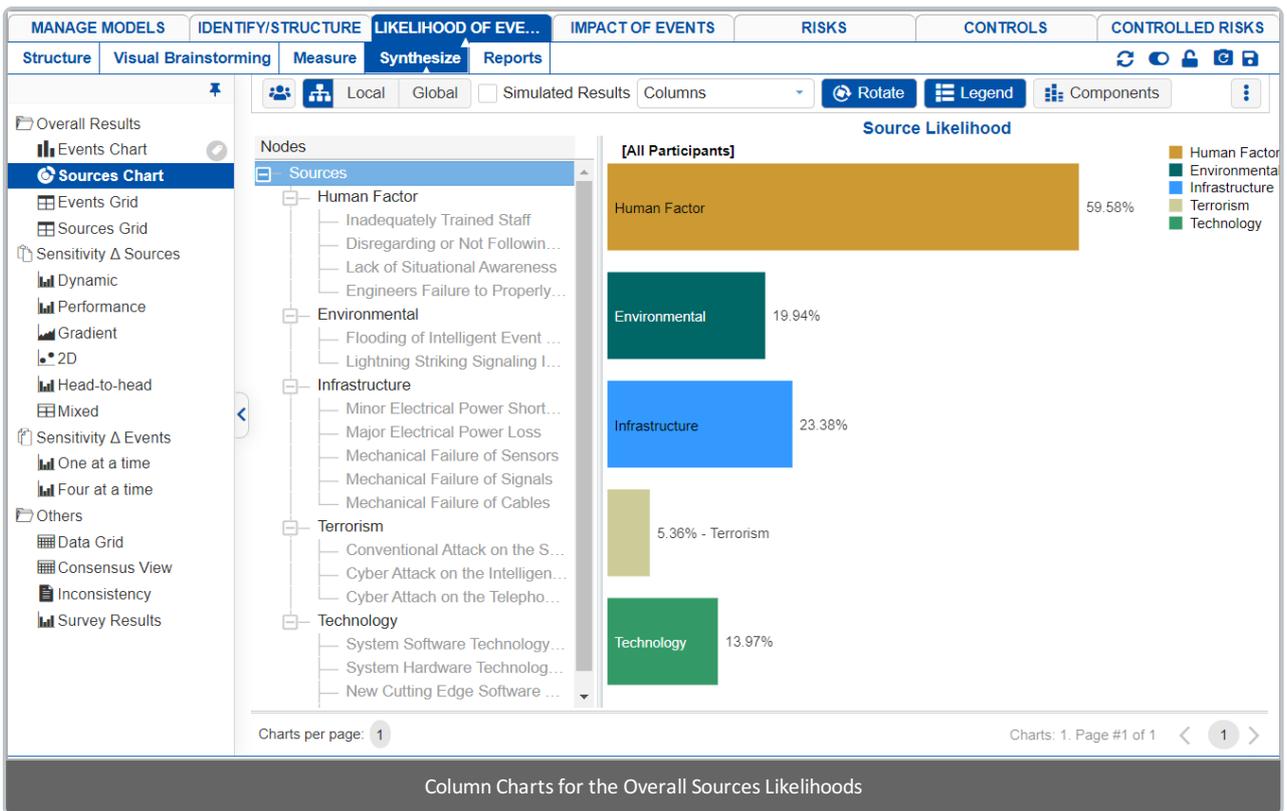
The Threats Chart page displays a variety of charts for threats and sub-threats. It displays the same likelihoods as in the Threats Grid.

In Riskion, we refer to **threats**, **causes**, **hazards**, and **sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

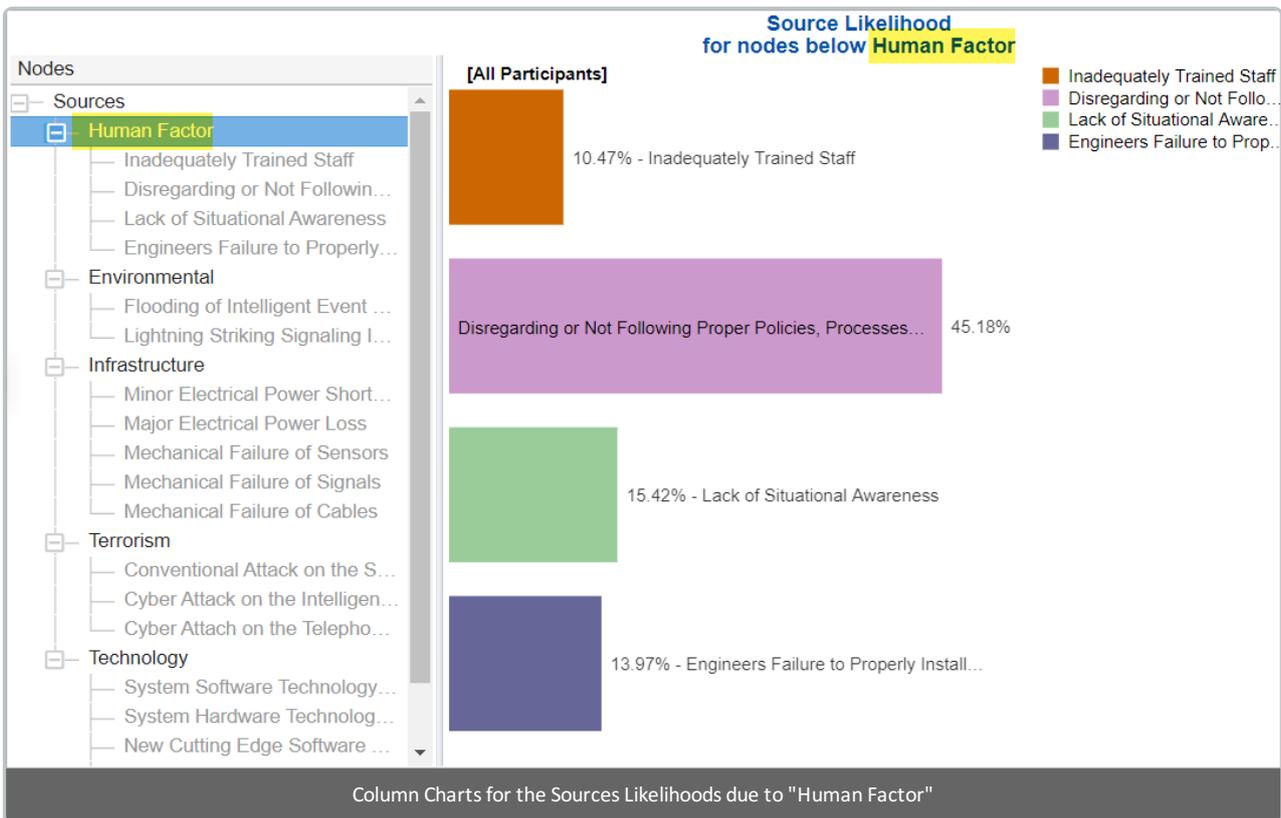
In our sample model, we will be using the terminology "Source(s)".

By default, the Columns chart is displayed. The column chart below shows the sources' likelihoods due to the overall Source.

You can view other different chart formats when the Advanced-mode is enabled.



Clicking another source node on the Sources hierarchy at the left will show the chart for the sources due to that node.



Above, we can see the column chart for the Sources likelihoods due to the "Human Factor".

You can hide the Sources Hierarchy at the left by clicking 

You can select one or more participants or groups by clicking 

If more than one chart is available, pagination is displayed at the bottom of the page:

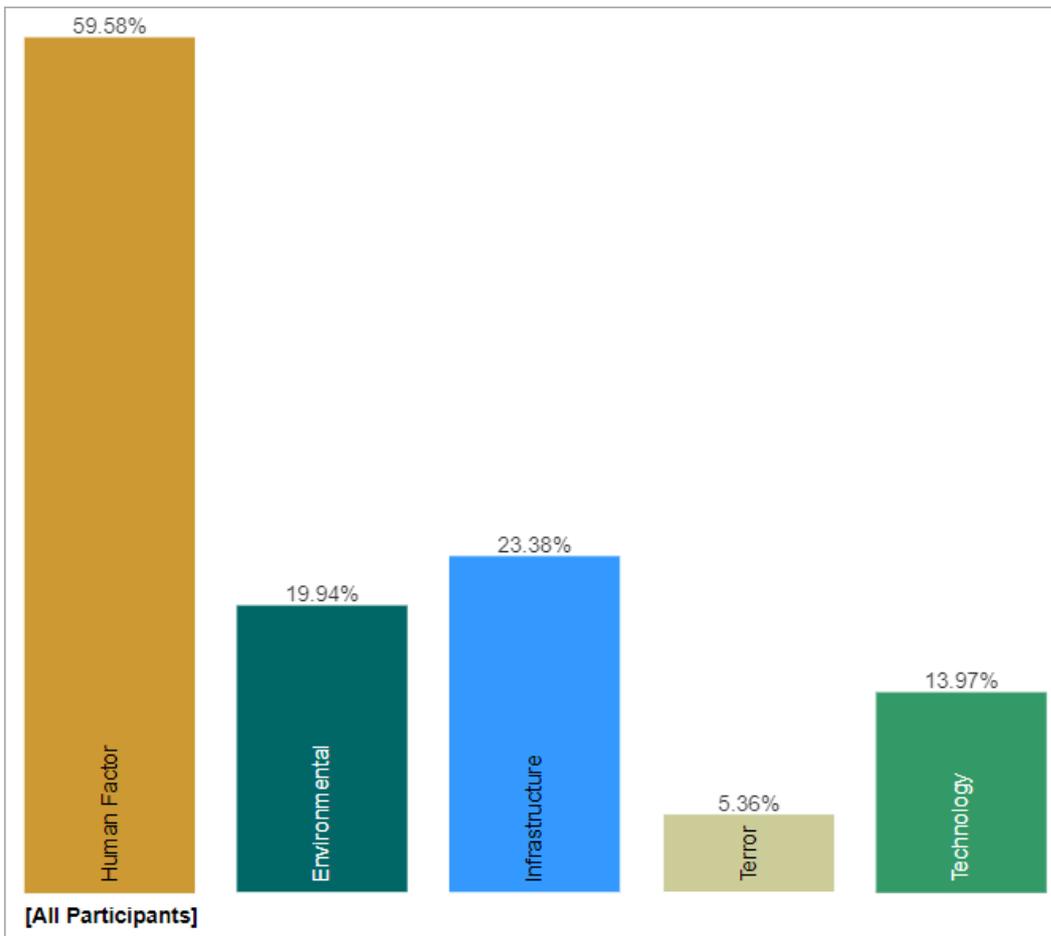


- Charts per page (left) - select how many charts to display per page
- Pagination (right) - paginate or select the page to display

## Non-advanced Mode options (Rotate, Legend, Sort, etc.)

Various options are displayed on the toolbar at the top of the charts. Depending on a chart type, options may only be available only a specific chart type.

- **Rotate** - turn on/off rotate chart by 90 degrees (this is ON by default)



- **Legend** - show or hide the Legend

 Legend



- **Components** - Show or hide threats/sources components.

 Components

- **Sort** - sort chart by likelihoods, name, or none (default: none)
- **Export** - export as png, svg, pdf or multiple pdf

 Export

**Export Chart Settings** ×

PNG

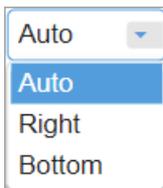
SVG

PDF

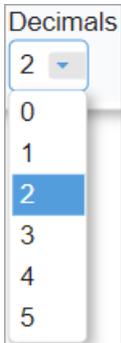
Multipage PDF

Cancel

- **Legend Position** - can be auto, right, or bottom of the chart (default: Auto). Legend position is only enabled when the Legend is displayed.



- Decimals



**TIP:** All chart types have the same common options as above for non-advanced mode -- except for Components which is only available for Columns.

**HINT:** For smaller screens, some of the options may be hidden. You may see the hidden options by clicking the ellipses

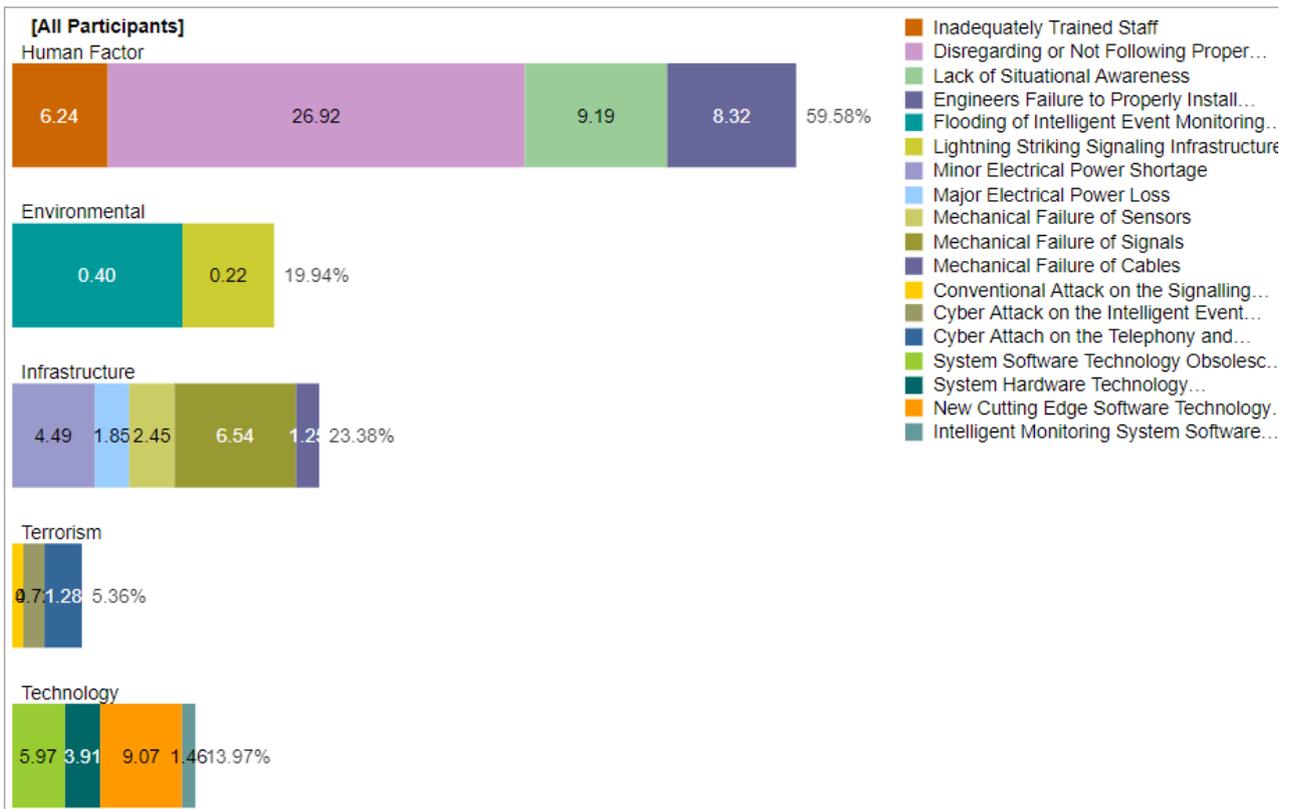


icon at the top right.

## Chart with Components

You can show the column charts with components by toggling the  **Components** button.

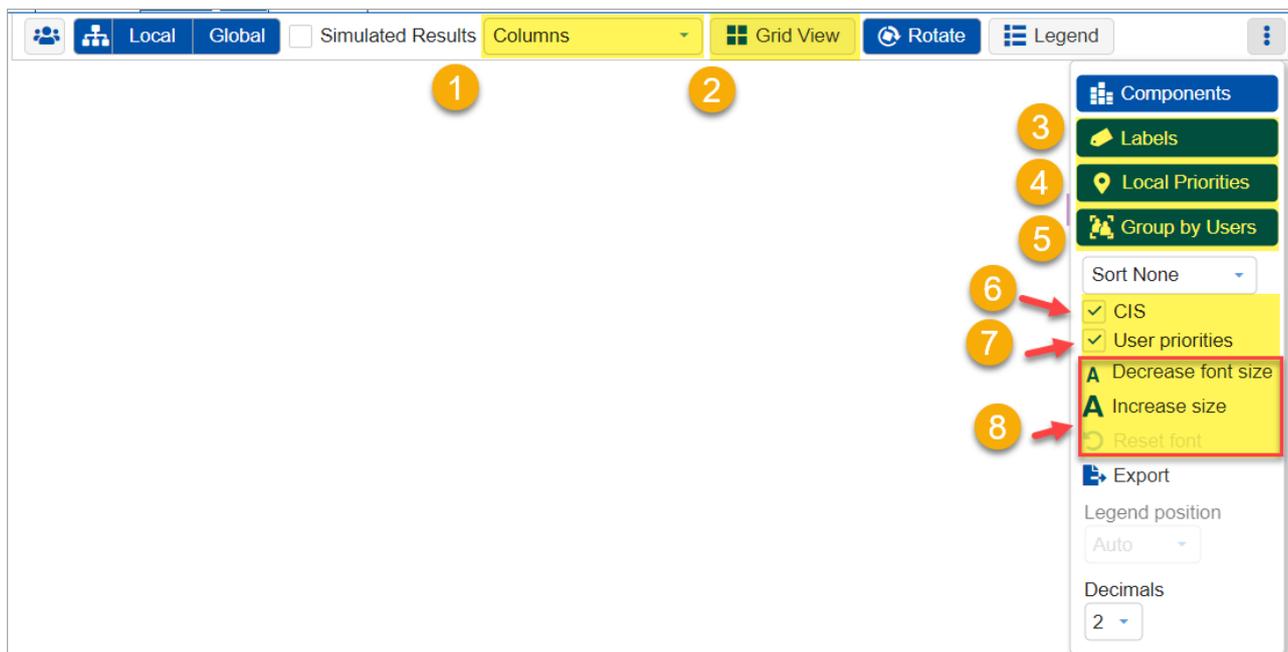
Sources Charts with Components show the likelihoods of each source divided into sections showing how much of the likelihood is due to each of the sources.



Hovering on a specific component will highlight that element for all the source bars, a tooltip will also be displayed to see its details -- ([Participant or Group Name]: %Likelihood Threat Name)

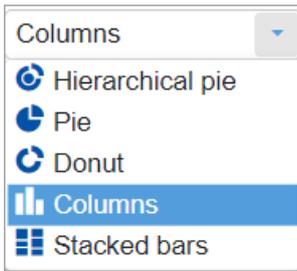
## Advanced Mode Options

When Advanced mode is ON, you will see the advanced options on this page (see highlighted):



### 1. Chart Types

More chart formats are available in the advanced mode.



The Columns chart is selected by default, you can select from other chart types available. The selected chart format on the advanced mode will be remembered when you switched back to the non-advanced mode.

## 2. Grid View (Multiple Rows or Single Row)

This option is available for all chart types except for Stack when more than one participant/group is displayed. This allows you to display the charts in grid view (**multiple rows**) when ON, or a **single row** when OFF.

## 3. Labels

Show or hide chart labels or the threat/source names on the chart. This will only show the % likelihood on the chart. You can then show the legend instead. 

## 4. Local Likelihoods

Toggle between local likelihoods (blue button) or global likelihoods (grey button) 

## 5. Group by Users

Available for Columns chart when multiple users/groups are selected. By default, this option is ON, so the chart is grouped by Users. When this is OFF, the chart will be group by elements or nodes.



## 6. Combined Input Option (CIS)

If the Combined Input Option (CIS) is ON, then results for individuals are computed by combining the likelihoods derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.



## 7. Apply User Priorities

If priorities (weights) have been specified for participants, you can use the "User Priorities" check box which enables you to apply or ignore these priorities in calculating the results.



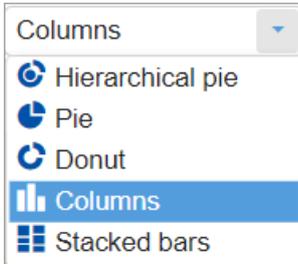
## 8. Font Size

Decrease or increase the font size, or reset

-  Decrease font size
-  Increase size
-  Reset font

## Advanced Mode Charts

When the Advanced Mode is ON, the Chart Type dropdown is available:



### Hierarchical Pie Chart

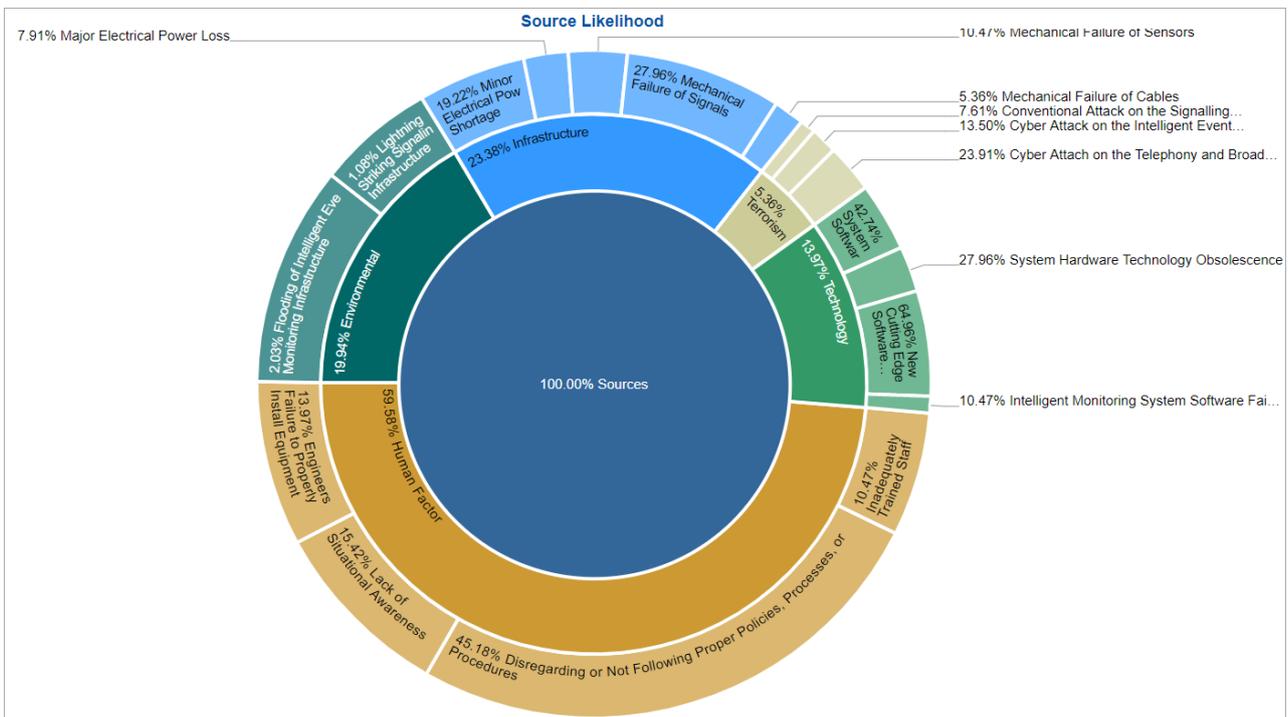
A *hierarchical pie chart* is a visual representation of the hierarchy of Sources. This is available when Auto-advanced is ON.

The center circle pertains to the Overall Source.

The first layer segments are the first-level children of the hierarchy -- the "Human Factor", "Environmental" and so on...

The second layer segments are the children of the first-level nodes which have a lighter shade color of their parent.

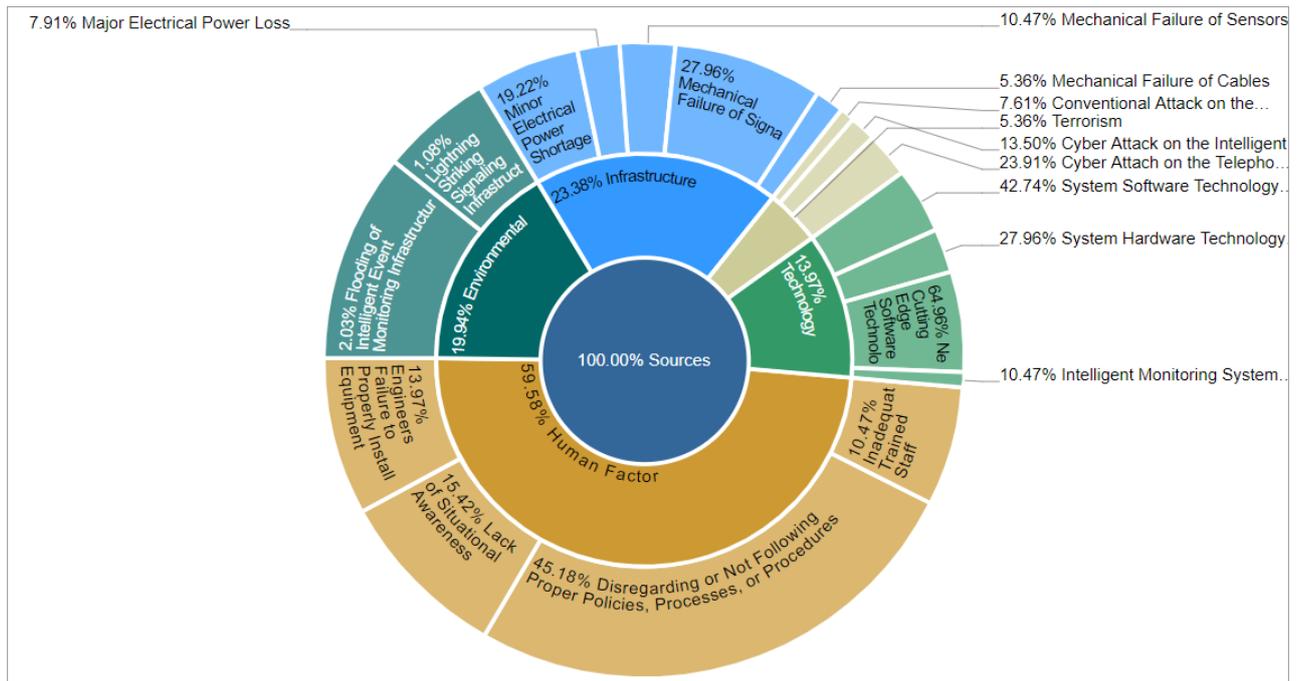
In the example below, the "Human Factor" source has children: "Engineers Failure to Properly Install Equipment", "Lack of Situational Awareness"...



When the Advanced mode is ON, we can check/uncheck the  **Area Mode** checkbox.

The chart above has the Area Mode is ON, that is, the sum of the children's segments area is equal to their parent's area.

When the Area Mode is OFF, all the segments will have the same height as shown below:



Turning ON the Rotate button rotates the chart by 45deg clockwise, turning it OFF will just revert it back (45deg counterclockwise).



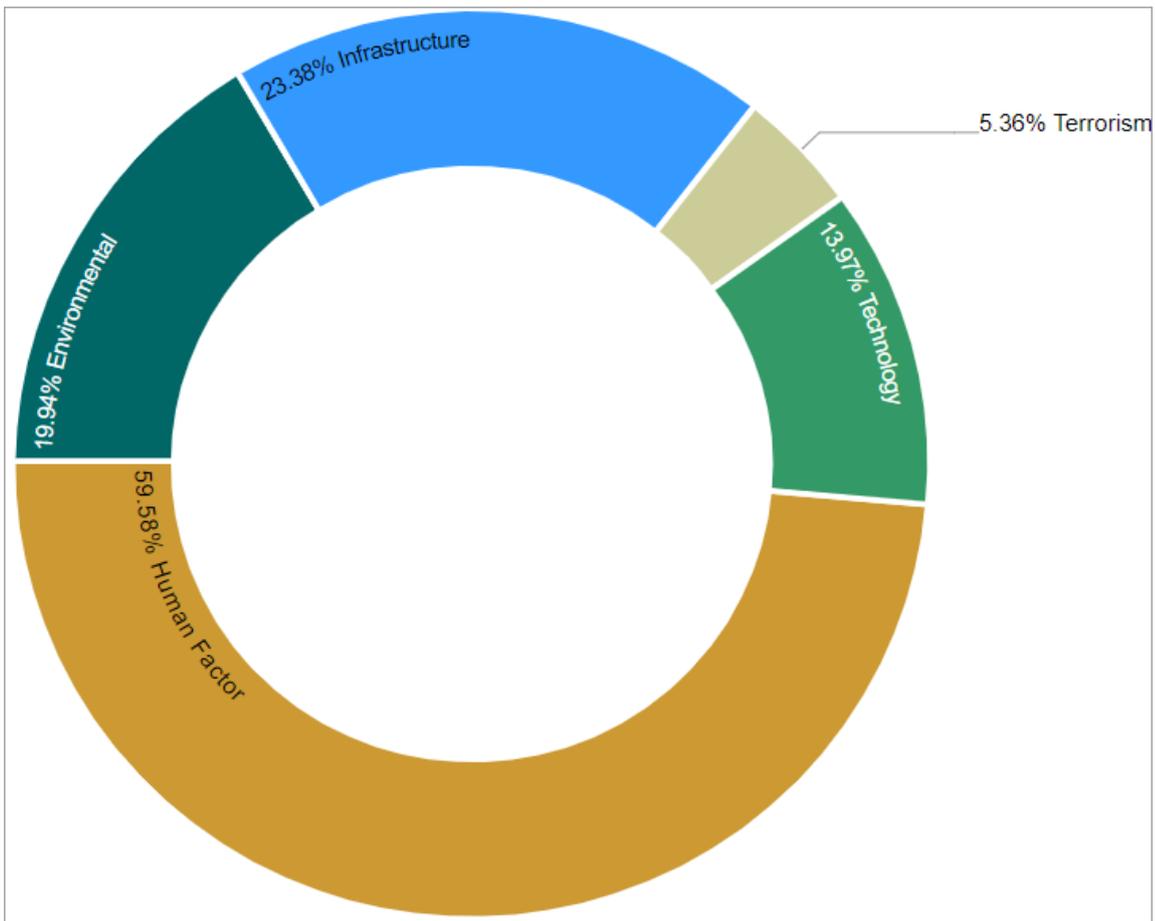
You can also rotate the chart by smaller degrees both clockwise and counterclockwise using the left/right arrows. The left/right arrow buttons are only available on Advanced mode.

TIP: If in case some of the labels are being blocked by the toolbar at the top, the rotate option will be helpful.

You can click on a parent node on the chart or from the legend to focus on a flex:

Clicking the same node will return to the overall chart.





Stack Chart



---

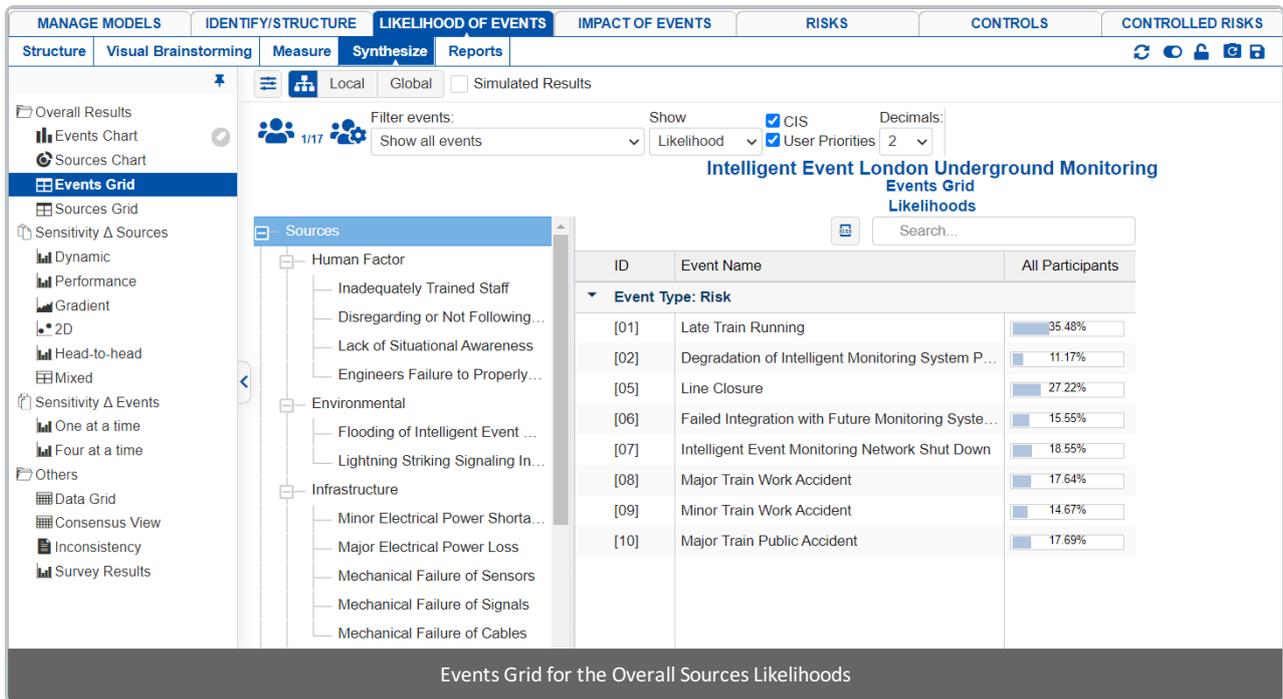
# Likelihood: Events Grid

## Overview

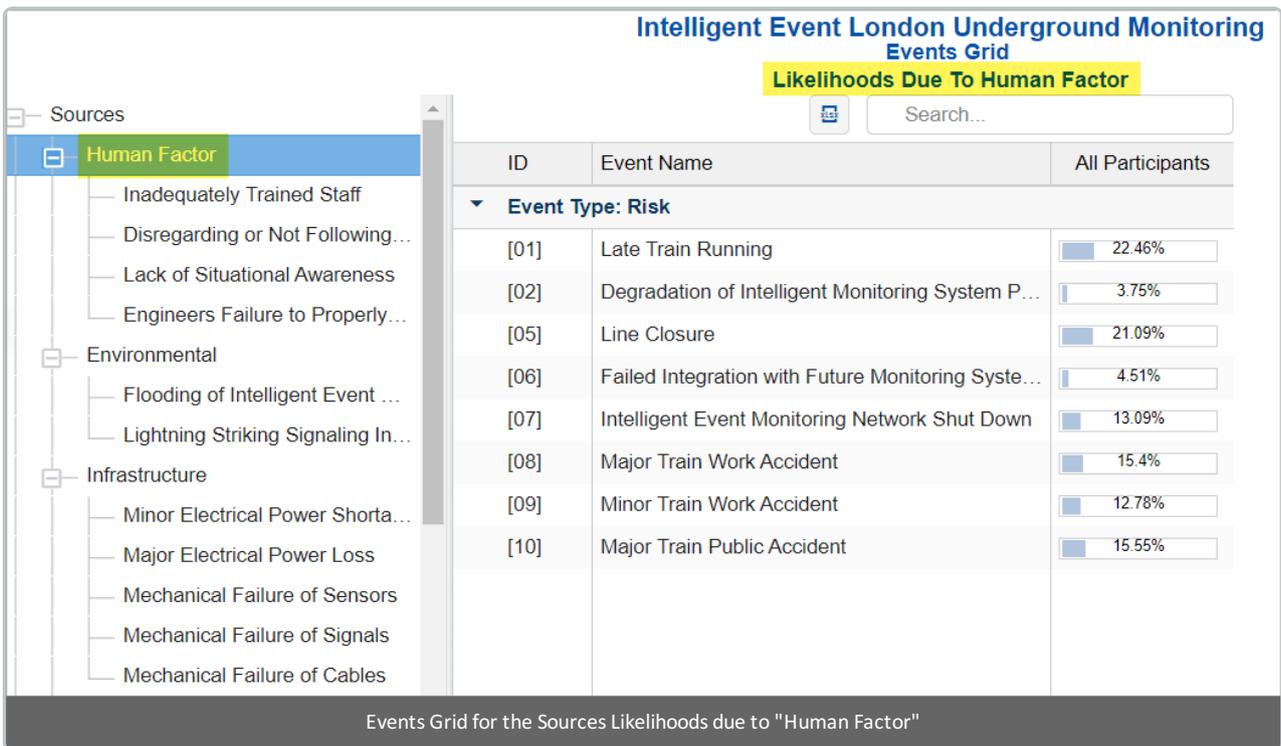
The **Events Grid** for Likelihood displays:

- the likelihoods or vulnerabilities of the events for Risk Events or
- the likelihoods/applicabilities for Opportunity Events.

By default, the grid shows the events' likelihoods due to the overall Threat/Source.

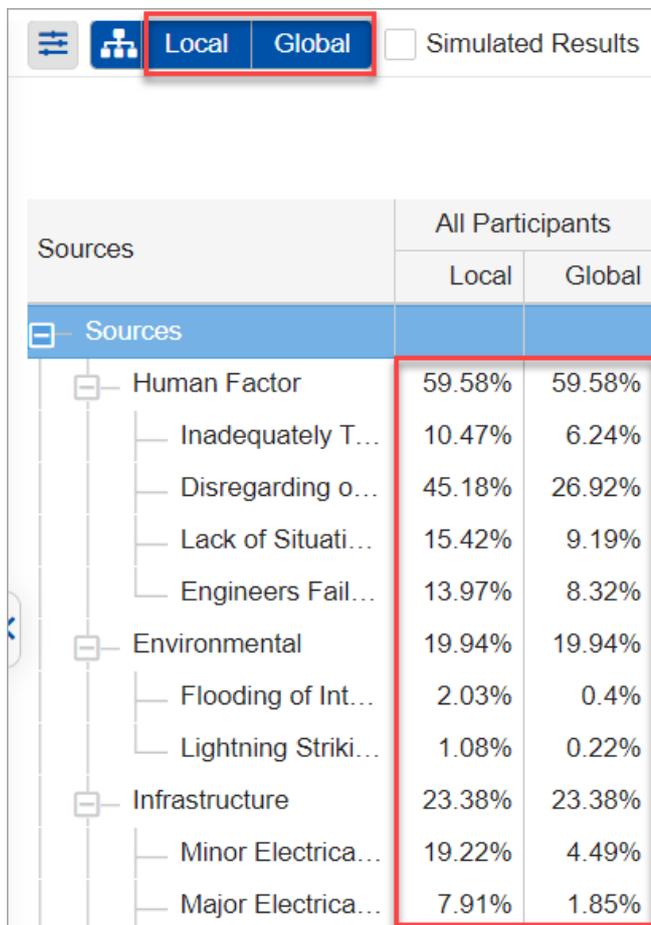


By selecting an element in the hierarchy other than the top Threat/Source, you can see the results due to the selected element.



The grid above shows the event's likelihoods due to the selected node "Human Factor".

You can show the local and global source's likelihoods on the Source Hierarchy at the right using the Local-Global buttons:



You can also hide the Sources Hierarchy at the left using

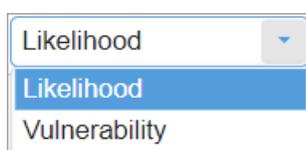
Click  to show/hide the toolbar options (*showing and hiding the toolbar is being remembered*).


 Filter events: 
 Show 
 CIS
  User Priorities
 Decimals:

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Show Likelihood or Vulnerability

You can select to show the events' vulnerabilities rather than the event's likelihoods by selecting from the dropdown menu:



For an Opportunity model, you can select to show the Likelihood or the Applicability.

Below is the Grid for Events Vulnerabilities due to the source "Human Factor".

**Intelligent Event London Underground Monitoring Events Grid**  
**Vulnerabilities Due To Human Factor**

ID	Event Name	All Participants
<b>Event Type: Risk</b>		
[01]	Late Train Running	<div style="width: 37.7%;"></div> 37.7%
[02]	Degradation of Intelligent Monitoring System P...	<div style="width: 6.3%;"></div> 6.3%
[05]	Line Closure	<div style="width: 35.4%;"></div> 35.4%
[06]	Failed Integration with Future Monitoring Syste...	<div style="width: 7.56%;"></div> 7.56%
[07]	Intelligent Event Monitoring Network Shut Down	<div style="width: 21.97%;"></div> 21.97%
[08]	Major Train Work Accident	<div style="width: 25.85%;"></div> 25.85%
[09]	Minor Train Work Accident	<div style="width: 21.45%;"></div> 21.45%
[10]	Major Train Public Accident	<div style="width: 26.09%;"></div> 26.09%

Events Grid for the Sources Vulnerabilities due to "Human Factor"

## Select Participants and Groups

You can select to display results for one or more participants also groups by clicking



The number designates the number selected/total number of participants/groups.

Clicking the button will open a window listing the participants and groups in the model. Simply check the participants and groups you want to see results.

**Participants and Groups**

Search:

<input type="checkbox"/>	Participant Name	Email Address	Has data?	<input checked="" type="checkbox"/>	Group name	Has data?	Select all users with data
<input type="checkbox"/>	Brian Quigley	quigleybf@gwu.edu	Yes	<input checked="" type="checkbox"/>	All Participants	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Engineering Officer	ceo@gwu.edu	Yes	<input type="checkbox"/>	C-Level Executives	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Executive Officer	che@gwu.edu	Yes	<input type="checkbox"/>	Engineering	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Risk Officer	cro@gwu.edu	Yes				
<input type="checkbox"/>	Denis Risman	denisrisman@gwu.edu					
<input type="checkbox"/>	Devin Nagy	devinnagy@gwu.edu					
<input type="checkbox"/>	Grace	grace@eci.com					
<input type="checkbox"/>	IT Supervisor	its@gwu.edu	Yes				
<input type="checkbox"/>	James	james@eci.com					
<input type="checkbox"/>	John Doe	j.doe@eci.com					
<input type="checkbox"/>	Michael Mankowski	mmankowski@gwu.edu					

Select all | Select All Participants And Groups With Data | Deselect all

OK Cancel

## Filter Events

By default, all events are displayed.

Show all events

- Show all events
- Show top 5 events b...
- Show top 10 events ...
- Show top 25 events ...
- Advanced
- Show bottom 5 even...
- Show bottom 10 eve...
- Show bottom 25 eve...
- Select/deselect events
- Filter by event attrib...
- Show risks only
- Show opportunities ...

You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.

The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

When the Advanced mode is ON, you will see the advanced options on this page:

### 1. Combined Input Option (CIS)

If the Combined Input Option (CIS) is ON, then results for individuals are computed by combining the likelihoods derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.

 CIS

### 2. Apply User Priorities

If priorities (weights) have been specified for participants, you can use the "User Priorities" check box which enables you to apply or ignore these priorities in calculating the results.

 User priorities

## Change Events Color

You can change the Events color from the Events Grid or Dynamic Sensitivities pages, and the Source/Objectives color on their corresponding Grid Results pages.

From Grid, simply click or right-click the event or source/objective results bar/cell, and then choose a color from the color picker:

## Intelligent Event London Underground Monitoring Events Grid Likelihoods



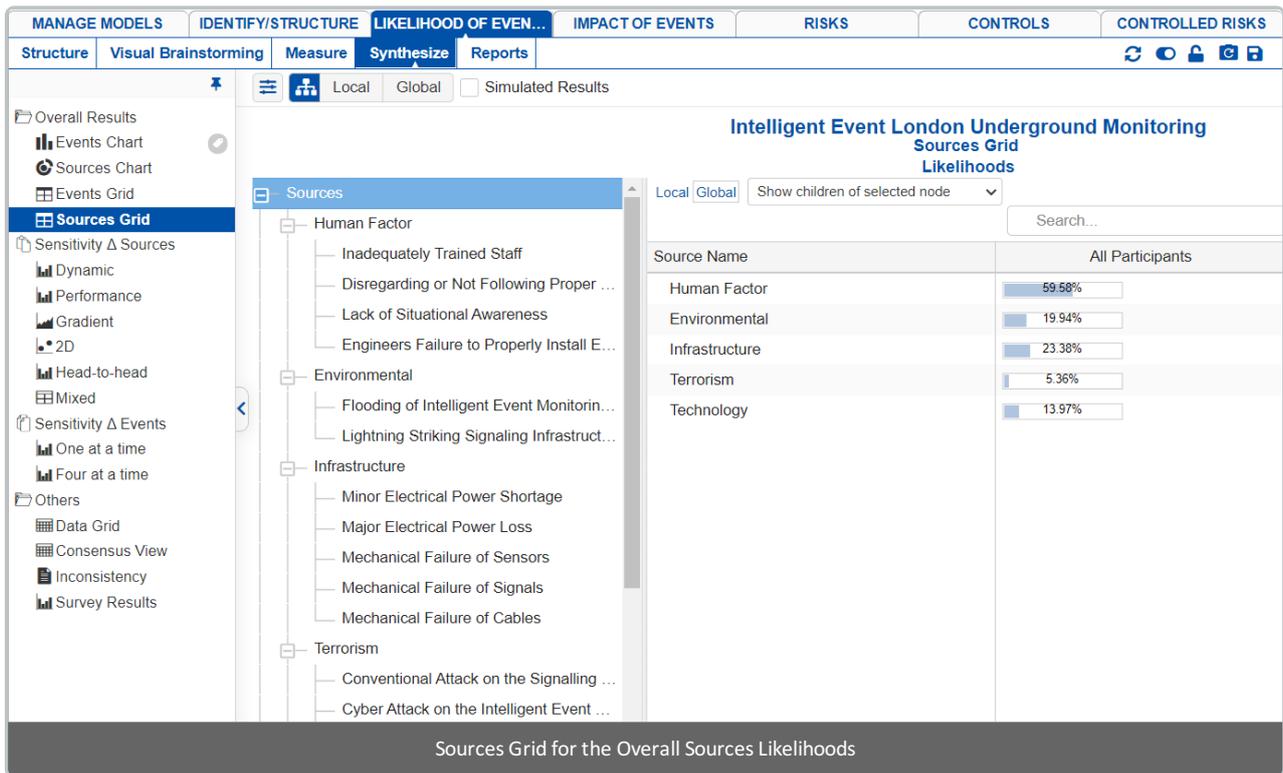

ID	Event Name	All Participants
▼ <b>Event Type: Risk</b>		
[01]	Late Train Running	<div style="width: 35.48%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 35.48%
[02]	Degradation of Intelligent Monitoring System P...	<div style="width: 11.17%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 11.17%
[05]	Line Closure	<div style="width: 27.22%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 27.22%
[06]	Failed Integration with Future Monitoring Syste...	<div style="width: 15.55%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 15.55%
[07]	Intelligent Event Monitoring Network Shut Down	<div style="width: 18.55%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 18.55%
[08]	Major Train Work Accident	<div style="width: 17.64%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 17.64%
[09]	Minor Train Work Accident	<div style="width: 14.67%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 14.67%
[10]	Major Train Public Accident	<div style="width: 17.69%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 17.69%

# Likelihood: Threats/Sources Grid

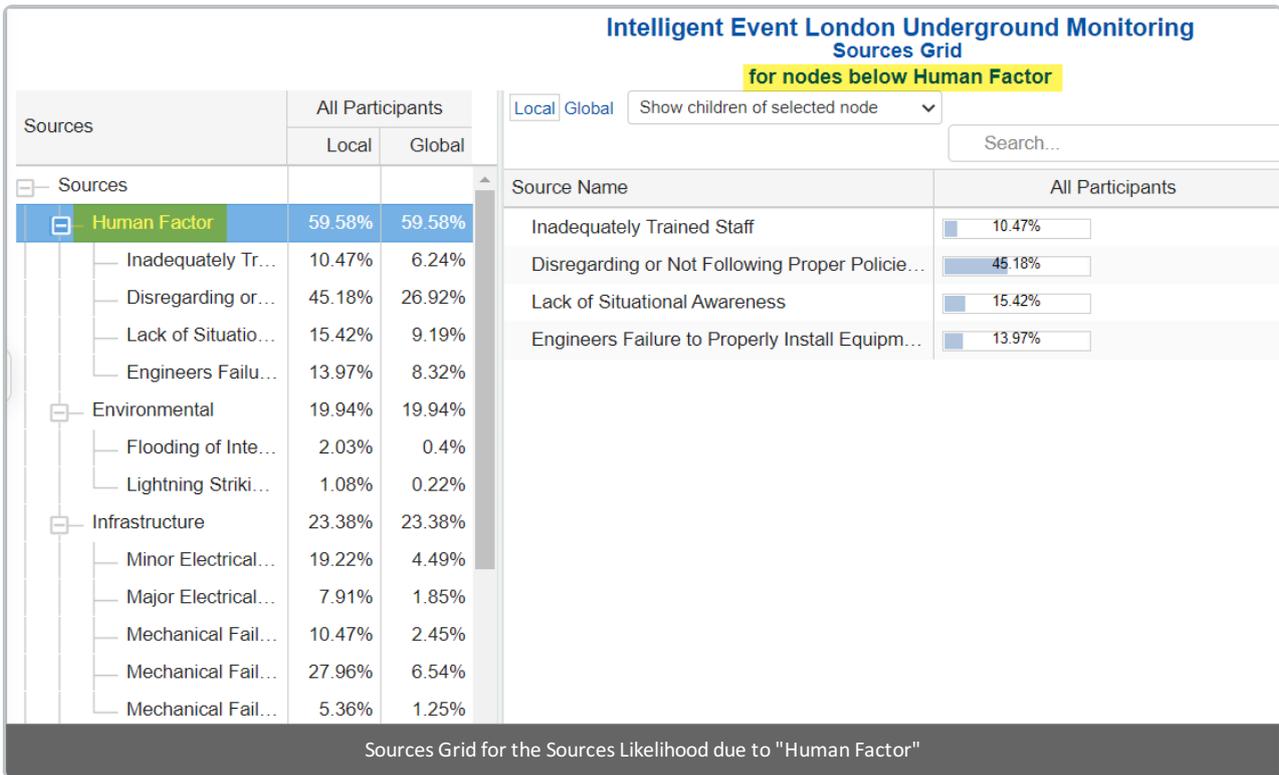
## Overview

The Threats Grid for Likelihood displays the likelihoods of the Threats or sub-threats.

By default, the grid shows the threats' likelihoods due to the overall Threat.

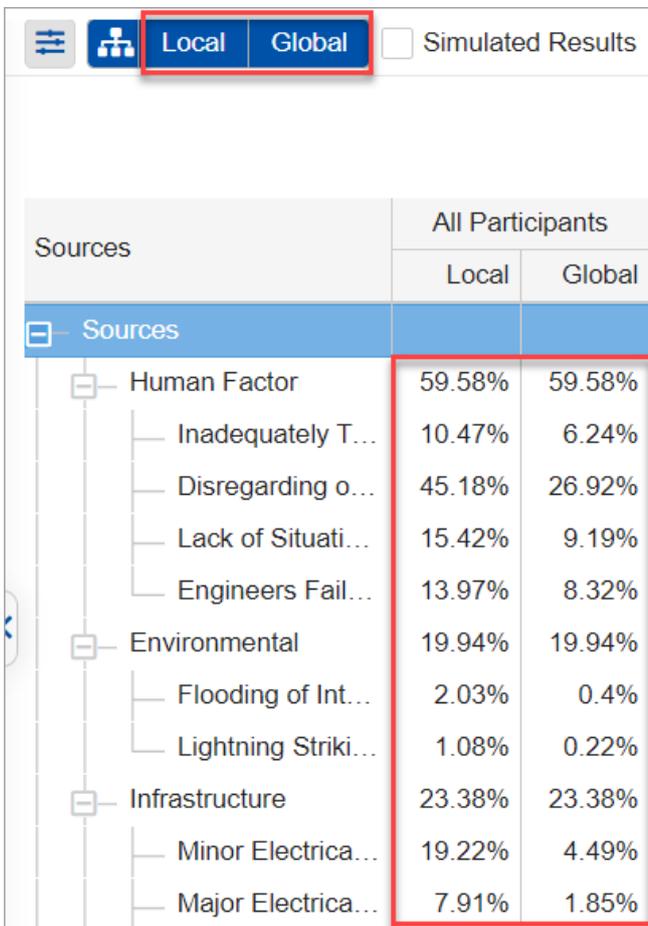


By selecting an element in the hierarchy other than the top Threat/Source, you can see the results due to the selected element.



The grid above shows the source's likelihoods due to the selected node "Human Factor".

You can show the local and global source's likelihoods on the Source Hierarchy at the right using the Local-Global buttons:



You can also hide the Sources Hierarchy at the left using 

Click  to show the toolbar options (*showing and hiding the toolbar is being remembered*).



## Select Participants and Groups

You can select to display results for one or more participants also groups by clicking



The number designates the number selected/total number of participants/groups.

Clicking the button will open a window listing the participants and groups in the model. Simply check the participants and groups you want to see results.

**Participants and Groups**

Search:

<input type="checkbox"/>	Participant Name	Email Address	Has data?	<input type="checkbox"/>	Group name	Has data?	Select all users with data
<input type="checkbox"/>	Brian Quigley	quigleybf@gwu.edu	Yes	<input checked="" type="checkbox"/>	All Participants	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Engineering Officer	ceo@gwu.edu	Yes	<input type="checkbox"/>	C-Level Executives	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Executive Officer	che@gwu.edu	Yes	<input type="checkbox"/>	Engineering	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Risk Officer	cro@gwu.edu	Yes				
<input type="checkbox"/>	Denis Risman	denisrisman@gwu.edu					
<input type="checkbox"/>	Devin Nagy	devinnagy@gwu.edu					
<input type="checkbox"/>	Grace	grace@eci.com					
<input type="checkbox"/>	IT Supervisor	its@gwu.edu	Yes				
<input type="checkbox"/>	James	james@eci.com					
<input type="checkbox"/>	John Doe	j.doe@eci.com					
<input type="checkbox"/>	Michael Mankowski	mmankowski@gwu.edu					

Select all | Select All Participants And Groups With Data | Deselect all

OK Cancel

## Advanced Mode Options

When the Advanced mode is ON, you will see the advanced options on this page:

### 1. Combined Input Option (CIS)

If the Combined Input Option (CIS) is ON, then results for individuals are computed by combining the priorities derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.



### 2. Apply User Priorities

If priorities (weights) have been specified for participants, you can use the "User Priorities" check box which enables you to apply or ignore these priorities in calculating the results.

User priorities

## Change Threats Color

You can change the Threats color from the Threats Grid.

Simply click or right-click the source/objective results bar/cell, and then choose a color from the color picker:

Intelligent Event London Underground Monitoring		
Events Grid		
Likelihoods		
		<input type="button" value="Print"/> <input type="text" value="Search..."/>
ID	Event Name	All Participants
▼ Event Type: Risk		
[01]	Late Train Running	<div style="width: 35.48%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 35.48%
[02]	Degradation of Intelligent Monitoring System P...	<div style="width: 11.17%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 11.17%
[05]	Line Closure	<div style="width: 27.22%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 27.22%
[06]	Failed Integration with Future Monitoring Syste...	<div style="width: 15.55%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 15.55%
[07]	Intelligent Event Monitoring Network Shut Down	<div style="width: 18.55%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 18.55%
[08]	Major Train Work Accident	<div style="width: 17.64%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 17.64%
[09]	Minor Train Work Accident	<div style="width: 14.67%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 14.67%
[10]	Major Train Public Accident	<div style="width: 17.69%;"><div style="background-color: #4f81bd; height: 10px;"></div></div> 17.69%

# Likelihood: Dynamic Analysis

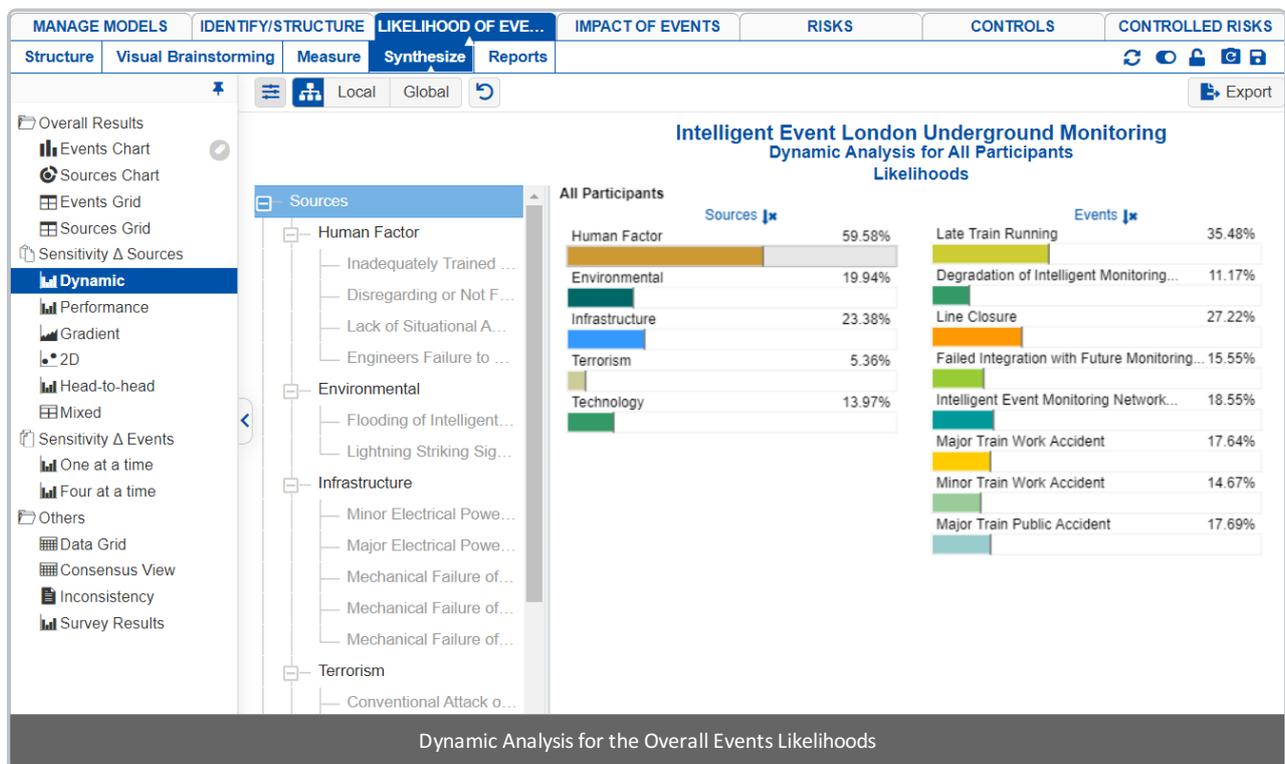
## Overview

Dynamic Sensitivity analysis for Likelihood is used to dynamically change the likelihoods of the threats to determine how these changes affect the likelihoods of the events.

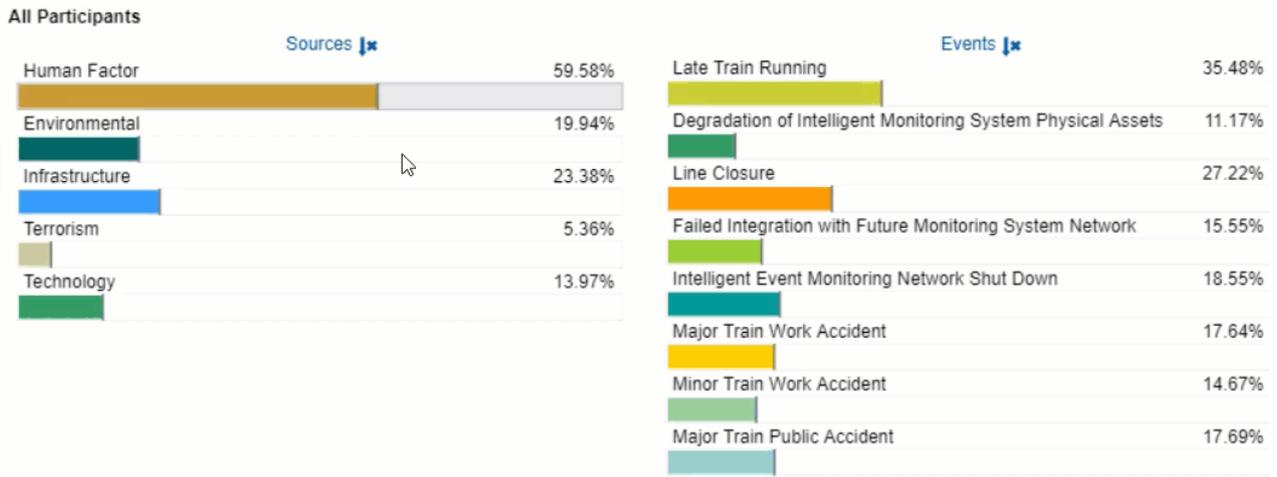
In Riskion, we refer to **threats**, **causes**, **hazards**, and **sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

In our sample model, we are using the terminology "Source(s)".

The bars at the left represent the likelihood of the sources, while the bars at the right are the likelihood of the events.



By dragging the source's likelihoods back and forth in the left column, the likelihoods of the events will change in the right column.

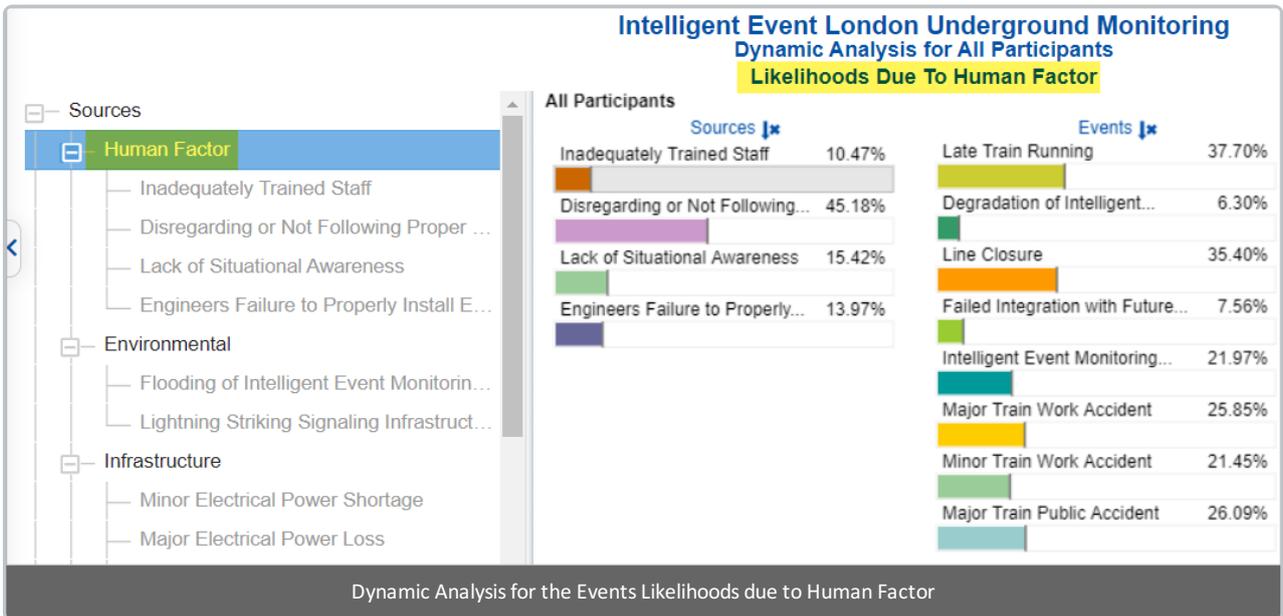


The black | markers on the source and event bars indicate the original sources' and events' likelihoods.



After temporarily changing the likelihoods of one or more of the sources, you can press the  reset icon.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Sources" node.



You can show the local and global source's likelihoods on the Source Hierarchy at the right using the Local-Global buttons:



 Simulated Results

Sources	All Participants	
	Local	Global
Sources		
Human Factor	59.58%	59.58%
Inadequately T...	10.47%	6.24%
Disregarding o...	45.18%	26.92%
Lack of Situati...	15.42%	9.19%
Engineers Fail...	13.97%	8.32%
Environmental	19.94%	19.94%
Flooding of Int...	2.03%	0.4%
Lightning Striki...	1.08%	0.22%
Infrastructure	23.38%	23.38%
Minor Electrica...	19.22%	4.49%
Major Electrica...	7.91%	1.85%

You can hide the Sources Hierarchy at the left using 

Click  to show/hide the toolbar options:





 Filter events: 
 Show 
 Decimals: 
 Sort Sources by: 
 Sort Events by: 
 Active

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the [Advanced Mode](#) switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using 

Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

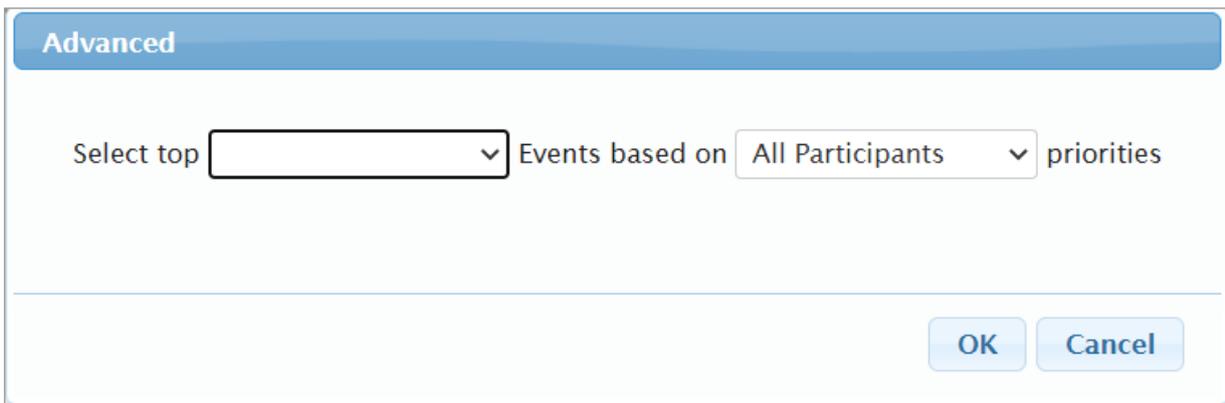
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



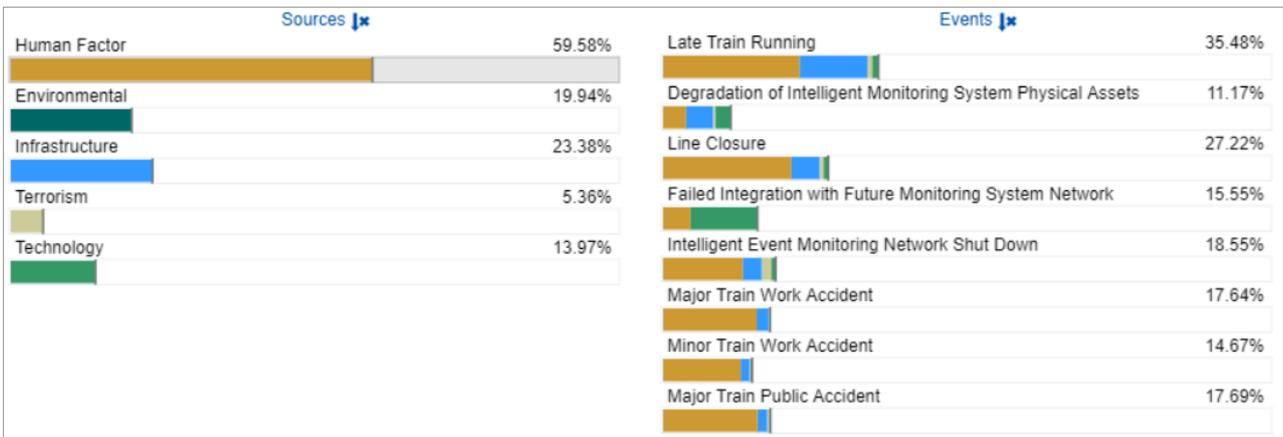
The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Events Components

Checking the  Show Components displays the breakdown of each of the source's contributions or share to the likelihoods of each of the events

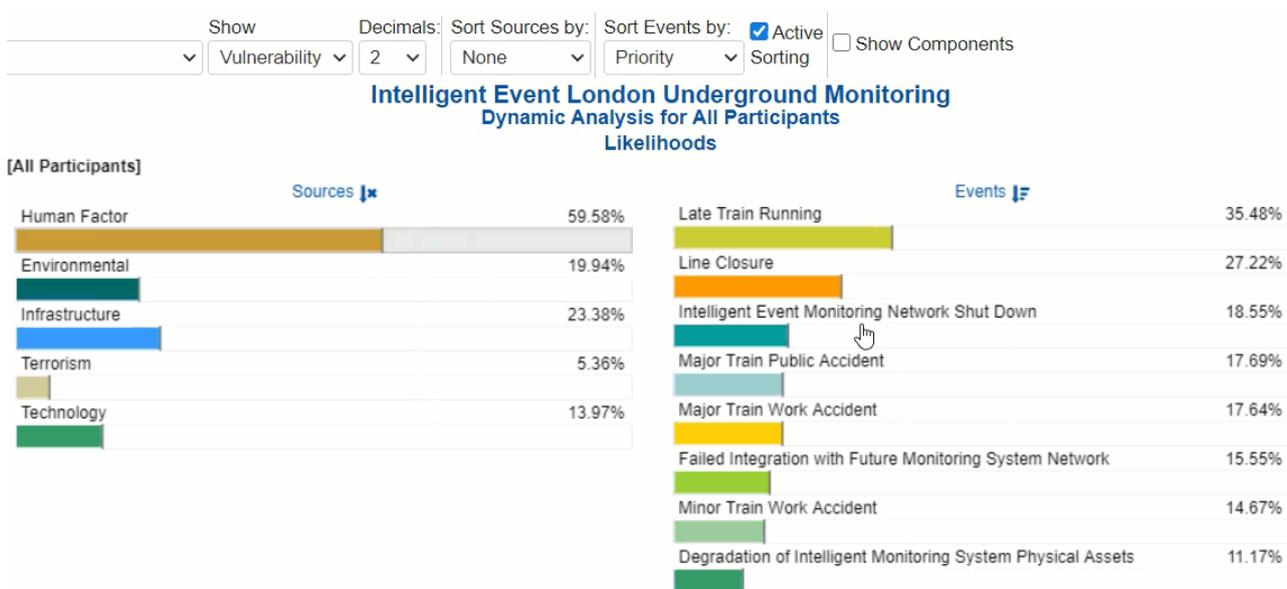


The breakdown colors of the event bars at the right corresponds to each of the sources at the left.

## Active Sorting (Keep Sorting)

Active Sorting is only enabled when Events are Sorted by Likelihoods.

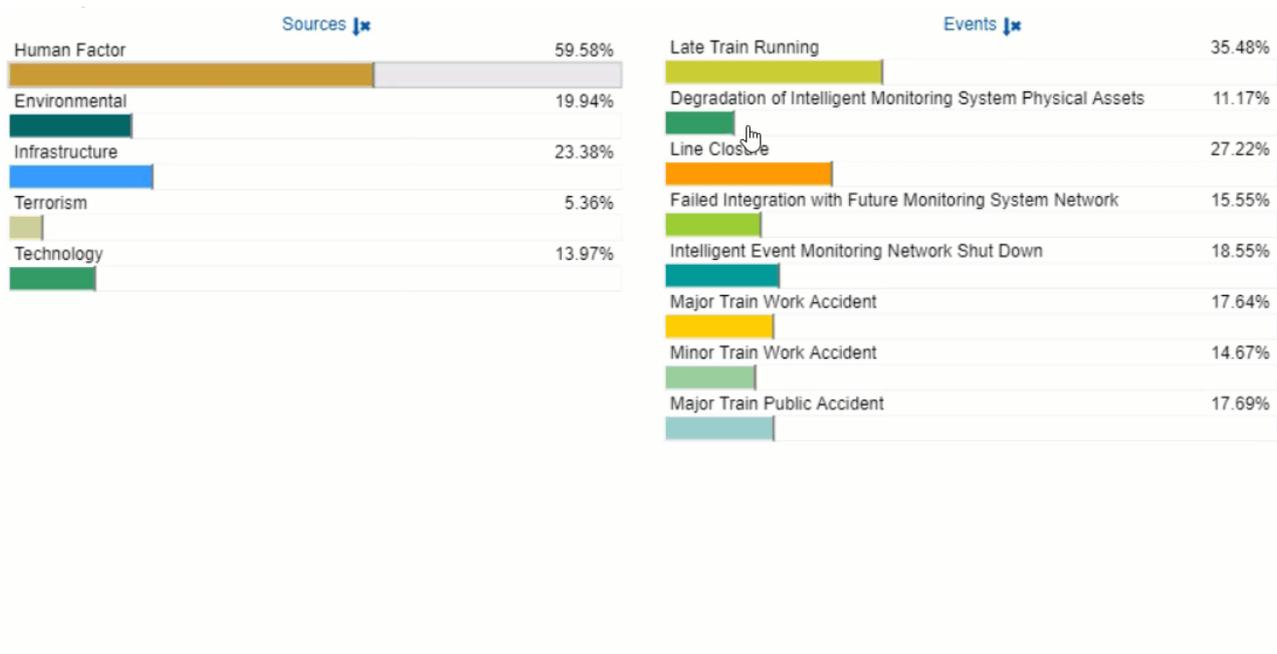
Checking the Active Sorting checkbox actively re-sorts the events as the source likelihoods are being adjusted.



When the Active Sorting is OFF, the initial sorting of the events will be remembered.

## Change Events Color

Clicking on the event bar will open a color picker where you can select and change the color assignment.



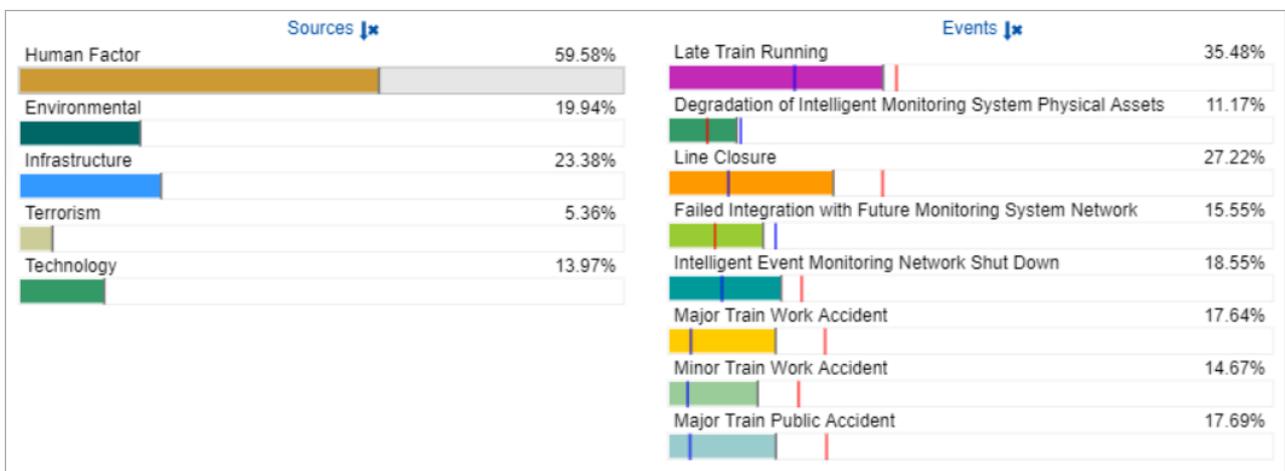
You can also change colors from the Events and Threats/Sources Grid.

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Advanced Mode Options

### 4. Show Markers

Checking the  **Show Markers** checkbox displays red and blue markers on the events bars indicating the likelihood when the selected source is dragged to the maximum (100%) or minimum (0%) respectively.



The selected source in the example above is the "Human Factor" as indicated by its light gray background. When the

"Human Factor" bar is dragged to the maximum (100%), the events' bars at the right will be filled up to where the red marker is. When it is dragged to the minimum (0%), the events bars at the right will be filled up to where the blue marker is.

Depending on the event, red might be on the right and blue on the left, or vice-versa.

---

# Likelihood: Performance Analysis

## Overview

Likelihood's Performance analysis is used to dynamically change the likelihoods of the threats to determine how these changes affect the likelihoods of the events.

In Riskion, we refer to **threats**, **causes**, **hazards**, and **sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

In our sample model, we are using the terminology "Source(s)".



Each performance sensitivity is composed of:

- The relative likelihood of the sources is depicted by the vertical bars and shown numerically on the left side of each bar.
- The relative likelihood due to any of the sources is shown by the intersection of that events line segment with the sources bars. Thus, for example, Late Train Running has the highest likelihood due to Human Factor (yellow-green bubble on the Human Factor bar).
- The intersection of the event line segment with the overall axis on the right shows the relative overall likelihood of the event.

The options above the chart are explained below:

- to display the lines connecting the events from one source to another. Note: The connecting lines have no meaning; they are included to help you find where a particular event lies as you move from one source to another.

- ► to hide the connecting lines and use horizontal ticks instead of circles to indicate the likelihood of the event due to the source
- ⇄ to align the event labels at the right to their corresponding overall likelihoods
- ↶ to expand the event labels
- ▮ to show the sources as bars
- 📊 to display the performance sensitivity as a radar chart

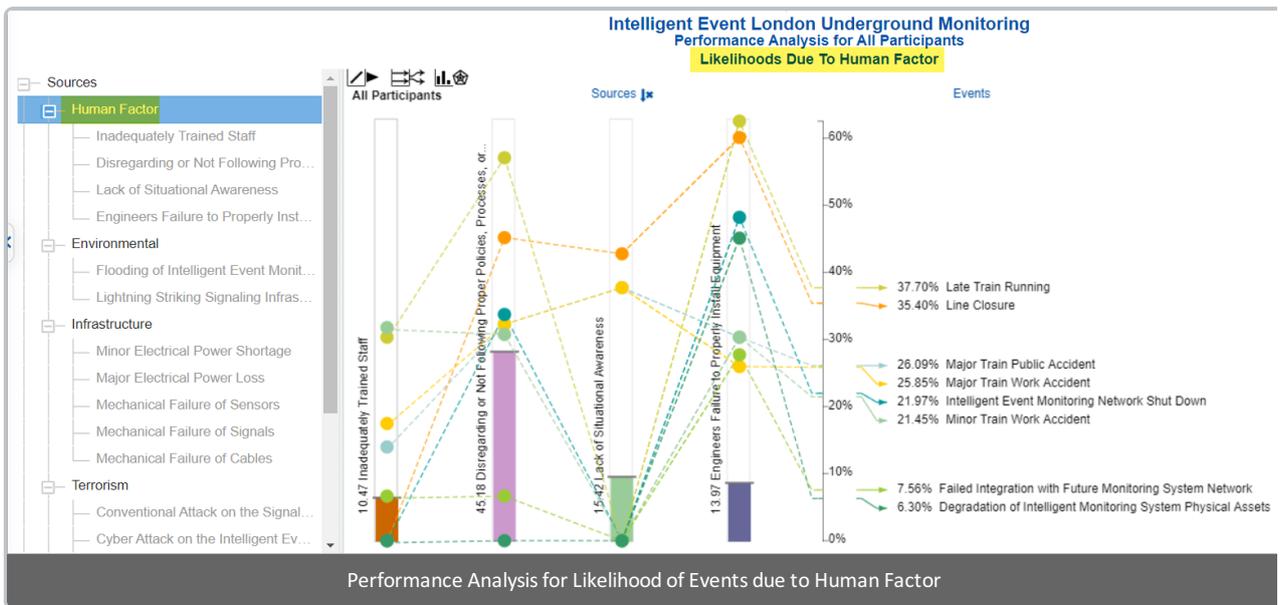
The Performance graph is also dynamic, so you can temporarily alter the relationship between the events and their sources by dragging the source bars up or down.

Note: If there is one event that is highest on every source, there is probably something missing from the model, or specific sources were not considered adequately when the judgments were. Iteration should be almost always be performed in such a case since it is extremely rare that any event is highest on every source.



After temporarily changing the likelihoods of one or more of the sources, you can press the  reset icon.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Sources" node.



The performance above shows all the event likelihoods due to the selected node Human Factor.

You can show the local and global source's likelihoods on the Sources Hierarchy at the right using the Local-Global buttons:

Local Global  Simulated Results

Sources	All Participants	
	Local	Global
Sources		
Human Factor	59.58%	59.58%
Inadequately T...	10.47%	6.24%
Disregarding o...	45.18%	26.92%
Lack of Situati...	15.42%	9.19%
Engineers Fail...	13.97%	8.32%
Environmental	19.94%	19.94%
Flooding of Int...	2.03%	0.4%
Lightning Striki...	1.08%	0.22%
Infrastructure	23.38%	23.38%
Minor Electrica...	19.22%	4.49%
Major Electrica...	7.91%	1.85%

You can hide the Sources Hierarchy at the left using

Click to show/hide the toolbar options:


 Filter events: 
 Decimals: 
 Sort Sources by:

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using 

Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

## Filter Events

By default, all events are displayed.

- Show all events ▼
- Show all events
- Show top 5 events b...
- Show top 10 events ...
- Show top 25 events ...
- Advanced
- Show bottom 5 even...
- Show bottom 10 eve...
- Show bottom 25 eve...
- Select/deselect events
- Filter by event attrib...
- Show risks only
- Show opportunities ...

You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.

**Advanced**

Select top  Events based on  priorities

---

The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

### Advanced Mode Options

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Filter events:

Show all events
▼

CIS

User Priorities

Decimals:

Sort Source:

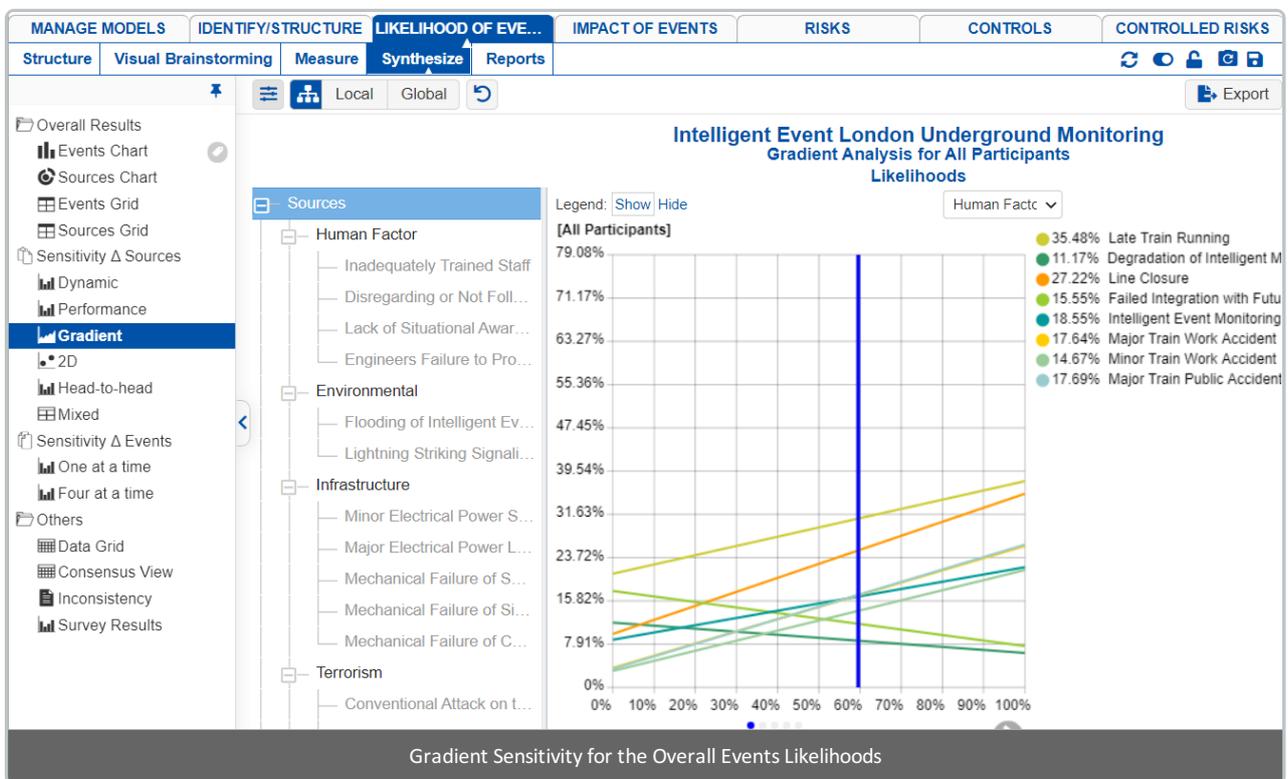
# Likelihood: Gradient Analysis

## Overview

The gradient analysis for Likelihood shows the rate of change of the likelihoods of events due to the change in the likelihood of one of the threats.

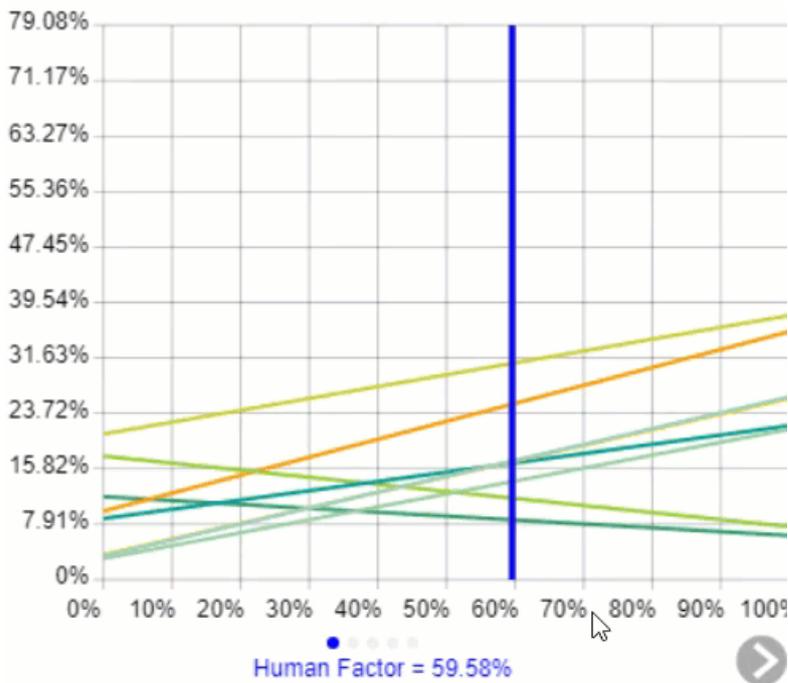
In Riskion, we refer to **threats**, **causes**, **hazards**, and **sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

In our sample model, we are using the terminology "Source(s)".



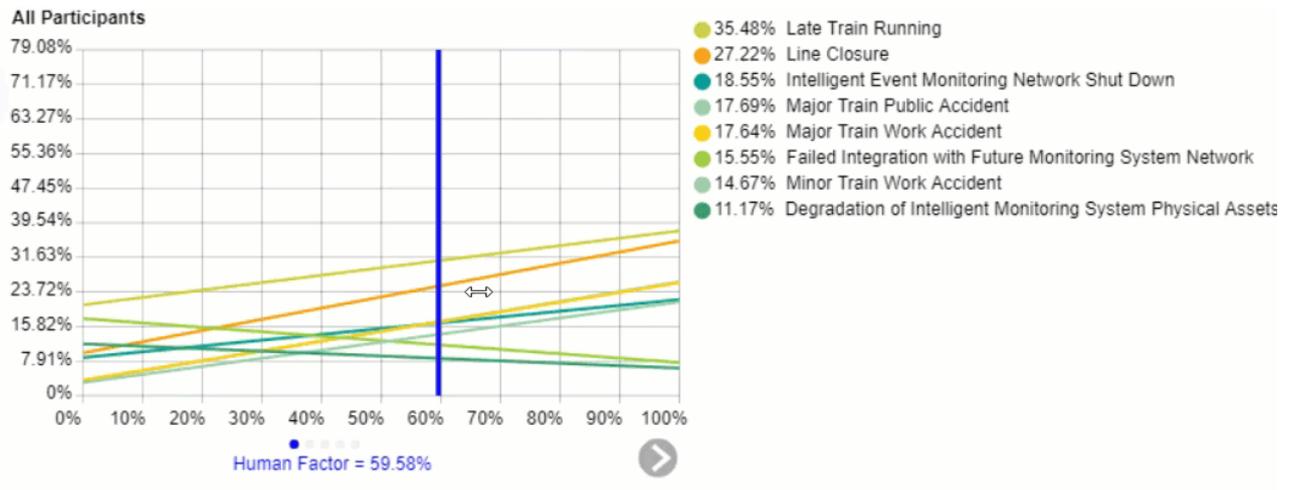
Gradient sensitivity is composed of:

- A source on the x-axis -- which can be selected from  or a pulldown menu



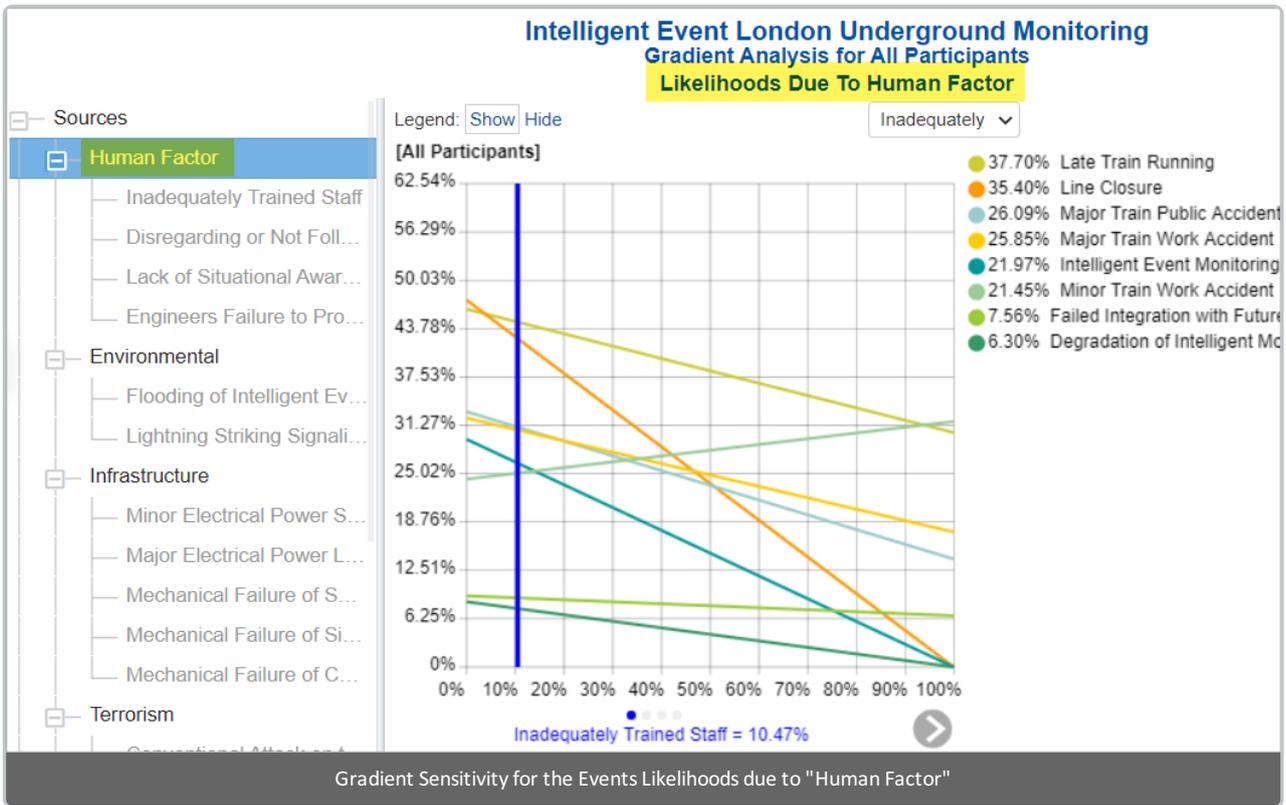
- A curve for each of the events
- A vertical blue bar representing the likelihood of the source being considered.

You can temporarily alter the relationship between the events and their sources by dragging the blue vertical bar left or right. The original impacts are represented by the vertical gray bar.



After temporarily changing the likelihoods of one or more of the sources, you can press the  reset icon.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Sources" node.



The gradient analysis above shows all the event likelihoods due to the selected node Human Factor.

You can show the local and global source's likelihoods on the Source Hierarchy at the right using the Local-Global buttons:

Simulated Results

Sources	All Participants	
	Local	Global
<b>Sources</b>		
Human Factor	59.58%	59.58%
Inadequately T...	10.47%	6.24%
Disregarding o...	45.18%	26.92%
Lack of Situati...	15.42%	9.19%
Engineers Fail...	13.97%	8.32%
Environmental	19.94%	19.94%
Flooding of Int...	2.03%	0.4%
Lightning Striki...	1.08%	0.22%
Infrastructure	23.38%	23.38%
Minor Electrica...	19.22%	4.49%
Major Electrica...	7.91%	1.85%

You can hide the Sources Hierarchy at the left using 

Click  to show/hide the toolbar options:

   	Filter events: <input type="text" value="Show all events"/>	Decimals: <input type="text" value="2"/>	Sort Sources by: <input type="text" value="None"/>	Sort Events by: <input type="text" value="Priority"/>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------	---------------------------------------------	-------------------------------------------------------	----------------------------------------------------------

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the [Advanced Mode](#) switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using 

Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

## Filter Events

By default, all events are displayed.



- Show all events
- Show all events
- Show top 5 events b...
- Show top 10 events ...
- Show top 25 events ...
- Advanced
- Show bottom 5 even...
- Show bottom 10 eve...
- Show bottom 25 eve...
- Select/deselect events
- Filter by event attrib...
- Show risks only
- Show opportunities ...

You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.

Advanced

Select top  Events based on  priorities

---

The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

### Advanced Mode Options

<
>

Filter events: 1  
 Show all events 2

CIS  
 User Priorities

Decimals:

Sort Sources by:

Sort Events by:  3

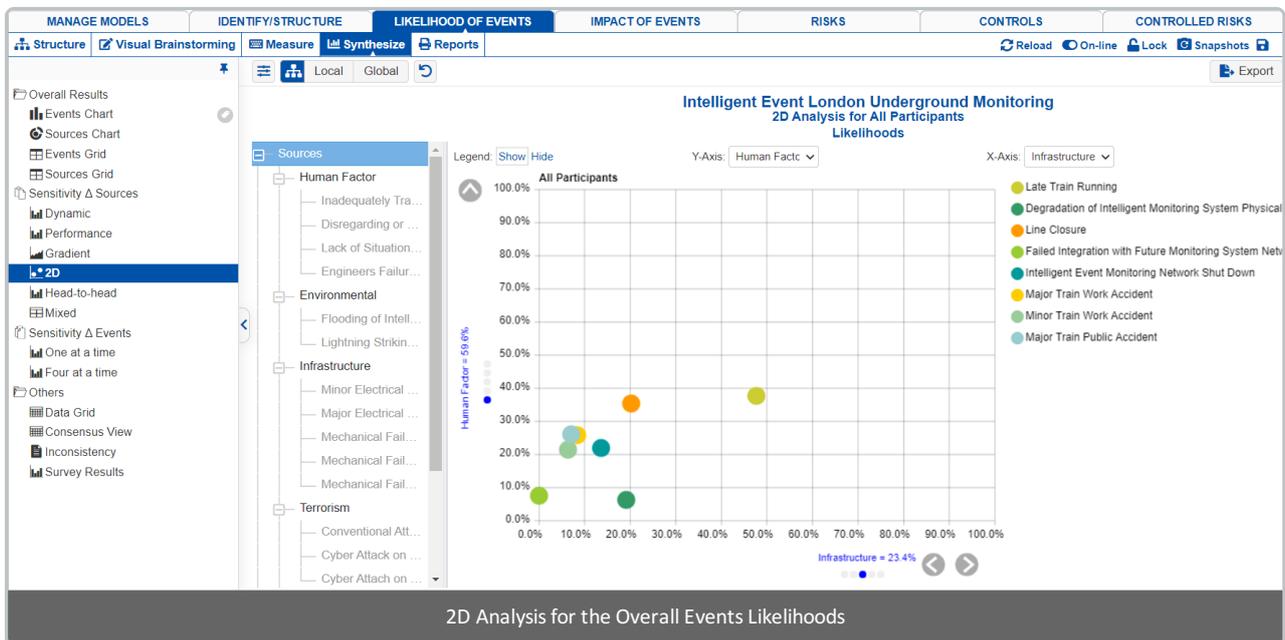
# Likelihood: 2D Analysis

## Overview

The Two Dimensional sensitivity for Likelihood shows how well the events perform given any two threats.

In Riskion, we refer to **threats**, **causes**, **hazards**, and **sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

In our sample model, we are using the terminology "Source(s)".



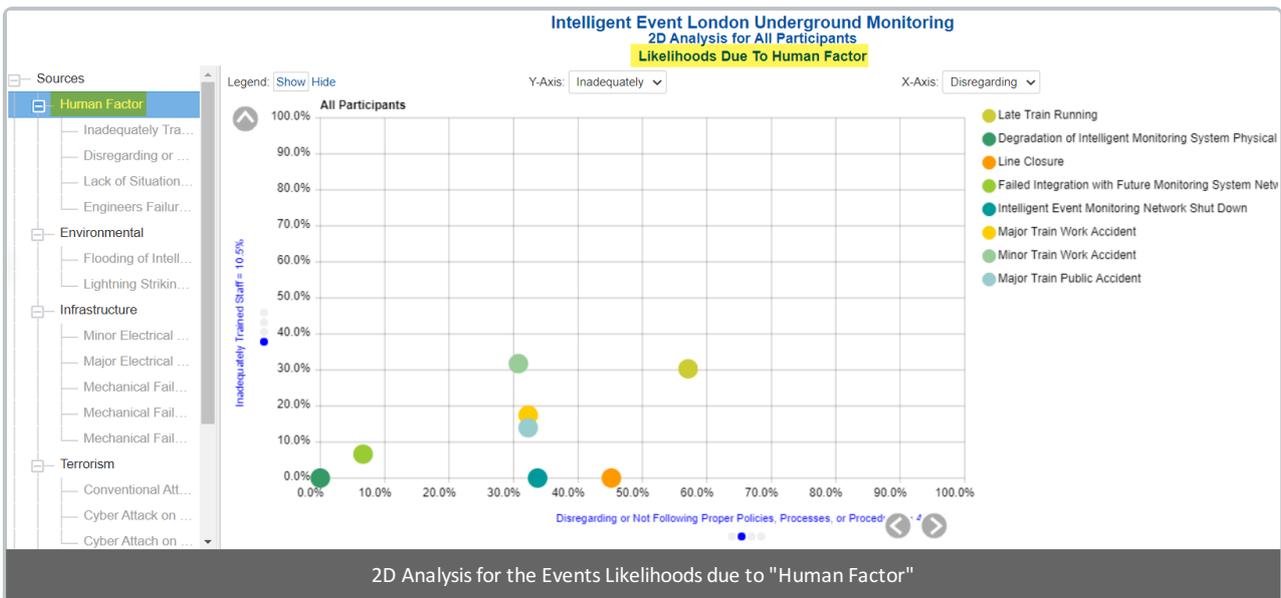
One source is represented on the X-Axis and another on the Y-Axis. The circles represent the events.

You can change the sources being displayed on the x and y axes by selecting them in the pull-down menus:



or by clicking the   (x-axis), or   (y-axis)

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Sources" node.



You can show the local and global source's likelihoods on the Sources Hierarchy at the right using the Local-Global buttons:

Local Global  Simulated Results

Sources	All Participants	
	Local	Global
Sources		
Human Factor	59.58%	59.58%
Inadequately T...	10.47%	6.24%
Disregarding o...	45.18%	26.92%
Lack of Situati...	15.42%	9.19%
Engineers Fail...	13.97%	8.32%
Environmental	19.94%	19.94%
Flooding of Int...	2.03%	0.4%
Lightning Striki...	1.08%	0.22%
Infrastructure	23.38%	23.38%
Minor Electrica...	19.22%	4.49%
Major Electrica...	7.91%	1.85%

You can hide the Sources Hierarchy at the left using

Click to show/hide the toolbar options:

Filter events: Show Decimals: Sort Sources by: Sort Events by:

Show all events Likelihood 1 None None

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using



Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

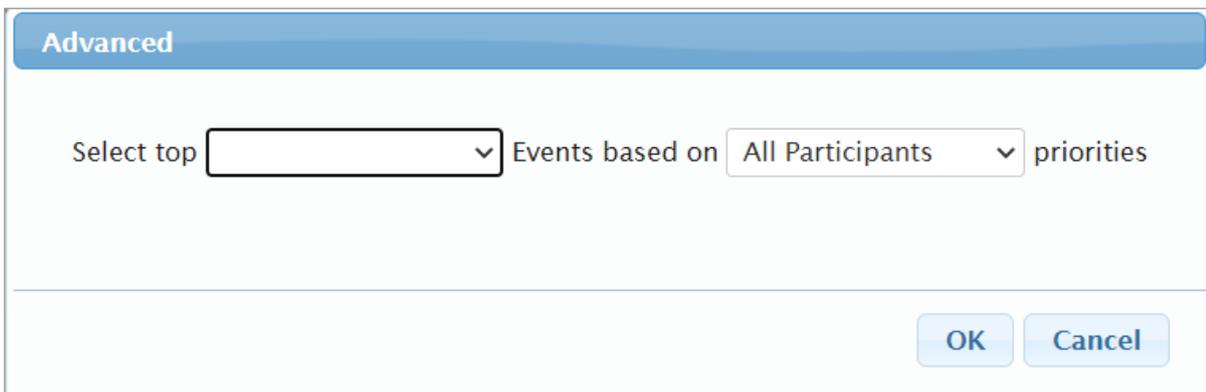
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

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Filter events:  1

CIS  User Priorities 2

Decimals:  3

Sort Sources by:

Sort Events by:

---

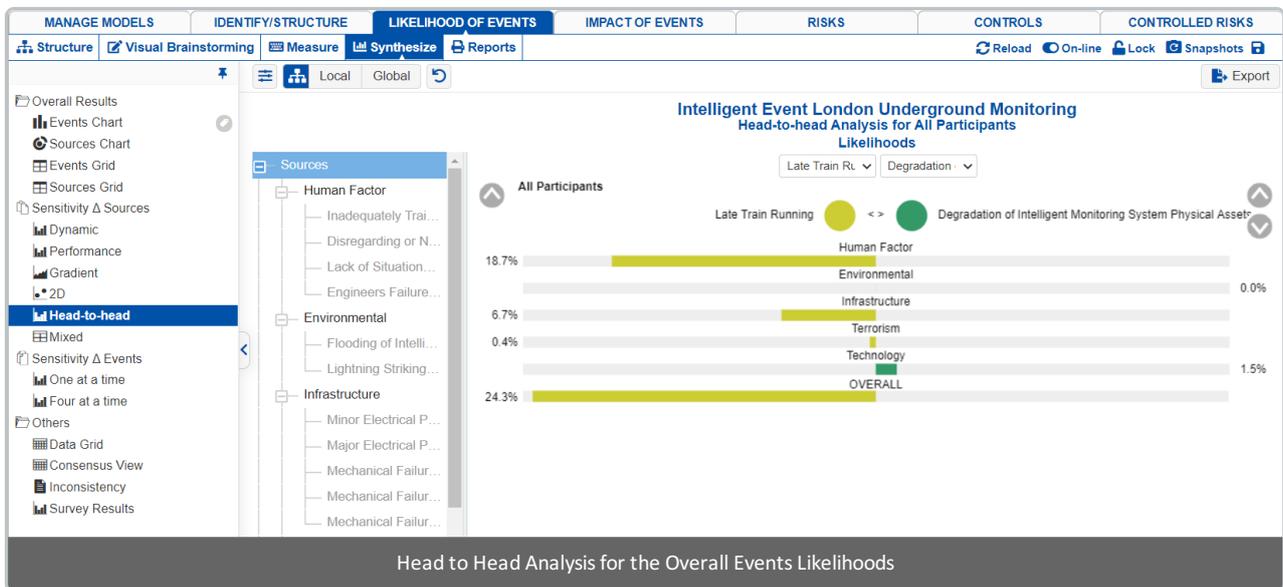
# Likelihood: Head to Head Analysis

## Overview

The Head-to-head analysis for Likelihoods shows how events compare to each other with respect to a Threat.

In Riskion, we refer to **threats**, **causes**, **hazards**, and **sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

In our sample model, we are using the terminology "Source(s)".



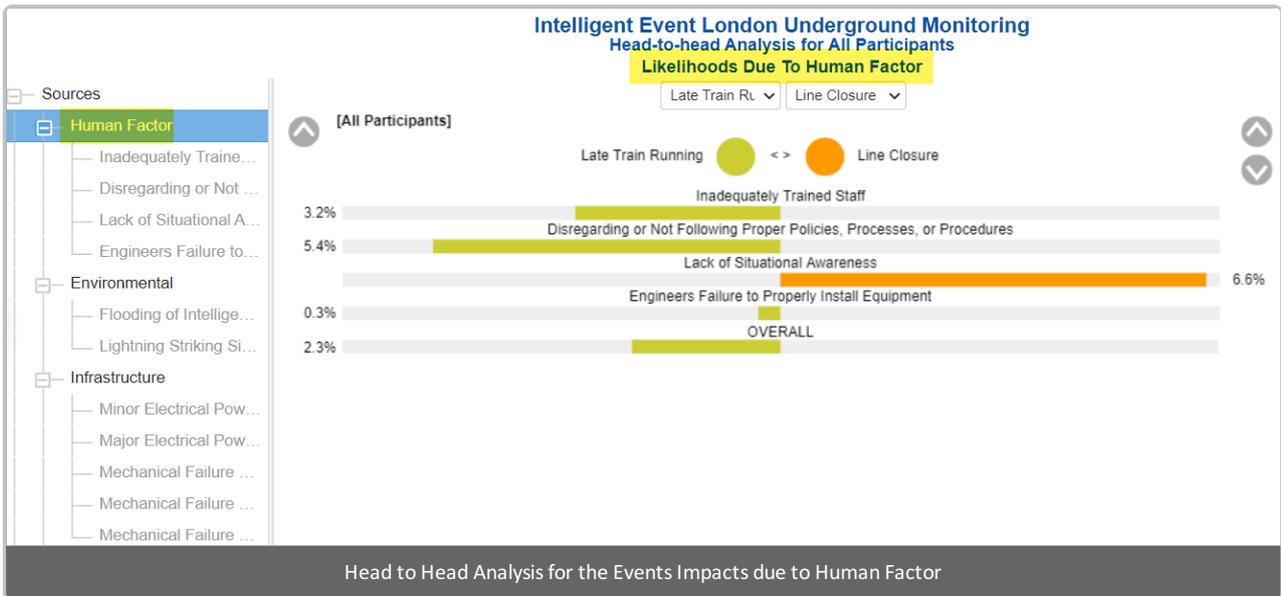
One event is listed on the left side of the graph and the other is listed on the right. Down the middle of the graph are listed the sources in the model. If the left-hand event is preferred to the right-hand event given the source, a horizontal bar is displayed towards the left. If the right-hand event is better, the horizontal bar will be on the right. If the two events are equal, no bar is displayed. The overall result is displayed at the bottom of the graph and shows the overall percentage that one event is better than the other; this is the difference.

You can change the events being compared using the pull-down menu:



or by clicking the icons.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Sources" node.



You can show the local and global source's likelihoods on the Source Hierarchy at the right using the Local-Global buttons:

Local Global  Simulated Results

Sources	All Participants	
	Local	Global
Sources		
Human Factor	59.58%	59.58%
Inadequately T...	10.47%	6.24%
Disregarding o...	45.18%	26.92%
Lack of Situati...	15.42%	9.19%
Engineers Fail...	13.97%	8.32%
Environmental	19.94%	19.94%
Flooding of Int...	2.03%	0.4%
Lightning Striki...	1.08%	0.22%
Infrastructure	23.38%	23.38%
Minor Electrica...	19.22%	4.49%
Major Electrica...	7.91%	1.85%

You can hide the Sources Hierarchy at the left using

Click to show/hide the toolbar options:

Filter events: 

 Decimals: 

 Sort Sources by: 

 Sort Events by:

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using



Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

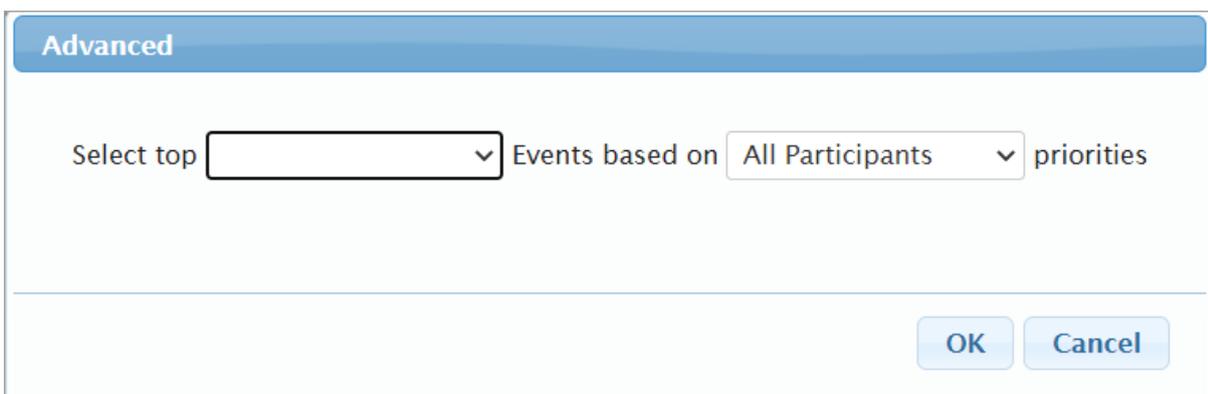
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

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The screenshot shows a control bar for event filtering and sorting. It includes a navigation icon, a filter dropdown, a checkbox for 'CIS', a checkbox for 'User Priorities', a 'Decimals' dropdown set to '2', a 'Sort Sources by' dropdown set to 'None', and a 'Sort Events by' dropdown set to 'None'. Three orange callout boxes are present: '1' points to the filter dropdown, '2' points to the 'User Priorities' checkbox, and '3' points to the 'Sort Events by' dropdown.

	Filter events: Show all events	<input type="checkbox"/> CIS	Decimals: 2	Sort Sources by: None	Sort Events by: None
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# Likelihood: Mixed

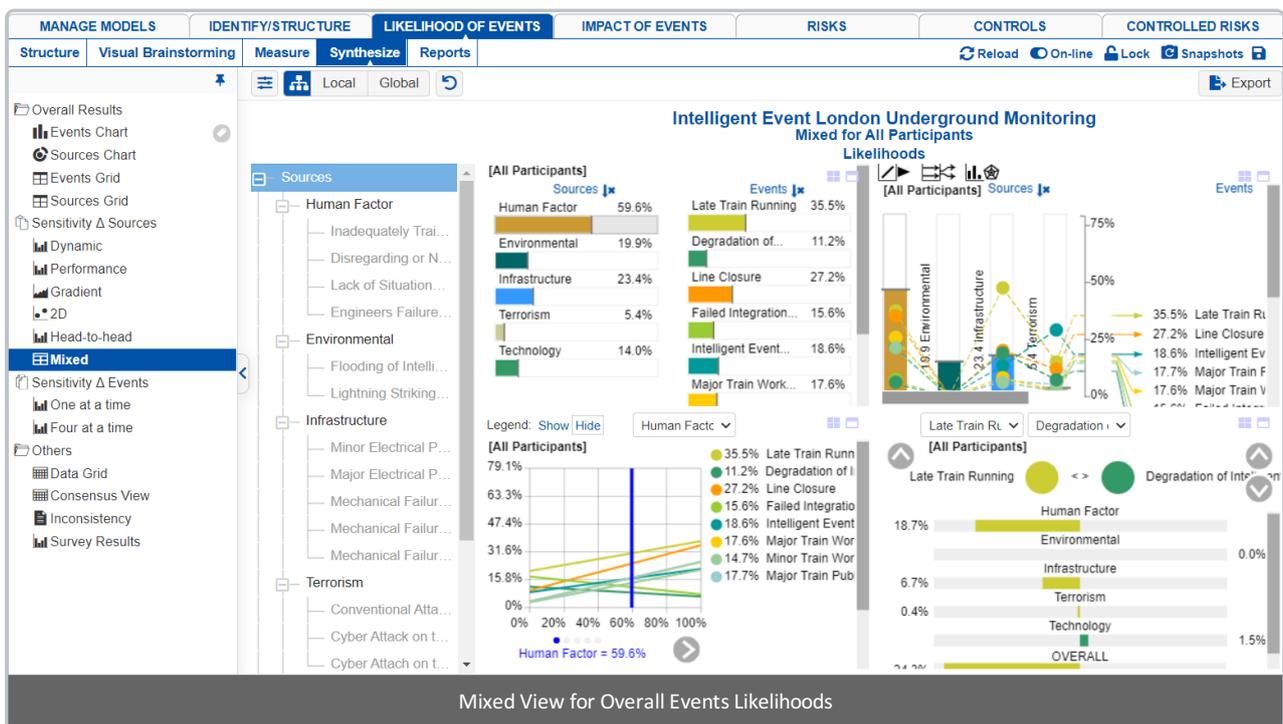
The Mixed screen for Likelihood displays the sensitivities and grids into one view:

- Dynamic Analysis
- Performance Analysis
- Gradient
- 2D plot
- Head to Head
- Events Grid
- Threats Grid

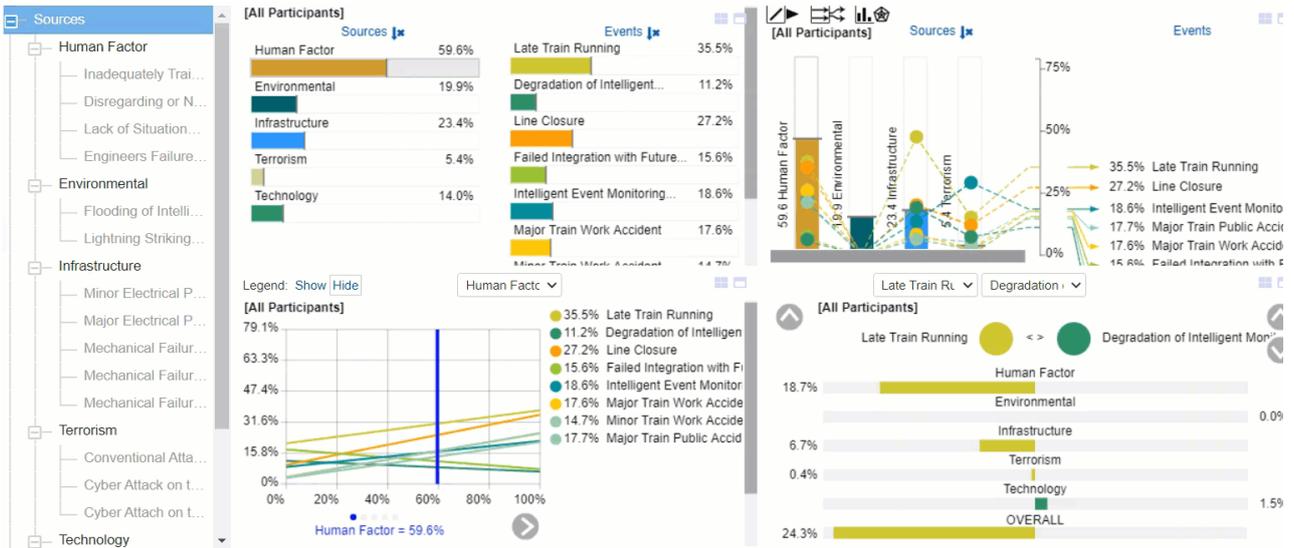
In Riskion, we refer to **threats**, **causes**, **hazards**, and **sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

In our sample model, we are using the terminology "Source(s)".

By default, four sensitivities are displayed as shown below:



You can temporarily alter the relationship between the events and their sources by dragging the bars/line (if applicable) on one sensitivity and it will be reflected on other sensitivities.



After temporarily changing the likelihoods of one or more of the sources, you can press the  reset icon.

You can show the local and global source's likelihoods on the Sources Hierarchy at the right using the Local-Global buttons:

Sources	All Participants	
	Local	Global
<b>Sources</b>		
Human Factor	59.58%	59.58%
Inadequately T...	10.47%	6.24%
Disregarding o...	45.18%	26.92%
Lack of Situati...	15.42%	9.19%
Engineers Fail...	13.97%	8.32%
Environmental	19.94%	19.94%
Flooding of Int...	2.03%	0.4%
Lightning Striki...	1.08%	0.22%
Infrastructure	23.38%	23.38%
Minor Electrica...	19.22%	4.49%
Major Electrica...	7.91%	1.85%

You can hide the Sources Hierarchy at the left using 

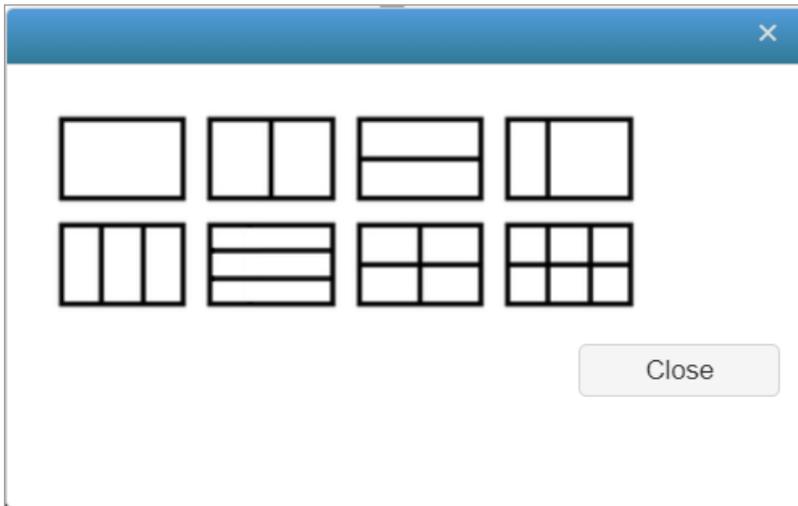
Click  to show/hide the toolbar options:

Filter events:  Decimals:  Sort Sources by:  Sort Events by:   Active Sorting  Show Components

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

The options available can be specific to a sensitivity.

Click  to select the layout how the sensitivities and/or grid will be displayed:



If you select the 6-widget layout, you will be able to select additional results widget:

[All Participants] Sources  Events

Source	Percentage	Event	Percentage
Human Factor	59.6%	Late Train...	35.5%
Environmental	19.9%	Line Closure	27.2%
Infrastructure	23.4%	Intelligent...	18.6%
Terrorism	5.4%	Major Train...	17.7%
Technology	14.0%	Major Train...	17.6%
		Failed...	15.6%

Legend: Show Hide Human Fact

[All Participants]

- 35.5% Late Train Runn
- 27.2% Line Closure
- 18.6% Intelligent Event
- 17.7% Major Train Pub
- 17.6% Major Train Wor
- 15.6% Failed Integratio
- 14.7% Minor Train Wor
- 11.2% Degradation of I

[All Participants]

- Events Grid
- Sources Grid
- Dynamic Sensitivity
- Performance Sensitivity
- Gradient Sensitivity
- 2D Sensitivity
- Head to Head Analysis
- Bow-Tie
- Risk Head Map

## Select Participants and Groups

You can select to display results for **one** participant or group using 

Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

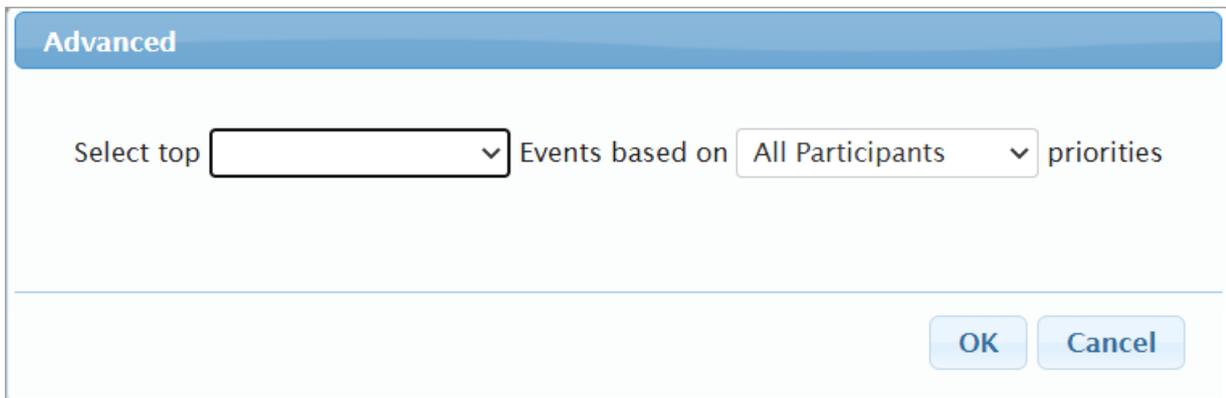
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



The select /deselection option, allows you to check/uncheck the events.

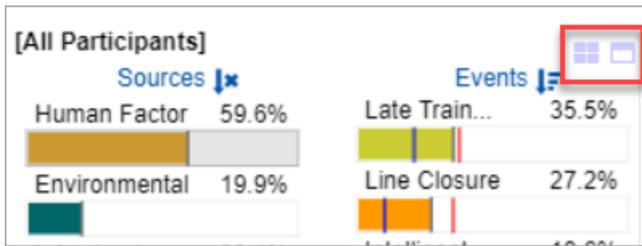
The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

### 4. Change or Maximize Widget

Two icons are displayed to the top right of each widget:



Clicking the first icon will show the list of all the available widget, simple click the widget you want to select:

- Events Grid
- Sources Grid
- Dynamic Sensitivity
- Performance Sensitivity
- Gradient Sensitivity
- 2D Sensitivity
- Head to Head Analysis

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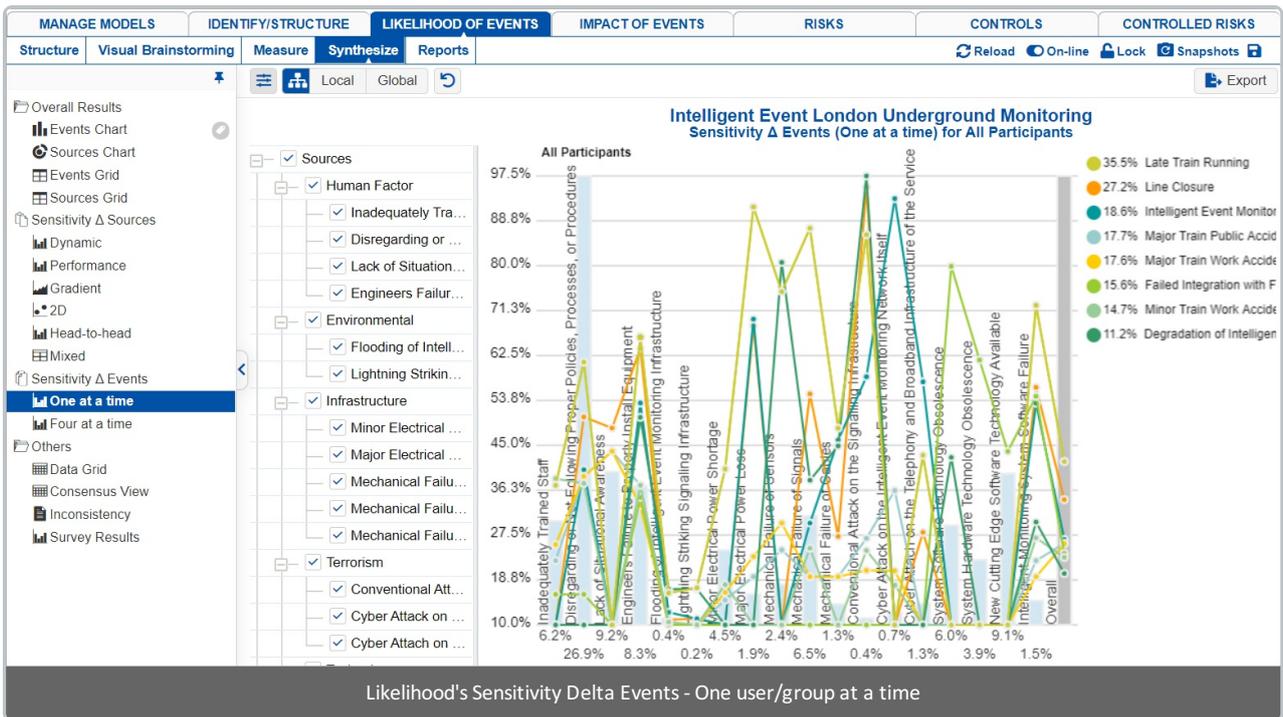
- Bow-Tie
- Risk Head Map

Clicking the second icon will open a modal where you can see the maximized view of the currently displayed widget.

# Likelihood: One at a time

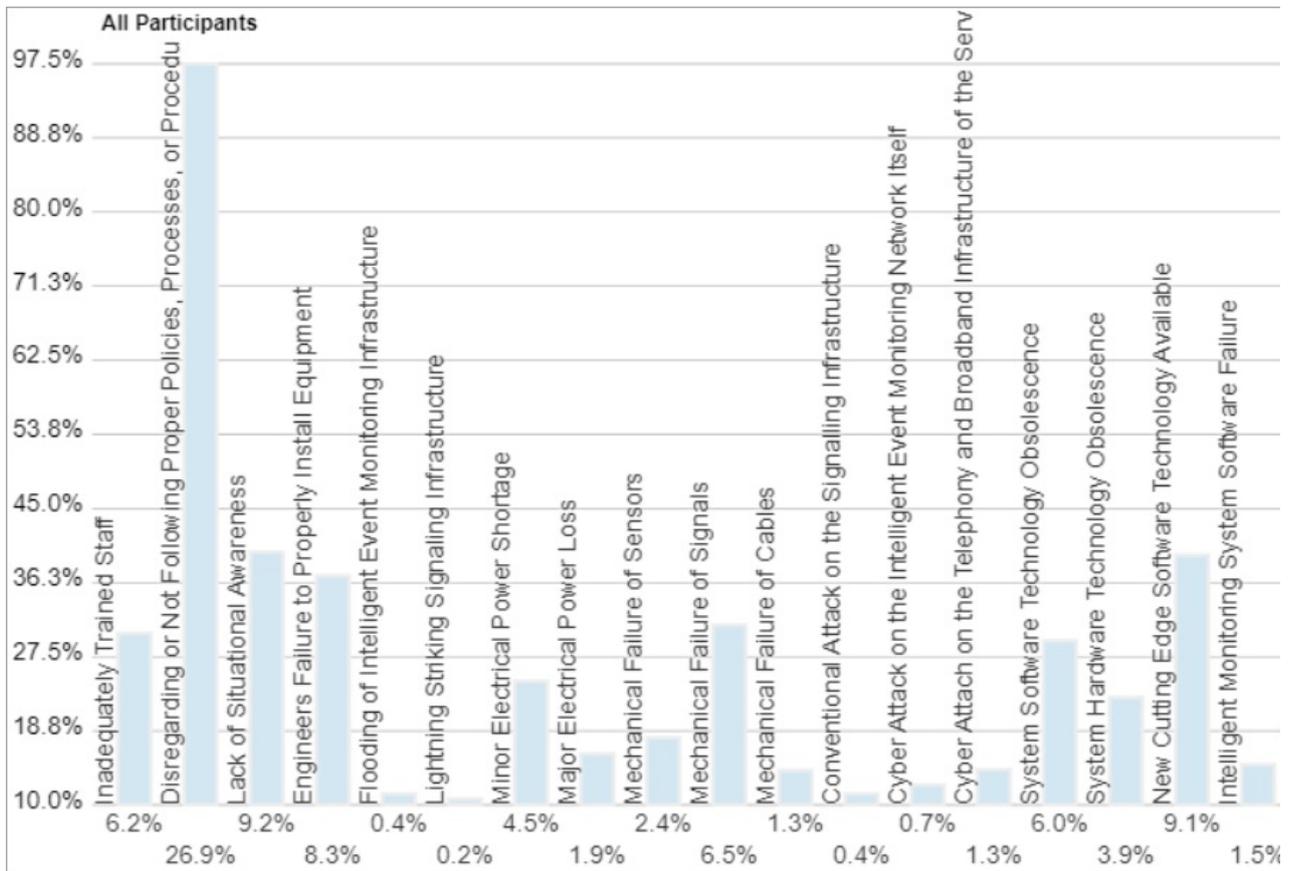
**Sensitivity  $\Delta$  (delta) Events** page for Likelihood shows the changes in overall event likelihoods when the event likelihood due to one or more covering threats/sources is changed. If you change an event's likelihood given a single threat/source, you'll see the effect on the events' overall likelihood.

When the likelihood of an event is changed due to a threat/source, we do not adjust the other event likelihoods (normalize to 1) as we do when we change the threat likelihoods Sensitivity  $\Delta$  delta Threats/Sources.



Let's look at the information that is contained in this graph piece by piece.

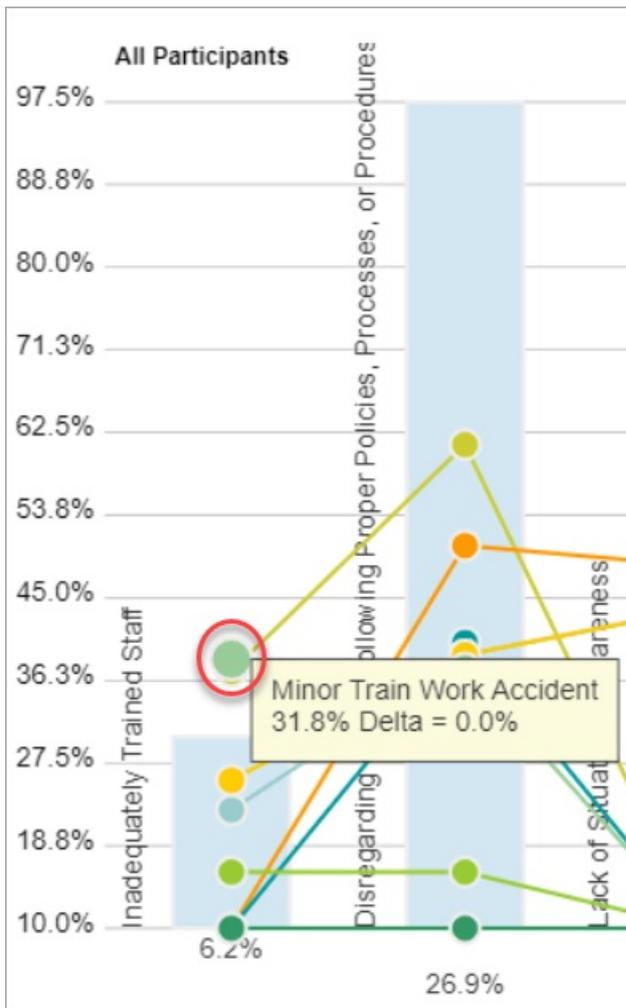
**First**, the likelihood of the covering threats/sources are depicted by the vertical blue bars and shown numerically at the side of each bar or by hovering on the bars:



**Secondly**, the likelihoods of events due to the covering threats/sources are shown by small circles representing each of the events.

Hovering on a circle displays a tooltip with the event name it designates to, the likelihood due to the covering threat/source, and Delta (0% indicates that the likelihood is based on actual participant judgments).

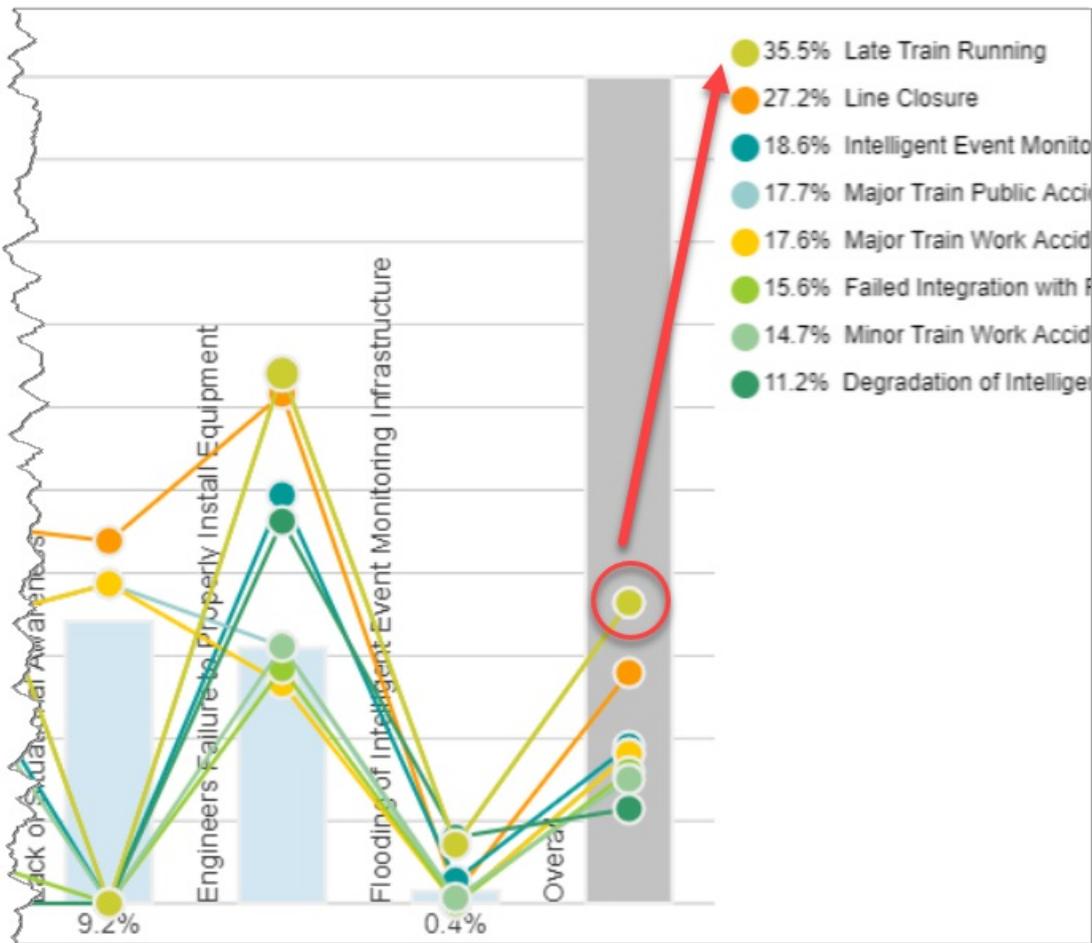
Below it shows that the event Minor Train Work Accident has the highest likelihood (31.8%) due to Inadequately Trained



Staff.

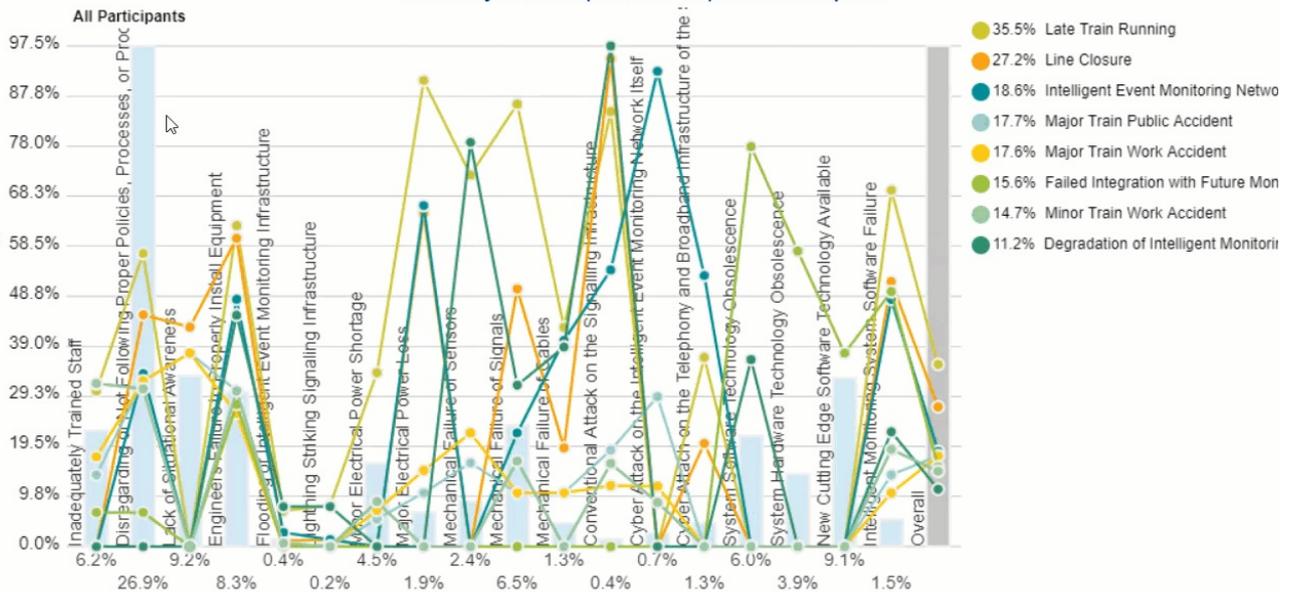
The lines connecting the events from one threat/source serve to help you find where a particular event lies as you move from one threat/source to another.

**Finally**, the intersection of the event line segment with the overall axis (gray vertical bar) shows the overall likelihoods of the events which are also displayed at the right with the event names.



To temporarily change the likelihood of an event given a covering threat/source, and see how it will affect the overall likelihoods of the events, simply drag the event circles up (increase likelihood) or down (decrease likelihood). The %delta will increase or decrease as you drag the plot up or down.

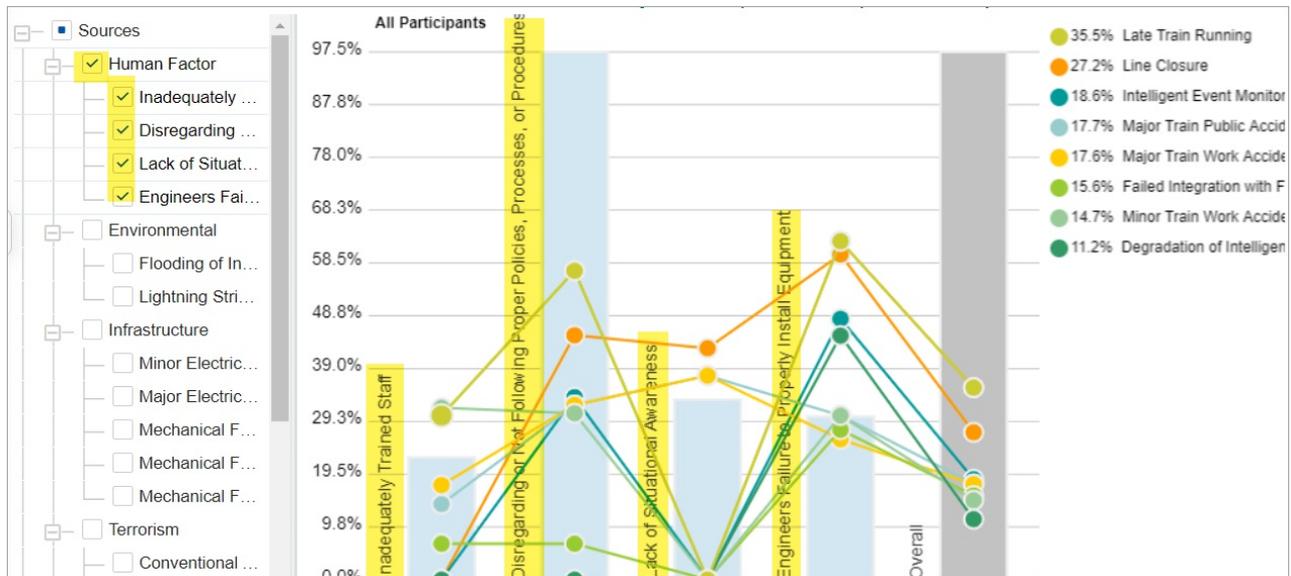
### Intelligent Event London Underground Monitoring Sensitivity $\Delta$ Events (One at a time) for All Participants



From above, we see that the original likelihood of Minor Train Work Accident due to Inadequacy Trained Staff is 31.8% and it's the 7th highest likelihood in the overall event likelihoods at the right. As we increase its likelihood by dragging the green circle upward (Delta=+65.8), we see that Minor Train Work Accident becomes the third-highest likelihood in the

overall event likelihoods.

You can select/deselect threats/sources so you can view the events for fewer covering threats/sources. This is done by checking/unchecking the checkboxes to the right of the threats/sources nodes.



Alternatively, you can use the pagination options to view fewer threats/sources at a time:

Page size: Page num:  
20 1

The Page size is the number of threats/sources to display on each page, e.g. view 5 covering sources/threats at a time.

The Page Num is to paginate to another list or set of threats/sources if there is pagination.

## Select Participants and Groups

You can select to display results for **one** participant or group using



Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

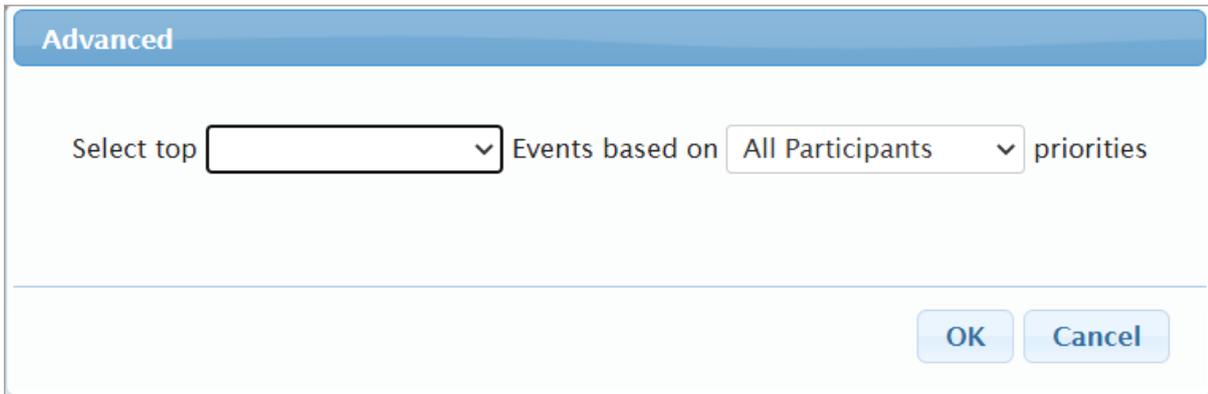
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

When the [Advanced mode](#) is ON, you will see the advanced options on this page:



### 1. Combined Input Option (CIS)

If the Combined Input Option (CIS) is on (see below) then results for individuals are computed by combining the likelihoods derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.



## 2. Apply User Priorities

If priorities (weights) have been specified for participants, you can use the "User Priorities" check box will enable you to apply or ignore these priorities in generating the results.



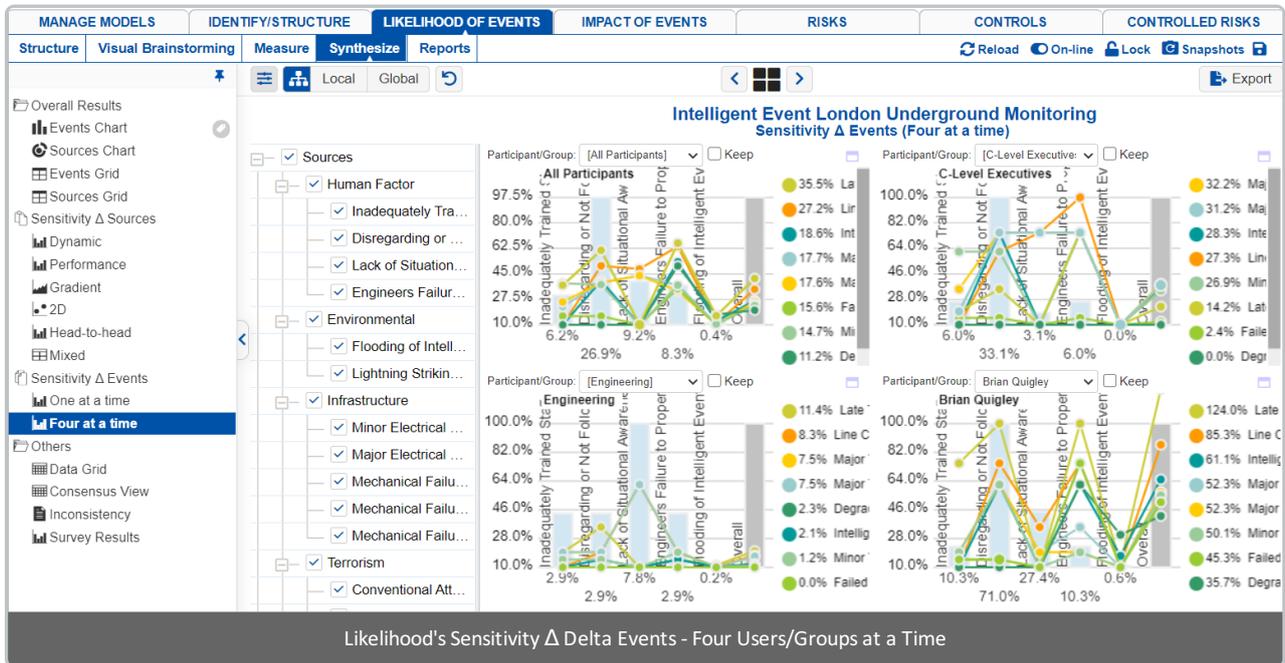
## 3. Show Event's Overall Likelihoods

Enabling this button shows the likelihoods of the events due to the top node, instead of the lower node currently selected on the left hierarchy tree. This icon is disabled when the top node is currently selected on the tree.



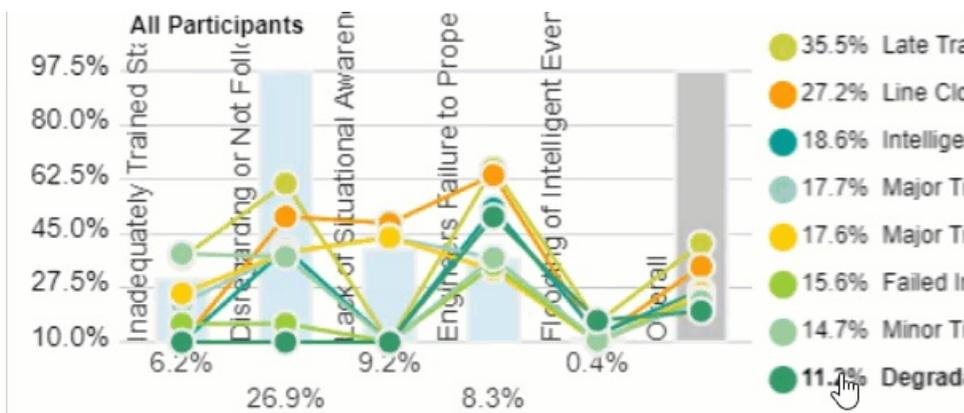
# Likelihood: Four at a Time

This page displays the same information as with the [Likelihood's Sensitivity Δ Events Sensitivity: One at a time](#) but with four participants or groups at a time.



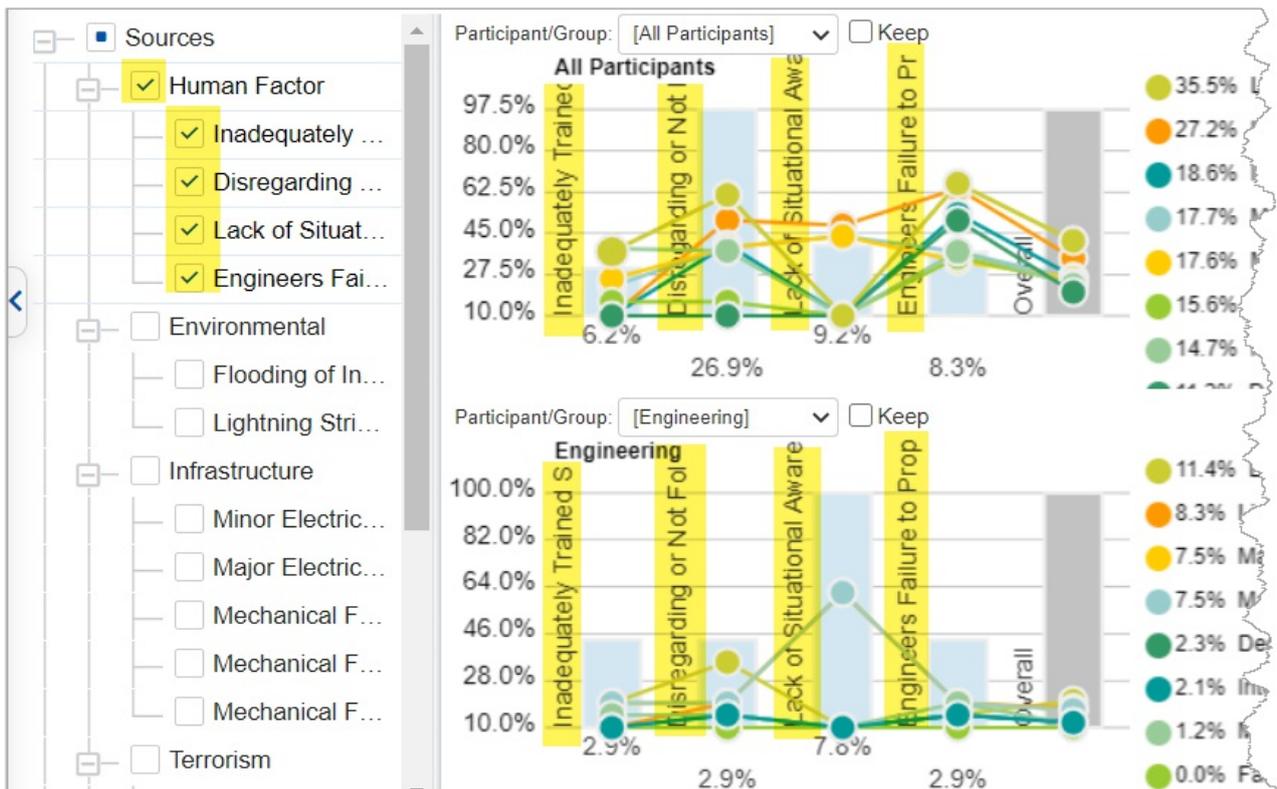
Likelihood's Sensitivity Δ Delta Events - Four Users/Groups at a Time

**Sensitivity Δ (delta) Events** page for Likelihood shows the changes in overall event likelihoods when the event likelihood due to one or more covering threats/sources is changed. If you change an event's likelihood given a single threat/source, you'll see the effect on the events' overall likelihood.



When the likelihood of an event is changed due to a threat/source, we do not adjust the other event likelihoods (normalize to 1) as we do when we change the threat likelihoods Sensitivity Δ delta Threats/Sources.

You can select/deselect threats/sources so you can view the events for fewer covering threats/sources. This is done by checking/unchecking the checkboxes to the right of the threats/sources nodes.



Alternatively, you can use the pagination options to view fewer threats/sources bars at a time:

Page size: Page num:  
 20 1

The Page size is the number of threats/sources to display on each page, e.g. view 5 covering sources/threats at a time.

The Page Num is to paginate to another list or set of threats/sources if there is pagination.

You can cycle through four participants/groups at a time by clicking < (previous) and > (next) buttons at the top.



When a participant/group is marked as "Keep", the participant/group will remain selected as you cycle through using the prev/next buttons.

Participant/Group: [All Participants]  Keep

You can click  at the top right of each sensitivity to maximize the view for one user/group.

# Common Synthesize Advanced Options: CIS, User Priorities, WRT top-node

When the [Advanced mode](#) is ON, you will see the advanced options of the page you are currently working on.

## 1. Combined Input Option (CIS)

If the Combined Input Option (CIS) is ON then results for individuals are computed by combining the likelihoods (or impacts) derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.



## 2. Apply User Priorities

If [priorities \(weights\)](#) have been specified for participants, you can use the "User Priorities" check box which enables you to apply or ignore these priorities in calculating the results.



## 3. Synthesize Events WRT top-node

This option is available on all the Sensitivity screens and can only be enabled when a non-covering node other than the top node is selected on the hierarchy tree.



Enabling this option allows to temporarily change the likelihood (or impacts) of the children of the selected node and see how these changes will affect the **overall likelihood (or impacts, or risks) of the events**. If this is OFF, we can then see the change of the likelihood (or impacts, or risks) of the events WRT the selected node.

---

# Likelihood: Datagrid

The Likelihood's Datagrid page displays the events attributes, events likelihoods given each of the sources, and the overall event likelihood.

The screenshot shows the 'LIKELIHOOD OF EVENTS' tab in a software application. The interface includes a navigation menu on the left with options like 'Overall Results', 'Events Chart', 'Sources Chart', 'Events Grid', 'Sources Grid', 'Sensitivity Δ Sources', 'Dynamic', 'Performance', 'Gradient', '2D', 'Head-to-head', 'Mixed', 'Sensitivity Δ Events', 'One at a time', 'Four at a time', and 'Others'. The 'Data Grid' option is selected. The main area displays a table with the following data:

Events	Attributes				Sources				
	Event History	Risk Owner	Total	Event Type	Inadequately Trained Staff	Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Flooding Intelligence Event Monitoring Infrastru
1 Late Train Running	Often	John	0.3548352	Risk	0.3032604	0.570823		0.6254267	0.0693
2 Degradation of Intelligent Monitoring System Physical Assets	no history	Carol	0.111717	Risk				0.450969	0.0779
3 Line Closure	Occasionally	Joe	0.2722118	Risk		0.4517705	0.4276324	0.6009955	0.0112
4 Failed Integration with Future Monitoring System Network	no history	Frank	0.1555223	Risk	0.06637929	0.06637929		0.2770897	
5 Intelligent Event Monitoring Network Shut Down	no history	Frank	0.1855276	Risk		0.3372278		0.4820388	0.027
6 Major Train Work Accident	twice annually	Joe	0.1763516	Risk	0.1746602	0.3226708	0.377167	0.2595263	
7 Minor Train Work Accident	once monthly	Carol	0.1467113	Risk	0.317683	0.3074679		0.3032604	0.00631
8 Major Train Public Accident	once every 2 years	John	0.176865	Risk	0.139673	0.3226708	0.377167	0.3032604	

By default, the Datagrid for "All Participants" is displayed.

You can select another participant or group:

The screenshot shows a dropdown menu for 'Select participant or participants group:'. The selected option is '[All Participants]'. The dropdown list includes the following options:

- [All Participants]
- [C-Level Executives]
- [Engineering]
- Denis Risman
- Brian Quigley
- Chief Risk Officer
- Chief Engineering ...
- IT Supervisor
- Chief Executive Off...
- Devin Nagy
- Michael Mankowski
- John Doe
- Project Manager
- Administrator

Groups are in [Group\_name] format.

Click [Download](#) to download the Datagrid into a .xlsx file.

Click **Select Columns** to hide some of the attribute columns.

**Select Columns**

- Event History
- Risk Owner
- Total
- Event Type

All | None

# Likelihood: Consensus View

The consensus view shows the standard deviations (the square root of the variances) among evaluators for event likelihoods due to sources.

Rank	Source / Event	With respect to: Source / Covering Source	Standard Deviation...	Step
1	Late Train Running	Engineers Failure to Properly Install Equi...	34.88%	49
2	Degradation of Intellige...	Mechanical Failure of Cables	33.52%	94
3	Line Closure	Engineers Failure to Properly Install Equi...	32.46%	51
4	Intelligent Event Monit...	Mechanical Failure of Cables	32.3%	96
5	Failed Integration with ...	Intelligent Monitoring System Software F...	31.91%	125
6	Failed Integration with ...	Engineers Failure to Properly Install Equi...	31.6%	52
7	Late Train Running	Disregarding or Not Following Proper Pol...	30.71%	37
8	Late Train Running	Cyber Attack on the Telephony and Broa...	29.39%	113
9	Degradation of Intellige...	System Software Technology Obsolesce...	29.06%	117
10	Degradation of Intellige...	Engineers Failure to Properly Install Equi...	28.75%	50
11	Major Train Public Acci...	Lack of Situational Awareness	27.75%	47
12	Major Train Work Accid...	Lack of Situational Awareness	27.75%	46
13	Intelligent Event Monit...	Conventional Attack on the Signalling Infr...	27.62%	103
14	Intelligent Event Monit...	Disregarding or Not Following Proper Pol...	27.22%	40
15	Major Train Public Acci...	Disregarding or Not Following Proper Pol...	27.11%	43

The entries are displayed for steps in the evaluation process, sorted from high to low standard deviation (square root of variance).

The standard deviation column has colored bars corresponding to the % to give a visual indication of the consensus but is not to be interpreted as being acceptable or not. The red bar indicates high %, yellow for medium, and green for low.

The main purpose of the consensus view is to make it easy to revisit those steps in the evaluation process where there is the greatest lack of consensus.

Clicking on the step number in a row will open TeamTime evaluation in another browser window, specific to the step for the chosen event/threat step. The variances are displayed in the TeamTime meeting instead of the Standard Deviation.

You can select only those portions of the hierarchy for which to view standard deviation.

For example:

Rank	Source / Event	With respect to: Source / Covering Source	Standard Deviation...	Step
23	Late Train Running	Inadequately Trained Staff	25.32%	31
30	Minor Train Work Accid...	Inadequately Trained Staff	22.33%	34
60	Major Train Public Acci...	Inadequately Trained Staff	8.57%	33
70	Major Train Public Acci...	Inadequately Trained Staff	7%	35
84	Failed Integration with ...	Inadequately Trained Staff	2.21%	32

will only display variances for those judgments due to **Inadequately Trained Staff**.



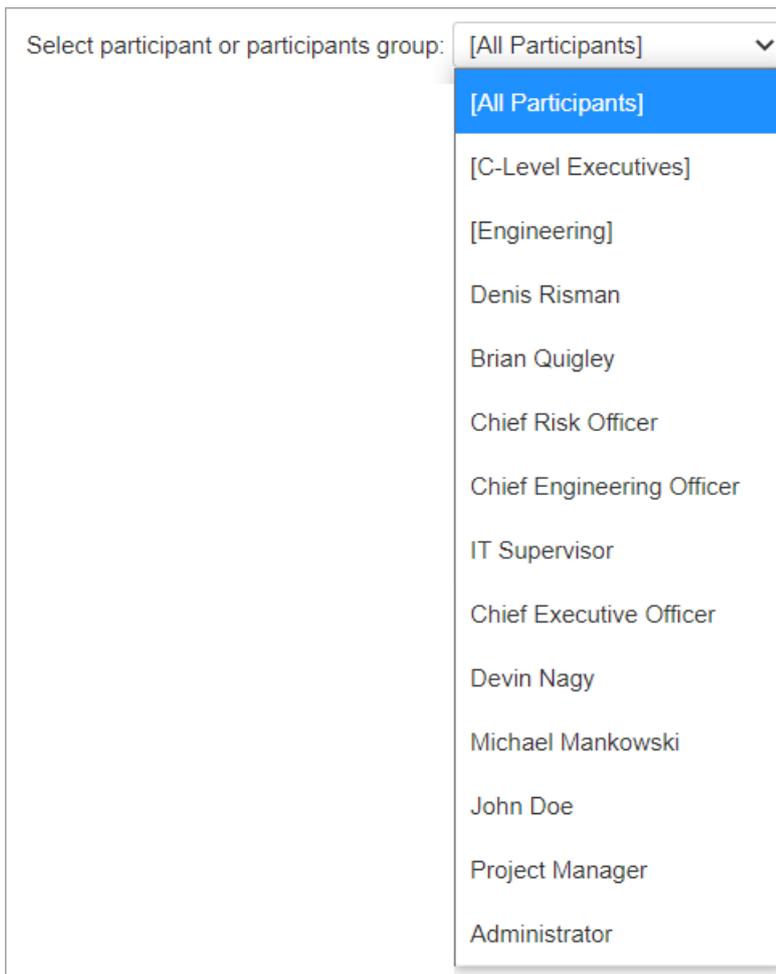
# Inconsistency Report

Depending on the model you are working on, the inconsistencies are shown for each cluster for which likelihoods or impacts were derived with **pairwise comparisons**.

This is found on:

- **Likelihood of Events > Synthesize > Others > INCONSISTENCIES** or
- **Impact of Events > Synthesize > Others > INCONSISTENCIES**

By default, "All Participants" is selected. This means that all participants will be included in the report. You can choose to select another group or a specific participant.



The image shows a dropdown menu with the label "Select participant or participants group:". The menu is currently open, showing a list of options. The top option, "[All Participants]", is highlighted in blue. Below it are several other options: "[C-Level Executives]", "[Engineering]", "Denis Risman", "Brian Quigley", "Chief Risk Officer", "Chief Engineering Officer", "IT Supervisor", "Chief Executive Officer", "Devin Nagy", "Michael Mankowski", "John Doe", "Project Manager", and "Administrator".

The "Threat" (for Likelihood) or "Objectives" (for Impact) column contains the cluster name and the "Path" column contains the full path to the cluster. The number of elements in each cluster is also shown.

Select participant or participants group: [All Participants] ▼

Refresh | RTF | PDF | XLS

Drag a column header here to group by that column

Name	Examine	Objective	Path	Inconsistency ▼	Number Of Children	Action
IT Supervisor	its@gwu.edu	Objectives	Objectives	0.1969	6	 
Chief Risk Officer	cro@gwu.edu	Objectives	Objectives	0.1871	6	 
Chief Risk Officer	cro@gwu.edu	Performance	Objectives   Performance	0.1235	4	 
Chief Executive Officer	che@gwu.edu	Performance	Objectives   Performance	0.0955	4	 
Chief Risk Officer	cro@gwu.edu	Reliability, Availability, Maintainability	Objectives   Reliability, Availability, Maintainability	0.0952	3	 
Chief Executive Officer	che@gwu.edu	Objectives	Objectives	0.0881	6	 
Chief Risk Officer	cro@gwu.edu	Financial	Objectives   Financial	0.0869	3	 
IT Supervisor	its@gwu.edu	Performance	Objectives   Performance	0.0844	4	 
Chief Engineering Officer	ceo@gwu.edu	Objectives	Objectives	0.0816	6	 
IT Supervisor	its@gwu.edu	Financial	Objectives   Financial	0.0538	3	 

Page 1 of 3 (24 items) < [1] 2 3 > All

[Create Filter](#)

You can sort either ascending or descending on any column -- in particular by the inconsistency column.

The action column has two options:



"View only" pipe - will open the "view only" pipe specific step on the pipe which shows the cluster results for the user. "View only" pipe means that the judgments can't be changed.



Login User - allows the Project Manager to be logged in as the specific user being examined

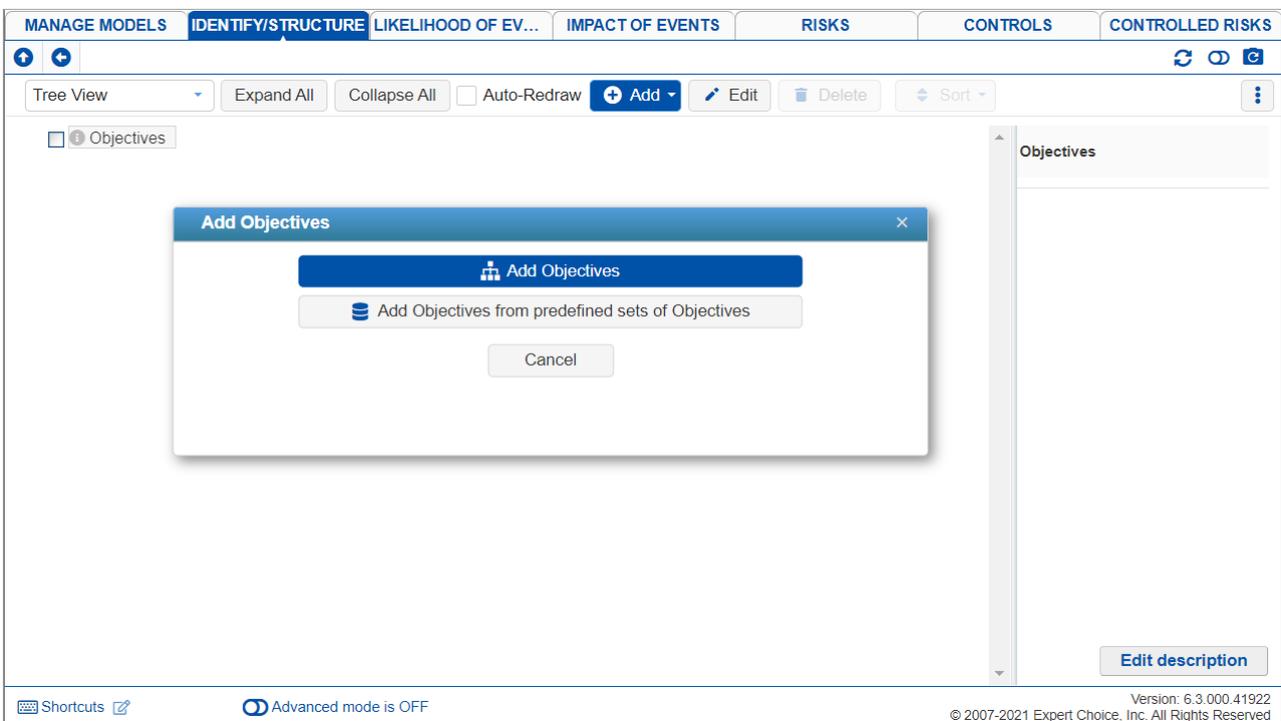
# Add, Edit and Delete Objectives

The Objectives hierarchy can be created, viewed, and edited from any of the following pages:

- IDENTIFY/STRUCTURE > IDENTIFY > **Objectives**;
- IDENTIFY/STRUCTURE > OBJECTIVES > **Hierarchy**;
- IMPACT OF EVENTS > STRUCTURE > EVENTS OBJECTIVES > **Objectives**.

The default wording can be defined on the Workgroup Template; or from Default Option Sets. You can also change the wording for each model on the Judgments Options page of the model.

Before adding Objectives, we suggest you read how Riskion defines Objectives-- [Riskion Taxonomy \(Risk Elements and Risk Measures\)](#).

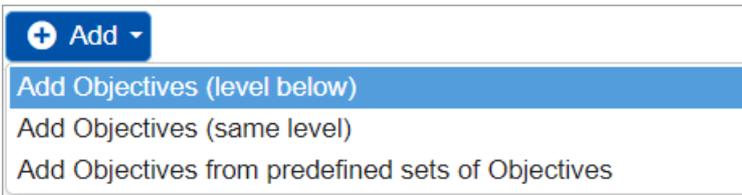


Depending on the Default Option Sets wording used when creating a model, the overall statement will be shown, in this case, "Objectives" and can be edited. A prompt to add objectives will pop-out as shown above.

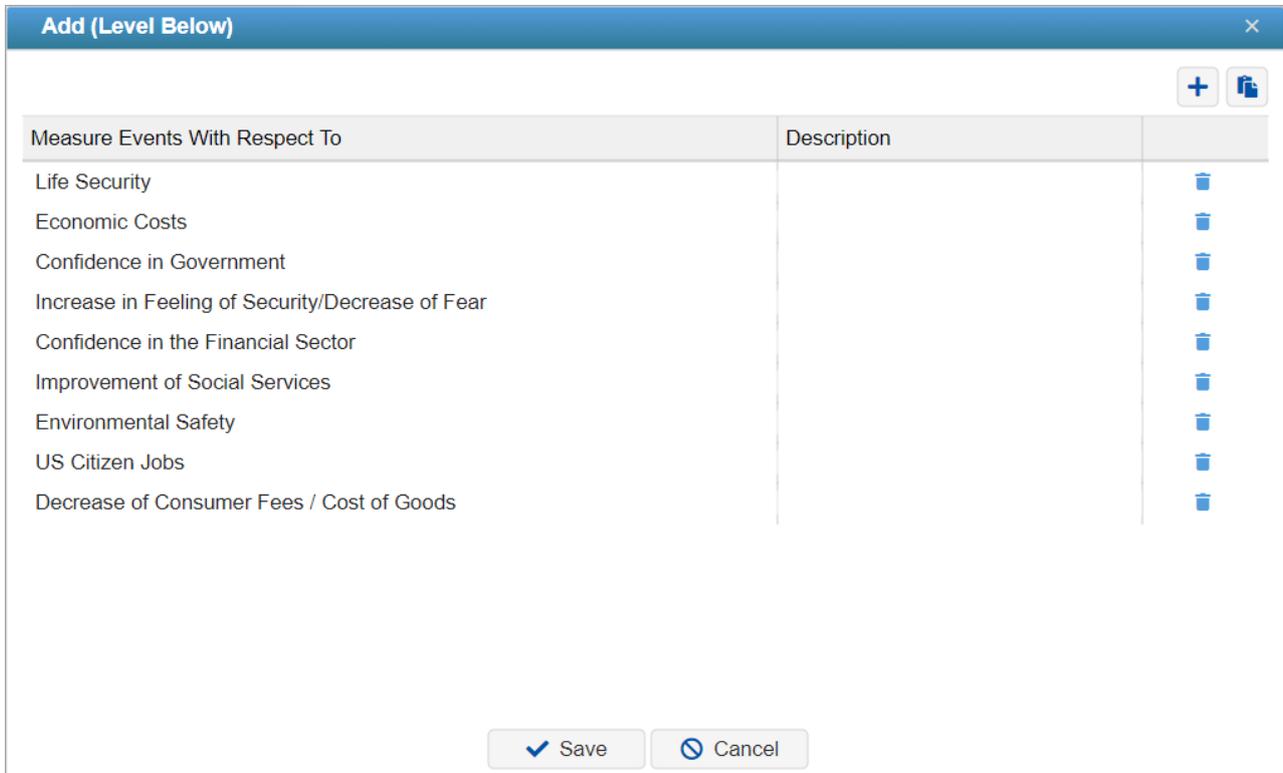
## Add Objectives (same level or below)

You can add objectives **below** the Objectives node.

Additional elements (objectives, sub-objectives) can be added either at the same level of the currently selected node by pressing **Add Objectives (same level)** button, or below the currently selected button, by pressing **Add Objectives (level below)** button.



Pressing either of the first two options above will open a dialog:



Here you can either:

a) enter one or more elements, along with brief descriptions (a simple form of an information document which you can modify later using the Edit description or buttons). Adding one or more spaces before an element name will indicate that the element should be added at a lower level in the hierarchy.

b) The **Paste from Clipboard** button will paste elements that have been previously placed on the clipboard into the hierarchy. These elements can be placed on the clipboard in a variety of ways:

1. By copying from adjacent rows/columns in an Excel spreadsheet
2. By copying from adjacent row/s columns in a Word document
3. By copying from a tab delimited text file, where the tab is used to separate the element name from the element description.

The Objective and the objective names can be **edited** by selecting them and clicking the Edit button or by double-clicking the node name.

## Add Objectives from predefined sets of Objectives

The **Add Objectives from predefined sets of Objectives** allows you to add new objectives from predefined objectives determined by the site administrator.

## Delete Objectives

You can **delete** one or more objectives by selecting them and clicking the Delete button.

You can also right-click an objective to see a set of commands, and then select Delete.

**HINT:** It is advisable to [save a copy of the model](#) before deleting many elements in case you want to save a copy of your model before the deletion. You can also use the **Model Snapshots** feature to revert to what you had.

## Objectives right-click commands

Some commands already explained above and more are available by right-clicking an Objective node:

- + Add Objectives (level below)
- + Add Objectives (same level)
- + Add Objectives from predefined sets of Objectives
- ✎ Edit
- ℹ Edit description
- 🗑 Delete
- 📄 Copy Judgments
- 📄 Paste Judgments
- 🗑 Erase node's judgments for all participants

- Add Objectives (level below) - add nodes below the selected node
- Add Objectives (same level) - add nodes same level as the selected node
- Add Objectives from predefined sets of Objectives - Open the predefined sets modal
- Edit - edit the selected node
- Edit description - open the rich text editor to edit the description of the selected node
- Delete - delete the selected node
- Copy judgments - copy judgments of the selected node
- Paste judgments - paste the copied judgments from another node to the selected node
- Erase node-s judgments for all participants - delete the judgments of the selected node

# Expand, Collapse and Auto-Redraw the Objectives Hierarchy

**Expand All** will expand all branches of the hierarchy.

**Collapse All** will collapse the hierarchy and show only the goal and the first level of elements (objectives).

You can also expand/collapse **sections** of the hierarchy by clicking the same icons at the left of the objective node.

When the **Auto-Redraw** box is checked, clicking on the *name* of any element will not only expand the branches below that element but will automatically contract the branches in other parts of the hierarchy. This is useful to be able to focus on a part of the hierarchy, see all of its ancestries, but not be distracted from details in other parts of the hierarchy.

Tree View  Expand All  Collapse All  Auto-Redraw  Add

- [-]  Objectives
  - [-]  Financial
    - Loss of Customers
    - Financial Loss
    - Financial Liability Due to Accident
  - [-]  Reliability, Availability, Maintainability
    - Loss of Maintenance Efficiency
    - Disruption/Damage to Service Line Infrastructure
    - Repair to Service Line Infrastructure
  - [-]  Performance
    - Temporary Line Closure
    - Loss of Reliability and Network Efficiency
    - Loss of Wider Monitoring System Program Efficiency
    - Loss of Train Service
  - [-]  Human Factors
    - Death
    - Injury
  - [-]  Safety
    - Loss of Safety
  - [-]  Public Relations
    - Customer/Business Dissatisfaction with the Service/Network Efficiency
    - Loss of Company Reputation

# Sort (Re-order) Objectives

Elements can be moved or copied from one position/level in the hierarchy to another by drag/dropping to the desired position in the hierarchy.

In Tree View, you can move or copy a node from one position to another by dragging and dropping. Simply select a node and hold on to the left button of your mouse and then drag to the position you want the node to be moved/copied (you will see a blue arrow as a pointer). Once you release the mouse's left key, you will then see a dialog asking whether to copy or move the node. Select and click OK to confirm.

Tree View   Expand All   Collapse All    Auto-Redraw  

- [-]  Objectives
  - [-]  Financial
    - Loss of Customers
    - Financial Loss
    - Financial Liability Due to Accident
  - [-]  Reliability, Availability, Maintainability
    - Loss of Maintenance Efficiency
    - Disruption/Damage to Service Line Infrastructure
    - Repair to Service Line Infrastructure
  - [-]  Performance
    - Temporary Line Closure
    - Loss of Reliability and Network Efficiency
    - Loss of Wider Monitoring System Program Efficiency
    - Loss of Train Service
  - [-]  Human Factors
    - Death
    - Injury
  - [-]  Safety
    - Loss of Safety
  - [-]  Public Relations
    - Customer/Business Dissatisfaction with the Service/Network Efficiency
    - Loss of Company Reputation

You can also **sort** elements in the cluster below the **selected** objective or sub-objective by name ascending/descending:

Sort

- By Name Ascending
- By Name Descending

Sorting by name can be done both in Tree View and Hierarchy View.

**HINT:** You can use the **Model Snapshots** feature in case you want to revert to what you had before the sorting.

---

# View Objectives (Tree or Hierarchy)

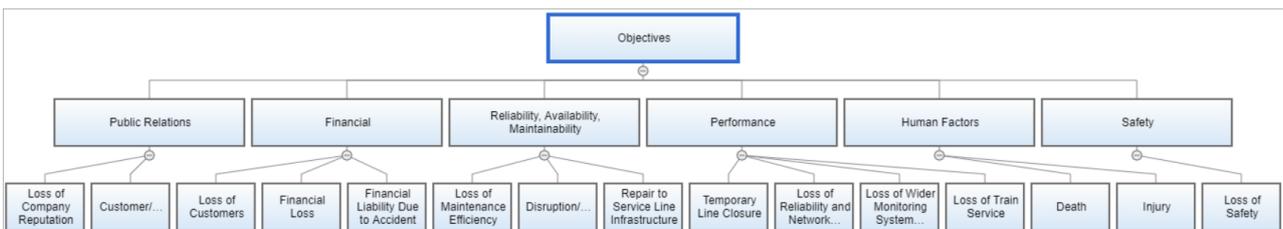
Objectives can be viewed in **Tree View** or **Hierarchical View**. By default, the Tree View is displayed as shown below:

The screenshot shows a software interface for viewing objectives. At the top, there is a yellow dropdown menu set to "Tree View", followed by "Expand All", "Collapse All", an "Auto-Redraw" checkbox, and a blue "Add" button with a plus sign. Below this is a tree structure under the heading "Objectives". The tree is expanded to show several categories: "Public Relations" (with sub-items "Loss of Company Reputation" and "Customer/Business Dissatisfaction with the Service/Network Efficiency"), "Financial" (with "Loss of Customers", "Financial Loss", and "Financial Liability Due to Accident"), "Reliability, Availability, Maintainability" (with "Loss of Maintenance Efficiency", "Disruption/Damage to Service Line Infrastructure", and "Repair to Service Line Infrastructure"), "Performance" (with "Temporary Line Closure", "Loss of Reliability and Network Efficiency", "Loss of Wider Monitoring System Program Efficiency", and "Loss of Train Service"), "Human Factors" (with "Death" and "Injury"), and "Safety" (with "Loss of Safety"). Each node in the tree has a small square icon to its left.

You can use the drop-down to select the Hierarchy View:

A close-up of the view selection dropdown menu. The dropdown is currently set to "Tree View". The menu is open, showing "Tree View" as the selected option and "Hierarchy View" as an alternative option.

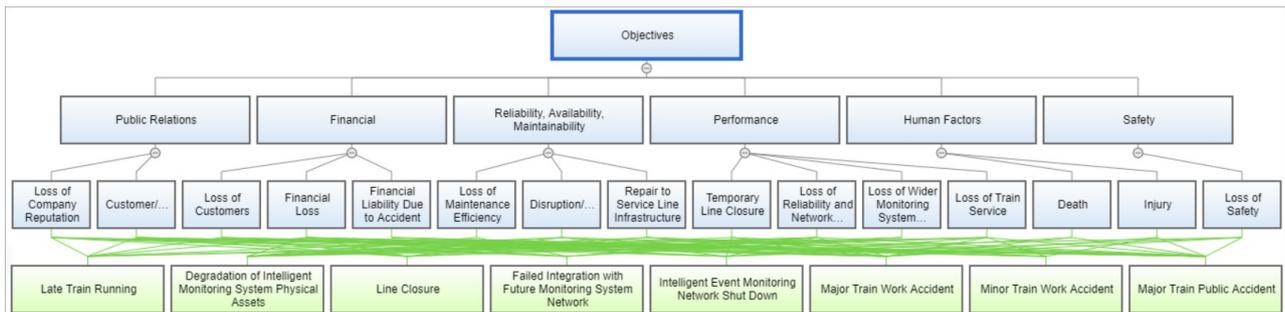
The Hierarchy View of Objectives is shown below:



You can do similar actions such as adding objectives, editing, sort by name, and export as you can do in the Tree View.

Additionally, you can show/hide the Events in the Hierarchy view by checking the  **Show Events** checkbox. The

Events those with green boxes.



You can specify the rectangle length and width by clicking the gear icon



### Preferences

Rectangle Height [50]

20 200

Rectangle Width [75 .. 159]

20 500

Reset To Defaults

Save Cancel

**HINT:** For smaller screens, some of the options may be hidden. You may see the hidden options by clicking the ellipses  icon at the top right.

# Consequences Grid (Contributions)

All events may contribute to all Objectives. In most cases, particularly when the hierarchy represents a broad range of organizational/categorical objectives, objectives may contribute to only some of the Events. It may also be possible that an event won't have any Threats. You can specify which covering objectives contribute to each of the Events on this page.

You can set up which events contribute to objectives on the Consequences Grid (Contributions) page which can be found on:

- IDENTIFY/STRUCTURE > OBJECTIVES > [Contributions](#), or
- IMPACT OF EVENTS > STRUCTURE > EVENT OBJECTIVES > [Consequences Grid](#)

Consequence Of Events On Objectives									
Events	Objectives/Consequences								
	Life Security	Economic Co	Confidence in	Increase in F	Confidence in	Improvement	Environment	US Citizen Jo	Decrease of
[1] Terrorists Smuggle WMD into US and Commit a Violent Act	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
[6] Terrorists bomb stock exchange building	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
[3] Criminal Network Smuggles Illegal Drugs Into US	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
[4] Criminal Network Smuggles Counterfeit Goods into the US	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
[5] Unauthorized Migrants Enter the US	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

An event that does not contribute to a covering objective does not receive any priority for that covering objective. This is equivalent to, for example, saying that it does contribute and then evaluating it with a zero priority rating. If there is some disagreement about whether or not an event contributes to a covering objective, it is better to designate it as contributing and allowing the evaluators to decide if the priority is zero or not.

Clicking on the row/column heading boxes will select/de-select all of the elements in that row/column.

- A  box in a column or row header means that all cells in the column or row contribute.
- A  half box means that some but not all contribute.
- A  blank means that no cells in the column or row contribute.

You can click on specific boxes to assign contributions for the Event (row) given the objectives (column).

# Event Consequences to Objectives

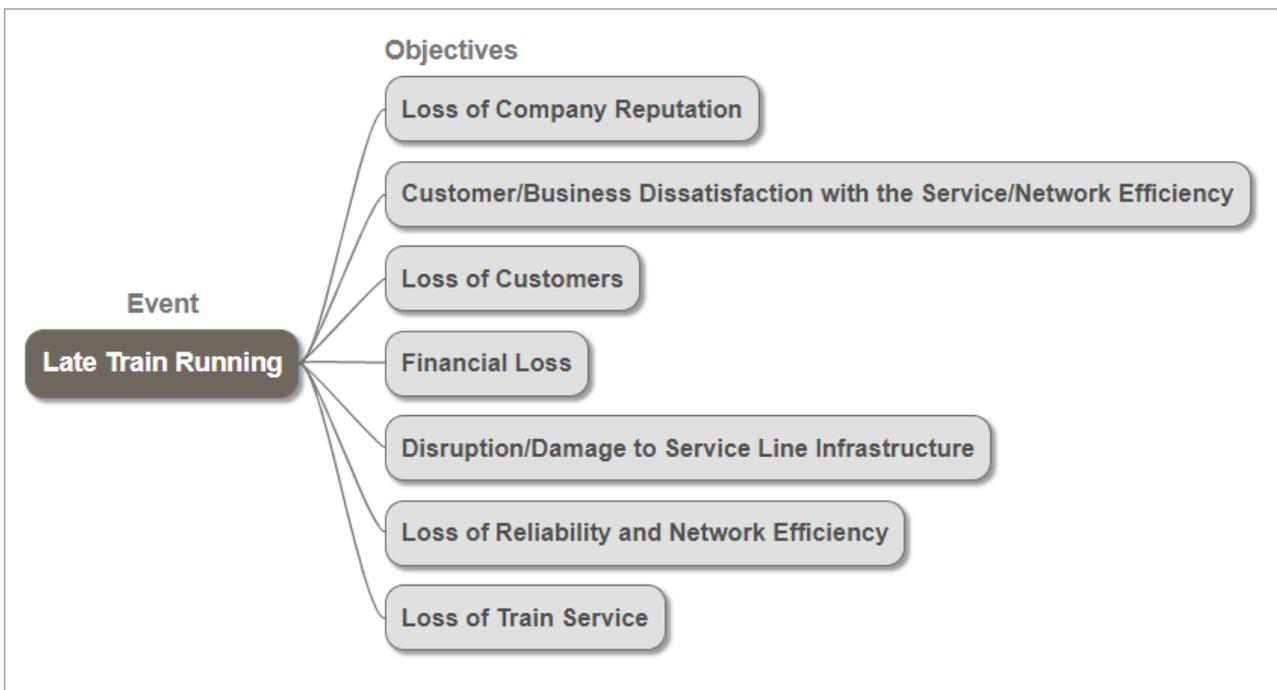
The Event Consequences to Objectives page allows you to define the contributions ([Consequences Grid](#)) in a mindmap or chart format.

You can select the event by clicking on the events list:

- Events

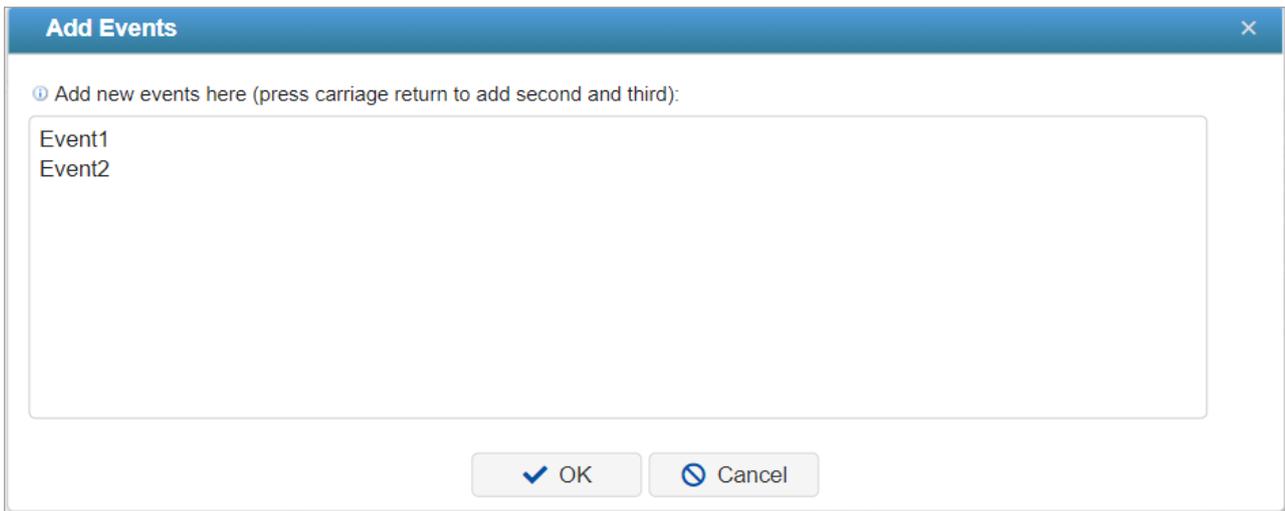
  - Late Train Running
  - Degradation of Intelligent Monitoring S
  - Line Closure
  - Failed Integration with Future Monitori
  - Intelligent Event Monitoring Network S
  - Major Train Work Accident
  - Minor Train Work Accident
  - Major Train Public Accident

The connected objective nodes to the event node are the objectives the event is consequential (or has an impact on):

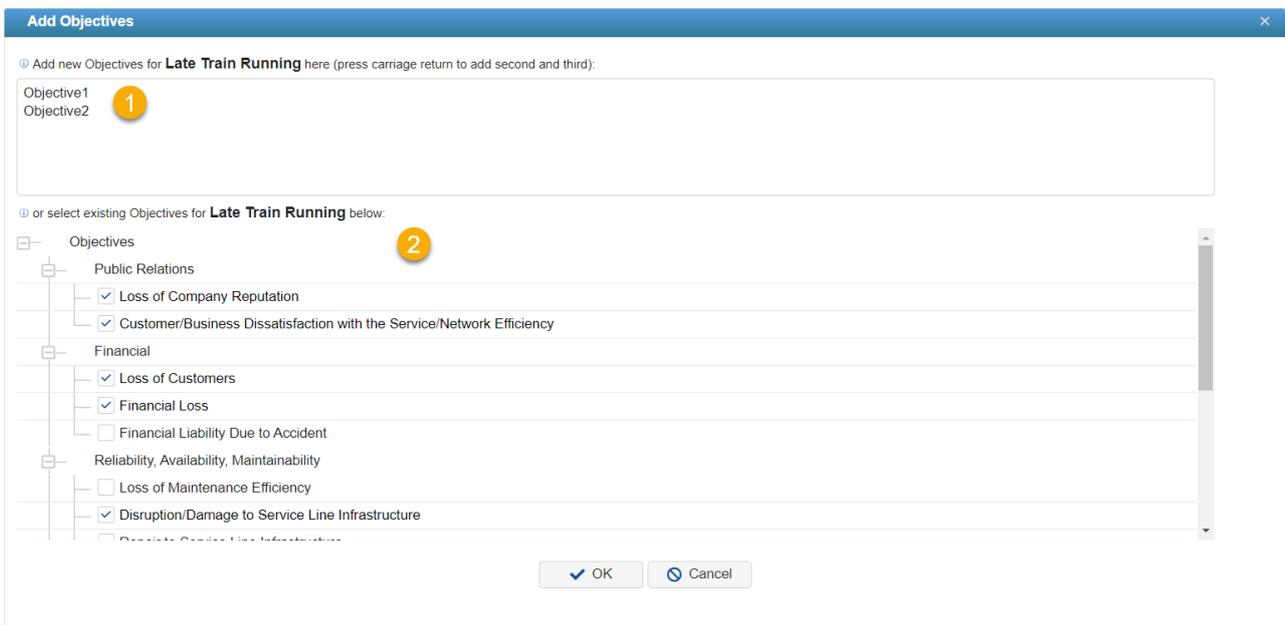


You can add a new event by clicking + New Event

A modal will pop out where you will enter the event names -- one event per line.



You can assign the selected event to a (1) new or (2) existing objectives by clicking



(1) For new objectives, simply add one objective per line.

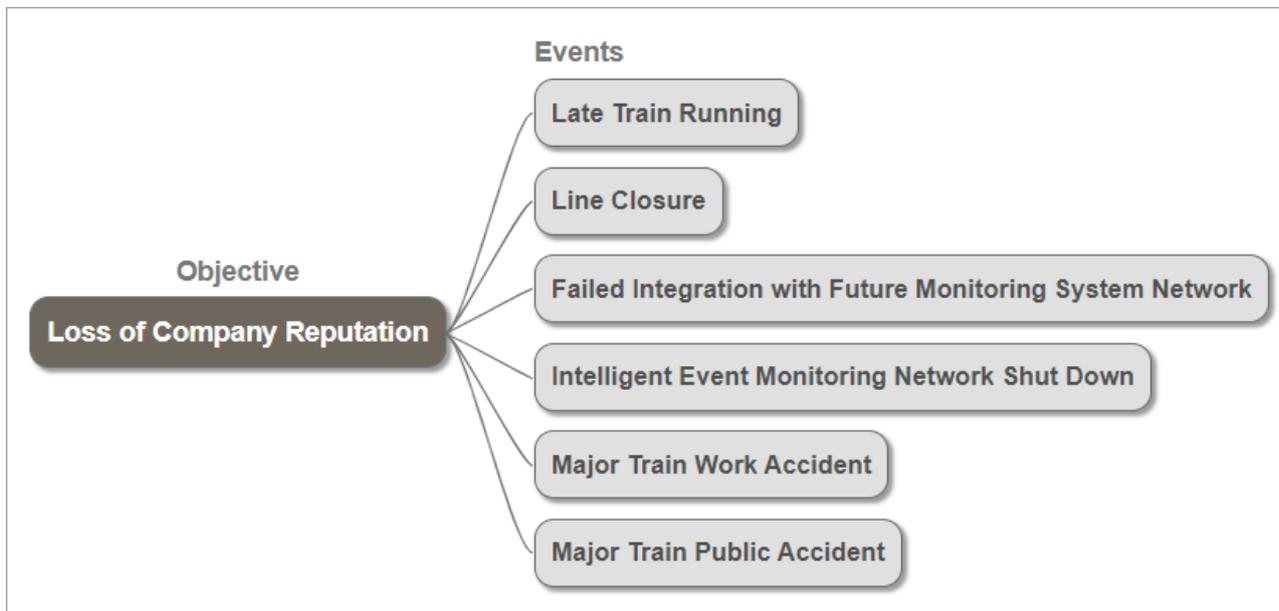
(2) For existing objectives, check the checkbox to the left of the objectives the selected event has an impact on.

# Objectives Contribution From Events

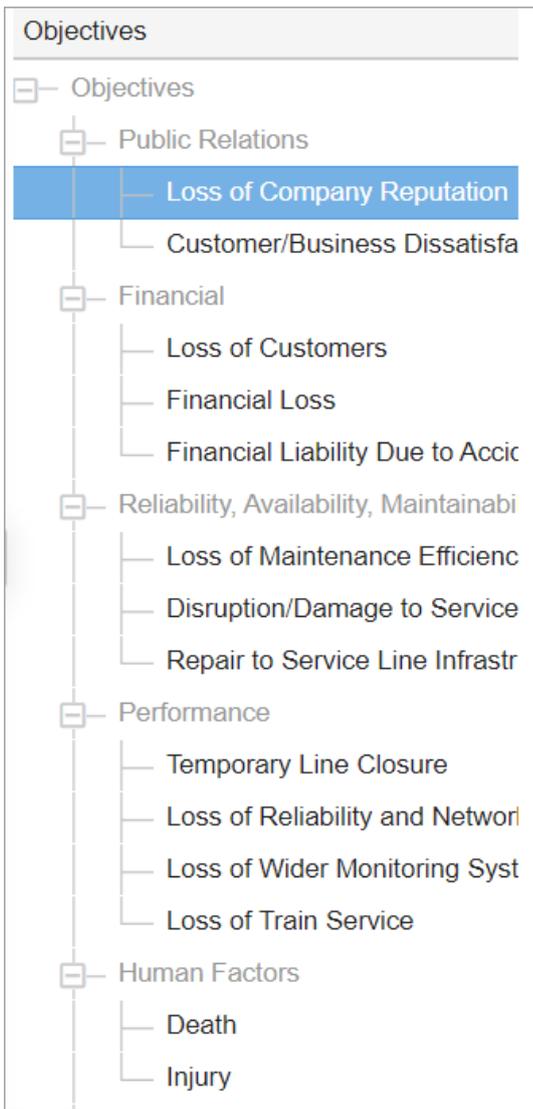
The Objectives Contribution From Events page allows you to define the contributions ([Consequences Grid](#)) in a mindmap or chart format.



This is similar to [Event Consequences To Objectives](#), but instead of selecting the event, we select the objective node and then specify all the events the selected objective is impacted on.



You can select an objective from the Impact Hierarchy:



You can only assign contributions to covering objectives, this is why the non-covering nodes are disabled.

You can add a new event by clicking + New Event

A modal will pop out where you will enter the event names -- one event per line.

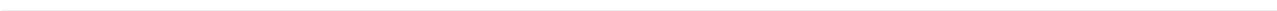
The modal window has a blue header with the title 'Add Events' and a close button (X). Below the header is a text area containing the instruction:
 

ⓘ Add new events here (press carriage return to add second and third):

 The text area contains two lines of text:
 

Event1  
Event2

 At the bottom of the modal are two buttons: 'OK' (with a checkmark icon) and 'Cancel' (with a circle-slash icon).



# Impact: Information Documents

You can define Impact's Information Documents in the **IMPACT OF EVENTS > STRUCTURE > Information Documents** page.

This screen allows you to create and/or edit information documents for:

- The Objectives (top node)
- Objectives
- Sub-objectives
- Covering Objectives
- And Events with respect to Covering Objectives

Select Columns		Objectives														
		Public Rela			Financial			Reliability, Availabil			Performance			Human Fac		Sat
		Loss of Comyt	Customer/Bu	Loss of Custc	Financial Los	Financial Liat	Loss of Maint	Disruption/Da	Repair to Ser	Temporary Li	Loss of Relial	Loss of Wfide	Loss of Train	Death	Injury	Loss of Safet
Events	...															
[01] Late Train Running	...															
[02] Degradation of Intelligent Monitoring System Physical Assets																
[05] Line Closure																
[06] Failed Integration with Future Monitoring System Network																
[07] Intelligent Event Monitoring Network Shut Down																
[08] Major Train Work Accident																
[09] Minor Train Work Accident																
[10] Major Train Public Accident																

Clicking any Edit Information Document button will open the [Rich text editor](#), where the Project Manager can add/edit the **information document** -- which may consist of texts, rich texts, and images.

The blue information document icon pertains that it has content, while gray pertains it is empty.

When there is no information document icon in a given cell, it means that the event is not [contributing to the objective](#).

**NOTE:** Due to security reasons, only images are allowed to be attached to the information documents. You can add hyperlinks to link to any external files. Just upload your PDF (or any other file) to any external servers such as Dropbox, GoogleDrive, OneDrive, Amazon, etc., and put the link to this file in the information documents.

# Impact: Participant and Group Roles Overview

Participants roles can be defined when evaluating:

- the **Likelihoods** of:
  - threats,
  - events given threats
  - events with no threats
- the **Impacts** of:
  - events with respect to objectives
  - objectives, and
- the **Effectiveness** of
  - Controls

On this page, we will focus on participants' roles for evaluating the Likelihoods.

This can be found on **IMPACT OF EVENTS > STRUCTURE > Participants roles:**

The Participant Roles page for Impact consists of:

1. The **For Event Consequences/For Priorities** tabs to assign roles for evaluating events consequence with respect to objectives and for objectives priorities respectively
2. The **Participants/Groups** tabs toggle between the participant's list and the group's list of the model.
3. The first column of the grid displays the **Events list**
4. The grid headings (next to the Events) displays the **Hierarchy of Objectives**
5. The intersecting cells were to assign roles for **evaluating the event (row) with respect to covering objectives (column)**
6. **Toolbar** options

**Roles can be set for:**

- The "All Participants Group" (every participant belongs to "All Participants")
- Any Defined Participant Groups (**non-dynamic** and **dynamic** groups)
- Each individual Participant Roles

**How Roles are processed -- Three rules:**

1. A role explicitly assigned for a participant **OVERRIDES** any role defined for:
  - The 'All Participants' Group
  - Any defined groups to which the participant belongs
2. Roles for the 'All Participants' Group and any Defined Groups have the same priority
3. A restrict role overrides an Allow role

**Roles can be assigned for:**

- Sub-objectives with respect to their parent Objective and
- Events with respect to covering objectives

**Assigning roles without groups** is a simpler way of setting up roles. **Setting up roles with groups** is a very flexible and powerful method, but somewhat more complex.

---

# Impact: Setting Up Roles without Groups

Roles can be assigned to Participant Groups ([custom groups](#) or a pre-defined group called 'All Participants') as well as to individual participants. The resultant role for a participant is a combination of the roles assigned to any group to which the participant belongs (including the pre-defined 'All Participants' group) and any role explicitly assigned to the individual participant.

In this topic, we will focus on **Setting up roles without groups**. For the purpose of setting roles without using participant groups, all we need to know now is that a participant will have a role for every node (as defined by the "All Participants" group which by default is Allowed) unless they are explicitly restricted for one or more nodes.

Since each participant has an **implicit** allow role for every node, the easiest way to set roles is to restrict nodes for which a participant should not have a role. (There is no need to explicitly allow roles when participant groups are not being used.)

## Roles for Evaluating the Objectives Priorities

Click the "**For Objectives Priorities**" tab to assign roles for evaluating objectives. Roles for evaluating the objectives are represented by the colored boxes on the non-covering objectives as below:

For Event Consequences		For Objective Priorities														
Events		Objectives														
		Public R			Financial			Reliability, Ava			Performance			Human		S
...	Loss of Company	Customer/Business	Loss of Customer	Financial Loss	Financial Liability	Loss of Maintenance	Disruption/Damage	Repair to Service	Temporary Line	Loss of Reliability	Loss of Wider Market	Loss of Train Service	Death	Injury	Loss of Safety	

The headers are arranged according to the objectives hierarchy/leveling. For example, the Objectives is the top-most node and its top-level children are the Public Relations, Financial, and so on...

An 'Allow' role for the top node means that the participant will have the role of evaluating the top-level objectives. The allow role for an objective node means that the participant will have the role for evaluating the sub-objectives with respect to that objective.

You will notice that all of the cells in the figure above have a background of light green because by default, the "All Participants" group has an 'allow role' for everything, and we have not defined any custom groups that might have had one or more 'restrict' roles.

In addition to the implicit assignment of roles based on participant groups, an explicit role can be specified for a participant (either allow or restrict). If this is the case, there will also be an interior color for the node and the background color will appear as a border.



The "Financial" node has an explicitly restricted role in the figure above and thus appears as a red interior with a green background or border. Since restrict overrides allow ([roles three rules](#)), the participant would not have a role in evaluating the sub-objectives of "Financial" given their parent (Financial).

## Roles for Evaluating the Events Consequences

Click the "**For Event Consequences**" tab to assign roles for evaluating the consequences of events with respect to

objectives. Roles for evaluating the events are represented by the boxes on the intersecting cells of the events (row) with respect to the covering objectives (column) -- see below.

All of the intersecting cells in the figure below have a background of green because by default, the "All Participants" group has an 'allow role' for everything.

For Event Consequences		For Objective Priorities		Objectives													
Events		Public Rel			Financial			Reliability, Avail			Performance			Human F: Safe			
		Loss of Compt	Customer/Bu	Loss of Custic	Financial Los	Financial Liat	Loss of Maint	Disruption/Da	Repair to Ser	Temporary Li	Loss of Relial	Loss of Wider	Loss of Train	Death	Injury	Loss of Safet	
1	Late Train Running	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
2	Degradation of Intelligent Monitoring System Physical Assets	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
3	Line Closure	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
4	Failed Integration with Future Monitoring System Network	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
5	Intelligent Event Monitoring Network Shut Down	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
6	Major Train Work Accident	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
7	Minor Train Work Accident	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
8	Major Train Public Accident	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green

In addition to the implicit assignment of roles based on groups, an explicit role can be specified for a participant (either allow or restrict). If this is the case, there will also be an interior color for the cell and the background color will appear as a border.

For Event Consequences		For Objective Priorities		Objectives	
Events		Public Relatio		...	
		Loss of Compt	Customer/Bu	Loss of Compt	Customer/Bu
1	Late Train Running	Yellow	Green	Red	Green
2	Degradation of Intelligent Monitoring System Physical Asse	Green	Green	Green	Green
3	Line Closure	Green	Green	Green	Green
4	Failed Integration with Future Monitoring System Network	Green	Green	Green	Green

"Late Train Running" in the figure above that has an explicit restrict role -- and is shown as a red interior with a light green background or border -- when evaluating given the covering objective "Loss of Company Reputation".

The yellow interior color on the "Late Train Running" represents that the participant has different explicit roles for evaluating "Late Train Running" with respect to the covering objectives -- from above, one is restricted while others are "undefined" (no interior color). Same reason for the yellow interior color for the "Loss of Company Reputation" cell -- the participant has different explicit roles for evaluating each of the events with respect to "Loss of Company Reputation".

The blank cells mean that the event is not vulnerable to the covering objective.

Note: If there is a blank cell, this means that the event doesn't contribute to the covering objective.

## How Participant Roles are Assigned?

We can assign roles explicitly while in Edit mode. Edit mode is the mode selected by default.

To assign roles to a participant, simply check the check box to the right of the participant name on the left pane:

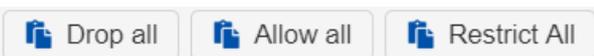
Participants	Groups
Search	
<input checked="" type="checkbox"/>	Select All
<input type="checkbox"/>	Denis Risman
<input type="checkbox"/>	Brian Quigley
<input checked="" type="checkbox"/>	Chief Risk Officer
<input type="checkbox"/>	Chief Engineering ...
<input type="checkbox"/>	IT Supervisor
<input type="checkbox"/>	Chief Executive Off...
<input type="checkbox"/>	Devin Nagy
<input type="checkbox"/>	Michael Mankowski
<input type="checkbox"/>	John Doe
<input type="checkbox"/>	Project Manager
<input type="checkbox"/>	Administrator

You can also select **multiple participants** at a time for assigning roles using the Shift and Control keys.

By successively clicking on a cell, the **interior** color of the cell will change to:

-  dark green (indicating a role that is allowed explicitly)
-  dark red (indicating a role that is restricted explicitly), or
-  light green (indicating a role that is allowed implicitly, based on participant group roles).

You can set the roles for **all events or objectives at once** by using the:



- **Allow All** (explicit allow)
- **Drop All**, or (no explicit specification)
- **Restrict All** (explicit restrict)

buttons, and then selectively click other nodes as desired.

Copy Roles Paste Roles Drop all Allow all Restrict All Select Columns Edit Mode

Participants	Groups	For Event Consequences		For Objective Priorities		Objectives								
						Public Rel		Financial			Reliability, Avail			Pe
						Loss of Comf	Customer/Bu	Loss of Custc	Financial Los	Financial Liat	Loss of Maint	Disruption/Da	Repair to Ser	Temporaru Li
Search		Events				...	...	...	...	...	...	...	...	...
<input type="checkbox"/> Select All		<input type="checkbox"/>	1 Late Train Running	...		...	...	...	...	...	...	...	...	...
<input checked="" type="checkbox"/> Kris		<input type="checkbox"/>	2 Degradation of Intelligent Monitoring System Physical Asse			...	...	...	...	...	...	...	...	...
<input type="checkbox"/> Chief Risk Officer		<input type="checkbox"/>	3 Line Closure			...	...	...	...	...	...	...	...	...
<input type="checkbox"/> Chief Engineering ...		<input type="checkbox"/>	4 Failed Integration with Future Monitoring System Network			...	...	...	...	...	...	...	...	...
<input type="checkbox"/> IT Supervisor		<input type="checkbox"/>	5 Intelligent Event Monitoring Network Shut Down			...	...	...	...	...	...	...	...	...
<input type="checkbox"/> Chief Executive Off...		<input type="checkbox"/>	6 Major Train Work Accident			...	...	...	...	...	...	...	...	...
<input type="checkbox"/> Michael Mankowski		<input type="checkbox"/>	7 Minor Train Work Accident			...	...	...	...	...	...	...	...	...
<input type="checkbox"/> John Doe		<input type="checkbox"/>				...	...	...	...	...	...	...	...	...
<input type="checkbox"/> Project Manager		<input type="checkbox"/>				...	...	...	...	...	...	...	...	...

For events, you can also define the role for:

- (1) one event with respect to all covering objectives; or
  - (2) all the events with respect to one covering objective at once,
- by clicking the box on the event or covering objective names.

Events	Objectives							
	Public Rel		Financial			Reliability, Avail		
	Loss of Comf	Customer/Bu	Loss of Custc	Financial Los	Financial Liat	Loss of Maint	Disruption/Da	Repair to Ser
...	...	...	...	...	...	...	...	...
1 Late Train Running	...	...	...	...	...	...	...	...
2 Degradation of Intelligent Monitoring System Physical Asse	...	...	...	...	...	...	...	...
3 Line Closure	...	...	...	...	...	...	...	...
4 Failed Integration with Future Monitoring System Network	...	...	...	...	...	...	...	...
5 Intelligent Event Monitoring Network Shut Down	...	...	...	...	...	...	...	...
6 Major Train Work Accident	...	...	...	...	...	...	...	...
7 Minor Train Work Accident	...	...	...	...	...	...	...	...
8 Major Train Public Accident	...	...	...	...	...	...	...	...

The yellow interior on the event names (rows) and covering objectives (columns) represents that the participant has different explicit roles for evaluating the event with respect to each of the covering objectives; or that the participant has different explicit roles for evaluating the covering objective given each of the events.



# Impact: Setting Up Roles with Groups

Setting up roles with groups is a very flexible and powerful method, but somewhat more complex.

Every participant belongs to a Participant Group called "All Participants".

The All Participants group initially has an "allow" role for all cells as seen below.

You can create additional [Participant Groups](#) from the Participants page.

There are three types of roles that can be specified for groups:

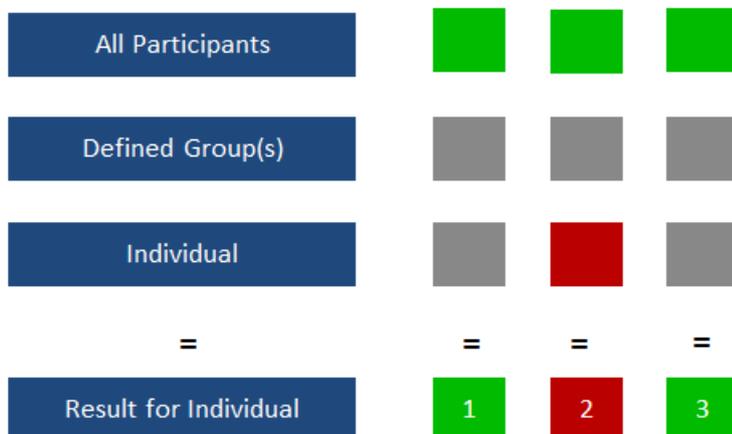
- Allow 
- Restricted 
- Undefined (Neither Allowed or Restricted) 

The role of a participant for any node depends on:

- Roles for the "All Participants" Group
- Roles for any defined Participant Group to which the participant belongs
- Roles explicitly assigned for the participant

Similar to [Setting up roles without groups](#), you can also assign roles to groups by clicking on the cells individually, by entire row/column, or by using the Allow/Restrict/Drop all buttons.

Each Column in the following figures represents a Case Illustrating the Above Rules



**Case 1** is the default. The result is Allow.

**Case 2** is a simple way to restrict individual roles.

**Case 3** is equivalent to case 1.

All Participants	Grey	Grey	Grey	Grey	Grey
Defined Group(s)	Grey	Grey	Green/Red	Grey	Red
Individual	Green	Red	Grey	Grey	Green
=	=	=	=	=	=
Result for Individual	4	5	6	7	8

To use roles with groups, we recommend that you start with No Specifications for the 'All Participants' group.

Cases 4 and 5 are obvious.

Case 6 shows a restricted group specification overrides an allowed group specification (Rule 3).

Case 7 illustrates if no roles are allowed for All Participants and Any Groups, then the Individual's role is Restricted.

Case 8 shows an Individual Participant's role overrides any group roles (Rule 1).

All Participants	Red	Red	Green
Defined Group(s)	Red	Green	Red
Individual	Green	Grey	Grey
=	=	=	=
Result for Individual	9	10	11

Case 9 An Individual's specification overrides any group specifications (Rule 1).

Cases 10 and 11 show a restricted group specification overrides an allow specification (Rule 3).

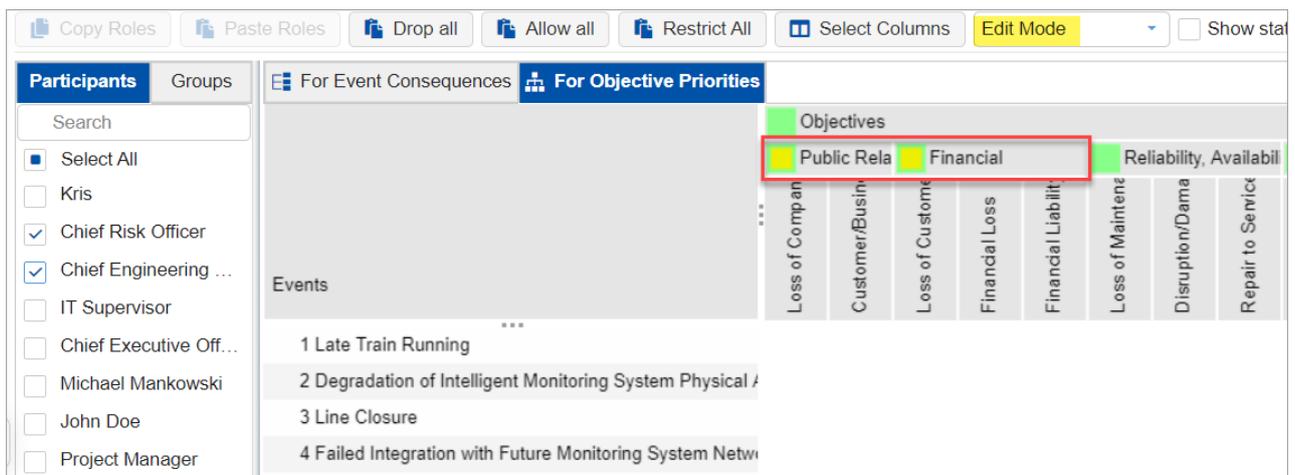
# Impact: Participant Roles Edit vs View Mode

## Edit Mode

The **Edit Mode** is a mode where the Project Manager can assign roles by clicking on the cells or using the Drop/Allow/Restrict All options.

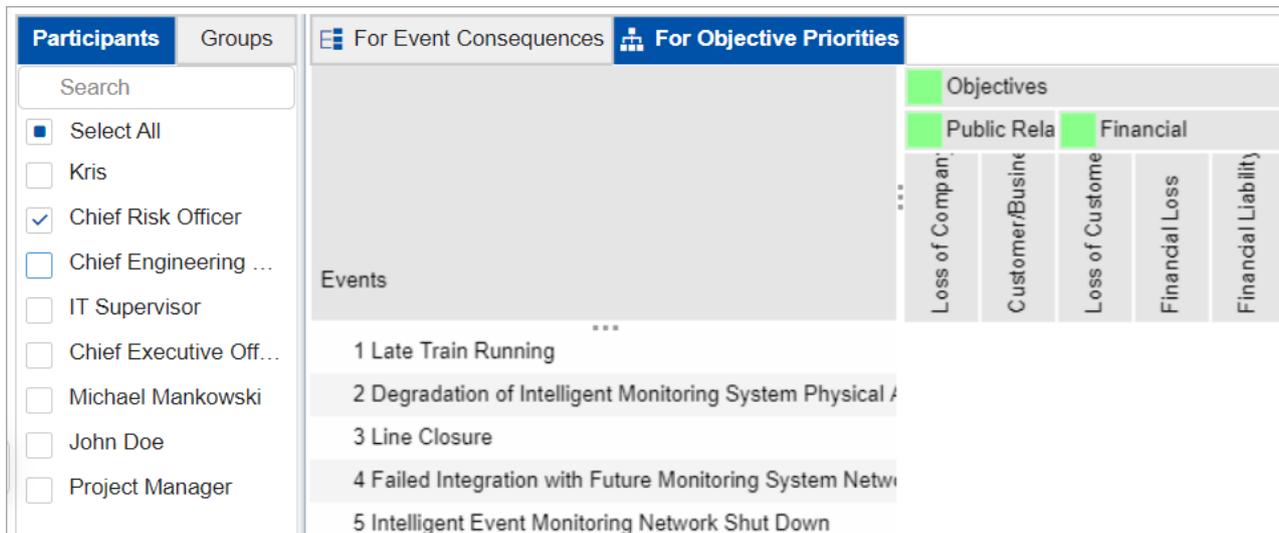
Two participants are selected in the example below. The border of the node (in this case light green for all nodes) reflects the roles implicitly assigned to the participants based on the roles assigned to the groups they are in. The interior represents the role, if any, explicitly assigned to the selected participants.

If they are not the same, yellow is displayed as for Public Relations and Financial see below.



To better understand what the yellow means, let's look at the roles assigned for objectives for Steve and Kris, one at a time.

**First for Chief Risk Officer:** As we see below, the interior of the nodes "Chief Risk Officer" is a light green, the same as the border, meaning that neither allow nor restrict was specified for any node for Chief Risk Officer (if a role had been previously specified, it has been 'dropped'). Thus, Chief Risk Officer has a role for every threat and sub-threat based on the roles assigned to groups to which Chief Risk Officer belongs.



Now let's look at Chief Engineering Officer roles:

As can be seen above, the Chief Engineering Officer has been explicitly ■ assigned a role for Public Relations and explicitly ■ restricted a role for Financial. The explicit assignment for Human Factor doesn't have any impact since, as can be seen from the border of that node, Chief Engineering Officer would have had that role based on the roles of the groups to which the Chief Engineering Officer belongs. However, if later, the role for Human Factor for one of the groups to which Chief Engineering Officer belongs is changed to 'restrict', this explicit assignment would override it since an explicit assignment for an individual overrides any group role assignments. If that were the case, then the Chief Engineering Officer node for Human Factor would have looked like this:



Let's now return our attention to the display when we look at the roles with both Chief Risk Officer and Chief Engineering Officer selected on the first image above.

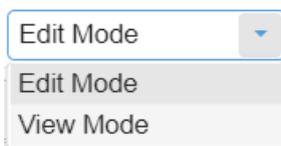
A node is displayed as yellow ■ in the Edit Mode if the individual role explicitly assigned to all of the selected participants is not the same. Public Relations is yellow because Chief Engineering Officer has an explicit role assigned for this node, but Chief Risk Officer does not -- so they are not the same. Financial is yellow because Chief Engineering Officer has an explicitly restricted role while Chief Risk Officer has no explicit role -- so again, they are not the same.

From the example, above we can see that in the Edit mode, we can only determine whether the individual roles for the selected participants are the same or different, but we can not determine their resulting roles.

## View Mode

As discussed above, the 'Edit mode' is the mode used to assign roles. We can not determine whether the resulting role for all the selected participants is the same or not from this display. The resulting roles can be determined using another mode called 'View mode'.

You can switch to the View mode using the menu as shown below:



If we look at the display for the same example above for the "View mode", we would see the following:

Copy Roles Paste Roles Drop all Allow all Restrict All Select Columns View Mode

Participants Groups For Event Consequences For Objective Priorities

Search

Select All

Kris

Chief Risk Officer

Chief Engineering ...

IT Supervisor

Chief Executive Off...

Michael Mankowski

John Doe

Project Manager

Events

1 Late Train Running

2 Degradation of Intelligent Monitoring System Physical A

3 Line Closure

4 Failed Integration with Future Monitoring System Netw

5 Intelligent Event Monitoring Network Shut Down

Objectives

Public Rela Financial

Loss of Compan Customer/Busine Loss of Custome Financial Loss Financial Liability

Since both Chief Risk Officer and Chief Engineering Officer have the same resulting role (allowed) for Public Relations, even though they have different explicit assignments, the node is shown as green. The Financial node is still yellow because one of the participants has the role and the other does not. We would have to look at each participant individually to see which one has that role and which one does not.

## Examining roles for all participants in the View mode

It is advisable to select all participants in the 'View' mode to see if there are any nodes that are red, meaning that no participant has been assigned the role for that node.

# Impact: Copy and Paste Roles

You can copy roles from one participant to another:

1. Select the participant you want roles to be copied
2. Click Copy Roles
3. Select the participant(s) where you want to paste the roles
4. Click Paste Roles

You can also select multiple participants to whom you want the roles to be copied.

---

# Impact: Participant Roles Statistics

You can view the number of participants that have an allowed role by checking the **Show Statistics** check box.

<input type="button" value="Copy Roles"/> <input type="button" value="Paste Roles"/> <input type="button" value="Drop all"/> <input type="button" value="Allow all"/> <input type="button" value="Restrict All"/> <input type="button" value="Select Columns"/> <span>Edit Mode</span> <input checked="" type="checkbox"/> Show statistics																	
Participants	Groups	For Event Consequences	For Objective Priorities	8 Objectives													
Search		Events	Loss of Comf	Customer/Bu	Loss of Custc	Financial Los	Financial Liab	Loss of Maint	Disruption/Da	Repair to Ser	Temporary Li	Loss of Reliab	Loss of Wride	Loss of Train	8 Human		8 Sa
															Death	Injury	
<input type="checkbox"/> Select All		1 Late Train Running	5	4	4	4			7			6		7			
<input checked="" type="checkbox"/> Kris		2 Degradation of Intelligent Monitoring System Physical /				5		6	6	5	6	8	8	7			8
<input type="checkbox"/> Chief Risk Officer		3 Line Closure	4	6	5	5			6	5		8		8			
<input type="checkbox"/> Chief Engineering ...		4 Failed Integration with Future Monitoring System Netw	4	5		5		5				7	8				
<input type="checkbox"/> IT Supervisor		5 Intelligent Event Monitoring Network Shut Down	4		5	5			8		5	8		8	6		7
<input type="checkbox"/> Chief Executive Off...		6 Major Train Work Accident	4	5	8	5	6		6	5	6	7		8	6	6	8
<input type="checkbox"/> Michael Mankowski		7 Minor Train Work Accident		5		5	6			5				8		6	
<input type="checkbox"/> John Doe		8 Major Train Public Accident	4	6	8	5	6		6	5	6	7		8	6	6	8
<input type="checkbox"/> Project Manager																	

# Recommended Approaches for Setting Roles for the 'All Participants' Group

Assigning roles to participants can be without using groups as well as with groups. In the former case, we advised leaving all roles allowed for the All Participants Group as they are set by default. In the case of assigning roles using groups, we advised starting by dropping all roles for the All Participants Group. There is one additional contingency to take into consideration: If new participants are added to the model after roles have been assigned to existing participants, what do we want the roles for the new participants to be? We describe three cases:

**Case 1)** If you want the roles for 'new' participants to be 'allowed' for everything, then leave the 'All Participants' group roles set to 'Allow' as they are by default.

**Case 2)** If you want the roles for 'new' participants to be 'allowed' for *almost* everything, then leave the 'All Participants' group roles set to 'Allow' as they are by default and 'restrict' roles for the new individuals as desired or add them to groups that have roles restricted for the desired nodes. (The latter can be done via a survey containing a question that is used to assign new participants to a group).

**Case 3)** If you want the roles for 'new' participants to be 'restricted' unless the new participant is in a group or groups that have specific roles enabled, or only if you explicitly allow roles for the participant, then 'Drop All' roles from the 'All Participants' group.

---

# Impact: Evaluation Progress

The Impact's Evaluation Progress page can be found in **IMPACT OF EVENTS > MEASURE > Evaluation Progress**.

The Overall Impact's Evaluation Progress bar and its equivalent percentage are displayed.

By default, All Participants' overall evaluation progress is displayed.

Participant Name	Email Address	Evaluation Progress	Last Judgment Time	Actions
Ed Hreljac	ed.hreljac@processpower.ca	100.0% (37/37)	10/7/2014, 4:05 AM	
Ernest Forman	forman@gwu.edu	100.0% (37/37)	10/7/2014, 4:06 AM	
Mike Jones	mjones@expertchoice.com	0.0% (0/37)		
Vijay Gupta	vijaygupta2607@gmail.com	0.0% (0/37)		
<b>John Doe</b>	<b>j.doe@eci.com</b>	<b>0.0% (0/37)</b>		
Risk Expert	expert@eci.com	0.0% (0/37)		

You can also see the evaluation progress for a [participant group](#) by selecting from the groups dropdown.



This page lists all of the evaluators for the model as well as the percentage of their input that has already been provided.

The display can be sorted by Name, E-mail, Evaluation progress, or Last judgment time by clicking on the table headers.

**There are three icons under the Actions column:**

1. **Copy an evaluator's anytime link** on the clipboard
2. **Log out and log back in** with another user's anytime link
3. **View the evaluation steps** and judgments for any evaluator. This is a 'view only' mode so while you can enter or change judgments, they will not be saved.

# Impact: Define Measurement Methods Overview

You can manage the Impact's Measurement Methods on the **IMPACT OF EVENTS > MEASURE > [Measurement Methods](#)** page:

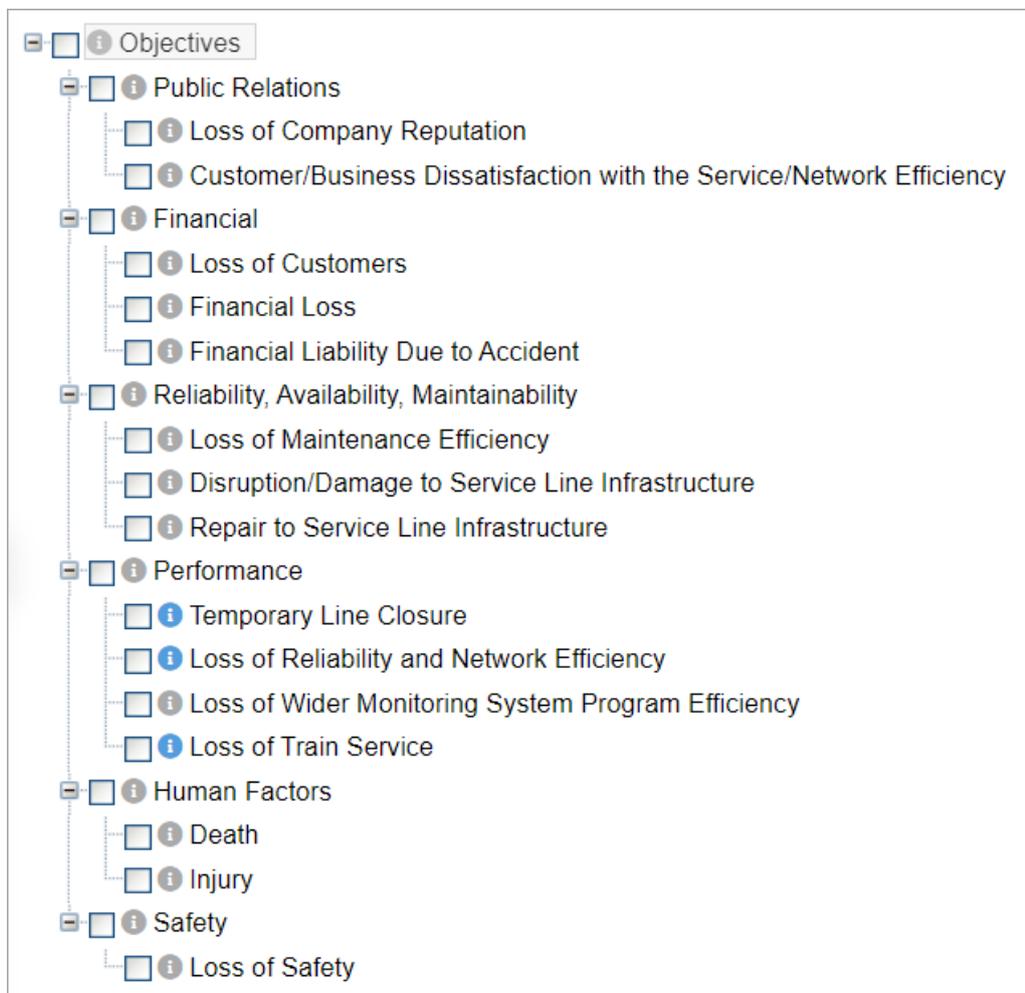
The Measurement Methods for Likelihoods page is where we designate how likelihoods are to be derived or assigned:

1. **For objectives** given the **parent objective**
2. **For events** given the **covering objectives**
3. **For events** with no **objectives**

You can assign the measurement options For Objectives and For Events on separate pages, or the same page by selecting from the three tabs:



For example, in the model with objectives hierarchy as shown below:



The nodes that have children are the non-covering objectives. (e.g. Public Relations, Financials ..).

The nodes that have no children are the covering objectives (e.g. Loss of Company Reputation, Customer Service Dissatisfaction., ..)

Depending on the selected tab, the measurement options (Measurement Type, Scale, and other Advanced Options) will be displayed to the right of the objective elements (first column).

- **For Objectives** - measurement options are available for the **non-covering objectives** to define how to measure the children with respect to the non-covering objective.
- **For Events** - measurement options are available for the covering objectives to define how to measure the events given the covering objective
- **All** - measurement options are available both for non-covering and covering objectives which allow defining the two mentioned above on the same page.

Measurement Methods			
Measure Objective Importance/Event Objectives With Respect To	Measurement Type Default (E): Rating Scale	Measurement Scale	Action
Objectives	Pairwise Comparison		Copy
Public Relations	Pairwise Comparison		Copy
Loss of Company Reputation	Rating Scale	Default Impact Scale	Copy
Customer/Business Dissatisfaction with the Service/Network Efficiency	Rating Scale	Default Impact Scale	Copy
Financial	Pairwise Comparison		Copy
Loss of Customers	Rating Scale	Default Impact Scale	Copy
Financial Loss	Rating Scale	Default Impact Scale	Copy
Financial Liability Due to Accident	Rating Scale	Default Impact Scale	Copy
Reliability, Availability, Maintainability	Pairwise Comparison		Copy
Loss of Maintenance Efficiency	Rating Scale	Default Impact Scale	Copy
Disruption/Damage to Service Line Infrastructure	Rating Scale	Default Impact Scale	Copy
Repair to Service Line Infrastructure	Rating Scale	Default Impact Scale	Copy
Performance	Pairwise Comparison		Copy
Temporary Line Closure	Rating Scale	Default Impact Scale	Copy

Total Judgments: 101

The following measurement types are available for evaluating Objectives:

- Pairwise Comparisons
- Direct

and for evaluating events with respect to Objective:

- Rating
- Direct
- Step Function
- Utility Curve
- Pairwise Comparisons
- Pairwise with Given Impact

Depending on the selected tab, the Total Judgments is displayed at the bottom of the page.

Total Judgments: 101

# Measurement Methods for Evaluating Objectives

Measurement Methods for evaluating objectives can be found on the **IMPACT OF EVENTS > MEASURE > Measurement Methods > For Objectives** tab.

This is where we designate how objective impacts are to be derived or assigned for those objectives (elements) in the objectives hierarchy given their parent objective (non-covering objective).



**NOTE:** You can also define Measurement Methods for Objectives in **All** mode where the measurement methods options For Objectives and For Events options are available.

When the **For Objectives** tab is selected, only the non-covering objectives have available measurement options to the right.

Measurement Methods			
Measure Objective Importance With Respect To	Measurement Type	Measurement Scale	Action
Objectives	Pairwise Comparison		Copy
Public Relations	Pairwise Comparison		Copy
Loss of Company Reputation			
Customer/Business Dissatisfaction with the Service/Network Efficiency			
Financial	Pairwise Comparison		Copy
Loss of Customers			
Financial Loss			
Financial Liability Due to Accident			
Reliability, Availability, Maintainability	Pairwise Comparison		Copy
Loss of Maintenance Efficiency			
Disruption/Damage to Service Line Infrastructure			
Repair to Service Line Infrastructure			
Performance	Pairwise Comparison		Copy
Temporary Line Closure			
Loss of Reliability and Network Efficiency			
Loss of Wider Monitoring System Program Efficiency			

Total Judgments: 30

In our example, "Objectives" (non-covering objective) children: Public Relations, Financial, Reliability..., and Performance, are to evaluate using Pairwise Comparisons, as specified on the options to the right of the "Objectives" node or their parent.

Measure Objective Importance With Respect To	Measurement Type
[-] Objectives	Pairwise Comparison ▾
[-] Public Relations	Pairwise Comparison ▾
— Loss of Company Reputation	
— Customer/Business Dissatisfaction with the Service/Network Efficiency	
[-] Financial	Pairwise Comparison ▾
— Loss of Customers	
— Financial Loss	
— Financial Liability Due to Accident	
[-] Reliability, Availability, Maintainability	Pairwise Comparison ▾
— Loss of Maintenance Efficiency	
— Disruption/Damage to Service Line Infrastructure	
— Repair to Service Line Infrastructure	
[-] Performance	Pairwise Comparison ▾
— Temporary Line Closure	

Similarly, the children below "Public Relations" will also be evaluated using the Pairwise Comparisons, as specified on the measurement options to the right of Public Relations.

[-] Objectives	Pairwise Comparison ▾
[-] Public Relations	Pairwise Comparison ▾
— Loss of Company Reputation	
— Customer/Business Dissatisfaction with the Service/Network Efficiency	

You can change the Measurement Type by selecting from the pull-down menu:

**Measurement Type**

Pairwise Comparison ▾

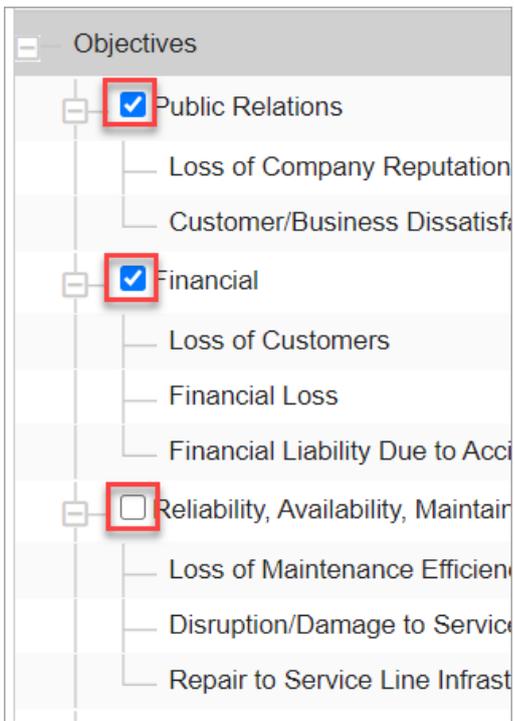
**Pairwise Comparisons**

Direct

You can copy the measurement options from one non-covering objective to one or more non-covering objective(s).

Simply click  **Copy** to the right of the non-covering threat you want to copy.

Checkboxes will appear to the left of the other non-covering nodes. Check the nodes you want to paste the measurement options to.



You can also check all the nodes at the bottom of the page.

Once done, click Proceed.

Copy To: [Select one or more non-covering Objectives and click Proceed.](#)    [Select: All | None](#)       

You can jump to the specific evaluation step of the given covering objective by clicking 

# Measurement Methods for Evaluating Events WRT Objectives

Measurement Methods for evaluating events given objectives can be found on the **IMPACT OF OF EVENTS > MEASURE > Measurement Methods > For Events** tab.

This is where we designate how impacts are to be derived or assigned for the events given the covering objectives in the objectives hierarchy.

**NOTE:** You can also define Measurement Methods for Events given Objectives in **All** mode where measurement methods options For Objectives and For Events options are available.

When the **For Events** tab is selected, only the covering objectives have available measurement options to the right.

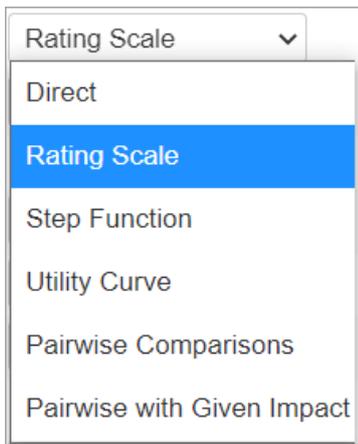
Measurement Methods			
Measure Event Objectives With Respect To	Measurement Type Default: Rating Scale	Measurement Scale	Action
Objectives			
Public Relations			
Loss of Company Reputation	Rating Scale	Default Impact Scale	Copy
Customer/Business Dissatisfaction with the Service/Network Efficiency	Rating Scale	Default Impact Scale	Copy
Financial			
Loss of Customers	Rating Scale	Default Impact Scale	Copy
Financial Loss	Rating Scale	Default Impact Scale	Copy
Financial Liability Due to Accident	Rating Scale	Default Impact Scale	Copy
Reliability, Availability, Maintainability			
Loss of Maintenance Efficiency	Rating Scale	Default Impact Scale	Copy
Disruption/Damage to Service Line Infrastructure	Rating Scale	Default Impact Scale	Copy
Repair to Service Line Infrastructure	Rating Scale	Default Impact Scale	Copy
Performance			
Temporary Line Closure	Rating Scale	Default Impact Scale	Copy
Loss of Reliability and Network Efficiency	Rating Scale	Default Impact Scale	Copy

Total Judgments: 71

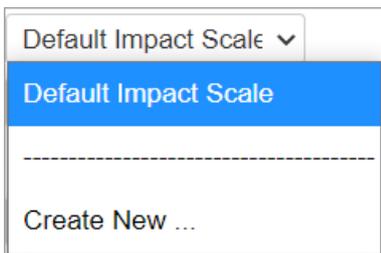
From above, the events with respect to "Loss of Company Reputation" will be evaluated using Rating as specified on the options to the right of this covering objective

Loss of Company Reputation	Rating Scale	Default Impact Scale
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You can change the Measurement Type by selecting from the pull-down menu:



You can change or create a new measurement scale (if applicable) by selecting from the pull-down:

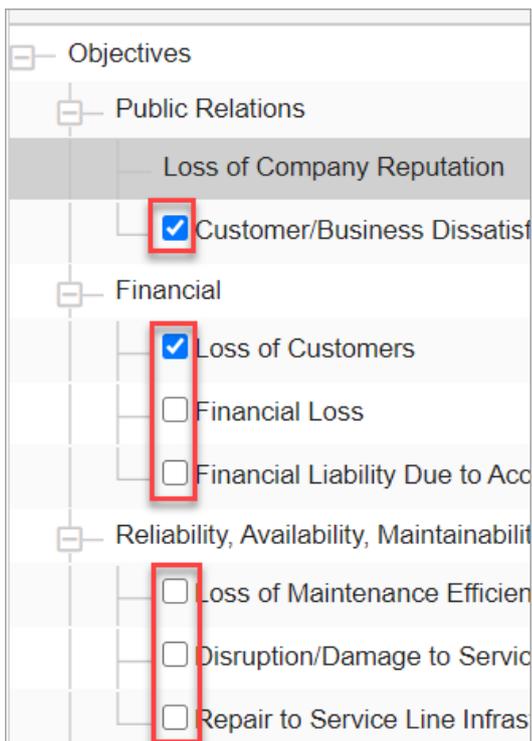


You can edit the currently selected scale by clicking 

You can also copy the measurement options from one covering objective to one or more covering objective(s).

Simply click  to the right of the covering objective you want to copy.

Checkboxes will appear to the left of the other covering nodes. Check the nodes you want to paste the measurement options to.



You can also check all the nodes at the bottom of the page.

Once done, click Proceed.

Copy To: Select one or more covering Objectives and click Proceed.	Select: All   None	Cancel	Proceed
--------------------------------------------------------------------	--------------------	--------	---------

You can jump to the specific evaluation step of the given covering objective by clicking 

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# Impact: Judgment Options Overview

The Impact's Judgment options page consists of the evaluation options for evaluating the Objectives and the Events with respect to Objectives.

The page has three sections:

- **Evaluate Objectives Options** - left section (blue), which consists of options to evaluate Objectives.
- **Evaluate Events Options** -right section (light green), which consists of the options to evaluate Events given Objectives.
- **Common Options** - the bottom section (white background-color) which is the options applicable for both Objectives and Events.

**Impact Judgment Options** Copy all settings to Likelihood

<p><input checked="" type="checkbox"/> <b>Evaluate Objectives</b></p> <p>Order for evaluating Objectives within hierarchy:</p> <p><input checked="" type="radio"/> Top down</p> <p><input type="radio"/> Bottom up</p> <p>When prioritizing Objectives on each screen, evaluate:</p> <p><input checked="" type="radio"/> One pair of Objectives with respect to parent objective</p> <p><input type="radio"/> All pairs of Objectives with respect to parent objective (AnyTime Evaluation only)</p> <p>Trade-off between accuracy and # of comparisons: (Number of pairs)</p> <p><input checked="" type="radio"/> All pairs (maximum accuracy)</p> <p><input type="radio"/> Two diagonals</p> <p><input type="radio"/> One diagonal (least time)</p> <p><input checked="" type="checkbox"/> Force most comparisons if fewer than <input type="text" value="5"/> elements in the cluster</p> <p>Select the type for pairwise comparison:</p> <p><input type="radio"/> Graphical/numerical</p> <p><input checked="" type="radio"/> 1-9</p> <p><input type="radio"/> unlimited</p> <p><input checked="" type="radio"/> Verbal</p> <p><input checked="" type="checkbox"/> Force graphical/numerical for 2 or 3 elements</p> <p>Change the wording when making pairwise comparisons for Objectives and sub-Objectives:</p> <p>Which of the two <input type="text" value="Objectives"/> below is more important <input type="text" value=""/></p> <p>Order of evaluation (top down or bottom up):</p> <p><input checked="" type="radio"/> Evaluate Objectives first (top down)</p> <p><input type="radio"/> Evaluate Events first (bottom up)</p> <p>Extra measurement options</p> <p><input type="checkbox"/> Apply values from names automatically</p>	<p><input checked="" type="checkbox"/> <b>Evaluate Events</b></p> <p>Default measurement type: <input type="text" value="Rating Scale"/></p> <p>When prioritizing Events on each screen, evaluate:</p> <p><b>IF Pairwise:</b></p> <p><input type="radio"/> One pair of Events with respect to a covering objective</p> <p><input checked="" type="radio"/> All pairs of Events with respect to a covering objective (AnyTime Evaluation only)</p> <p><b>IF Ratings or Direct:</b></p> <p><input checked="" type="radio"/> One objective and all Events (AnyTime Evaluation only)</p> <p><input type="radio"/> One event with respect to all covering Objectives (AnyTime Evaluation only)</p> <p><input type="radio"/> One event with respect to a covering objective, followed by the next event with respect to that covering objective</p> <p><input type="radio"/> One event with respect to a covering objective, followed by that event with respect to the next covering objective</p> <p><input checked="" type="checkbox"/> Show Event Numbers: <input type="text" value="ID"/></p> <p>Trade-off between accuracy and # of comparisons: (Number of pairs)</p> <p><input checked="" type="radio"/> All pairs (maximum accuracy)</p> <p><input type="radio"/> Two diagonals</p> <p><input type="radio"/> One diagonal (least time)</p> <p><input checked="" type="checkbox"/> Force most comparisons if fewer than <input type="text" value="5"/> elements in the cluster</p> <p>Select the type for pairwise comparison:</p> <p><input type="radio"/> Graphical/numerical</p> <p><input checked="" type="radio"/> 1-9</p> <p><input type="radio"/> unlimited</p> <p><input checked="" type="radio"/> Verbal</p> <p><input checked="" type="checkbox"/> Force graphical/numerical for 2 or 3 elements</p> <p>Change the wording when making pairwise comparisons for Events:</p> <p>Which of the two <input type="text" value="Events"/> below is more consequential <input type="text" value=""/></p>
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# Turn ON/OFF Evaluation for Objectives or Events given Objectives

The Project Manager can turn ON or OFF the evaluation for Threats/Objectives or for Events given Threats/Objectives.

The default option is to evaluate:

- threats,
- events given threats
- objectives
- events with respect to objectives

Although a Project Manager might want to do the evaluation in stages over a period of time, and turn off the evaluation of threats/objectives and evaluate only events, or vice versa, during one of these phases (for both Anytime and TeamTime evaluations).

This can be done on **LIKELIHOOD OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Judgments Options** for the evaluation for Threats and for Events given Threats.

Here you can check/uncheck the options to evaluate the Threats and the Events.

Manage Models	Identify/Structure	Likelihood of Eve...	Impact of Events	Risks	Controls	Controlled Risks
Structure	Visual Brainstorming	Measure	Synthesize	Reports		
<b>Likelihood Judgment Options</b>						Copy all settings to Impact
<input checked="" type="checkbox"/> Evaluate Threats			<input checked="" type="checkbox"/> Evaluate Events			

Similarly, you can turn ON/OFF the evaluation for Objectives or for Events with respect to Objectives on **IMPACT OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Judgments Options**.

Manage Models	Identify/Structure	Likelihood of Eve...	Impact of Events	Risks	Controls	Controlled Risk
Structure	Visual Brainstorming	Measure	Synthesize	Reports		
<b>Impact Judgment Options</b>						Copy all settings to Likelihood
<input checked="" type="checkbox"/> Evaluate Objectives			<input checked="" type="checkbox"/> Evaluate Events			

Unchecking these options will hide the respective options below them since they will not be applicable once the evaluation for Threats, Objectives or for Events is disabled.

# Order for evaluating within the Threats or Objectives hierarchy

When there is more than one level of threats/objectives, it is customary to proceed from the **top-down** -- that is, evaluating the relative importance of the main threats/objectives, then the relative importance of the sub-threats/objectives with respect to the threats/objectives, and so on.

However, for reasons similar to the above where it was recommended to proceed **bottom-up** -- evaluating events before the threats/objectives -- it is also recommended to evaluate the various levels in the threats/objectives hierarchy bottom-up as well. Doing so will enable the evaluators to have a better idea of the significance of the elements contained within the higher-level threats/objectives when they are evaluated.

Depending on the hierarchy you are working, you can specify the order of evaluation on:

- **LIKELIHOOD OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Judgments Options.**

**Order for evaluating Threats within hierarchy:**

- Top down
- Bottom up

- **IMPACT OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Judgments Options.**

**Order for evaluating Objectives within hierarchy:**

- Top down
  - Bottom up
-

# Default Pairwise Display: One or All pairs on the display

When prioritizing Threats, Objectives, or Events on each screen using Pairwise Comparisons, the Project Manager can select to display one pair or all pairs elements.

For Likelihood, this can be set on **LIKELIHOOD OF EVENTS > MEASURE < SET MEASUREMENT OPTIONS > Judgment Options:**

MANAGE MODELS	IDENTIFY/STRUCTURE	LIKELIHOOD OF EVENTS	IMPACT OF EVENTS	RISKS	CONTROLS	CONTROLLED RISKS		
Structure	Visual Brainstorming	Measure	Synthesize	Reports	Reload	On-line	Lock	Snapshots
<b>When prioritizing Threats on each screen, evaluate:</b> <input checked="" type="radio"/> One pair of Threats with respect to parent threat <input type="radio"/> All pairs of Threats with respect to parent threat (AnyTime Evaluation only)			<b>When prioritizing Events on each screen, evaluate:</b> <b>IF Pairwise:</b> <input type="radio"/> One pair of Events with respect to a covering threat <input checked="" type="radio"/> All pairs of Events with respect to a covering threat (AnyTime Evaluation only)					

For Impact, this can be set on **IMPACT OF EVENTS > MEASURE < SET MEASUREMENT OPTIONS > Judgment Options:**

MANAGE MODELS	IDENTIFY/STRUCTURE	LIKELIHOOD OF EVENTS	IMPACT OF EVENTS	RISKS	CONTROLS	CONTROLLED RISKS		
Structure	Visual Brainstorming	Measure	Synthesize	Reports	Reload	On-line	Snapshots	
<b>When prioritizing Objectives on each screen, evaluate:</b> <input checked="" type="radio"/> One pair of Objectives with respect to parent objective <input type="radio"/> All pairs of Objectives with respect to parent objective (AnyTime Evaluation only)			<b>When prioritizing Events on each screen, evaluate:</b> <b>IF Pairwise:</b> <input type="radio"/> One pair of Events with respect to a covering objective <input checked="" type="radio"/> All pairs of Events with respect to a covering objective (AnyTime Evaluation only)					

Note: The All pairs setting is only applicable for AnyTime Evaluation.

Note: The setting in this page is the default and can be overridden per cluster from the Measurement Methods page.

# Default Number of diagonals (Trade-off between accuracy and # of comparisons)

These options apply to the number of pairwise comparisons to be made within each cluster of elements. Let's consider an example of a cluster with five elements, A, B, C, D, and E:

The non-dark cells in the following figure illustrate all possible  $((5 * 4)/2 = 10)$  pairwise comparisons for a cluster of five elements.

A	B	C	D	E
	2.88			

The most accurate results are achieved with the first option above but at the expense of taking more time. If the number of elements in a cluster is small, then this option provides the most redundancy and hence most accurate results.

The choice of firsts and second diagonals in the above example would entail 4+3 judgments. This would consist of 3 'redundant' judgments (since at least 4 judgments are required for a spanning set) and would be reasonable even if verbal judgments were made.

Choosing the minimum number of comparisons is not recommended unless pairwise graphical judgments are made and you have confidence in the accuracy of each of the judgments.

This option can be set when evaluating using pairwise comparisons for:

- Threats
- Events given threat
- Objectives
- Events with respect to an objective

Depending on what you are working on, this can be done on:

- **LIKELIHOOD OF EVENTS > MEASURE < SET MEASUREMENT OPTIONS > Judgment Options** - for Threats (left) and for Events given Threat (right)

The screenshot shows the software interface with the following components:

- Navigation Tabs:** MANAGE MODELS, IDENTIFY/STRUCTURE, LIKELIHOOD OF EVENTS (active), IMPACT OF EVENTS, RISKS, CONTROLS, CONTROLLED RISKS.
- Sub-Tabs:** Structure, Visual Brainstorming, Measure (active), Synthesize, Reports.
- IF Ratings or Direct:**
  - One threat and all Events (AnyTime Evaluation only)
  - One event with respect to all covering Threats (AnyTime Evaluation only)
  - One event with respect to a covering threat, followed by the next event with respect to that covering threat
  - One event with respect to a covering threat, followed by that event with respect to the next covering threat
- Show Event Numbers:**  ID
- Trade-off between accuracy and # of comparisons: (Threats)**
  - All pairs (maximum accuracy)
  - Two diagonals
  - One diagonal (least time)
- Trade-off between accuracy and # of comparisons: (Events given Threat)**
  - All pairs (maximum accuracy)
  - Two diagonals
  - One diagonal (least time)

- **IMPACT OF EVENTS > MEASURE < SET MEASUREMENT OPTIONS > Judgment Options** - for Objectives (left) and for Events given Objectives (right)

MANAGE MODELS	IDENTIFY/STRUCTURE	LIKELIHOOD OF EVENTS	IMPACT OF EVENTS	RISKS	CONTROLS	CONTROLLED RISKS
<p>Trade-off between accuracy and # of comparisons: (Number of pairs)</p> <input checked="" type="radio"/> All pairs (maximum accuracy) <input type="radio"/> Two diagonals <input type="radio"/> One diagonal (least time)			<input checked="" type="radio"/> One objective and all Events (AnyTime Evaluation only) <input type="radio"/> One event with respect to all covering Objectives (AnyTime Evaluation only) <input type="radio"/> One event with respect to a covering objective, followed by the next event with respect to that covering objective <input type="radio"/> One event with respect to a covering objective, followed by that event with respect to the next covering objective <input checked="" type="checkbox"/> Show Event Numbers: ID <input type="text"/>			
			<p>Trade-off between accuracy and # of comparisons: (Number of pairs)</p> <input checked="" type="radio"/> All pairs (maximum accuracy) <input type="radio"/> Two diagonals <input type="radio"/> One diagonal (least time)			

This setting is only the default and can be overridden per cluster from the Measurement Methods page.

# Default Question Wording for Pairwise Comparison

The model elements terminologies for **Events**, **Causes**, **Objectives**, and **Controls** -- both singular and plural, are defined from the **IDENTIFY/STRUCTURE > Model Properties > Model Details** page.

In addition, you can also specify the wording to use during the evaluation, specifically for pairwise comparison (and rating, see explanation below) evaluation. This can be found on the **MEASURE > SET MEASUREMENT OPTIONS > Judgment Options** page.

Depending on the model you are working on (Likelihood or Impact), you can see the following options on the Judgments Options page:

## Likelihood

<b>Change the wording when making pairwise comparisons for Causes and sub-Causes:</b> Which of the two <input type="text" value="Causes"/> below <input type="text" value="is more likely"/> ▼	<b>Change the wording when making pairwise comparisons for Events:</b> Which of the two <input type="text" value="Events"/> below <input type="text" value="is more likely"/> ▼
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

## Impact

<b>Change the wording when making pairwise comparisons for Objectives and sub-Objectives:</b> Which of the two <input type="text" value="Objectives"/> below <input type="text" value="is more important"/> ▼	<b>Change the wording when making pairwise comparisons for Events:</b> Which of the two <input type="text" value="Events"/> below <input type="text" value="is more consequential"/> ▼
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

After "Which of the two" is the name of the element being compared. These terminologies (Causes, Objectives, Events) are the same and in sync with what's on the [Model Wording](#) page (plural). To edit, simply type in the desired wording on the text box

When changing the plural terminologies from the Judgments option page, keep in mind to also update the corresponding singular terminologies on the Wording Template page to make sure that the singular-plural wordings are consistent.

The pairwise evaluation phrase is defined from the second dropdown:

## Likelihood

### For Causes

<b>Change the wording when making pairwise comparisons for Causes and sub-Causes:</b> Which of the two <input type="text" value="Causes"/> below <input type="text" value="is more likely"/> ▼ <input type="text" value="is more likely"/> <input type="text" value="has more impact"/> <input type="text" value="has more influence"/> <input type="text" value="is more influential"/> <input type="text" value="— Custom —"/>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### For Events Given Causes

Change the wording when making pairwise comparisons for Events:

Which of the two  below

- is more likely
- is more influential
- Custom —

### Impact

#### For Objectives

Change the wording when making pairwise comparisons for Objectives and sub-Objectives:

Which of the two  below

- is more important
- has more impact
- has more influence
- Custom —

#### For Events wrt Objectives

Change the wording when making pairwise comparisons for Events:

Which of the two  below

- is more consequential
- has more impact
- is more likely
- has more influence
- Custom —

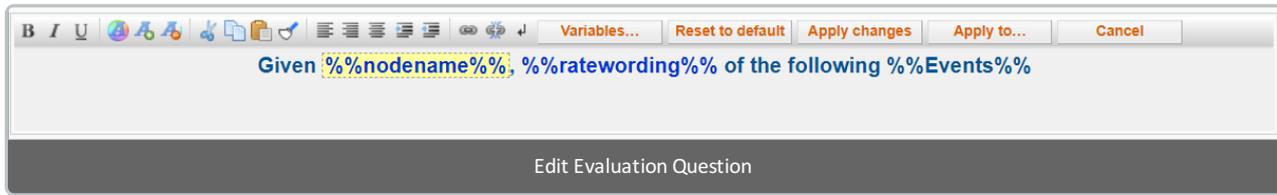
Simply select the phrase that best suits your model.

Selecting a predefined phrase will apply a similar phrase for Rating evaluation. For example, if you selected "**is more likely**", the Rating wording will be "**Rate the likelihood**".

You can also select --Custom-- and type in a custom phrase (e.g. is more influential, has more importance, etc.).

Custom wording will not be applicable for Rating evaluation -- the default will be used.

If in case you want to fully customize the evaluation questions, you can [edit the question](#) from the evaluation page itself.



# Impact: Evaluation Settings Overview

The Evaluation Settings screen consists of the navigation options **during** and **after** the evaluation.

MANAGE MODELS	IDENTIFY/STRUCTURE	LIKELIHOOD OF EVENTS	<b>IMPACT OF EVENTS</b>			
+	←	Structure	Visual Brainstorming	<b>Measure</b>	Synthesize	Reports

### Impact evaluation settings

- Hide navigation box/Evaluation progress
  - Hide navigation step buttons
- Show next unassessed
- Don't allow going to 'next' step unless input is provided
  
- Auto advance on
- Auto advance off, and ask evaluator (once) if they want to turn it on
- Auto advance off, and don't ask evaluator if they want to turn it on
  
- After collect input:**
  - Stay on the evaluation pipe
  - Close browser window (tab)
  - Join evaluation pipes (*Likelihood, Impact*)
  - Redirect to URL:
  - Open another model:
  - Perform user log-off

# Auto-advance to Next Step

**Auto-advance** can be used to make the evaluation for single pairwise verbal and single rating faster by auto-advancing to the next step after the judgment was made.

Depending on the model you are working on, the Auto-Advanced option can be set on:

- **LIKELIHOOD OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Evaluation settings.**
- **IMPACT OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Evaluation settings.**

- Auto advance on
  - Auto advance off, and ask evaluator (once) if they want to turn it on
  - Auto advance off, and don't ask evaluator if they want to turn it on

There are three options for the auto-advance feature:

- Auto-advance on
- Auto-advance off, and ask the evaluator (once) if they want to turn on - a prompt will be displayed during the evaluation suggesting to turn on the auto-advance feature if the evaluator already entered five(5) single pairwise verbal or single rating judgments
- Auto-advance off, and don't ask evaluator if they want to turn it on

Note: The evaluators can turn on/off the auto-advance during the evaluation.

# Show or Hide the Navigation box and buttons

The Project Manager can show or hide navigation buttons during the evaluation.

Hide navigation box/Evaluation progress

Hide navigation step buttons

Show next unassessed

Don't allow going to 'next' step unless input is provided

Depending on the model you are working on, this can be set on:

- **LIKELIHOOD OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > [Evaluation settings](#).**
- **IMPACT OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > [Evaluation settings](#).**

By default, the navigation available on the evaluation are as follows:

Navigation Box 🔊

Steps: 1 ... 15 16 17 18 19 20 21 22 23 ... 60 📄 Evaluated: 0/114

Auto advance

View as Evaluator

**Next Unassessed**

Previous Next

The Project Manager has options to show/hide some buttons and more:

- **Hide navigation box/Evaluation progress** - hide the navigation box at the left which shows the buttons to move to a specific step, current cluster, and steps list.
  - **Hide navigation step buttons** - hide the navigation box but show the evaluation progress. Note: When the "Hide navigation box/Evaluation progress" is checked, this option is disabled since it will be overridden.

Step: **4/60** Evaluated: **0/114**

- **Show next unassessed** - show or hide the "Next unassessed" button. The next unassessed button allows the evaluator to skip the results/information/evaluated steps and jump to a specific step that is not yet evaluated, and skip results or information steps.
- **Don't allow going to 'next' step unless input is provided** - disable the Next button and the number steps when the evaluator hasn't provided judgment for the current step.

# After collect input options

The Project Manager can choose where to redirect the evaluators after the evaluation.

Depending on the model you are working on, the Auto-Advanced option can be set on:

- LIKELIHOOD OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Evaluation settings.
- IMPACT OF EVENTS > MEASURE > SET MEASUREMENT OPTIONS > Evaluation settings.

**After collect input:**

Stay on the evaluation pipe

Close browser window (tab)

Join evaluation pipes (*Likelihood, Impact*)

Redirect to URL:

Open another model:

Perform user log-off

The following options are available:

- **Stay on the evaluation pipe** - stay on the last step of the evaluation, commonly the "Thank you" page. The evaluator can close the tab or go back to the previous steps.
- **Close browser window (tab)** - add a Finish button on the last step of evaluation which will close the browser tab
- **Join evaluation pipe (Likelihood, Impact)** - on the last step of the likelihood model evaluation, a next button will be available which will redirect to the impact evaluation; clicking previous from the first step of impact will go back to the likelihood evaluation.
- **Redirect to URL** - will take the evaluator to the URL specified by the Project Manager following their completion of the evaluation
- **Open another model** - select and open another Riskion model on the workgroup where the evaluator will be redirected to collect input
- **Perform user log-off** - automatically log the evaluator off after completing their input.

# Participant Display Options Overview

The Participant Display Options page is where the Project Manager determines what evaluators will see during their evaluation session -- this includes the Welcome and Thank You page, Results, Information Documents, and more.

Depending on the hierarchy that you are working on, the Participants Display Options page can be found on:

## Likelihood

LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

The screenshot shows the navigation interface for the 'LIKELIHOOD OF EVENTS' section. The 'MEASURE' sub-tab is active. In the left sidebar, 'Participant display options' is highlighted with a red box. In the main content area, under the 'SET MEASUREMENT OPTIONS' section, 'Participant display options' is also highlighted with a red box.

The screenshot displays the 'Likelihood participant display options' configuration page. It includes a 'Copy all settings to Impact' button in the top right. The page is divided into several sections:

- Intermediate Results:**
  - Hide
  - Individual (AnyTime Evaluation only)
  - Combined (AnyTime Evaluation only)
  - Both
  - Display 'expected value' if applicable
  - Show index
- Intermediate results sorting:**
  - No sorting
  - Sort by name
  - Sort by individual Likelihood
  - Sort by combined Likelihood
- Overall Results:**
  - Hide
  - Individual (AnyTime Evaluation only)
  - Combined (AnyTime Evaluation only)
  - Both
  - Display 'expected value' if applicable
  - Show index
- Overall results sorting:**
  - No sorting
  - Sort by name
  - Sort by individual Likelihood
  - Sort by combined Likelihood
- Display Options:**
  - Show welcome page (Edit...)
  - Show thank you page (Edit...)
  - Show "Reward" page instead when participant completes all their judgments (Edit...)
  - Show full threat path:  Never  Always  Auto-collapse
  - Question Text-to-Speech:  Disabled  Auto-play (when available)  Play on demand
  - Show inconsistency ratio (An inconsistency ratio cannot be computed if there are more than fifteen elements or if there are no redundant judgments)
  - Show information documents
    - Hide information documents captions
    - Display information documents as frame (uncheck to display as tooltip)
    - Auto-fit information document images
  - Show/allow comments entry
  - Use combined input sources for individual results
  - Suppress warning when judgments are not made
- Sensitivity analysis:**
  - Display dynamic analysis
  - Display gradient analysis
  - Display performance analysis
- Which results do you want to use in the sensitivity analysis?**
  - Individual
  - Combined
- Synthesis:**
  - Distributive mode
  - Ideal mode

The footer of the page reads: 'Likelihood's Participant Display Options Page'.

## Impact

IMPACT OF EVENTS > MEASURE > Set Measurement Options > Participant display options.

The screenshot shows the 'IMPACT OF EVENTS' application interface. The top navigation bar includes 'MANAGE MODELS', 'IDENTIFY/STRUCTURE', 'LIKELIHOOD OF EVENTS', and 'IMPACT OF EVENTS'. Under 'IMPACT OF EVENTS', there are sub-tabs for 'Structure', 'Visual Brainstorming', 'Measure', 'Synthesize', and 'Reports'. The 'Measure' sub-tab is active. On the left, a navigation menu lists various options, with 'Participant display options' highlighted in a red box. The main content area shows the 'MEASURE' section with 'SET MEASUREMENT OPTIONS' as a sub-section. Under this sub-section, 'Participant display options' is also highlighted in a red box.

The screenshot displays the 'Impact participant display options' configuration page. At the top right, there is a button labeled 'Copy all settings to Likelihood'. The page is organized into several sections:

- Intermediate Results:** Includes radio buttons for 'Hide', 'Individual (AnyTime Evaluation only)', 'Combined (AnyTime Evaluation only)', and 'Both'. There are checkboxes for 'Display 'expected value' if applicable' and 'Show index' (checked).
- Intermediate results sorting:** Includes radio buttons for 'No sorting', 'Sort by name', 'Sort by individual Impact', and 'Sort by combined Impact'.
- Overall Results:** Similar to Intermediate Results, with radio buttons for 'Hide', 'Individual (AnyTime Evaluation only)', 'Combined (AnyTime Evaluation only)', and 'Both'. Checkboxes for 'Display 'expected value' if applicable' and 'Show index' (checked).
- Overall results sorting:** Similar to Intermediate results sorting, with radio buttons for 'No sorting', 'Sort by name', 'Sort by individual Impact', and 'Sort by combined Impact'.
- Display Preferences:** Includes checkboxes for 'Show welcome page', 'Show thank you page', and 'Show "Reward" page instead when participant completes all their judgments'. There are 'Edit...' buttons next to each. Below these are options for 'Show full objective path' (radio buttons for 'Never', 'Always', 'Auto-collapse') and 'Question Text-to-Speech' (radio buttons for 'Disabled', 'Auto-play (when available)', 'Play on demand').
- Information and Sensitivity:** Includes checkboxes for 'Show inconsistency ratio', 'Show information documents', 'Hide information documents captions', 'Display information documents as frame (unchecked to display as tooltip)', 'Auto-fit information document images', 'Show/allow comments entry', 'Use combined input sources for individual results', and 'Suppress warning when judgments are not made'.
- Sensitivity analysis:** Includes checkboxes for 'Display dynamic analysis', 'Display gradient analysis', and 'Display performance analysis'.
- Which results do you want to use in the sensitivity analysis?:** Radio buttons for 'Individual' (selected) and 'Combined'.
- Synthesis:** Radio buttons for 'Distributive mode' and 'Ideal mode' (selected).
- Embed extra content as pipe step(s):** Checkboxes for 'Show Overall Risk Results' and 'Show Overall Risk Map'.

At the bottom of the page, there is a footer that reads 'Impact's Participant Display Options Page'.

# Show or Hide Intermediate and Overall Results

The Project Manager can show or hide the Intermediate and/or Overall Results, and decide how these results will be sorted.

Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

## Intermediate Results

**Overall Results**

Hide

Individual (AnyTime Evaluation only)

Combined  (AnyTime Evaluation only)

Both

Display 'expected value' if applicable

Show index

**Overall results sorting**

No sorting

Sort by name

Sort by individual priority

Sort by combined priority

Intermediate results, such as the likelihoods/impacts for elements in a cluster derived from pairwise comparisons, can be shown to or hidden from evaluators. If shown, their individual results can be shown, or the combined results, or both.

Intermediate results can be sorted by name, individual results, or combined results.

The Hide option applies to both Anytime and TeamTime. The Individual and Combined apply only to Anytime.

TeamTime will display both individual and combined results unless the "Hide" option is ticked in which case you get no results steps at all.

To hide the combined results in TeamTime, the Project Manager can click the gear icon and then check the "Hide Combined Results" checkbox during the meeting.

You can show the 'expected value' if the node names are numeric.

You can also hide or show the index in the results grid.

## Overall Results

**Overall Results**

- Hide
- Individual (AnyTime Evaluation only)
- Combined  (AnyTime Evaluation only)
- Both
- Display 'expected value' if applicable
- Show index

**Overall results sorting**

- No sorting
- Sort by name
- Sort by individual priority
- Sort by combined priority

Overall Results has similar options as with the Intermediate results.

Overall results for the events can be shown to or hidden from evaluators. If shown, their individual results can be shown, or the combined results, or both.

The Hide option applies to both Anytime and TeamTime. The Individual and Combined apply only to Anytime.

TeamTime will display both individual and combined results unless the "Hide" option is ticked in which case you get no results steps at all.

To hide the combined results in TeamTime, the Project Manager can click the gear icon and then check the "Hide Combined Results" checkbox during the meeting.

Overall results can be sorted by name, individual priority, or combined priority.

You can show the 'expected value' if the node names are numeric.

You can also hide or show the index in the results grid.

---

# Edit Welcome, Thank You or Rewards pages

The Evaluation's Welcome, Thank you, or Reward pages of the evaluation can be shown or hidden.

Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > [Participant display options.](#)
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > [Participant display options.](#)

<input checked="" type="checkbox"/> Show welcome page	<a href="#">Edit...</a>
<input checked="" type="checkbox"/> Show thank you page	<a href="#">Edit...</a>
<input type="checkbox"/> Show "Reward" page instead when participant completes all their judgments	<a href="#">Edit...</a>

A **welcome page** is shown at the beginning of the evaluation and/or a **thank you page** at the end of the evaluation.

You can display a **reward page** instead of the thank you page when participants completed their judgments.

Each of these pages can be edited. Simply click the **Edit...** button to open the [rich text editor](#) where you can add texts, images, URLs, etc.

---

# Show Threats/Objectives Full Path

You can show or hide the threats/objectives full path in the evaluation heading.

Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

Show full threat path:  Never  Always  Auto-collapse

- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

Show full objective path:  Never  Always  Auto-collapse

Options include:

- **Never** - not to show the threats/objectives full path at all
  - **Always** - always show the threats/objectives full path
  - **Auto-collapse** - show the threats/objectives full path for 5 seconds and then collapsed it. Clicking the threats/objective name will show again the full path.
-

## Show or Hide Inconsistency ratio

Inconsistency Ratio can be shown or hidden in the Intermediate Results pages.

Depending on the model you are working on, this can be turned on/off on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

The inconsistency ratio can be shown when judgments are entered using pairwise comparisons. The evaluators can also see various options to improve the inconsistency.

Show inconsistency ratio (*An inconsistency ratio cannot be computed if there are more than fifteen elements or if there are no redundant judgments*)

---

# Information Documents Settings (Hide or Show, Tooltip or Frame View)

[Information Documents](#) can be shown or hidden and displayed as a tooltip or as a frame in the Collect Input process.

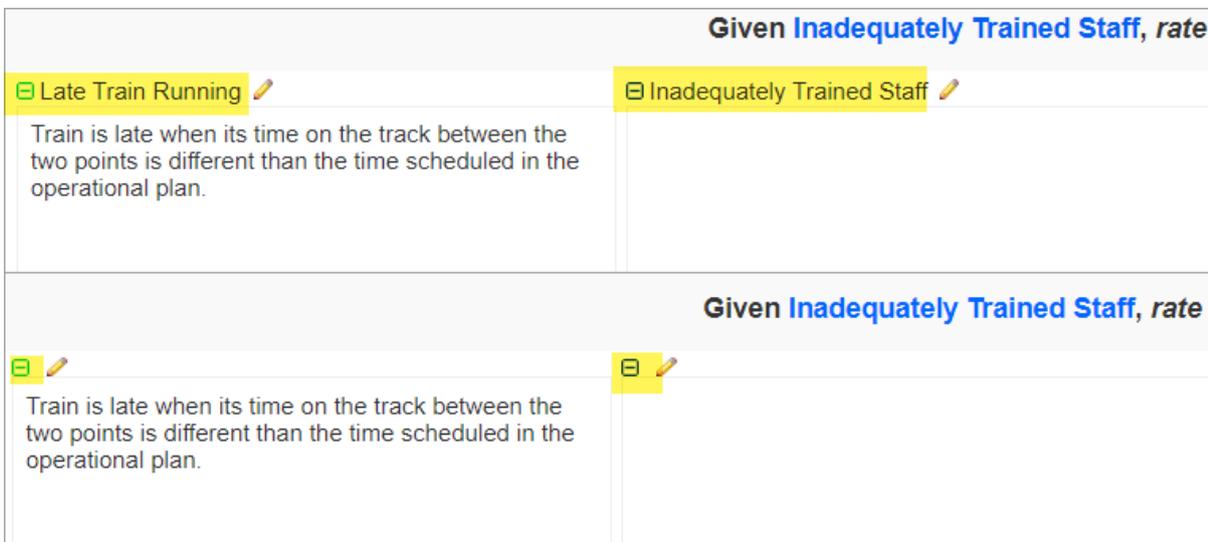
Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

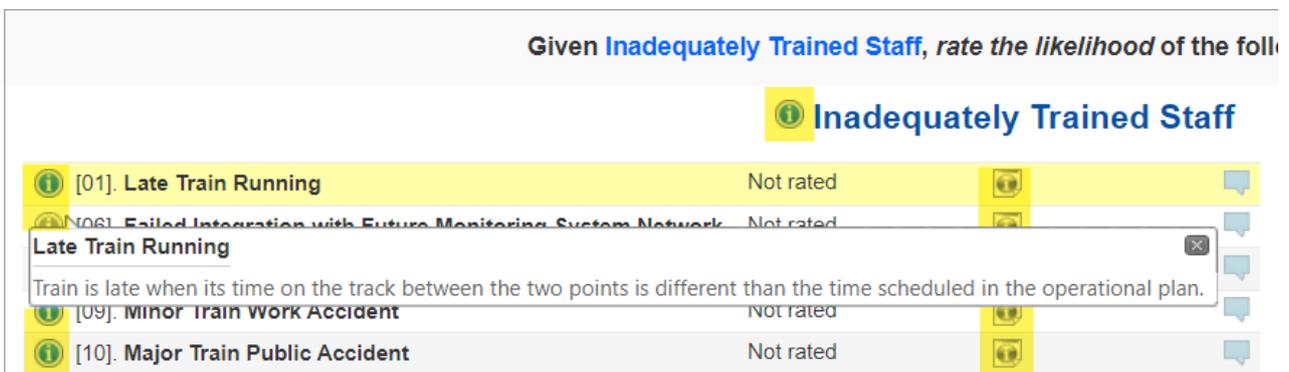
Simply check the "Show information documents" checkbox to show the information documents on the Evaluation.

<input checked="" type="checkbox"/> Show information documents
<input type="checkbox"/> Hide information documents captions
<input checked="" type="checkbox"/> Display information documents as frame <i>(uncheck to display as tooltip)</i>

The Hide information document captions option hides the element name for the frame view infodocs.



The information documents can be displayed in the **frame** as shown above or as a **tooltip** shown below:



Simply hover on the "i" icon to display its content, or click it to open the [rich text editor](#) for editing.

# Allow or Disable Comments Entry

Evaluators can add comments during the evaluation.

A comment allows the evaluator to add a note for his/her specific judgment which the Project Manager can review later on the Judgments Overview Reports.

The comments Entry can be enabled or disabled.

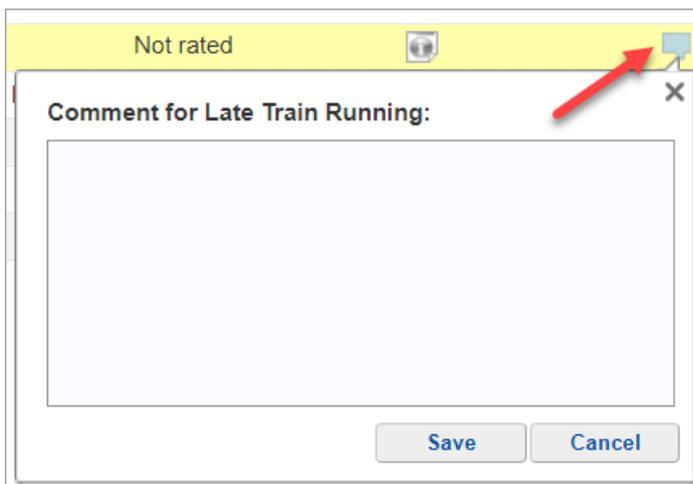
Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

Simply check or uncheck the Show/allow comments entry.

 Show/allow comments entry

Depending on the evaluation (multi or single), comments are displayed as a tooltip by clicking the blue icon.



or in the expandable frame:

 Comment

# Show Sensitivity analysis on the Evaluation

Sensitivity analysis (Dynamic, Performance, and Gradient) can be shown to the evaluators. If shown, either the individual or combined sensitivities can be shown.

Depending on the model you are working on, this can be done on:

- LIKELIHOOD OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**
- IMPACT OF EVENTS > MEASURE > Set Measurement Options > **Participant display options.**

**Sensitivity analysis**

Display dynamic analysis

Display gradient analysis

Display performance analysis

**Which results do you want to use in the sensitivity analysis?**

Individual

Combined

---

# Send AnyTime Invitation (from Riskion or Local Mail Client)

Depending on the model you are working on, you can invite participants to AnyTime Evaluation on:

- **LIKELIHOOD OF EVENTS > MEASURE > AnyTime Evaluation > Send Invitations**
- **IMPACT OF EVENTS > MEASURE > AnyTime Evaluation > Send Invitations**

The **Send Email(s)** tab is one of the send invitation options for AnyTime Evaluation.

It displays a participants list table as shown below where the Project Manager will select the participant/s that will receive the AnyTime invitation.

The screenshot shows the 'Send Email(s)' interface. At the top, there are tabs for 'Send Email(s)', 'General Link', 'Participant Specific Links', and 'Group Specific Links'. Below the tabs is a search bar. The main area is divided into two sections: a table of participants on the left and an email composition area on the right.

<input type="checkbox"/>	NAME	E-mail	Has Data	Progress
<input type="checkbox"/>	System Manager	Admin	No	0.0%
<input type="checkbox"/>	Ernest Forman	forman@gwu.edu	Yes	100.0%
<input type="checkbox"/>	Ed Hreljac	ed.hreljac@processpower.ca	Yes	100.0%
<input type="checkbox"/>	Mike Jones	mjones@expertchoice.com	No	0.0%
<input type="checkbox"/>	Vijay Gupta	vijaygupta2607@gmail.com	No	0.0%
<input type="checkbox"/>	John Doe	j.doe@eci.com	No	0.0%
<input type="checkbox"/>	Risk Expert	expert@eci.com	No	0.0%

The email composition area on the right has the following fields:

- From:** "Expert Choice Comparion" <donotreply@expertchoice.com>
- Subject:** Riskion®: Please join our Evaluation
- Body:** Dear System Manager,  
Please join our Riskion® assessment for risk event Impacts in the model: DHS Border Security example with controls  
by clicking in the following link:  
(A hyperlink customized for each participant will appear HERE when the 'Send Invite' button is pressed)  
If you need additional help, please email Admin.  
Thank you,  
System Manager  
This is an automatically generated email, please do not reply.

At the bottom of the interface, there are buttons for 'Add Participants...', 'Download MS-Word MailMerge', 'Edit Invite', 'Reset', and 'Send Invite'.

You can add participants from the [Identify/Structure > Identify > Participants page](#) by navigating through the menus or by simply clicking the **Add Participants** button at the bottom of the table.

A template for the email is provided at the right which can be edited to explain the purpose of the evaluation and provide any other information or hyperlinks that you want to convey to the evaluators.

You can edit the email Subject by typing on the Subject Field.

Clicking the **Edit Invite** button will open a [rich text editor](#) where you can edit the body of the invitation. You can add variables that Riskion will replace with the appropriate information as desired. After returning from editing you can then view what the email will look like.

Click the **Reset** button to reset the invitation to the default.

The **Send Invite** button is disabled until you select at least one participant from the left. You can select some or all of the participants to receive the email. You can also re-invite or remind participants if they are not making progress. You can select all participants without judgments or sort by the Evaluation Progress column and select those with a small percentage of judgments to re-invite or remind.

By default, the invitation email is being sent by Riskion, you can choose to send the invitation using your local mail client (e.g Outlook, Thunderbird, etc.) by selecting "User Your Local Mail Client" under the "From:" field.

Note that using this option, you can only send invitations to one selected participant at a time. If you want to send to multiple participants at once using your local mail client, you can use the Mail Merge option.

Simply select the participants you want to send the invitation to and then click the Download MS-MailMerge button at the bottom.

 [Download MS-Word MailMerge](#)

A .zip file will be downloaded, extracting the zip file will uncompress the ff:

- Your\_Model\_Name.docx - the MS mail merge file
- Your\_Model\_Name.mdb - MS database
- README.docx

Read the README.docx for the instructions.

---

# Invite Participants using General Links (Anonymous, Signing in, Login)

Depending on the model you are working on, you can invite participants to AnyTime Evaluation on:

- **LIKELIHOOD OF EVENTS > MEASURE > AnyTime Evaluation > [Send Invitations](#)**
- **IMPACT OF EVENTS > MEASURE > AnyTime Evaluation > [Send Invitations](#)**

The General Link tab provides hyperlink and invitation instructions that can be used **both by registered and unregistered participants**.

The General Link page is divided into three sections:

- **General Link type** - Anonymous, Signing in and Evaluation and Log in, these are explained in detail below
- **Options** - Options can be enabled or disabled as applicable to the selected General Link type
- **Invite Link and Invite Instructions** - where the invite link and instructions based on the general link type and options specified are displayed. The Project Manager can copy and send the link/instruction via email, post it to a website, or transmit it via a chat window or any other communications vehicle. You can also see a hint text below the invite instruction explaining briefly how the link works.

Send Email(s) **General Link** Participant Specific Links Group Specific Links

A hyperlink will be created that can be sent to people for them to evaluate this model. You can send the link to those who are not registered in this Comparison workgroup as well as those who are already registered.

Link for Anonymous Evaluation  
 Link for Signing In and Evaluation  
 Link for going to normal Riskion® login screen

**Options:**

Sign-up form fields:  
 E-mail  
 Name  
 Phone number  
 Password

Required form fields:  
 E-mail  
 Name  
 Phone number  
 Password

Sign-up page title:  
  
[Edit Sign-up page message](#)

Users accessing the model with this link will be assigned to:  
No Group  
 Assign as Project Manager when user has workgroup permission to manage model(s)

New users who access the model with this link will be assigned the permissions of a(n):  
Evaluator

Invite Link: <https://riskbeta.expertchoice.com/?hash=8a7e4c0645ff6f688bd520e2b95bfc86> [Copy](#)

Invite Instruction: To join a Riskion® evaluation anonymously in the model 'DHS Border Security example with controls', please go to <https://riskbeta.expertchoice.com/?hash=132daf99df71f4fb6b1eb6b1a876b18c> for the Likelihood evaluation, and then go to <https://riskbeta.expertchoice.com/?hash=8a7e4c0645ff6f688bd520e2b95bfc86> for the Impact evaluation. (No login or registration required) [Copy](#)

Use invitations for both hierarchies (Likelihood, Impact)  
**Please note:** Regular evaluation pipes in this model (not joined). [\[Change options\]](#)

The evaluator will begin the evaluation without entering any information about their email or name or password. If they exit the evaluation and execute the link at a subsequent time, they will be returned to the same point at which they left off.

There are three General Link types as shown by the radio buttons on this screen.

Link for Anonymous Evaluation  
 Link for Signing In and Evaluation  
 Link for going to normal Riskion® login screen

# 1. Link for Anonymous Evaluation

Generates a link that, when used, will allow the respondent to enter judgments anonymously. If they exit the evaluation and execute the link at a subsequent time, they will be returned to the same point at which they left off. Anonymous users will have dummy names and emails.

Link for Anonymous Evaluation  
 Link for Signing In and Evaluation  
 Link for going to normal Riskion® login screen

**Options:**

Sign-up form fields:	Required form fields:	Sign-up page title:
<input checked="" type="checkbox"/> E-mail <input checked="" type="checkbox"/> Name <input type="checkbox"/> Phone number <input checked="" type="checkbox"/> Password	<input checked="" type="checkbox"/> E-mail <input type="checkbox"/> Name <input type="checkbox"/> Phone number <input checked="" type="checkbox"/> Password	<input type="text"/> <input type="button" value="Edit Sign-up page message"/>

Users accessing the model with this link will be assigned to: 

Assign as Project Manager when user has workgroup permission to manage model(s)

New users who access the model with this link will be assigned the permissions of a(n):

Invite Link:

Invite Instruction:

Use invitations for both hierarchies (Likelihood, Impact)  
**Please note:** Regular evaluation pipes in this model (not joined). [\[Change options\]](#)

The evaluator will begin the evaluation without entering any information about their email or name or password. If they exit the evaluation and execute the link at a subsequent time, they will be returned to the same point at which they left off.

The options available for Anonymous Evaluation invitation are as follows, and are also available for the Signing Up and Evaluation tab:

- **Group Assignment** - assign the invited users to a specific participant group when executing the link.

Users accessing the model with this link will be assigned to: 

By default, "No group" is selected, meaning they will not be assigned to any group. You can select a group, if available, by clicking on the dropdown. You can click the Manage Groups  icon to redirect you to the Add Participants screen and open the Manage Groups modal where you can add groups.

**TIP:** The invite/instruction link section at the bottom has a generated link that is based on the currently selected group on the dropdown. If you want to get the links for all the existing groups at once, go to the fourth tab, **Group-Specific Links** tab lists, where you can copy/download the links.

- **Permission Assignment** - assign permission (Evaluator, Viewer, Evaluator/Viewer, and Project Manager) to non-registered participants when executing the link.

New users who access the model with this link will be assigned the permissions of a(n):

Evaluator

Evaluator

Viewer

Evaluator/Viewer

Project Manager

A Riskion model composes of Likelihood and Impact evaluation (and Control), an additional option can be found below the invitation instruction section:

- **Use invitation for both hierarchies (Likelihood and Impact)** - checking this option will indicate both the Likelihood and Impact invitation links on the Invite Instruction. Please note that this is only applicable if the Likelihood and Impact pipes are not joined as specified from the [Evaluation Settings page](#).

Invite Instruction: To join a Riskion® evaluation in the model 'DHS Border Security example with controls', please do the following:

1. Go to <https://riskbeta.expertchoice.com/?passcode=4463-2607> for the Likelihood evaluation
2. Enter your email address and your password to login
3. Click on "Log in"
4. After finishing the Likelihood evaluation, go to <https://riskbeta.expertchoice.com/?passcode=5384-0367> for the Impact evaluation

Use invitations for both hierarchies (Likelihood, Impact)

This option is available for the three general links type.

## 2. Link for Signing In and Evaluation

The Link for Signing In and Evaluation is applicable for **registered** and **non-registered** users. Executing the link will redirect the users to a page with two forms, where user can either sign up or log in:

### DHS Border Security

Please join our Risk Assessment. For new users, please sign up using the form at the left. For registered users, use the login form at the right.

<p style="text-align: center; color: #0056b3;"><b>New users login here:</b></p> <p>E-mail*: <input type="text"/></p> <p>Full name: <input type="text"/></p> <p>Password*: <input type="password"/></p> <p>Confirm password*: <input type="password"/></p> <p style="text-align: center; color: #0056b3;"><b>Sign up</b></p>	<p style="text-align: center; color: #0056b3;"><b>Existing user login:</b></p> <p>E-mail*: <input type="text"/></p> <p>Password: <input type="password"/></p> <p style="text-align: center; color: #0056b3;"><b>Log in</b></p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

In addition to the options available for the Anonymous Evaluation described above, more options are available for Link for Signing In and Evaluation:

**Options:**

<p>Sign-up form fields:</p> <input checked="" type="checkbox"/> E-mail <input checked="" type="checkbox"/> Name <input type="checkbox"/> Phone number <input checked="" type="checkbox"/> Password	<p>Required form fields:</p> <input checked="" type="checkbox"/> E-mail <input type="checkbox"/> Name <input type="checkbox"/> Phone number <input checked="" type="checkbox"/> Password	<p>Sign-up page title:</p> <input type="text"/> <input type="button" value="Edit Sign-up page message"/> <input type="button" value="Q"/>
<p>Users accessing the model with this link will be assigned to:</p> <input type="button" value="No Group"/>	<input type="button" value="Assign as Project Manager when user has workgroup permission to manage model(s)"/>	<p>New users who access the model with this link will be assigned the permissions of a(n):</p> <input type="button" value="Evaluator"/>

- **Sign-up form fields and required fields** - select the fields (E-mail, Name, Phone number, Password) that will be displayed for the non-registered users form when the link is executed and indicate if responses are required or not. At least one of the fields must be selected (checked) to appear.

**Note:** You cannot specify a required password unless the email is required. If all selected fields are designated as optional (not required) and the user chooses not to enter any information, then the link functions the same as the anonymous evaluation.

- **Assign a Project Manager permission to the registered user** - if this option is checked, a registered user that has a Project Organizer Workgroup Permission will be a Project Manager of the model. (Note: A Workgroup Manager will always be a Project Manager of a model)
- **Specify the signup page title and message** - this is the (1) heading and (2) custom message that will appear at the top of the signing up/login page. A default heading is provided in case you did not specify it, on the other hand, the custom message can be blank.



### 3. Link for going to normal Riskion login screen

When executing the link generated from this option, the user will be taken to the normal Riskion login screen with an **access code** for this model. The registered user needs to provide his/her email and password and click Log in.



E-mail: \*

Password:

Access Code:

Remember me

[Log in](#)

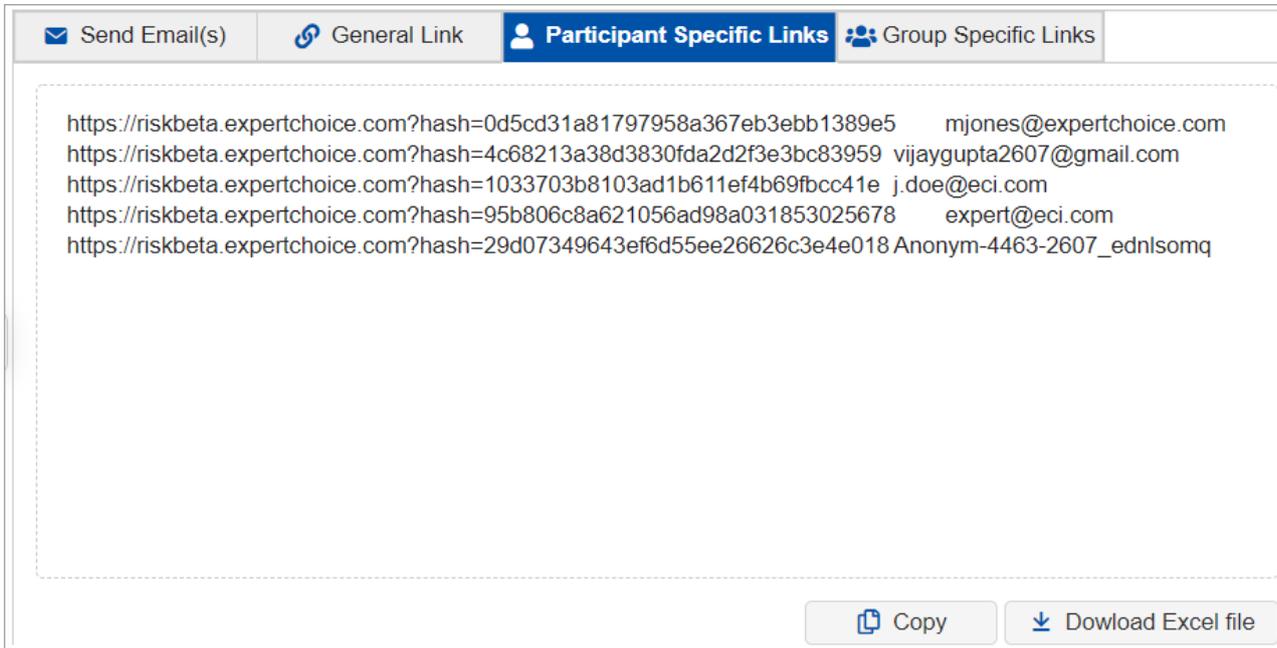
— OR —

[Join TeamTime™ Session](#)

[? I forgot my password](#)

# Invite Participants using Participant Specific Links

The Participant Specific Links tab provides a (unique) link and email address generated for every **registered participant** in the model. The Project Manager can use these links in any way that they desire.



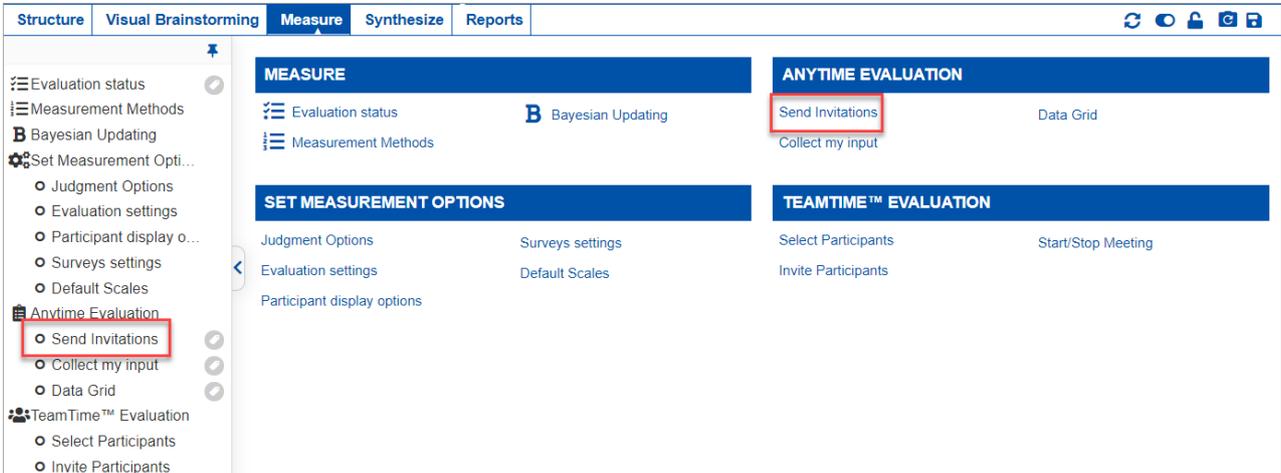
The screenshot shows a software interface with four tabs: 'Send Email(s)', 'General Link', 'Participant Specific Links' (which is selected and highlighted in blue), and 'Group Specific Links'. Below the tabs is a large dashed-line box containing a list of five unique links and their corresponding email addresses. At the bottom right of the interface are two buttons: 'Copy' and 'Download Excel file'.

Link	Email Address
<a href="https://riskbeta.expertchoice.com?hash=0d5cd31a81797958a367eb3ebb1389e5">https://riskbeta.expertchoice.com?hash=0d5cd31a81797958a367eb3ebb1389e5</a>	mjones@expertchoice.com
<a href="https://riskbeta.expertchoice.com?hash=4c68213a38d3830fda2d2f3e3bc83959">https://riskbeta.expertchoice.com?hash=4c68213a38d3830fda2d2f3e3bc83959</a>	vijaygupta2607@gmail.com
<a href="https://riskbeta.expertchoice.com?hash=1033703b8103ad1b611ef4b69fbcc41e">https://riskbeta.expertchoice.com?hash=1033703b8103ad1b611ef4b69fbcc41e</a>	j.doe@eci.com
<a href="https://riskbeta.expertchoice.com?hash=95b806c8a621056ad98a031853025678">https://riskbeta.expertchoice.com?hash=95b806c8a621056ad98a031853025678</a>	expert@eci.com
<a href="https://riskbeta.expertchoice.com?hash=29d07349643ef6d55ee26626c3e4e018">https://riskbeta.expertchoice.com?hash=29d07349643ef6d55ee26626c3e4e018</a>	Anonym-4463-2607_ednlsomq

# Invite Participants using Group Specific links

Depending on the model you are working on, you can get the Group-Specific Invite links on:

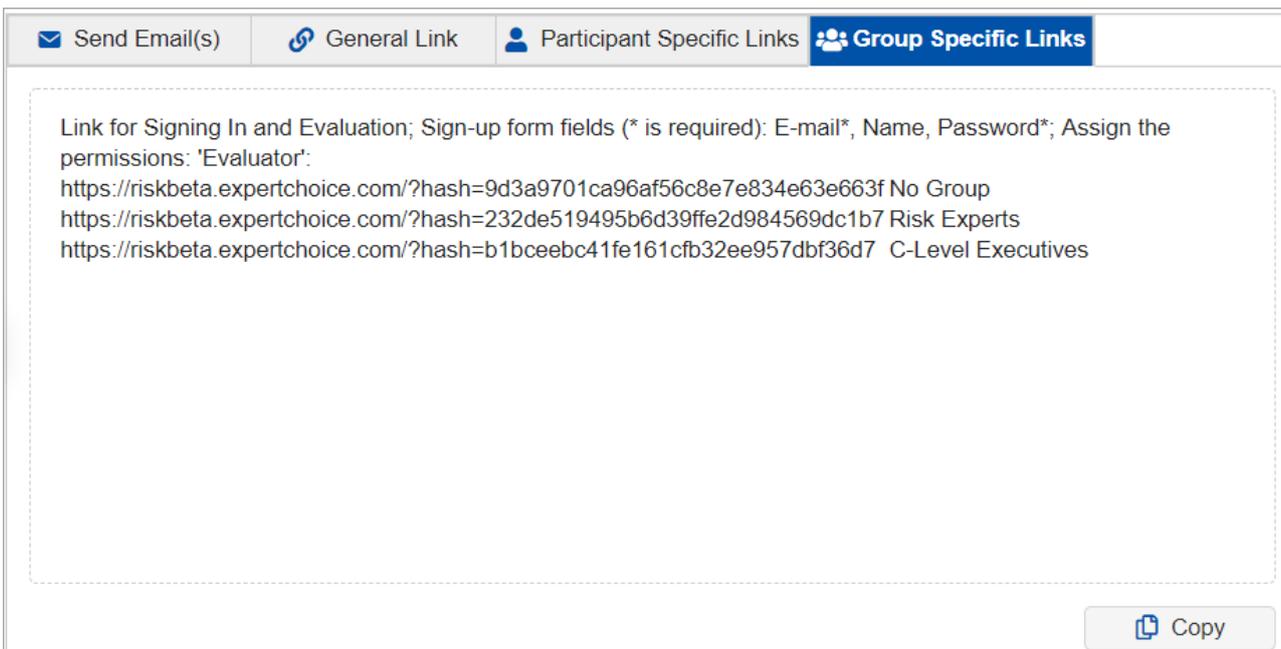
- LIKELIHOOD > MEASURE > ANYTIME EVALUATION > [Send Invitations](#) page
- IMPACT > MEASURE > ANYTIME EVALUATION > [Send Invitations](#) page:



The Group-Specific Links tab provides a link that will assign both **registered** and **unregistered** participants to a specific group.

In the General Link tab, you can only select a group and copy the invitation link one at a time. Here in the Groups-specific tab, we take into account the currently selected options from the General links tab (e.g. general link type, permission, etc.) and generate a link with those definitions for each existing participants groups.

For example:



The invitation link details are indicated at the first line as shown above: "Signing In and Evaluation" invite links with sign-up form fields: Email\*, Name, and Password\*, users will be assigned to an "Evaluator" permission.

Three invite links were generated. When a user executed the first link, he/she will be redirected to the "Signing in and Evaluation" page and will not be assigned to any group after he/she signed-up or logged-in.

The second link will assign the users to the "Risk Experts" group, and the third to the "C-Level Executives" group.

Participants Groups can be added from **IDENTIFY/STRUCTURE > IDENTIFY > Participants groups** page. Each group has a unique link as shown below.

---

# Impact: Welcome Page

The Riskion Evaluation process usually starts with the Welcome Page where the Project Manager can give an introduction and instructions to the Evaluators.

Depending on the model you are currently evaluating, the welcome page can be for Likelihood or Impact evaluation.

### Welcome to Expert Choice Riskion®

Riskion® is a collaborative decision tool on the web where a team can come together to evaluate risks, and ways to reduce risk.

Please click 'Next' to answer a series of questions.

If you need help, click the help icon  near the top right of the screen.

After completing the task on a page, you simply need to click 'Next' to continue. You may be alerted along the way of specific things to keep in mind.

**Navigation Box** 

Steps: 1 2 3 4 5 6 7 8 9 10 11 ... 49  Evaluated: 107/107

Next Unassessed

Previous **Next**

 Shortcuts

Version: 6.3.000.42452  
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# How to Navigate in the Evaluation pipe?

The Project Manager decides the navigation options available during the evaluation.

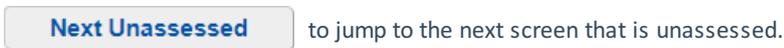
By default, the navigation box, and buttons can be available at the bottom of each of the evaluation steps. *(Note: A button can be disabled if not applicable to the step)*



## Sequential Navigation

The easiest and most common way to proceed through the evaluation is sequential -- by clicking the **Next** button after entering any information requested on each page. You can go back to a previous step using the **Previous** button.

If you have previously entered judgments and requested to go back to an earlier step (see below) you click

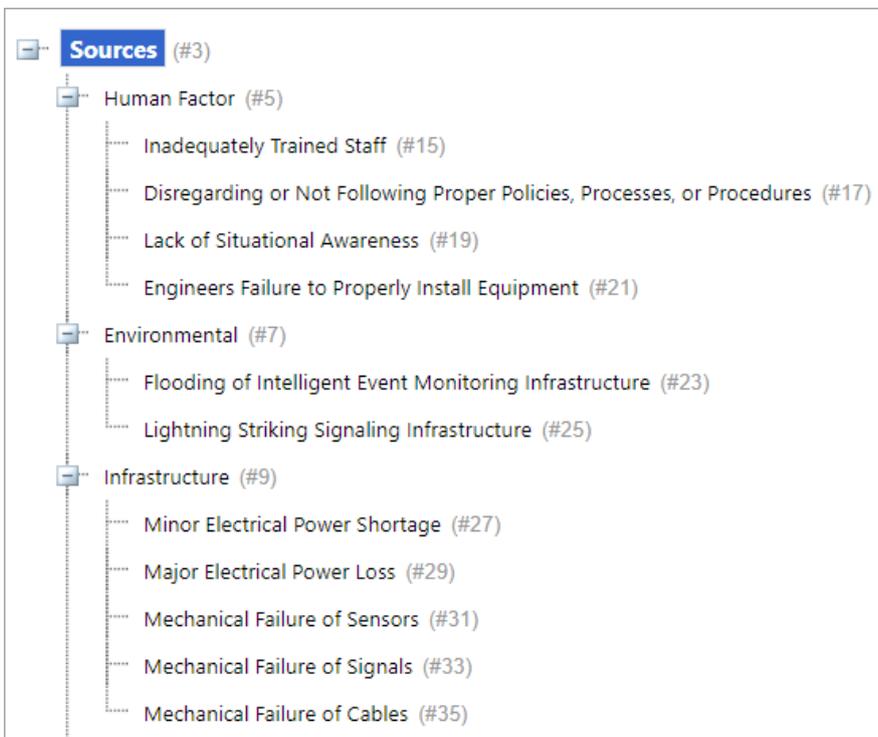


to jump to the next screen that is unassessed.

## Non-Sequential Navigation

Depending on options set by the Project Manager, you may have considerable flexibility in navigating through the evaluation without sequentially going step by step. We recommend that you do this only if you have used Riskion before.

The 'Current Step' icon  at the bottom left of the screen can be used to display a pop-up view of the hierarchy. By clicking on any element in the hierarchy, you will jump to the first screen that elicits judgments' with respect to that element. The 'with respect to' for the current step is shown in blue.



If the Project Manager enables displaying the navigation box, you can click on any step to move either forward or backward.

## Navigation Box

Steps: **1** 2 3 4 **5** 6 7 8 9 10 11 ... 92  Evaluated: 3/262

The current step is displayed with a dark background. The step numbers are colored as follows:

- **Red:** judgment has not yet been made
- **Black:** judgment has been made
- **Blue:** Results or information steps

The number of steps (pages shown during the evaluation) is **NOT** the same as the number of evaluations because:

- a) some pages show information or results
- b) some pages may have multiple evaluations.

If you want to navigate directly to a step (assuming you remember what is at that step), you can click on the numbered step button, or you can click on the ellipses and be prompted for the step:



Click the 'Current Step' 



This option is very useful if you want to have a quick look at all the steps of the evaluation with their short descriptions which enables you to know on which step you want to jump to. We recommend that you use this option for better navigation, especially on large structured models. Note that the color-coding is the same as for navigation box steps.

## Likelihood and Impact Joined Evaluation

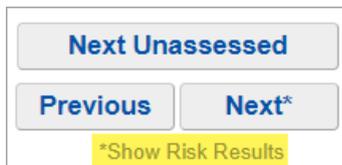
When the Project Manager sets it up to join the **Likelihood and Impact evaluation**, the Next button on the last step of the Likelihood Evaluation will redirect you to the first step of the Impact evaluation;



and then the Previous button at the first step of the Impact Evaluation will redirect you to the last step of the Likelihood Evaluation.



The Next button on the last step of the Impact evaluation will redirect you to the risk results.



and clicking the Previous button from the Risk Results will then revert you back to the Impact Evaluation's last step.

---

## How to Save Judgments?

Your judgment will be automatically recorded when you go to another step, such as by clicking  button.

After doing so, you can leave the evaluation and be assured that all your previous judgments are saved. You will return to the step where you left off once you return the evaluation.

---

# Edit Evaluation Question

The Project Manager can edit the evaluation phrase to make it more suitable to the model or clearer to the evaluators.

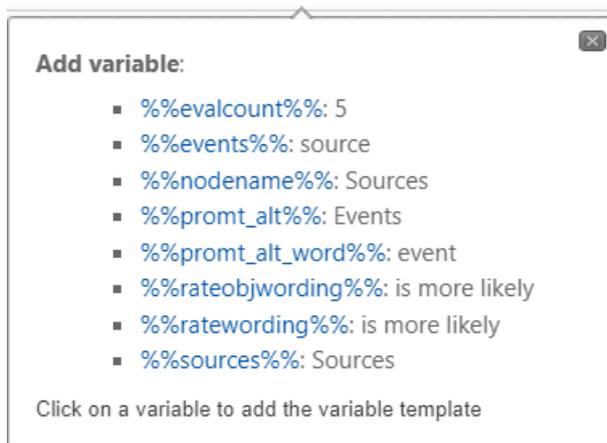


This is done by clicking the **Edit** button.

The wording phrase will be in edit mode as shown below:



Click **Variables...** to view the available templates that can be inserted:

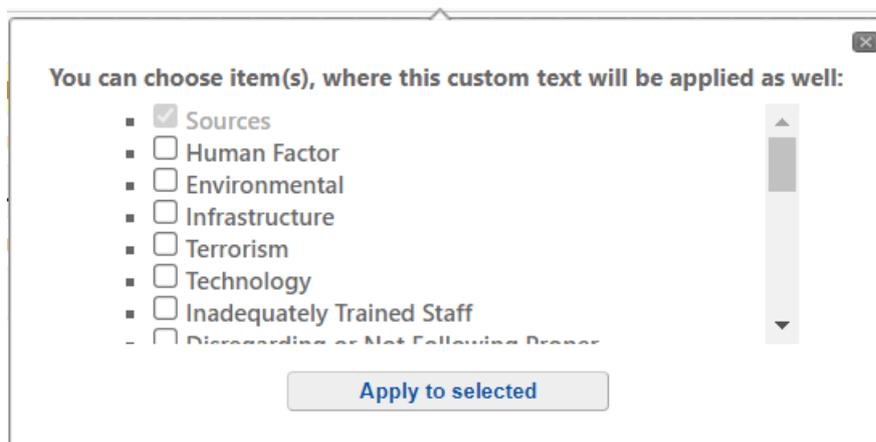


Click **Reset to default** to reset the wording.

The customized wording will be applied to the cluster where the element/s being evaluated belongs.

Click **Apply changes** to save your changes for the specific step.

Click the **Apply to...** button if you want to list other clusters with similar measurement method where you can select to apply the wording:





# Single Pairwise Verbal Comparisons

Pairwise Verbal can be used to express your judgment about the likelihoods or impacts of the two elements.

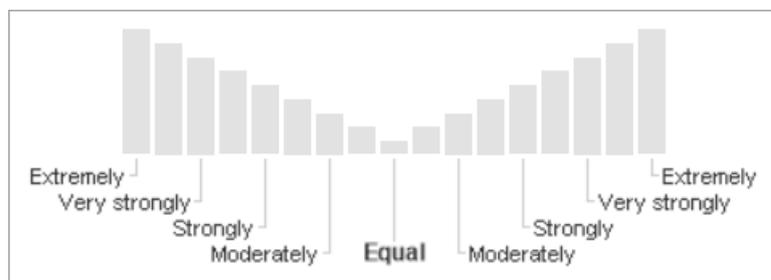
For Likelihood evaluation, we recommend using Pairwise with Given Likelihood instead of Pairwise unless the elements being evaluated are the entire set of possible outcomes (which may not be the case) since the resulting likelihoods will be adjusted to add to 100%.

The single-pairwise verbal comparison composes of:

1. The question for the evaluation is indicated at the top of the page. This states something like: **Given Threat/Objective, which of the two Events (or Threats or Objectives) is more likely (or has more impact).**

The question can be read automatically using the text-to-speech functionality. The text-to-speech can play on-demand or auto-play as you click the play or speaker buttons respectively.

2. The **two elements** being compared are displayed on the left (blue) and left (green) boxes. The names of the elements being compared are indicated inside the boxes, in our example, we just use A and B -- but normally these are the event, threat, or objective names.
3. The clickable **intensity bars** at the center. A word below the bar expresses the judgment about the likelihood/impact of one element over another. The intensity between any of the words, such as between moderately and strongly is also available. Hovering your mouse over any bar will display the verbal intensity that it represents.

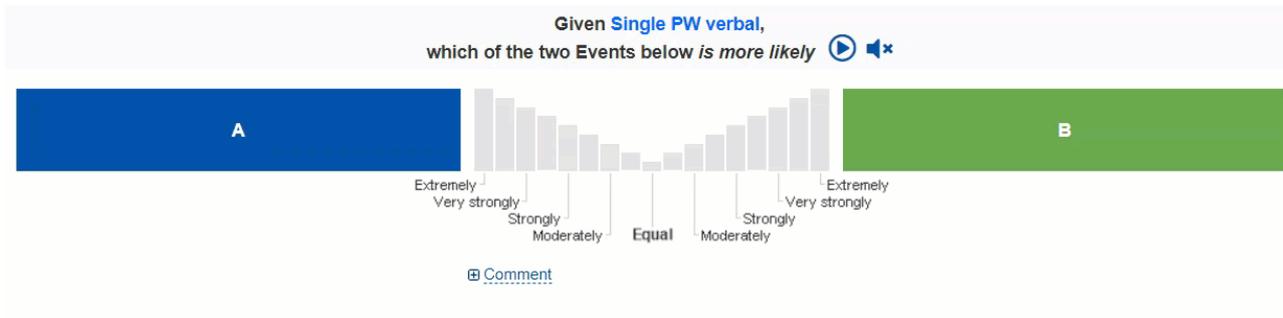


There are three ways to enter judgment for single pairwise verbal comparisons:

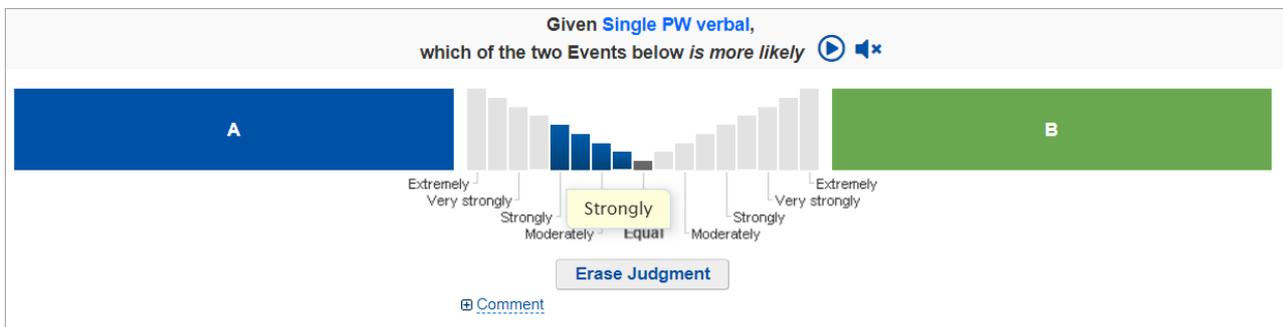
1. By clicking on the bar
2. By clicking a word below the bar
3. By clicking on the blue and green boxes, each click will increment the shaded bar one bar higher to the direction of

the clicked box.

The three ways to enter judgment are demonstrated below:



See sample judgment:



To interpret above, the judgment is made that element A is **strongly** more likely than element B.

If added and set to be displayed by the Project Manager, you will see [information documents](#) of the elements being evaluated.

Information documents are displayed either in frame or tooltip.

# Multi-pairwise Verbal Comparison Evaluation

Pairwise Verbal can be used to express your judgment about the relative importance or preference or likelihoods of the two elements. The Multi-Pairwise Verbal evaluation is just similar to Single Pairwise Evaluation, but multiple pairs are displayed on the page.

The AHP pairwise relative verbal scale consists of the following words:

Ex	Extremely — an order of magnitude (10 to 1) or more
VS	Very strongly
S	Strongly
M	Moderately
Eq	Equal

The words are not precise, but because of the way Riskion computes priorities from redundant pairwise comparisons, it is possible to derive accurate ratio scale priorities from what are ordinal judgments.

For Likelihood evaluation, we recommend using Pairwise with Given Likelihood instead of Pairwise unless the elements being evaluated are the entire set of possible outcomes (which may not be the case) since the resulting likelihoods will be adjusted to add to 100%.

**Given: Multi PW verbal, evaluate the *relative likelihood* of the two Events in each pair below.**

<b>A</b>		Ex	VS	S	M	Eq	M	S	VS	Ex		<b>B</b>
		<input style="width: 100%;" type="text"/>										
<b>B</b>		<input style="width: 100%;" type="text"/>										
<b>A</b>		<input style="width: 100%;" type="text"/>										

Ex	Extremely — an order of magnitude (10 to 1) or more
VS	Very strongly
S	Strongly
M	Moderately
Eq	Equal

The multi-pairwise verbal comparison composes of:

1. The question for the evaluation is indicated at the top of the page. This states something like: **Given Threat/Objective, which of the two Events (or Threats or Objectives) is more likely (or has more impact).**

**Given Human Factor,**  
**which of the two Sources below is more likely**

The question can be read automatically using the text-to-speech functionality. The text-to-speech can play on-demand or auto-play as you click the play or speaker buttons respectively.

2. The **pair of elements** being compared are displayed on each row. The elements being compared for each pair are displayed on the left (blue) and left (green) boxes. The names of the elements being compared are indicated inside the boxes, in our example, we just use A, B, and C -- but normally these are the event, threat, or objective names. The currently selected pair has a light yellow background, in our example above, the A and B elements being compared.
3. The clickable **intensity bars** at the center. of each pair. For the currently selected pair, the intensity name shortcuts (Ex, VS, S, etc.) are displayed above the bar it corresponds to. The intensity between any of the words, such as between moderately and strongly is also available. Hovering your mouse over any bar will display the verbal

intensity that it represents. The intensity legend is displayed at the right.

The screenshot shows a comparison interface with three pairs of elements. The first pair is A vs B, the second is B vs C, and the third is A vs C. Each pair has a horizontal bar with 11 segments and a legend to the right. The legend defines the intensity levels: Ex (Extremely — an order of magnitude (10 to 1) or more), VS (Very strongly), S (Strongly), M (Moderately), and Eq (Equal). The first pair (A vs B) is highlighted in yellow, and the legend is also highlighted in red.

For each pair, you can enter a judgment by clicking on the bar that expresses your judgment about the likelihood or impact of one element over the element.

As you enter judgment for one pair, the selected element automatically advances to the next pair where you can continue entering your judgment.

Given: **Multi PW verbal**, evaluate the *relative likelihood* of the two Events in each pair below.  

The screenshot shows the same comparison interface as above, but with a mouse cursor pointing at the 'Eq' segment of the B vs C pair. The legend is also visible on the right.

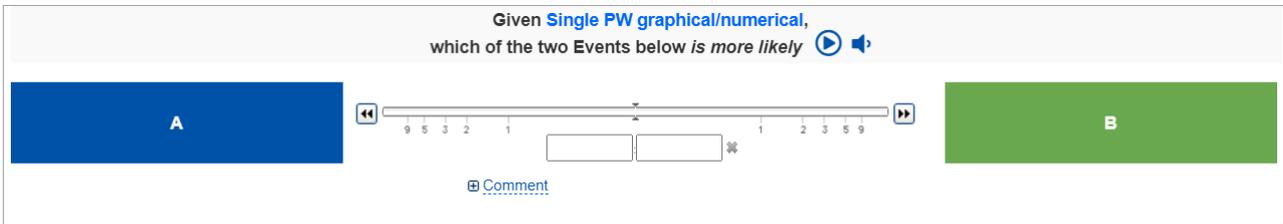
If added and set to be displayed by the Project Manager, you will see [information documents](#) of the elements being evaluated.

Information documents are displayed either in frame or tooltip.

The information document displayed may be depending on the currently selected pair of elements.

# Single Pairwise Graphical/Numerical Comparisons

Pairwise graphical/numerical comparisons can be used to express your judgment about the likelihood or impact of the two elements.



For Likelihood evaluation, we recommend using Pairwise with Given Likelihood instead of Pairwise unless the elements being evaluated are the entire set of possible outcomes (which may not be the case) since the resulting likelihoods will be adjusted to add to 100%.

The single-pairwise verbal comparison composes of:

1. The question for the evaluation is indicated at the top of the page. This states something like: **Given Threat/Objective, which of the two Events (or Threats or Objectives) is more likely (or has more impact).**



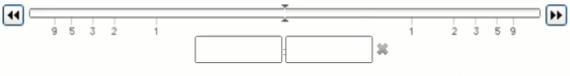
The question can be read automatically using the text-to-speech functionality. The text-to-speech can play on-demand or auto-play as you click the play  or speaker  buttons respectively.

2. The **two elements** being compared are displayed on the left (blue) and left (green) boxes. The names of the elements being compared are indicated inside the boxes, in our example, we just use A and B -- but normally these are the event, threat, or objective names.
3. The **slider and input box** at the center. There are small numbers below the slider that corresponds to the numerical ratio of the slider. The corresponding numerical value is also displayed on the input box at the bottom.

There are four ways to enter judgment for single pairwise graphical/numerical comparisons:

1. By clicking on or dragging the slider bar. You can drag the bar only up to ratio 9:1 (or 1:9) as the extreme. Corresponding numerical data will be reflected on the input box.
2. By clicking on the chevron icons  or  . If the mouse is held down on either of these two icons, the slider will continue to move in the appropriate direction with increasing increments the longer the mouse is depressed.
3. By clicking on the blue and green boxes, each click will increment 0.01 higher to the direction of the clicked box.
4. By entering the ratio on the input boxes. Judgments with ratios greater than 9 to 1 can be entered numerically on the input boxes which will move the slider on the extra white spaces from 9. Entered ratios such as 10:20 will be simplified to 1:2.

Given **Single PW graphical/numerical**,  
which of the two Events below *is more likely*  

A  B

 [Comment](#) 

The image shows a slider interface for comparing two events, A and B. Event A is represented by a blue box on the left, and Event B is represented by a green box on the right. A horizontal slider with a vertical arrow in the center is positioned between the two boxes. The slider has numerical markings from 9 to 1 on both sides. Below the slider, there are two empty input boxes and a small icon. A 'Comment' link and a mouse cursor are also visible.

If you realize that your judgment is inverted, you can click on the  icon.

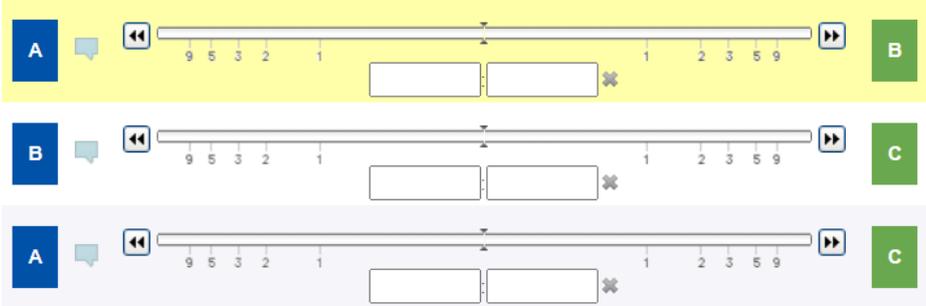
Your judgment will be automatically recorded when you go to another step, such as by clicking [Next](#)

---

# Multi-pairwise Graphical/Numerical Comparisons

Pairwise graphical/numerical comparisons can be used to express your judgment about the relative importance or preference or likelihoods of the two elements shown on each line.

**Given: Multi PW graphical/numerical, evaluate the *relative likelihood* of the two Events in each pair below.**  



The multi-pairwise verbal comparison composes of:

1. The question for the evaluation is indicated at the top of the page. This states something like: **Given Threat/Objective, which of the two Events (or Threats or Objectives) is more likely (or has more impact).**

**Given Human Factor,**  
**which of the two Sources below is more likely**  

The question can be read automatically using the text-to-speech functionality. The text-to-speech can play on-demand or auto-play as you click the play  or speaker  buttons respectively.

2. The **pair of elements** being compared are displayed on each row. The elements being compared for each pair are displayed on the left (blue) and left (green) boxes. The names of the elements being compared are indicated inside the boxes, in our example, we just use A, B, and C -- but normally these are the event, threat, or objective names. The currently selected pair has a light yellow background, in our example above, the A and B elements being compared.
3. The **slider and input boxes** at the center of each pair. For selected pair is highlighted with light yellow.

For each pair, you can enter a judgment:

1. By clicking on or dragging the slider bar. You can drag the bar only up to ratio 9:1 (or 1:9) as the extreme. Corresponding numerical data will be reflected on the input box.
2. By clicking on the chevron icons  or . If the mouse is held down on either of these two icons, the slider will continue to move in the appropriate direction with increasing increments the longer the mouse is depressed.
3. By entering the ratio on the input boxes. Judgments with ratios greater than 9 to 1 can be entered numerically on the input boxes which will move the slider on the extra white spaces from 9. Entered ratios such as 10:20 will be simplified to 1:2.

As you enter judgment for one pair, the selected element automatically advances to the next pair where you can continue entering your judgment.

If added and set to be displayed by the Project Manager, you will see [information documents](#) of the elements being evaluated.

Information documents are displayed either in frame or tooltip.

The information document displayed may be depending on the currently selected pair of elements.

---

# Rating Evaluation

Depending on how the Project Manager set up the evaluation, you will be asked to rate one event with respect to one threat/objective on each screen, or all events with respect to one threat/objective on each screen, or one event with respect to all threat/objectives on each screen.

Given **Human Factor**, estimate the likelihood of each of the following Sources  

Human Factor	Not rated	
<b>Inadequately Trained Staff</b>	Not rated	
Human Factor <b>Disregarding or Not Following Proper Policies, Processes, or Procedures</b>	Not rated	
Human Factor <b>Lack of Situational Awareness</b>	Not rated	
Human Factor <b>Engineers Failure to Properly Install Equipment</b>	Not rated	

• Human Factor

**estimate the likelihood of Inadequately Trained Staff**

Intensity Name	Likelihood
<input checked="" type="radio"/> <b>Not rated</b>	
<input type="radio"/> Certain	100.00% 
<input type="radio"/> Very likely	72.40% 
<input type="radio"/> Significantly likely	57.52% 
<input type="radio"/> Moderately likely	27.96% 
<input type="radio"/> Possible but not likely	10.47% 
<input type="radio"/> Negligible	5.36% 
<input type="radio"/> Direct Value	<input type="text"/>

The question for the evaluation is indicated at the top of the page.

In the example above, each row shown is the sources to be evaluated given one source, **Human Factor**.

The yellow highlight indicates which of the source is being evaluated given Human Factor.

The fastest way to enter a rating is to click on an intensity name, such as "Very Likely" on the right side of the page.

After clicking the intensity name, the highlight advances to the next source.

The likelihood (or impact or priority) corresponding to the verbal intensities are shown also (Very Likely - 72.40%)

If you would like to enter a rating other than those corresponding to the intensities, you can enter a direct value between and including 0 and 1.

The judgments will then be displayed beside the source name with the corresponding bar presentation.

# Direct Entry Evaluation

The Direct Input method can be used when evaluating threats/objectives with respect to another threat/objective or when evaluating events with respect to a threat/objective.

In the example below, we are asked to evaluate all the sources given Human Factor using the direct input method.

**Given Human Factor, estimate the likelihood of each of the Sources below**  

 <b>Inadequately Trained Staff</b>	<input type="text"/>	<input type="range"/>	
 <b>Disregarding or Not Following Proper Policies, Processes, or Procedures</b>	<input type="text"/>	<input type="range"/>	
 <b>Lack of Situational Awareness</b>	<input type="text"/>	<input type="range"/>	
 <b>Engineers Failure to Properly Install Equipment</b>	<input type="text"/>	<input type="range"/>	

The question for the evaluation is indicated at the top of the page.

You can enter a judgment by dragging the slider on the bar or by entering a number from 0 to 1 in the text box.

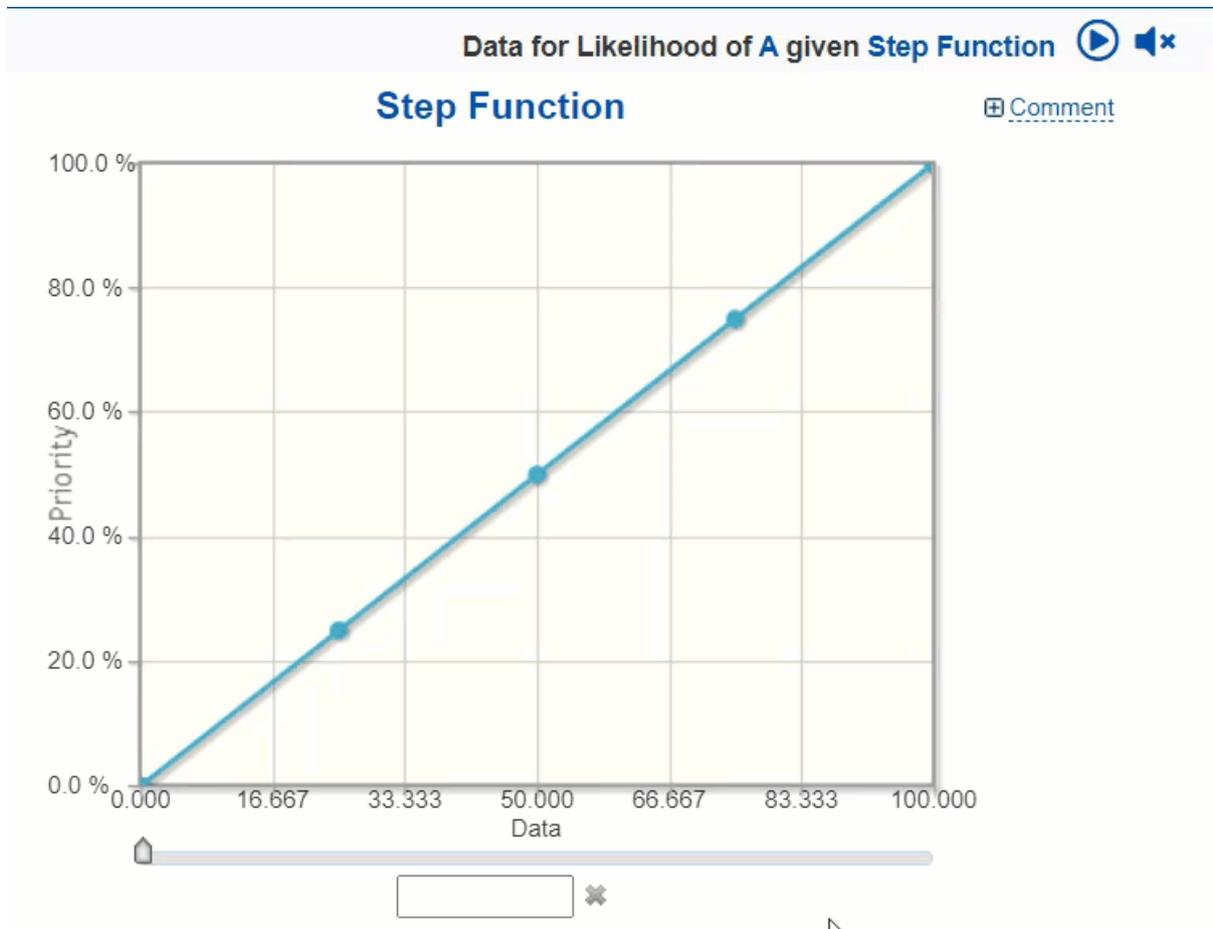
Your judgment will be automatically recorded when you go to another step, such as by clicking Next.

Depending on how the Project Manager set up the evaluation, you will be asked to evaluate one event with respect to one threat/objective on each screen, or all events with respect to one threat/objective on each screen, or one event with respect to all threats/objectives on each screen.

# Step Function Evaluation

Depending on the settings made by the Project Manager, the Step Function graph and the resulting likelihood or impact may vary depending on whether the Piecewise Linear option is enabled or not.

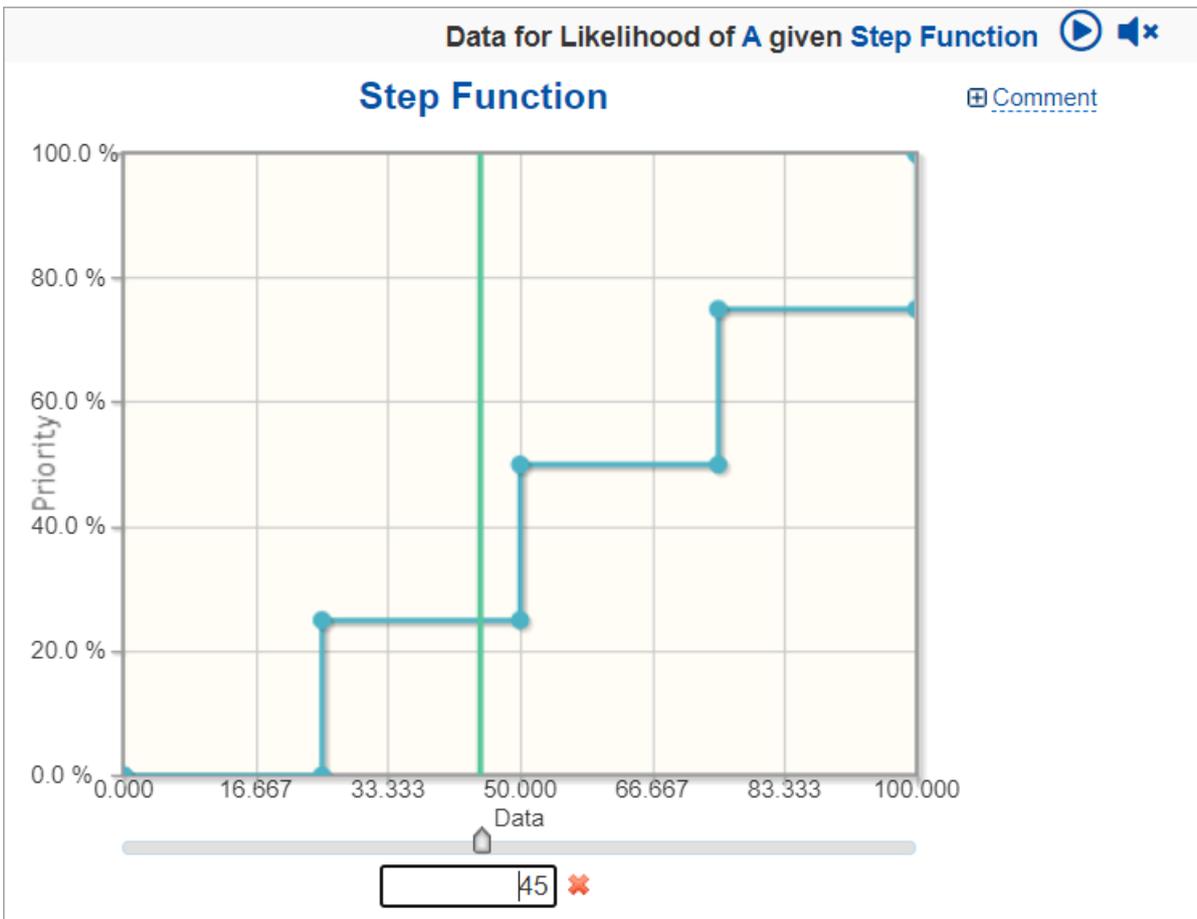
The graph below shows the Step Function when the Piecewise Linear option is enabled.



- The question for the evaluation is indicated at the top of the page. The question can be read automatically using the text-to-speech functionality. The text-to-speech can play on-demand or auto-play as you click the play  or speaker  buttons respectively.
- The x-axis is the data for the event (or data for threat given another threat) being evaluated
- The y-axis is the corresponding likelihood or impact given the entered data

The data can be entered by dragging the handle of the vertical slider or typing on the textbox provided, the corresponding likelihood (or impact) will be shown in the graph. From our example, the data entered is **45** and the resulting priority is **45%**.

When the Piecewise Linear option is disabled on the same Step function scale used above, the graph will be:



The Step Function graph is now different from the first one, the slope from one point to the next is now equal to zero.

Having the same data: 45, the resulting priority is now **25%** (this was 45% when the Piecewise Linear is enabled).

# Select Participants for TeamTime Evaluation

Depending on the model you are working on, you can select participants for Likelihood and Impact Teamtime Evaluation on:

## Likelihood

**Select TeamTime™ Participants**

Meeting ID: [622-765-565](#)

Use keypads (requires TeamTime™ Assistant)  
 Display keypad numbers in front of participant names  
 Allow new users to join the TeamTime™ meeting using Meeting ID

Drag a column header here to group by that column

<input checked="" type="checkbox"/>	E-mail	Name	Has Data	Access Mode
<input checked="" type="checkbox"/>	Admin	Administrator	No	On-line
<input checked="" type="checkbox"/>	ceo@gwu.edu	Chief Engineering Officer	Yes	On-line
<input checked="" type="checkbox"/>	che@gwu.edu	Chief Executive Officer	Yes	On-line
<input checked="" type="checkbox"/>	cro@gwu.edu	Chief Risk Officer	Yes	On-line
<input checked="" type="checkbox"/>	denisrisman@gwu.edu	Denis Risman	No	On-line
<input checked="" type="checkbox"/>	devinnagy@gwu.edu	Devin Nagy	No	On-line
<input checked="" type="checkbox"/>	grace@eci.com	Grace	No	On-line
<input checked="" type="checkbox"/>	its@gwu.edu	IT Supervisor	Yes	On-line
<input checked="" type="checkbox"/>	j.doe@eci.com	John Doe	No	On-line
<input checked="" type="checkbox"/>	james@eci.com	James	No	On-line

Page 1 of 2 (12 items) < 1 2 >

## Impact

**Select TeamTime™ Participants**

Meeting ID: [304-702-906](#)

Use keypads (requires TeamTime™ Assistant)  
 Display keypad numbers in front of participant names  
 Allow new users to join the TeamTime™ meeting using Meeting ID

Drag a column header here to group by that column

<input checked="" type="checkbox"/>	E-mail	Name	Has Data	Access Mode
<input checked="" type="checkbox"/>	Admin	Administrator	Yes	On-line
<input checked="" type="checkbox"/>	ceo@gwu.edu	Chief Engineering Officer	Yes	On-line
<input checked="" type="checkbox"/>	che@gwu.edu	Chief Executive Officer	Yes	On-line
<input checked="" type="checkbox"/>	cro@gwu.edu	Chief Risk Officer	Yes	On-line
<input checked="" type="checkbox"/>	denisrisman@gwu.edu	Denis Risman	No	On-line
<input checked="" type="checkbox"/>	devinnagy@gwu.edu	Devin Nagy	No	On-line
<input checked="" type="checkbox"/>	grace@eci.com	Grace	No	On-line
<input checked="" type="checkbox"/>	its@gwu.edu	IT Supervisor	Yes	On-line
<input checked="" type="checkbox"/>	j.doe@eci.com	John Doe	No	On-line
<input checked="" type="checkbox"/>	james@eci.com	James	No	On-line

Page 1 of 2 (12 items) < 1 2 >

All participants that have been added to the model are listed. You can select all or only some of them to participate in the TeamTime evaluation session by clicking the check box to the left or their names:

Participants can evaluate the threats, objectives, and/or events in an Online mode from any location, and/or in the meeting room (in which the meeting facilitator has set up a keypad receiver) using keypads. The use of keypads and receiver requires a TeamTime Assistant license and the **Use keypads** check-box must be selected.

When **Allow new users to join TeamTime meeting using Meeting ID** is enabled, unregistered participants and the unselected participants in the table above will be allowed to join the TeamTime meeting using the meeting ID and [general](#)

[links.](#)

---

# Setting Keypad mode in TeamTime Evaluation

You can enable Keypads on TeamTime evaluation on:

- [LIKELIHOOD OF EVENTS > MEASURE > TeamTime Evaluation > Select TeamTime Participants](#)
- [IMPACT OF EVENTS > MEASURE > TeamTime Evaluation > Select TeamTime Participants](#)

The use of keypads and receiver requires a TeamTime Assistant license and the **Use keypads** check-box must be selected.

Use keypads (requires TeamTime™ Assistant)  
 Display keypad numbers in front of participant names

If keypads are used, you can choose to display the keypad numbers in front of participant names for those that are using keypads, as shown on the second checkbox above.

You can assign keypad mode and keypad number to each participant from the Access Mode and Keypad columns respectively:

Drag a column header here to group by that column		Set "Keypad" mode for selected participants		Search...			
<input checked="" type="checkbox"/>	E-mail	<input checked="" type="checkbox"/>	Name	<input checked="" type="checkbox"/>	Has Data	<input checked="" type="checkbox"/>	Access Mode
<input checked="" type="checkbox"/>	Admin		Administrator	No			Keypad 1
<input checked="" type="checkbox"/>	ceo@gwu.edu		Chief Engineering Officer	Yes			Keypad 2
<input checked="" type="checkbox"/>	che@gwu.edu		Chief Executive Officer	Yes			On-line
<input checked="" type="checkbox"/>	cro@gwu.edu		Chief Risk Officer	Yes			On-line
<input checked="" type="checkbox"/>	denisrisman@gwu.edu		Denis Risman	No			Keypad
							View only

You can set keypad mode for all selected participants:

Set "Keypad" mode for selected participants

This will automatically assign keypad mode and keypad numbers to the selected participants.

The keypad icon  will be available on the TeamTime meeting evaluation page when the Use Keypad option is checked. (This turns green  when you hover over it). See Instructions for [Using TeamTime Keypad Assistant](#).

# Impact: Instructions for Receiver and Keypads with TeamTime Evaluation

Plug the receiver into the USB port of the computer being used by the Facilitator.

The drivers should be loaded automatically.

## Downloading and Installation of the TeamTime Keypad Assistant

To download and use the TeamTime Keypad Assistant, make sure that you enabled the Use Keypads option in the [TeamTime Select Participants](#) setting.

When TeamTime evaluation is started, click on the keypad  icon to launch the Team Time Keypad Assistant (the keypad icon turns green  when you hover over it).

---

# Invite Participants for TeamTime Evaluation

After having **selected participants** to evaluate the model and assigning them roles to evaluate threats, objectives, and/or events, you can invite the participants into TeamTime Evaluation.

Depending on the model you are working on, you can select participants for Likelihood and Impact Teamtime Evaluation on:

## Likelihood

The screenshot shows the 'LIKELIHOOD OF EVENTS' tab in the software interface. The 'Measure' sub-tab is active, and the 'Invite by email' button is selected. The email composition area is visible, showing a pre-filled subject line 'Riskion®: Please join our TeamTime™ Meeting' and a body text that includes a personalized greeting 'Dear John Doe,' and instructions for the 'Send Invite' button. The interface includes a sidebar with various settings and a bottom toolbar with buttons for 'Edit Invite', 'Send Invite', 'Add Participants', and 'Download MS Word Mail Merge'.

## Impact

The screenshot shows the 'IMPACT OF EVENTS' tab in the software interface. The 'Measure' sub-tab is active, and the 'Invite by email' button is selected. The email composition area is visible, showing a pre-filled subject line 'Riskion®: Please join our TeamTime™ Meeting' and a body text that includes a personalized greeting 'Dear John Doe,' and instructions for the 'Send Invite' button. The interface includes a sidebar with various settings and a bottom toolbar with buttons for 'Edit Invite', 'Send Invite', 'Add Participants', and 'Download MS Word Mail Merge'.

In addition to two ways of inviting participants to a TeamTime session from the **Select Participants** screen, you can invite participants in four ways from this screen:

A horizontal row of four buttons: 'Invite by email' (blue), 'Invite by phone' (grey), 'Copy and paste' (grey), and 'Participant specific links' (grey).

## (1) Invite by email

A template for the email is provided which can be edited to explain the purpose of the evaluation and provide any other information or hyperlinks that you want to convey to the evaluators.

You can edit the invitation, as well as add variables that Riskion will replace with the appropriate information before the email is sent. You can add links to any information that you would like the participants to see before the meeting, such as an agenda stored on a Website or in a Dropbox file.

## (2) Invite by phone

Instructions are provided that you can give to a participant over the phone. The instructions include the URL of the site hosting the TeamTime meeting and the meeting ID. The participant must have already been added to the project and selected to participate beforehand.

## (3) Copy and paste

Instructions are copied to the clipboard so you can send them to a participant via email, instant message, etc. The instructions include the URL of the site hosting the TeamTime meeting and the meeting ID. The participant must have already been added to the project and selected to participate beforehand.

## (4) Participant Specific Links

The Participant Specific Links tab provides a (unique) teamtime link and an email address is generated for every **registered participant** in the model. The Project Manager can use these links in any way that they desire.

---

# Impact: Events Charts

## Overview

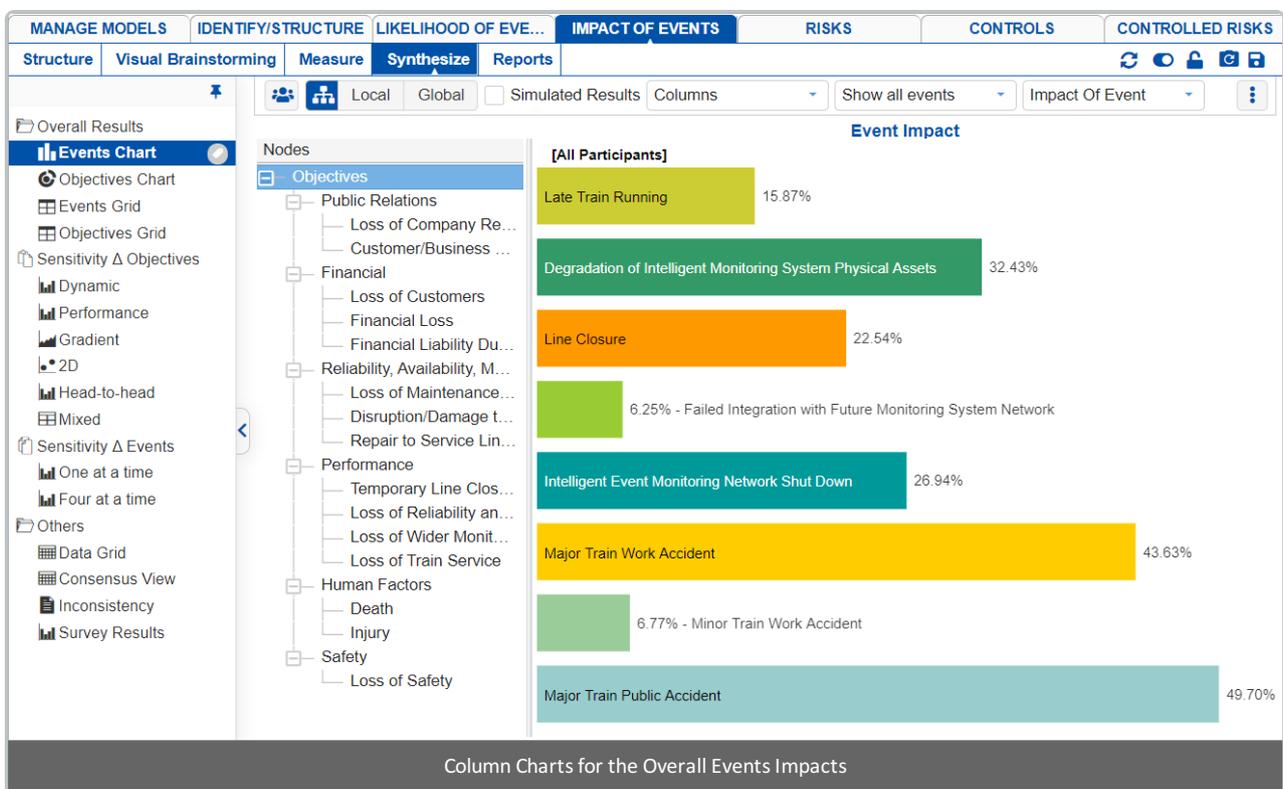
The Impact's Events Chart page displays the same results as in the Impacts Events Grid.

Depending on the Riskion model you are working on, charts can display:

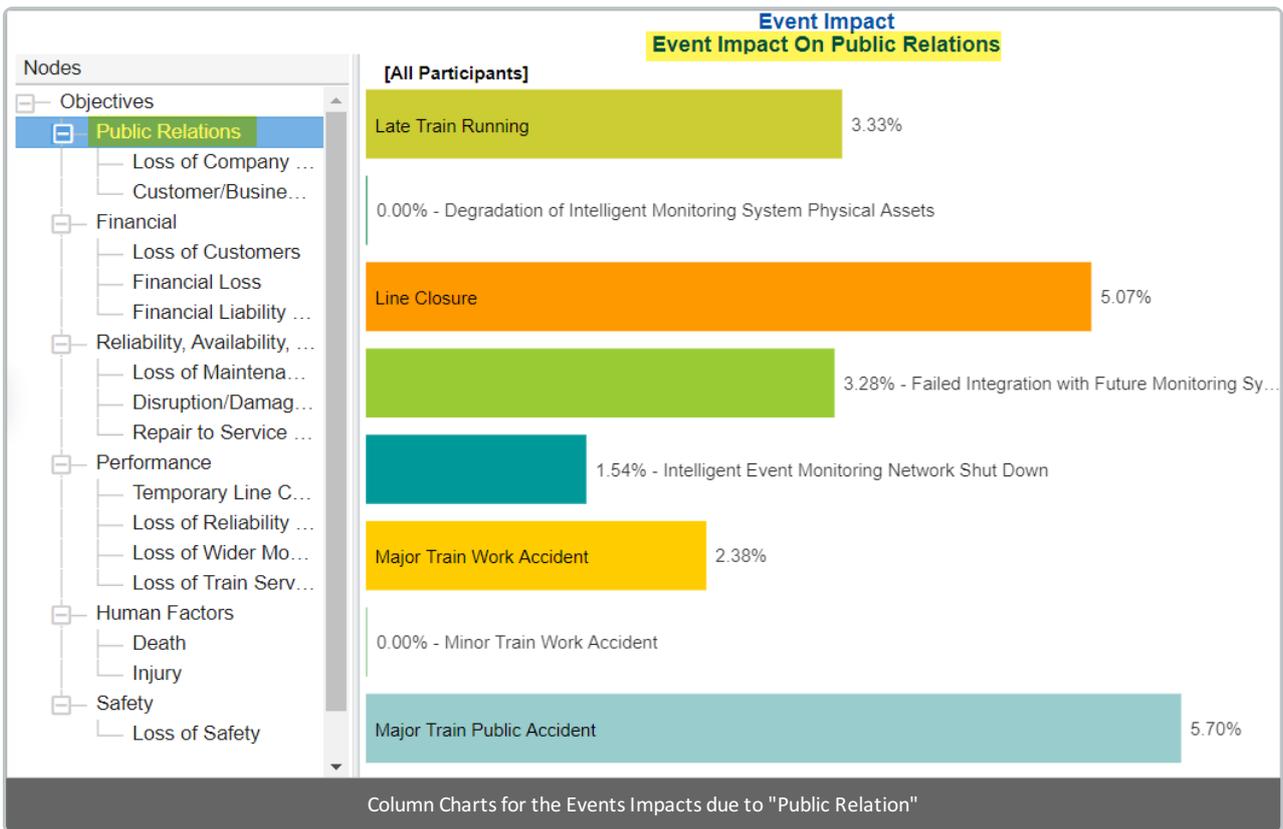
- the impacts or consequence of the events for Risk Events,
- the impacts or causes for Opportunity Events,

By default, the Columns chart is displayed. The column chart below shows the events' impacts due to the overall Objective.

You can view other different chart formats when the Advanced-mode is enabled.



Clicking another objective node on the Objectives hierarchy at the left will show the chart for the events due to that node.



The chart above shows the Events impacts due to "Public Relations".

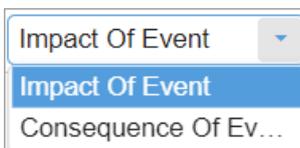
You can show the local and global source's impacts on the Objective Hierarchy at the right using the Local-Global buttons:

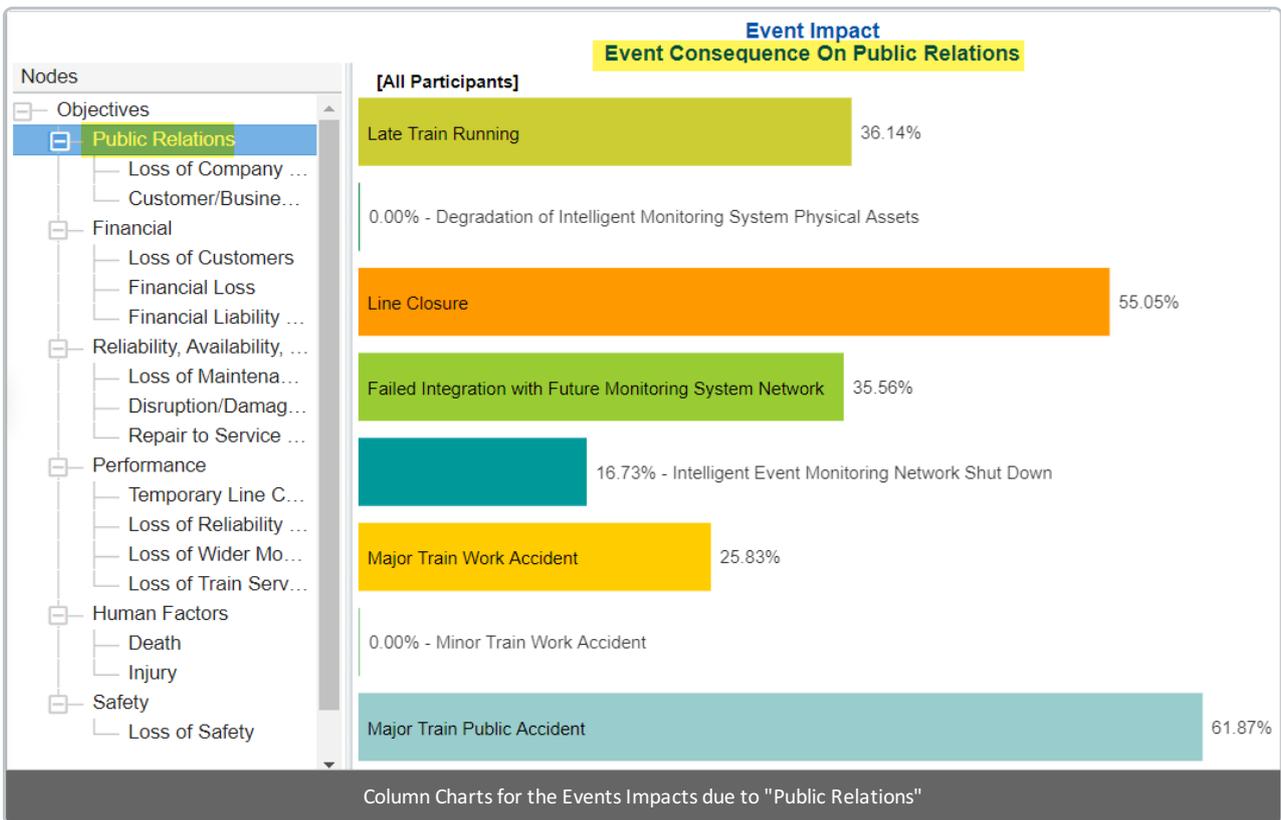
Nodes	[All Participants]	
	Local	Global
[-] Objectives		
[-] Public Relations	9.21%	9.21%
[-] Loss of Company ...	46.46%	4.28%
[-] Customer/Busines...	53.54%	4.93%
[-] Financial	7.22%	7.22%
[-] Loss of Customers	22.71%	1.64%
[-] Financial Loss	21.79%	1.57%
[-] Financial Liability ...	55.5%	4.01%
[-] Reliability, Availability, ...	21.7%	21.7%
[-] Loss of Maintenan...	28.23%	6.13%
[-] Disruption/Damag...	36.65%	7.96%
[-] Repair to Service ...	35.12%	7.62%
[-] Performance	19.41%	19.41%
[-] Temporary Line Cl...	24.91%	4.83%
[-] Loss of Reliability ...	32%	6.21%
[-] Loss of Wider Mon...	23.86%	4.63%
[-] Loss of Train Service	19.23%	3.73%
[-] Human Factors	10.64%	10.64%
[-] Death	86.8%	9.24%
[-] Injury	13.2%	1.4%

You can also hide the Objectives Hierarchy at the left using 

## Show Impact or Consequence

In addition to showing the event impacts, you can select to show the events' consequences due to the selected objective node from the dropdown menu:





You can select one or more participants or groups using the 

If more than one chart is available, pagination is displayed at the bottom of the page:

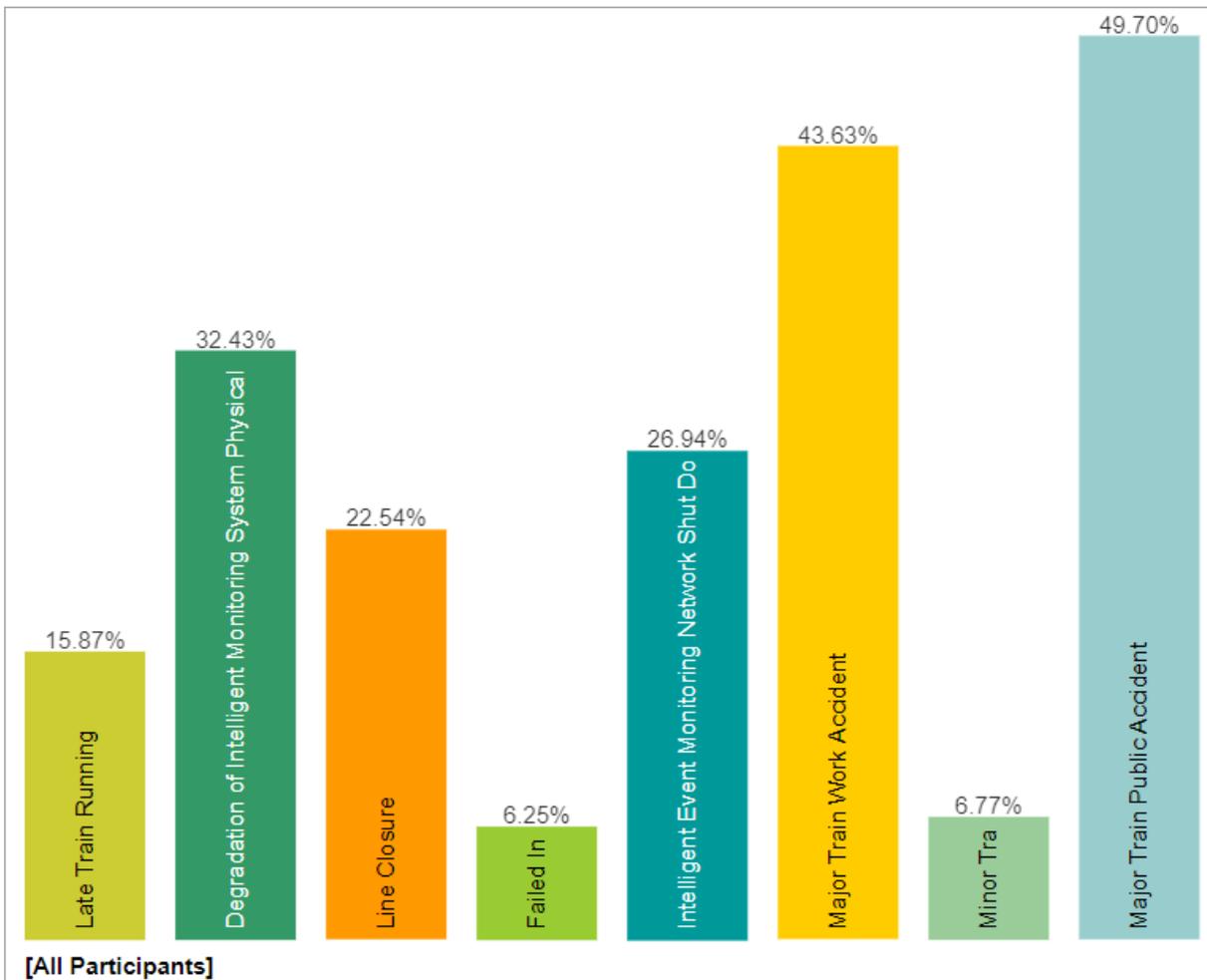


- Charts per page (left) - select how many charts to display per page
- Pagination (right) - paginate or select the page to display

## Non-advanced Mode Chart options (Rotate, Legend, Sort, etc.)

Various options are displayed on the toolbar at the top of the charts. Depending on a chart type, options may only be available only a specific chart type.

- **Rotate** - turn on/off rotate chart by 90 degrees (this is ON by default)



- **Legend** - show or hide the Legend

 Legend

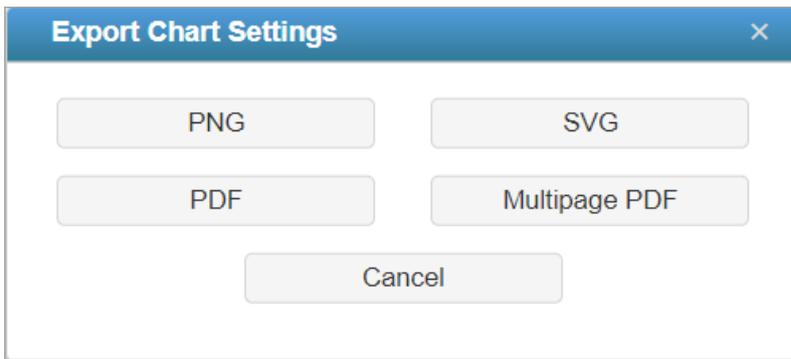
- Late Train Running
- Degradation of Intelligent Monitoring System Physic...
- Line Closure
- Failed Integration with Future Monitoring System Net...
- Intelligent Event Monitoring Network Shut Down
- Major Train Work Accident
- Minor Train Work Accident
- Major Train Public Accident

- **Components** - Show or hide the event components.

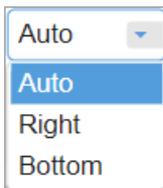
 Components

- **Sort** - sort chart by likelihoods, name, or none (default: none)
- **Export** - export as png, svg, pdf or multiple pdf

 Export



- **Legend Position** - can be auto, right, or bottom of the chart (default: Auto). Legend position is only enabled when the Legend is displayed.



- **Decimals**



**TIP:** All chart types have the same common options as above for non-advanced mode -- except for Components which is only available for Columns.

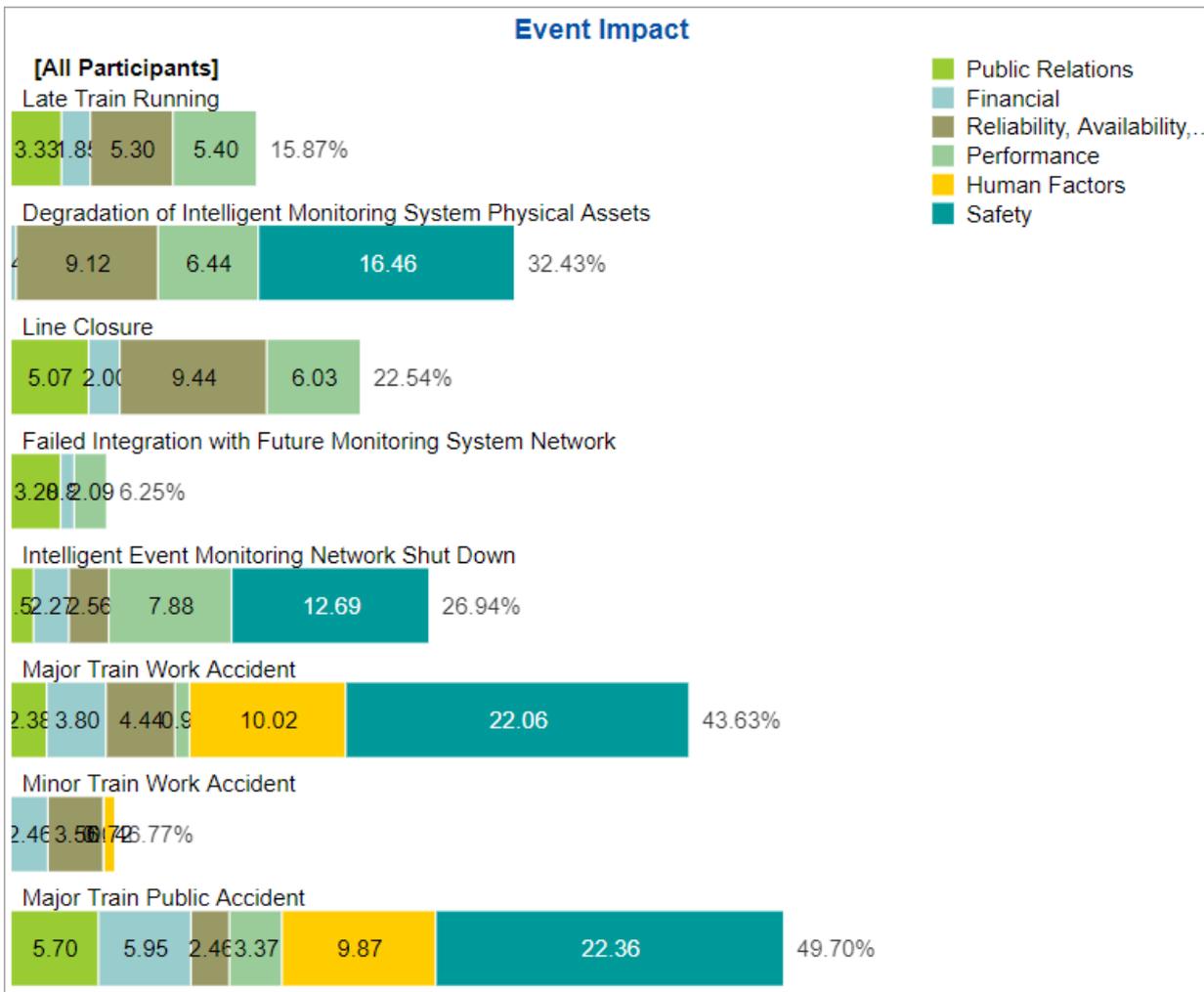
**HINT:** For smaller screens, some of the options may be hidden. You may see the hidden options by clicking the ellipses icon at the top right.



## Events Chart with Components

You can show the column charts with components by toggling the  **Components** button.

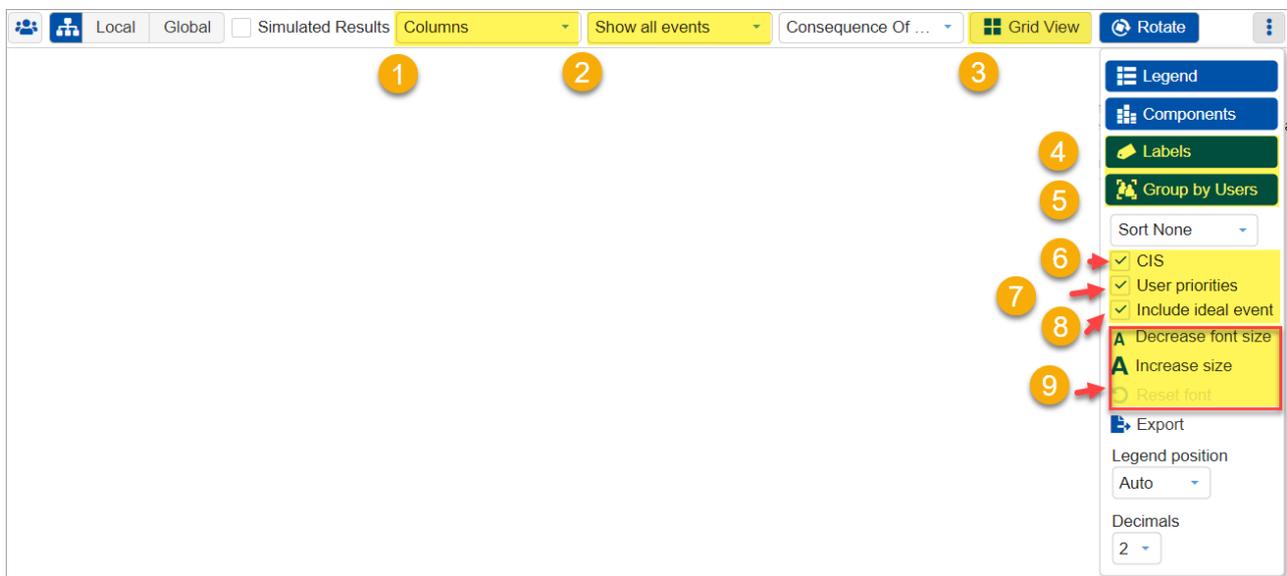
Events Charts with Components show the impacts of each event divided into sections showing how much of the impact is due to each of the objectives.



Hovering on a specific component will highlight that element for all the event bars, a tooltip will also be displayed to see its details -- ([Participant or Group Name]: %Impact Event Name).

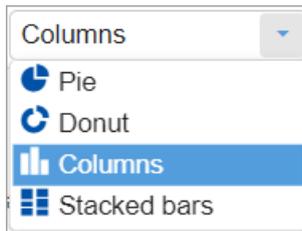
## Advanced Mode Options

When Advanced mode is ON, you will see the advanced options on this page (see highlighted):



## 1. Chart Types

More chart formats are available in the advanced mode.



The Columns chart is selected by default, you can select from other chart types available. The selected chart format on the advanced mode will be remembered when you switched back to the non-advanced mode.

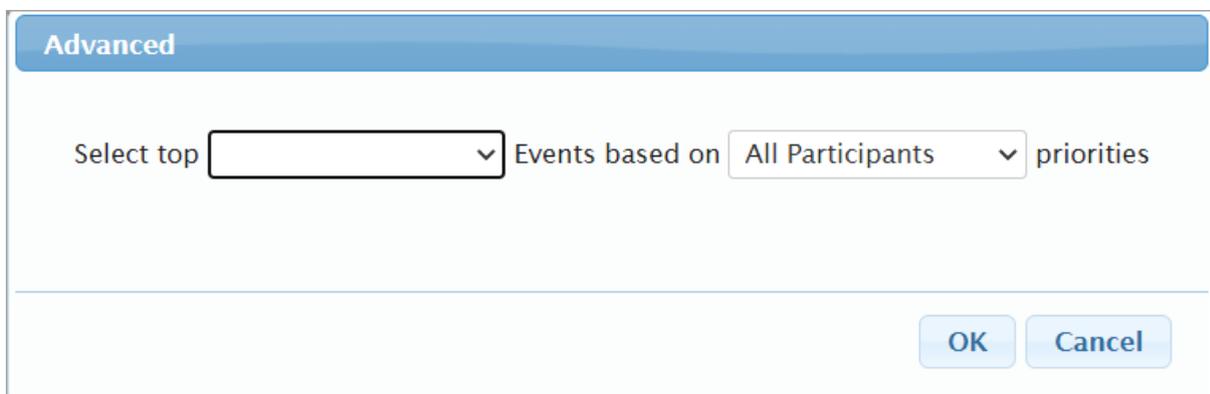
## 2. Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group likelihoods.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



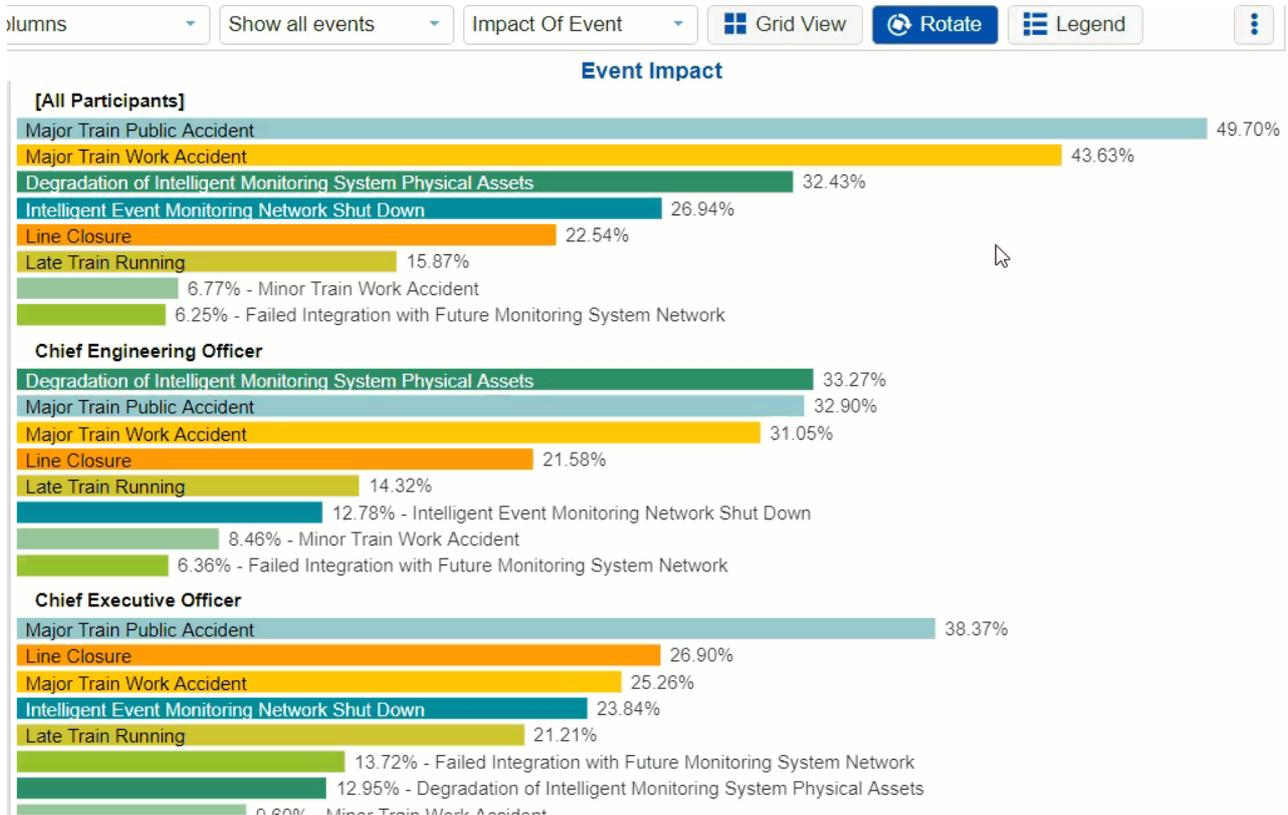
The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

### 3. Grid View (Multiple Rows or Single Row)

This option is available for all chart types except for Stack when more than one participant/group is displayed. This allows you to display the charts in grid view (**multiple rows**) when ON, or a **single row** when OFF.



### 4. Labels

Show or hide chart labels or the threat/source names on the chart. This will only show the % priority on the chart. You can then show the legend instead.



### 5. Group by Users

Available for Columns chart when multiple users/groups are selected. By default, this is option is ON, so the chart is grouped by Users. When this is OFF, the chart will be group by elements or nodes.



### 6. Combined Input Option (CIS)

If the Combined Input Option (CIS) is on (see below) then results for individuals are computed by combining the priorities derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.



### 7. Apply User Priorities

If priorities (weights) have been specified for participants, you can use the "User Priorities" check box will enable you to apply or ignore these priorities in generating the results.

 User priorities

### 8. Include Ideal Event

Include the Ideal Event on the Chart Results

### 9. Font Size

Decrease or increase the font size, or reset

 Decrease font size  
 Increase size  
 Reset font

**HINT:** For smaller screens, some of the options may be hidden. You may see the hidden options by clicking the ellipses

 icon at the top right.

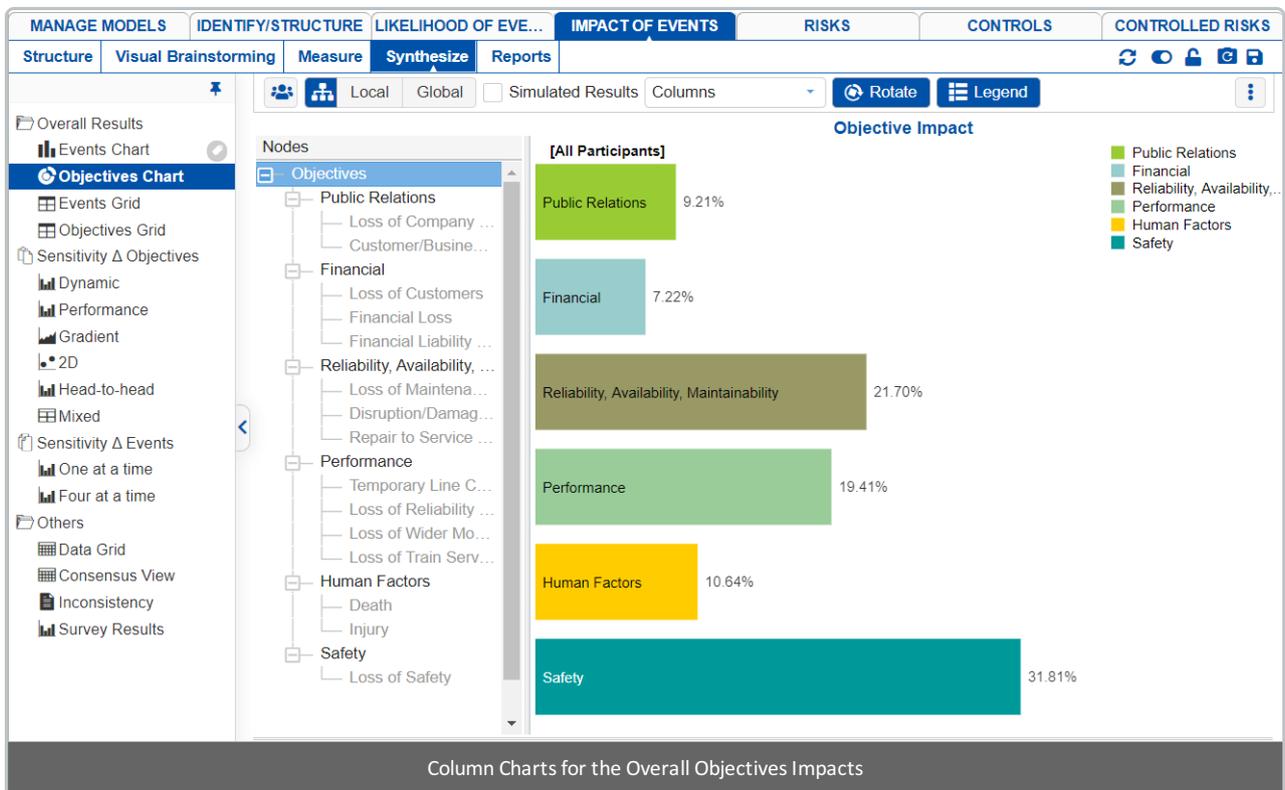
# Impact: Objectives Chart

## Overview

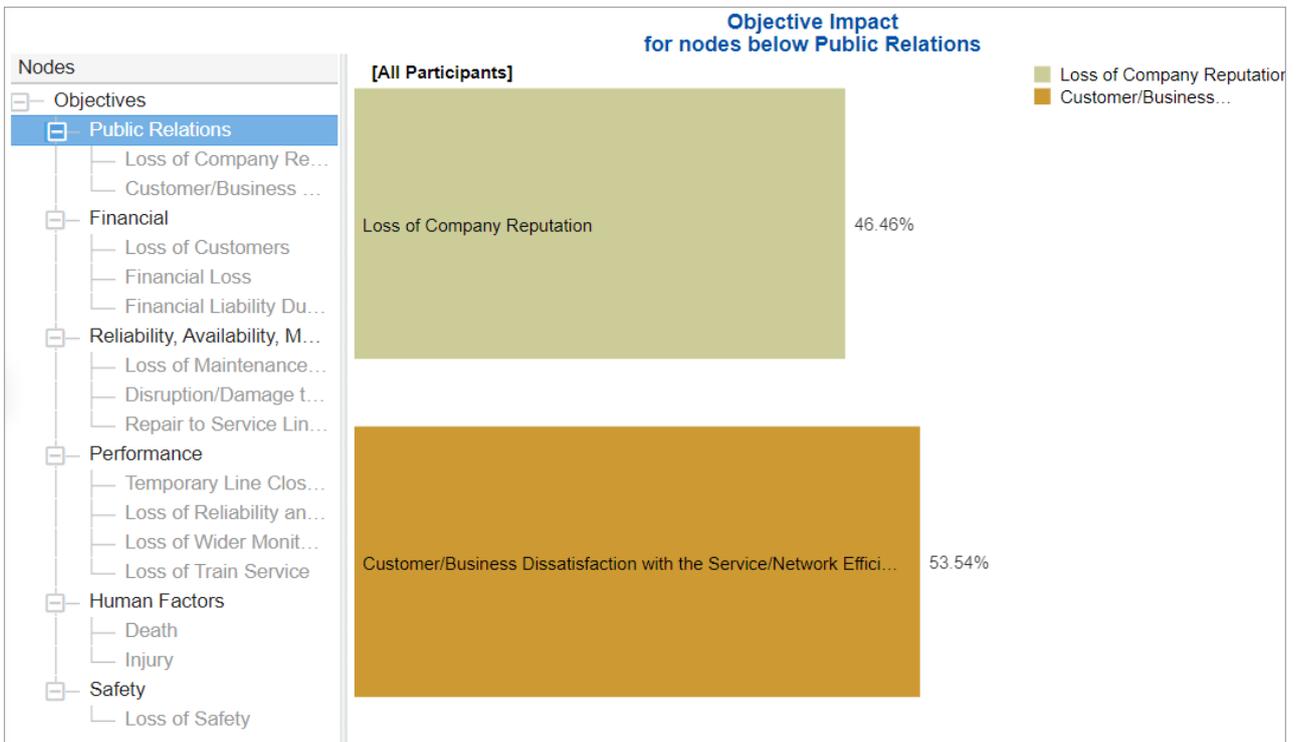
The Objectives Chart page displays a variety of charts for objectives and sub-objectives. It displays the same impacts as in the Objectives Grid.

By default, the Columns chart is displayed. The column chart below shows the sources' impacts due to the overall Objective.

You can view other different chart formats when the Advanced-mode is enabled.



Clicking another objective node on the Objectives hierarchy at the left will show the chart for the objectives due to that node.



Above, we can see the column chart for the Objectives impacts for nodes below "Public Relations".

You can select one or more participants or groups by clicking 

If more than one chart is available, pagination is displayed at the bottom of the page:

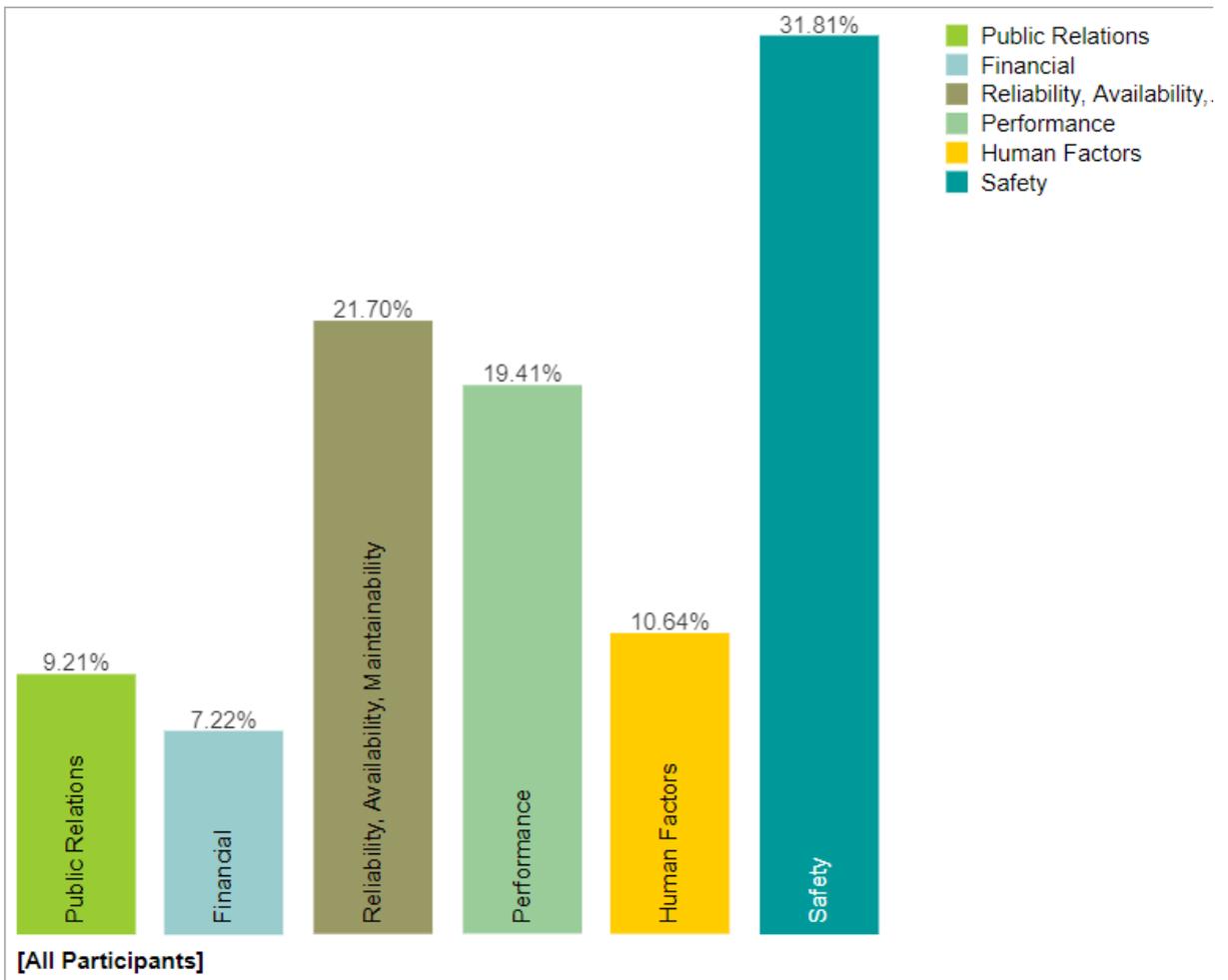


- Charts per page (left) - select how many charts to display per page
- Pagination (right) - paginate or select the page to display

## Non-advanced Mode options (Rotate, Legend, Sort, etc.)

Various options are displayed on the toolbar at the top of the charts. Depending on a chart type, options may only be available only a specific chart type.

- **Rotate** - turn on/off rotate chart by 90 degrees (this is ON by default)



- **Legend** - show or hide the Legend

Legend

- Public Relations
- Financial
- Reliability, Availability, Maintainability
- Performance
- Human Factors
- Safety

- **Components** - Show or hide objectives components.

Components

- **Sort** - sort chart by impacts, name, or none (default: none)
- **Export** - export as png, svg, pdf or multiple pdf

Export

**Export Chart Settings** ×

PNG

SVG

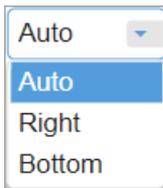
PDF

Multipage PDF

Cancel

- **Legend Position** - can be auto, right, or bottom of the chart (default: Auto). Legend position is only enabled when

the Legend is displayed.



- **Decimals**



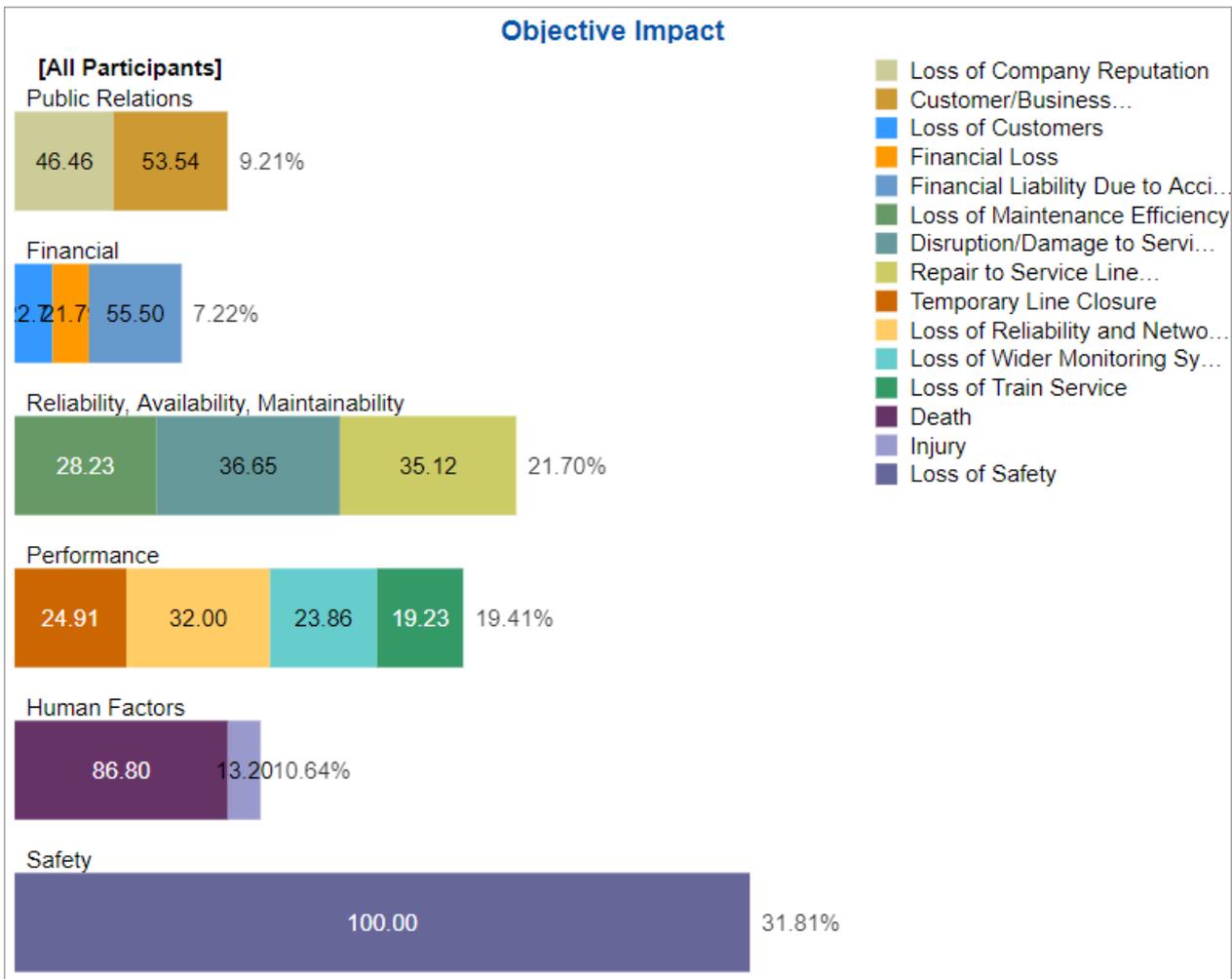
**TIP:** All chart types have the same common options as above for non-advanced mode -- except for Components which is only available for Columns.

**HINT:** For smaller screens, some of the options may be hidden. You may see the hidden options by clicking the ellipses icon at the top right.

## Chart with Components

You can show the column charts with components by toggling the  **Components** button.

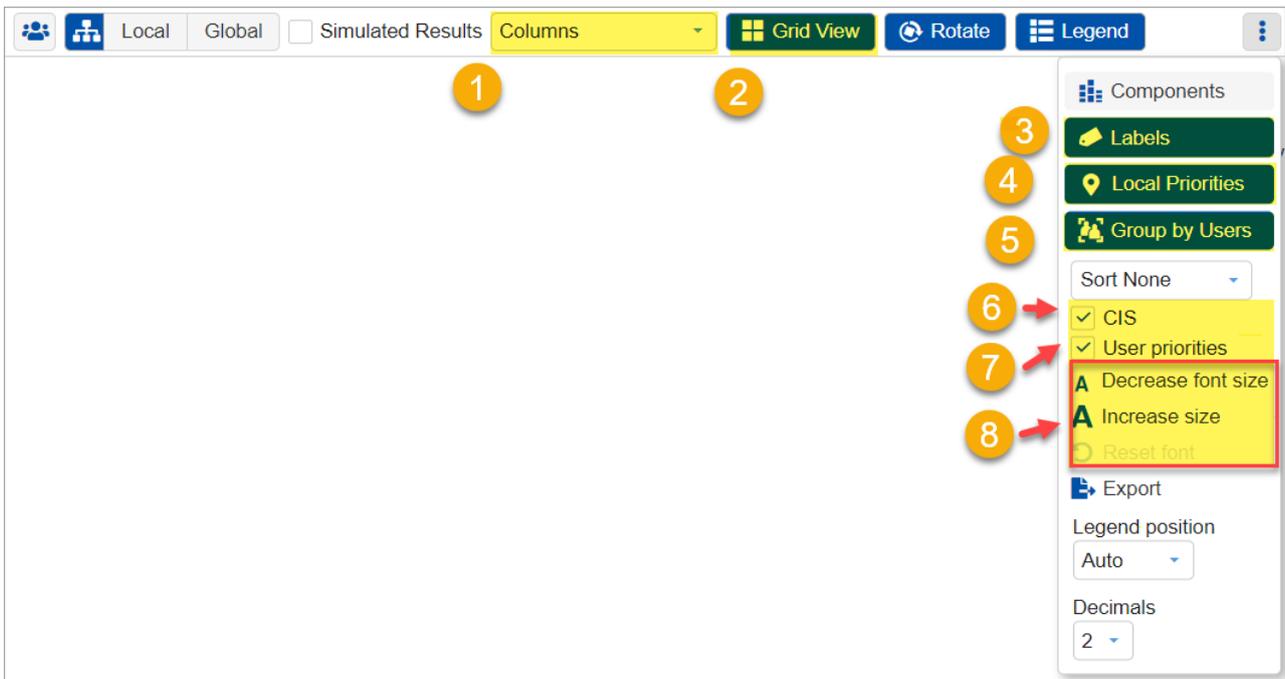
Objectives Charts with Components show the impacts of each source divided into sections showing how much of the impact is due to each of the objectives.



Hovering on a specific component will highlight that element for all the objective bars, a tooltip will also be displayed to see its details -- ([Participant or Group Name]: %Impact Objective Name).

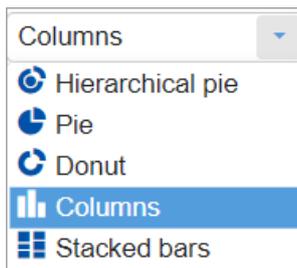
## Advanced Mode Options

When Advanced mode is ON, you will see the advanced options on this page (see highlighted):



### 1. Chart Types

More chart formats are available in the advanced mode.



The Columns chart is selected by default, you can select from other chart types available. The selected chart format on the advanced mode will be remembered when you switched back to the non-advanced mode.

### 2. Grid View (Multiple Rows or Single Row)

This option is available for all chart types except for Stack when more than one participant/group is displayed. This allows you to display the charts in grid view (**multiple rows**) when ON, or a **single row** when OFF.

### 3. Labels

Show or hide chart labels or the objective names on the chart. This will only show the % impact on the chart. You can then show the legend instead. 

### 4. Local Likelihoods

Toggle between local impacts (blue button) or global impacts (grey button) 

### 5. Group by Users

Available for Columns chart when multiple users/groups are selected. By default, this is option is ON, so the chart is

grouped by Users. When this is OFF, the chart will be group by elements or nodes.



### 6. Combined Input Option (CIS)

If the Combined Input Option (CIS) is on (see below) then results for individuals are computed by combining the impacts derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.



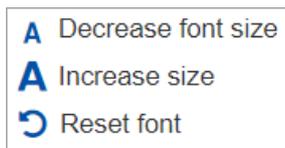
### 7. Apply User Priorities

If priorities (weights) have been specified for participants, you can use the "User Priorities" check box will enable you to apply or ignore these priorities in generating the results.



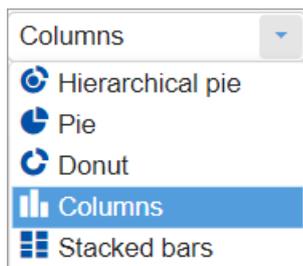
### 8. Font Size

Decrease or increase the font size, or reset



## Advanced Mode Charts

When the Advanced Mode is ON, the Chart Type dropdown is available:



### Hierarchical Pie Chart

A *hierarchical pie chart* is a visual representation of the hierarchy of Objectives. This is available when Auto-advanced is ON.

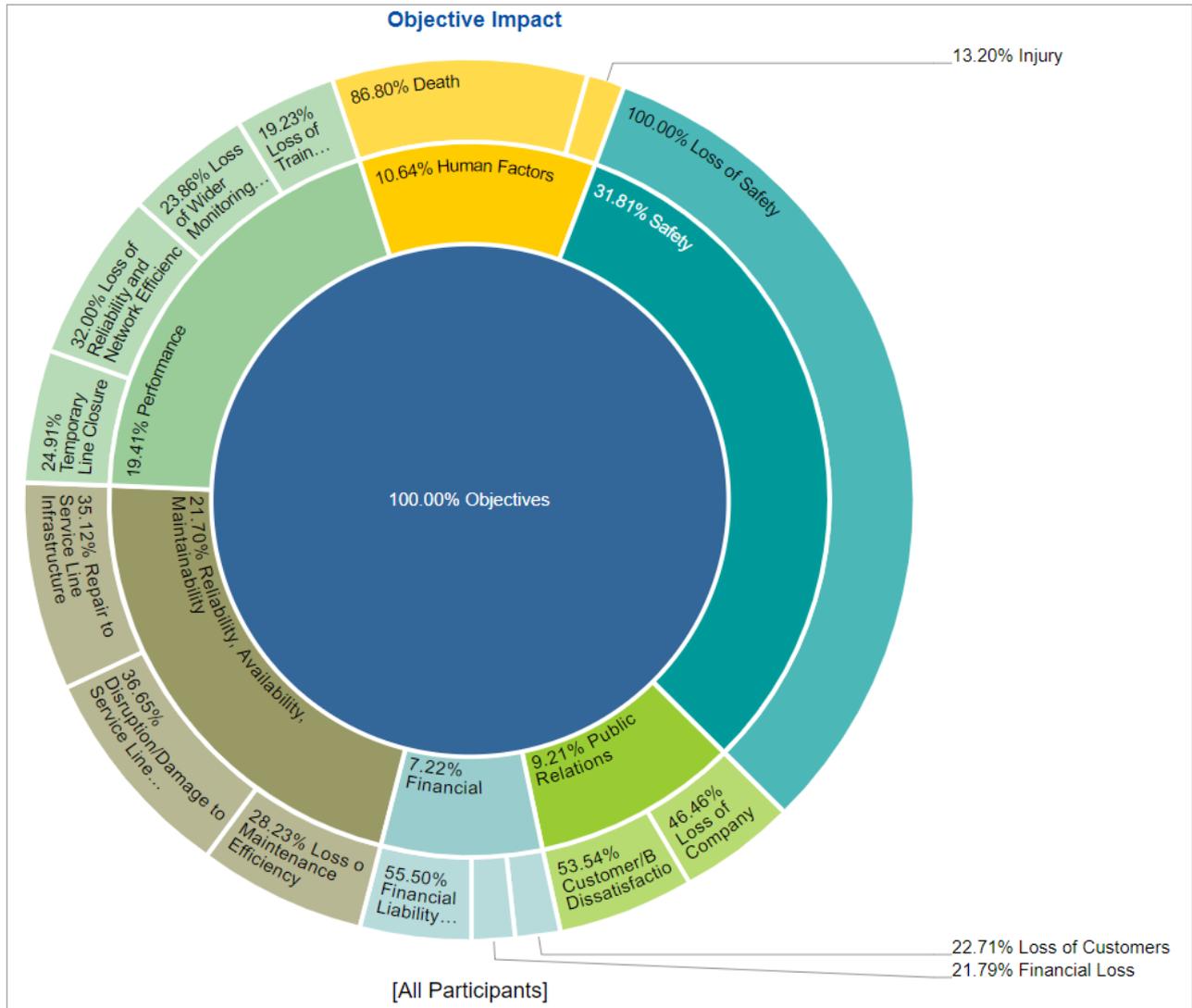
The center circle pertains to the Overall Objective.

The first layer segments are the first-level children of the hierarchy -- the "Human Factor", "Environmental" and so on...

The second layer segments are the children of the first-level nodes which have a lighter shade color of their parent.

In the example below, the "Human Factor" source has children: "Engineers Failure to Properly Install Equipment", "Lack of

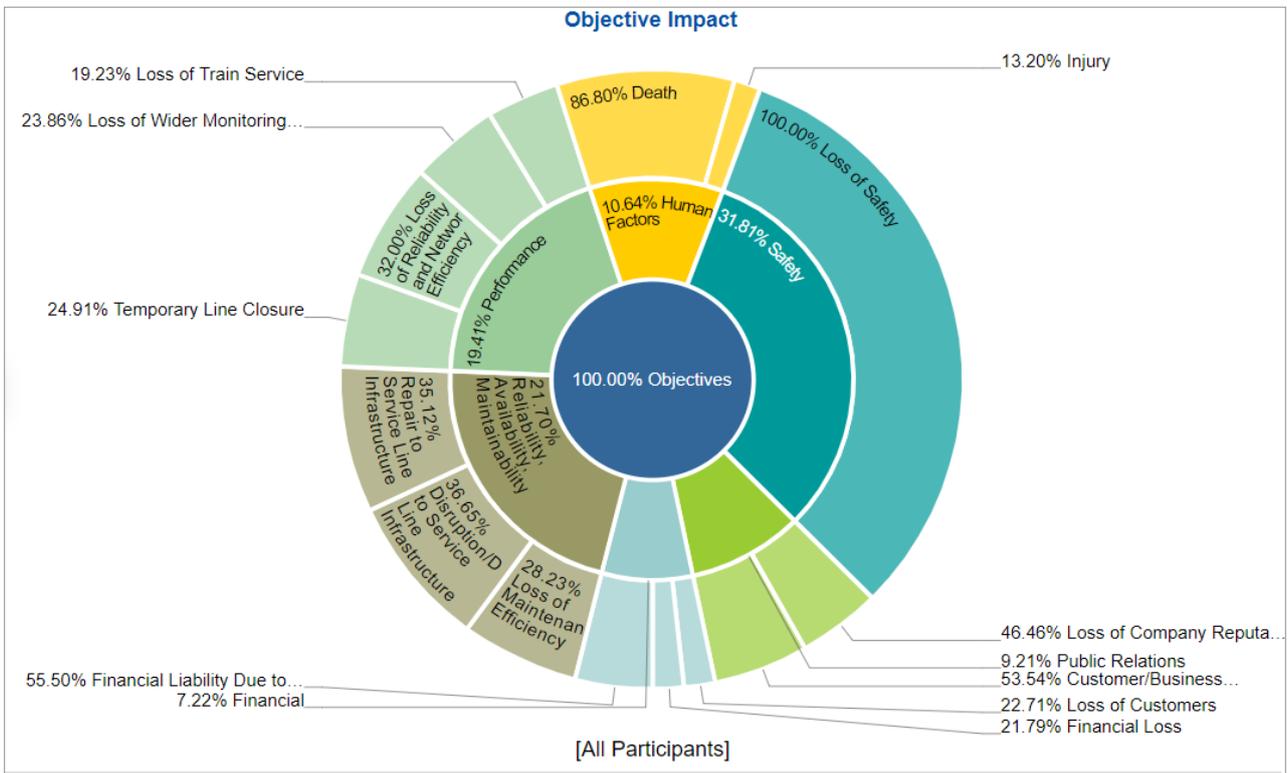
Situational Awareness"



When the Advanced mode is ON, we can check/uncheck the  **Area Mode** checkbox.

The chart above has the Area Mode is ON, that is, the sum of the children's segments area is equal to their parent's area.

When the Area Mode is OFF, all the segments will have the same height as shown below:



Turning ON the Rotate button rotates the chart by 45deg clockwise, turning it OFF will just revert it back (45deg counterclockwise).



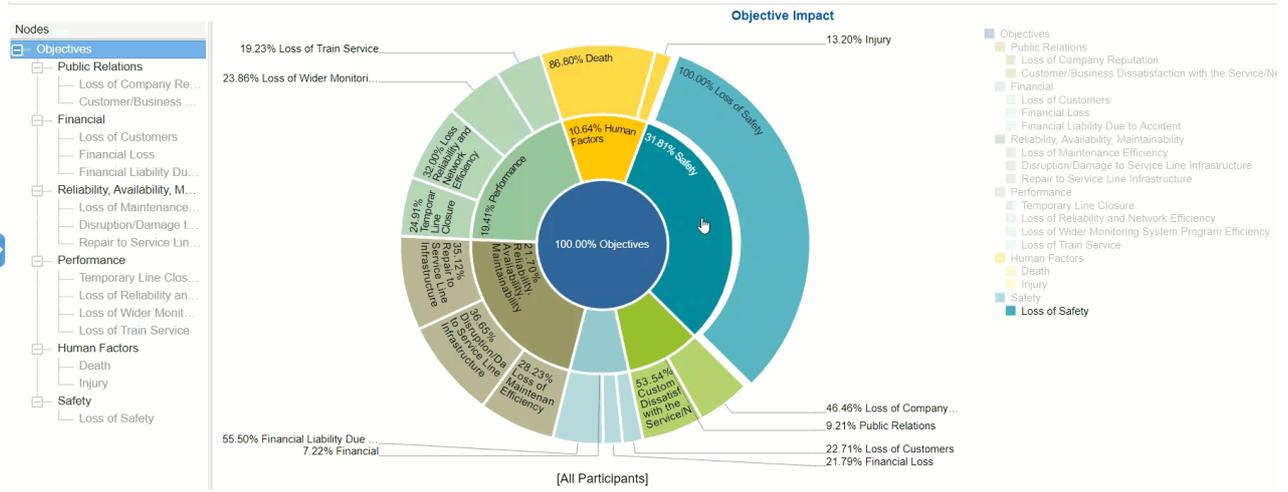
You can also rotate the chart by smaller degrees both clockwise and counterclockwise using the left/right arrows. The left/right arrow buttons are only available on Advanced mode.

You can also rotate the chart by smaller degrees both clockwise and counterclockwise using the left/right arrows. The left/right arrow buttons are only available on Advanced mode.

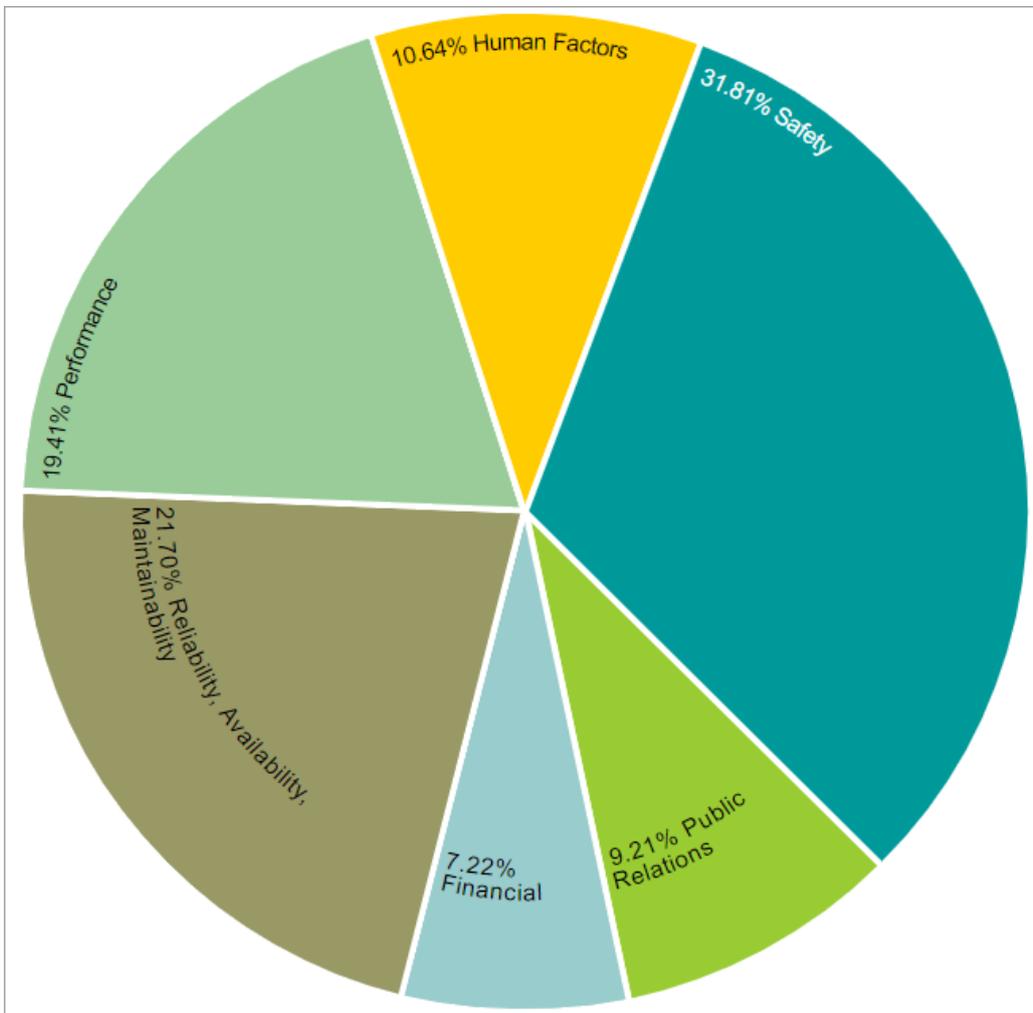
TIP: If in case some of the labels are being blocked by the toolbar at the top, the rotate option will be helpful.

You can click on a parent node on the chart or from the legend to focus on a flex:

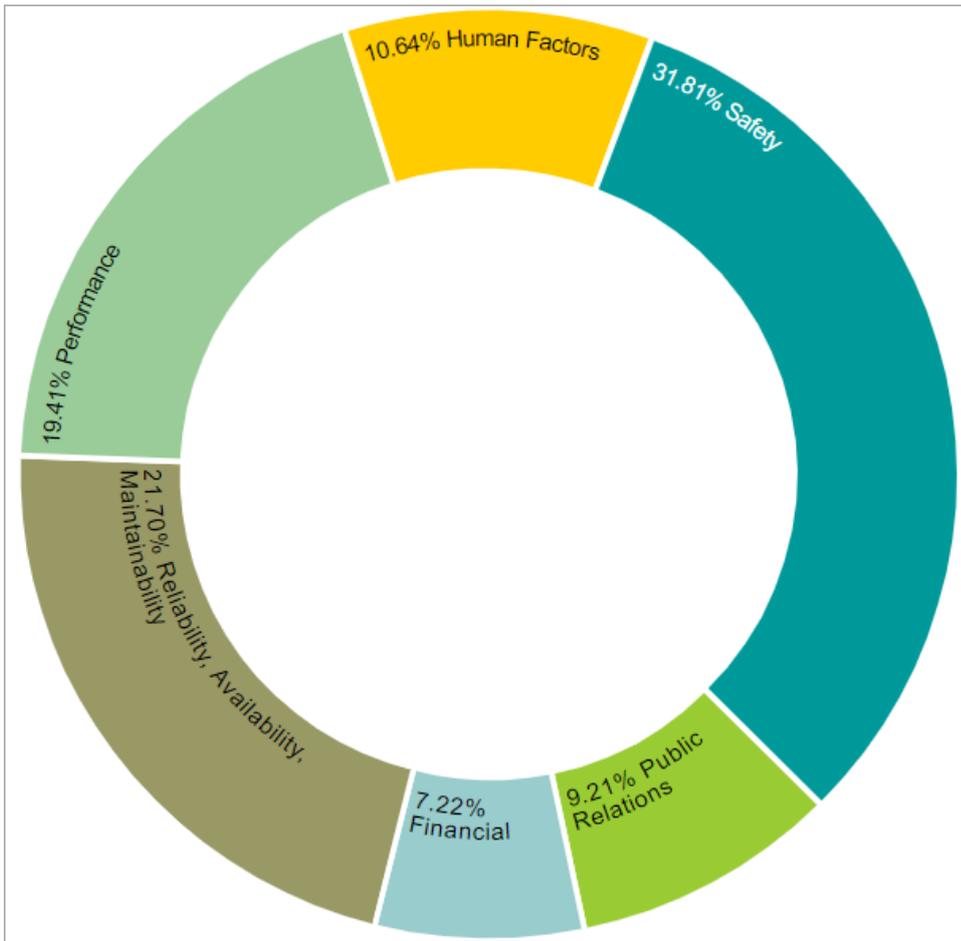
Clicking the same node will return to the overall chart.



Pie



Donut



Stack



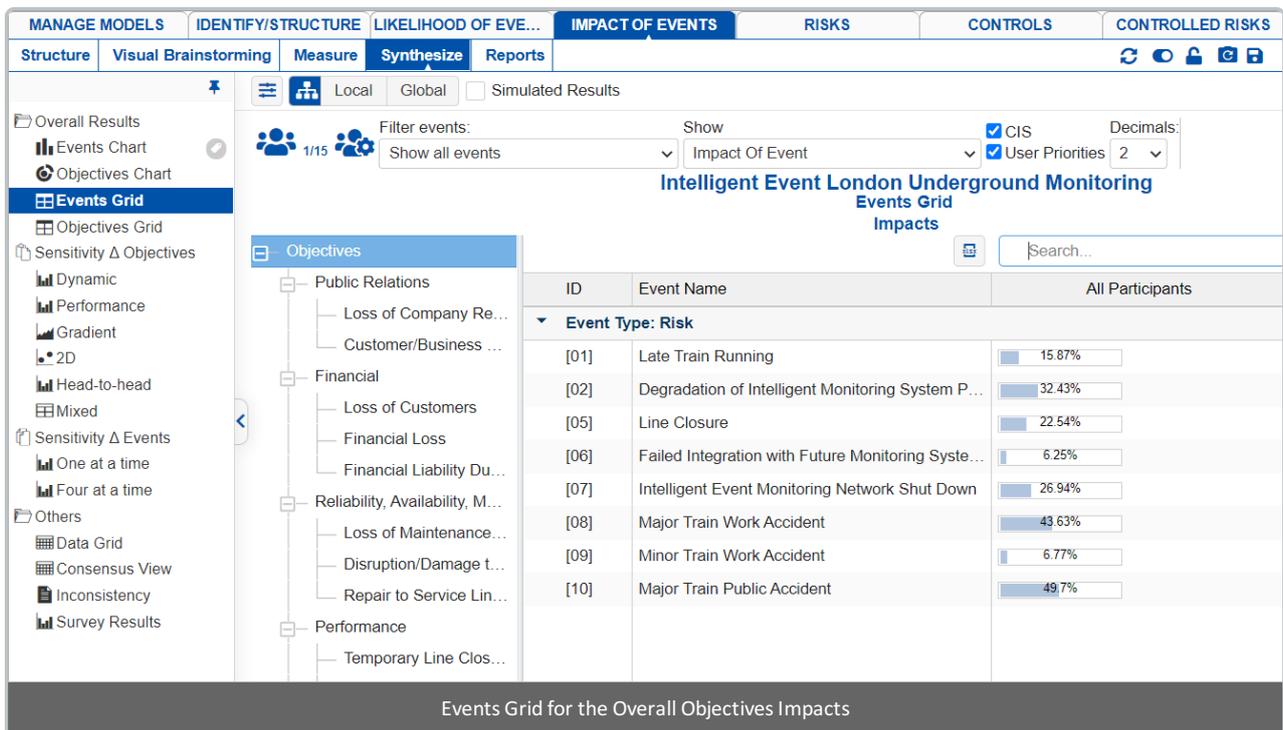
# Impact: Events Grid

## Overview

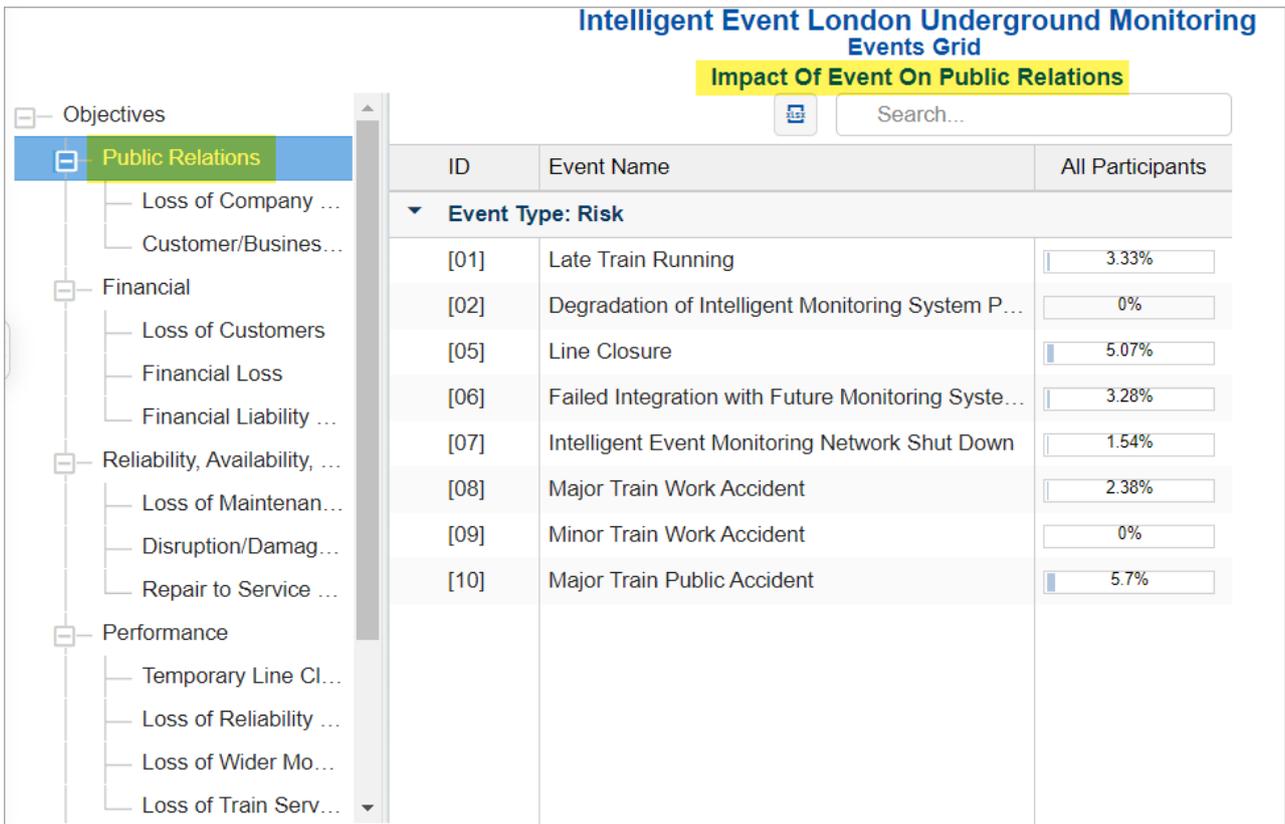
The **Objectives Grid** for Likelihood displays:

- the impacts or consequences of the events for Risk Events or
- the likelihoods/causes for Opportunity Events.

By default, the grid shows the events' impacts due to the overall Objectives.



By selecting an element in the hierarchy other than the top Objective, you can see the results due to the selected element.



The grid above shows the event's impacts due to the selected node "Public Relations".

You can show the local and global source's impacts on the Objective Hierarchy at the right using the Local-Global buttons:

Objectives	All Participants	
	Local	Global
Objectives		
Public Relations	9.21%	9.21%
Loss of Compa...	46.46%	4.28%
Customer/Busi...	53.54%	4.93%
Financial	7.22%	7.22%
Loss of Custom...	22.71%	1.64%
Financial Loss	21.79%	1.57%
Financial Liabili...	55.5%	4.01%
Reliability, Availabili...	21.7%	21.7%
Loss of Mainten...	28.23%	6.13%
Disruption/Dam...	36.65%	7.96%
Repair to Servi...	35.12%	7.62%
Performance	19.41%	19.41%
Temporary Line...	24.91%	4.83%
Loss of Reliabili...	32%	6.21%
Loss of Wider ...	23.86%	4.63%

You can also hide the Sources Hierarchy at the left using 

Click  to show/hide the toolbar options (*showing and hiding the toolbar is being remembered*).

 1/15 	Filter events: Show all events	Show Impact Of Event	<input checked="" type="checkbox"/> CIS <input checked="" type="checkbox"/> User Priorities	Decimals: 2
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------	-------------------------	------------------------------------------------------------------------------------------------	----------------

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Show Impact or Consequence

You can select to show the events' consequences rather than the event's impacts by selecting from the dropdown menu:

Show

Impact Of Event ▼

Impact Of Event

Consequence Of Event On Objective

For an Opportunity model, you can select to show the Likelihood or the Causes.

Below is the Grid for Events Consequences due to the objective "Public Relations".

Intelligent Event London Underground Monitoring Events Grid																																	
Consequence Of Event On Public Relations																																	
Objectives	All Participants		All Participants																														
	Local	Global																															
Objectives																																	
Public Relations	9.21%	9.21%																															
Loss of Compa...	46.46%	4.28%																															
Customer/Busi...	53.54%	4.93%																															
Financial	7.22%	7.22%																															
Loss of Custom...	22.71%	1.64%																															
Financial Loss	21.79%	1.57%																															
Financial Liabili...	55.5%	4.01%																															
Reliability, Availabili...	21.7%	21.7%																															
Loss of Mainten...	28.23%	6.13%																															
Disruption/Dam...	36.65%	7.96%																															
Repair to Servi...	35.12%	7.62%																															
<table border="1"> <thead> <tr> <th>ID</th> <th>Event Name</th> <th>All Participants</th> </tr> </thead> <tbody> <tr> <td colspan="3">Event Type: Risk</td> </tr> <tr> <td>[01]</td> <td>Late Train Running</td> <td>36.14%</td> </tr> <tr> <td>[02]</td> <td>Degradation of Intelligent Monitoring System P...</td> <td>0%</td> </tr> <tr> <td>[05]</td> <td>Line Closure</td> <td>55.05%</td> </tr> <tr> <td>[06]</td> <td>Failed Integration with Future Monitoring Syste...</td> <td>35.56%</td> </tr> <tr> <td>[07]</td> <td>Intelligent Event Monitoring Network Shut Down</td> <td>16.73%</td> </tr> <tr> <td>[08]</td> <td>Major Train Work Accident</td> <td>25.83%</td> </tr> <tr> <td>[09]</td> <td>Minor Train Work Accident</td> <td>0%</td> </tr> <tr> <td>[10]</td> <td>Major Train Public Accident</td> <td>61.87%</td> </tr> </tbody> </table>				ID	Event Name	All Participants	Event Type: Risk			[01]	Late Train Running	36.14%	[02]	Degradation of Intelligent Monitoring System P...	0%	[05]	Line Closure	55.05%	[06]	Failed Integration with Future Monitoring Syste...	35.56%	[07]	Intelligent Event Monitoring Network Shut Down	16.73%	[08]	Major Train Work Accident	25.83%	[09]	Minor Train Work Accident	0%	[10]	Major Train Public Accident	61.87%
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[10]	Major Train Public Accident	61.87%																															

### Select Participants and Groups

You can select to display results for one or more participants also groups by clicking



The number designates the number selected/total number of participants/groups.

Clicking the button will open a window listing the participants and groups in the model. Simply check the participants and groups you want to see results.

**Participants and Groups**

Search:

	Participant Name	Email Address	Has data?	Group name	Has data?	Select all users with data
<input type="checkbox"/>	Brian Quigley	quigleybf@gwu.edu	Yes	<input checked="" type="checkbox"/> All Participants	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Engineering Officer	ceo@gwu.edu	Yes	<input type="checkbox"/> C-Level Executives	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Executive Officer	che@gwu.edu	Yes	<input type="checkbox"/> Engineering	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Risk Officer	cro@gwu.edu	Yes			
<input type="checkbox"/>	Denis Risman	denisrisman@gwu.edu				
<input type="checkbox"/>	Devin Nagy	devinnagy@gwu.edu				
<input type="checkbox"/>	Grace	grace@eci.com				
<input type="checkbox"/>	IT Supervisor	its@gwu.edu	Yes			
<input type="checkbox"/>	James	james@eci.com				
<input type="checkbox"/>	John Doe	j.doe@eci.com				
<input type="checkbox"/>	Michael Mankowski	mmankowski@gwu.edu				

Select all | Select All Participants And Groups With Data | Deselect all

OK Cancel

## Filter Events

By default, all events are displayed.

Show all events

Show all events

Show top 5 events b...

Show top 10 events ...

Show top 25 events ...

Advanced

Show bottom 5 even...

Show bottom 10 eve...

Show bottom 25 eve...

Select/deselect events

Filter by event attrib...

Show risks only

Show opportunities ...

You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group impacts.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.

The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

When the Advanced mode is ON, you will see the advanced options on this page:

### 1. Combined Input Option (CIS)

If the Combined Input Option (CIS) is on (see below) then results for individuals are computed by combining the impacts derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.

 CIS

### 2. Apply User Priorities

If priorities (weights) have been specified for participants, you can use the "User Priorities" check box will enable you to apply or ignore these priorities in generating the results.

 User priorities

## Change Alternatives Color

You can change the Events color from the Events Grid or Dynamic Sensitivities pages, and the Source/Objectives Color on their corresponding Grid Results pages.

From Grid, simply click or right-click the event or source/objective results bar/cell, and then choose a color from the color picker:

**Intelligent Event London Underground Monitoring**  
**Events Grid**  
**Likelihoods**



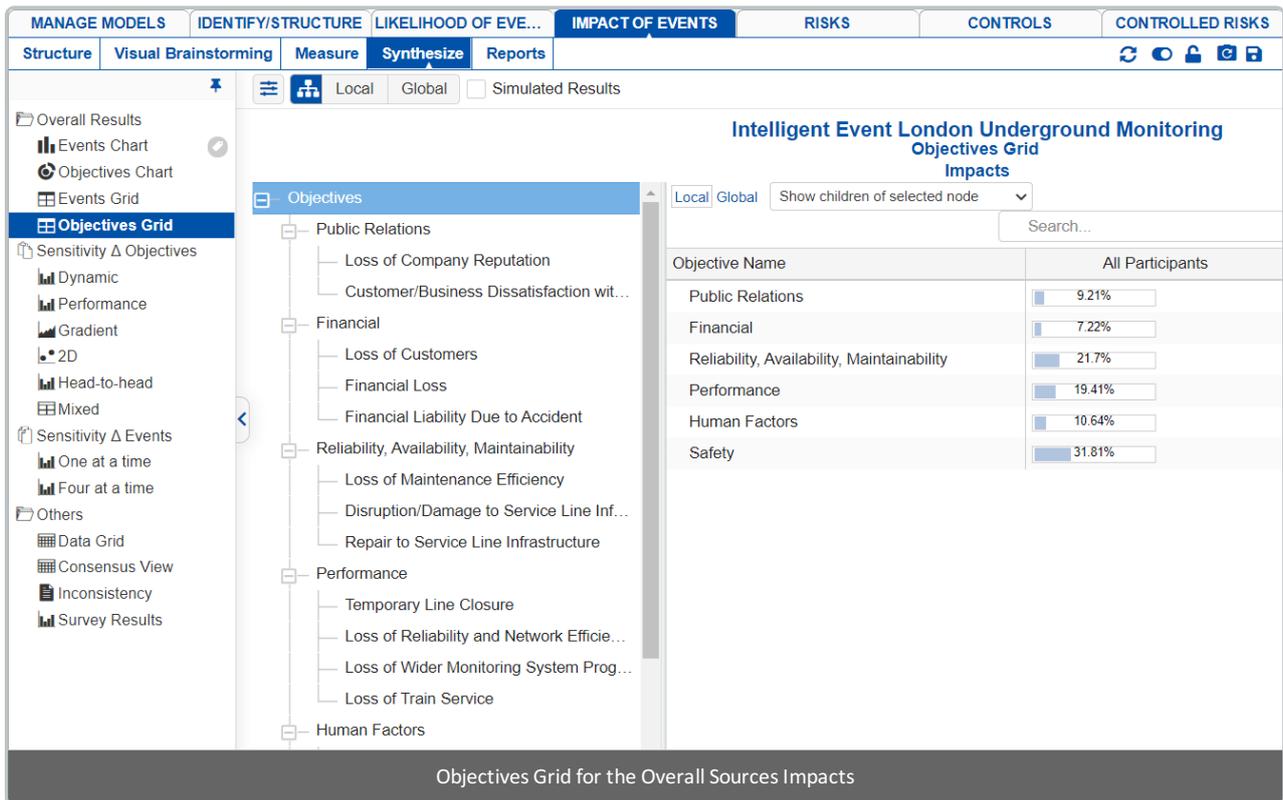

ID	Event Name	All Participants
<b>▼ Event Type: Risk</b>		
[01]	Late Train Running	<div style="width: 35.48%;"><div style="width: 35.48%;"></div></div> 35.48%
[02]	Degradation of Intelligent Monitoring System P...	<div style="width: 11.17%;"><div style="width: 11.17%;"></div></div> 11.17%
[05]	Line Closure	<div style="width: 27.22%;"><div style="width: 27.22%;"></div></div> 27.22%
[06]	Failed Integration with Future Monitoring Syste...	<div style="width: 15.55%;"><div style="width: 15.55%;"></div></div> 15.55%
[07]	Intelligent Event Monitoring Network Shut Down	<div style="width: 18.55%;"><div style="width: 18.55%;"></div></div> 18.55%
[08]	Major Train Work Accident	<div style="width: 17.64%;"><div style="width: 17.64%;"></div></div> 17.64%
[09]	Minor Train Work Accident	<div style="width: 14.67%;"><div style="width: 14.67%;"></div></div> 14.67%
[10]	Major Train Public Accident	<div style="width: 17.69%;"><div style="width: 17.69%;"></div></div> 17.69%

# Impact: Objectives Grid

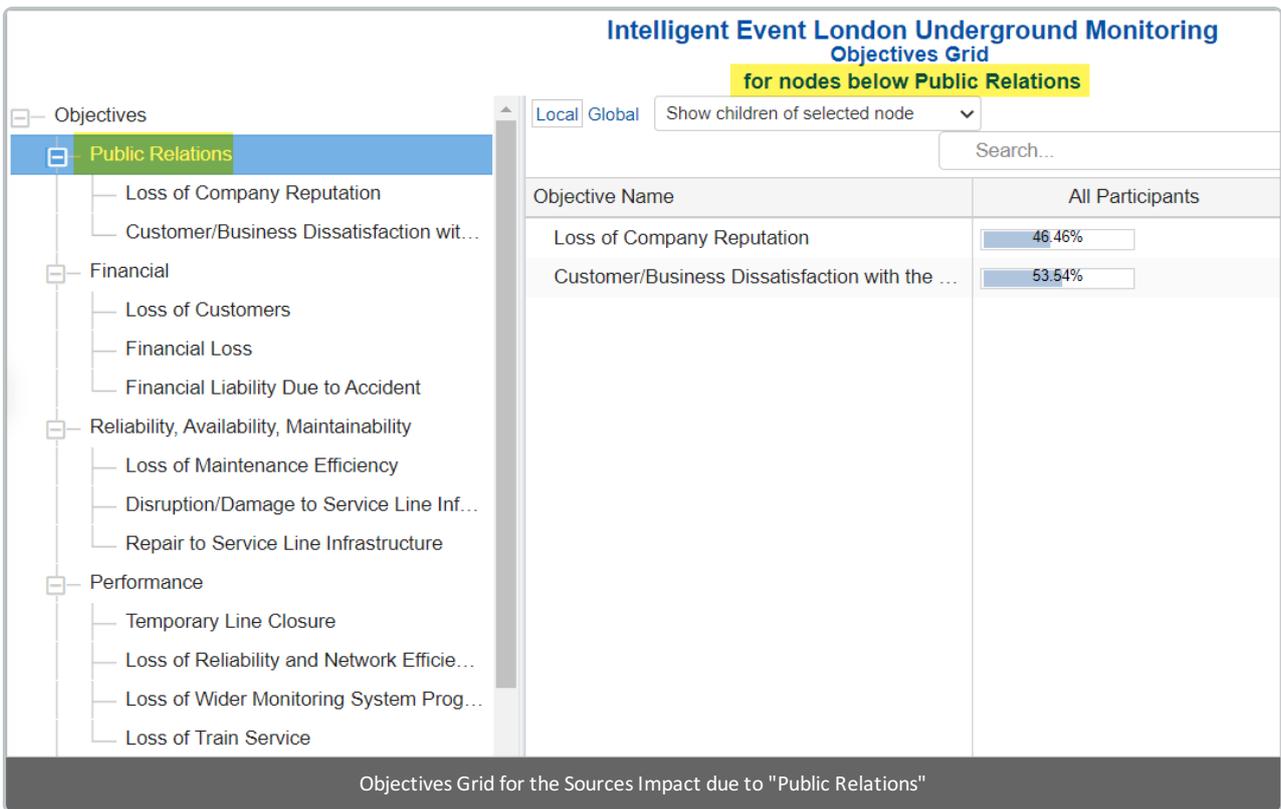
## Overview

The Threats Grid for Impact displays the impacts of the Objectives or sub-objectives.

By default, the grid shows the objectives' impacts due to the overall Objective.



By selecting an element in the hierarchy other than the top Objective, you can see the results due to the selected element.



The grid above shows the source's impacts due to the selected node "Public Relations".

You can show the local and global source's impacts on the Source Hierarchy at the right using the Local-Global buttons:

Objectives	All Participants	
	Local	Global
Objectives		
Public Relations	9.21%	9.21%
Loss of Compan...	46.46%	4.28%
Customer/Busin...	53.54%	4.93%
Financial	7.22%	7.22%
Loss of Customers	22.71%	1.64%
Financial Loss	21.79%	1.57%
Financial Liabilit...	55.5%	4.01%
Reliability, Availabilit...	21.7%	21.7%
Loss of Mainten...	28.23%	6.13%
Disruption/Dam...	36.65%	7.96%
Repair to Servic...	35.12%	7.62%
Performance	19.41%	19.41%
Temporary Line ...	24.91%	4.83%
Loss of Reliabilit...	32%	6.21%

You can also hide the Sources Hierarchy at the left using 

Click  to show the toolbar options (*showing and hiding the toolbar is being remembered*).



## Select Participants and Groups

You can select to display results for one or more participants also groups by clicking



The number designates the number selected/total number of participants/groups.

Clicking the button will open a window listing the participants and groups in the model. Simply check the participants and groups you want to see results.

**Participants and Groups**

Search:

	Participant Name	Email Address	Has data?	Group name	Has data?	Select all users with data
<input type="checkbox"/>	Brian Quigley	quigleybf@gwu.edu	Yes	<input checked="" type="checkbox"/> All Participants	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Engineering Officer	ceo@gwu.edu	Yes	<input type="checkbox"/> C-Level Executives	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Executive Officer	che@gwu.edu	Yes	<input type="checkbox"/> Engineering	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Risk Officer	cro@gwu.edu	Yes			
<input type="checkbox"/>	Denis Risman	denisrisman@gwu.edu				
<input type="checkbox"/>	Devin Nagy	devinnagy@gwu.edu				
<input type="checkbox"/>	Grace	grace@eci.com				
<input type="checkbox"/>	IT Supervisor	its@gwu.edu	Yes			
<input type="checkbox"/>	James	james@eci.com				
<input type="checkbox"/>	John Doe	j.doe@eci.com				
<input type="checkbox"/>	Michael Mankowski	mmankowski@gwu.edu				

Select all | Select All Participants And Groups With Data | Deselect all

OK Cancel

## Advanced Mode Options

When the Advanced mode is ON, you will see the advanced options on this page:

### 1. Combined Input Option (CIS)

If the Combined Input Option (CIS) is on (see below) then results for individuals are computed by combining the impacts derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.

CIS

### 2. Apply User Priorities

If priorities (weights) have been specified for participants, you can use the "User Priorities" check box will enable you to apply or ignore these priorities in generating the results.

User priorities

## Change Threats Color

You can change the Threats color from the Threats Grid.

Simply click or right-click the source/objective results bar/cell, and then choose a color from the color picker:

## Intelligent Event London Underground Monitoring Events Grid Likelihoods

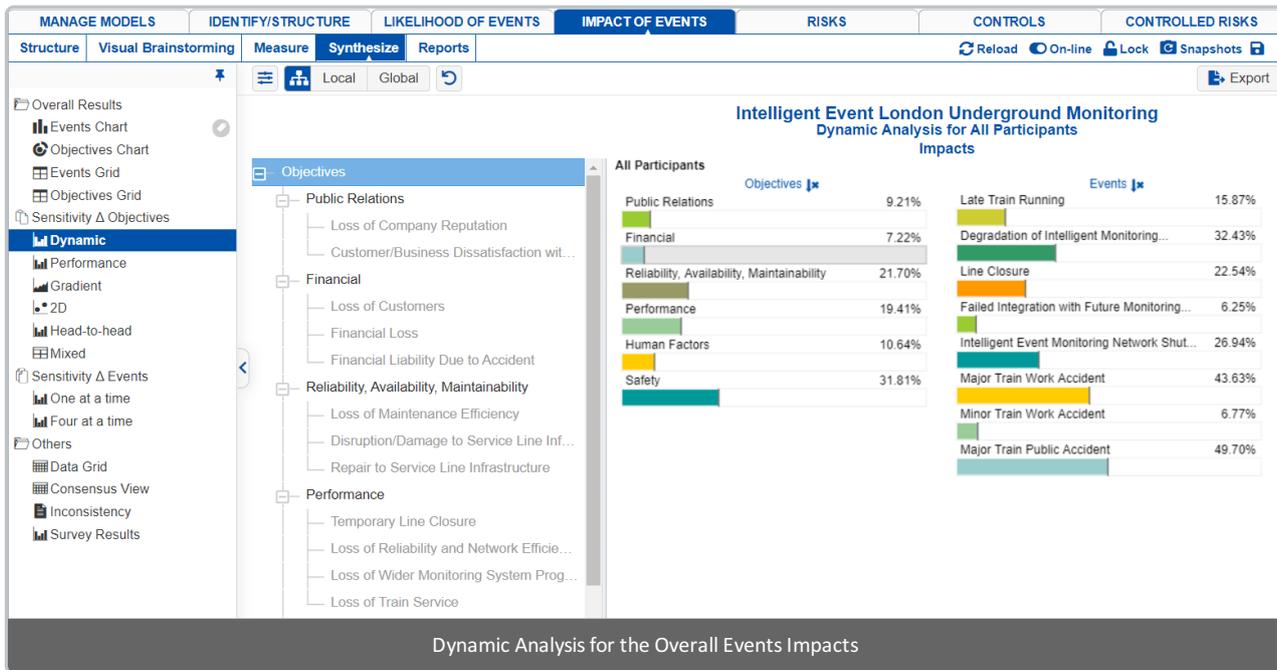



ID	Event Name	All Participants
▼ <b>Event Type: Risk</b>		
[01]	Late Train Running	<div style="width: 35.48%;"><div style="width: 35.48%;"></div></div> 35.48%
[02]	Degradation of Intelligent Monitoring System P...	<div style="width: 11.17%;"><div style="width: 11.17%;"></div></div> 11.17%
[05]	Line Closure	<div style="width: 27.22%;"><div style="width: 27.22%;"></div></div> 27.22%
[06]	Failed Integration with Future Monitoring Syste...	<div style="width: 15.55%;"><div style="width: 15.55%;"></div></div> 15.55%
[07]	Intelligent Event Monitoring Network Shut Down	<div style="width: 18.55%;"><div style="width: 18.55%;"></div></div> 18.55%
[08]	Major Train Work Accident	<div style="width: 17.64%;"><div style="width: 17.64%;"></div></div> 17.64%
[09]	Minor Train Work Accident	<div style="width: 14.67%;"><div style="width: 14.67%;"></div></div> 14.67%
[10]	Major Train Public Accident	<div style="width: 17.69%;"><div style="width: 17.69%;"></div></div> 17.69%

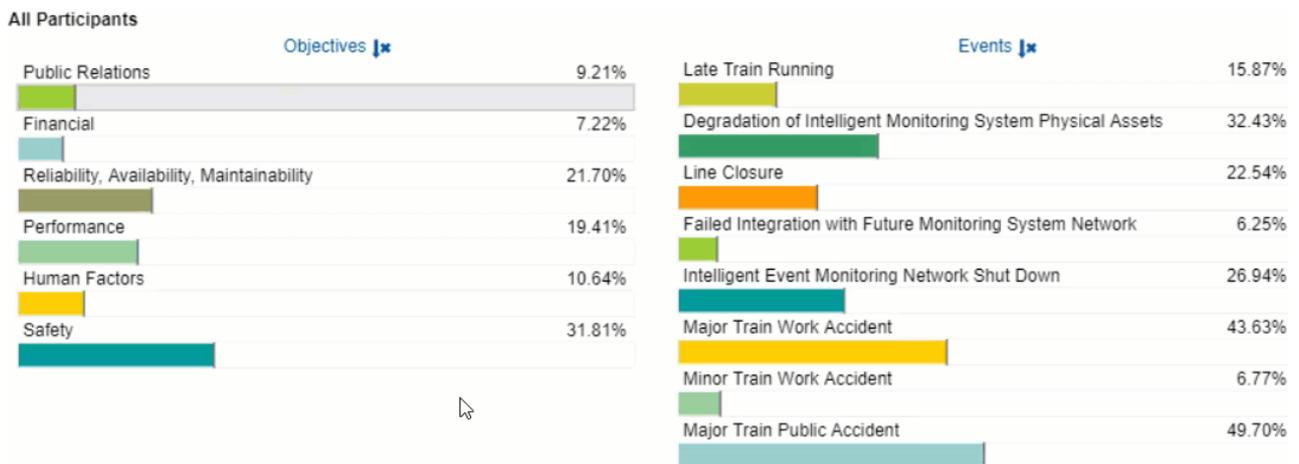
# Impact: Dynamic Analysis

## Overview

Dynamic Sensitivity analysis is used to dynamically change the impacts of the objectives to determine how these changes affect the impacts of the events.



By dragging the objective's impact back and forth in the left column, the impacts of the events will change in the right column.

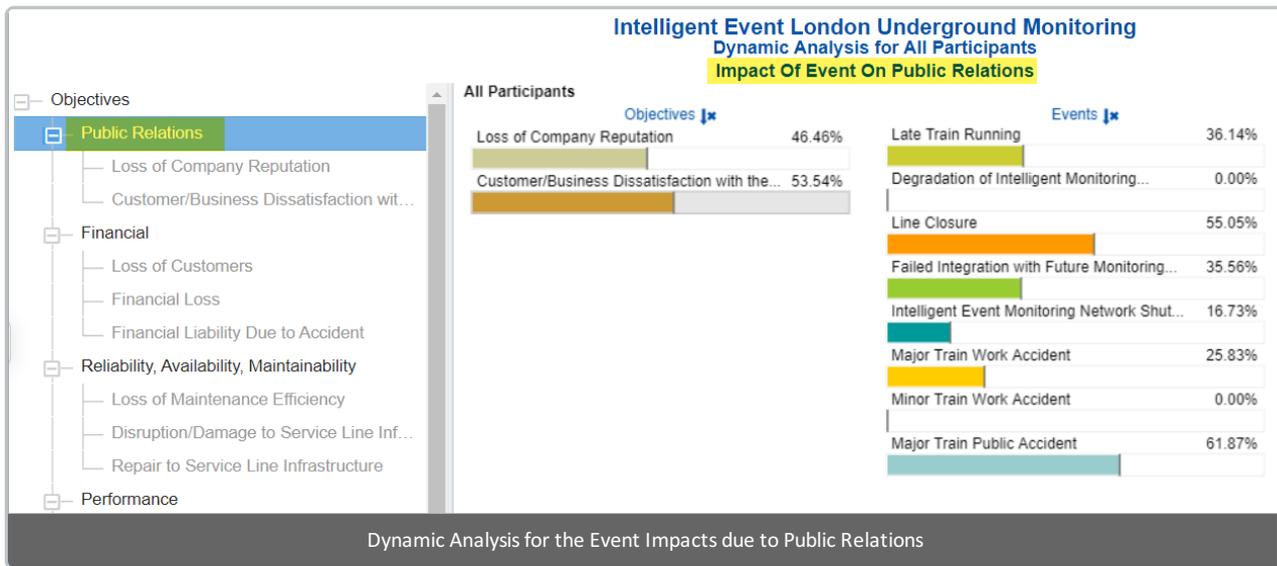


The black | markers on the objective and event bars indicate the original objective and event impacts.



After temporarily changing the impacts of one or more of the objectives, you can press the  reset icon.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Objectives" node.



You can show the local and global objectives impacts on the Objectives Hierarchy at the right using the Local-Global buttons:

Objectives	All Participants	
	Local	Global
Objectives		
Public Relations	9.21%	9.21%
Loss of Compan...	46.46%	4.28%
Customer/Busin...	53.54%	4.93%
Financial	7.22%	7.22%
Loss of Customers	22.71%	1.64%
Financial Loss	21.79%	1.57%
Financial Liabilit...	55.5%	4.01%
Reliability, Availabilit...	21.7%	21.7%
Loss of Mainten...	28.23%	6.13%
Disruption/Dam...	36.65%	7.96%
Repair to Servic...	35.12%	7.62%
Performance	19.41%	19.41%
Temporary Line ...	24.91%	4.83%
Loss of Reliabilit...	32%	6.21%
Loss of Wider M...	23.86%	4.63%

You can hide the Objectives Hierarchy at the left using 

Click  to show/hide the toolbar options:

	Filter events: Show all events	Decimals: 2	Sort Objectives by: None	Sort Events by: None	<input type="checkbox"/> Active Sorting	Events parameter: Impact	<input type="checkbox"/> Show Components
-------------------------------------------------------------------------------------	-----------------------------------	----------------	-----------------------------	-------------------------	--------------------------------------------	-----------------------------	------------------------------------------

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using



Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

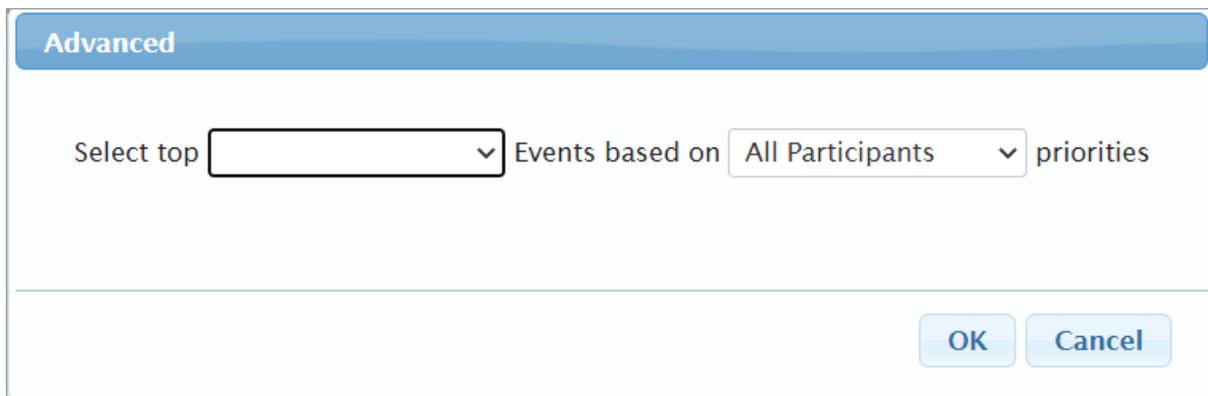
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group impacts.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



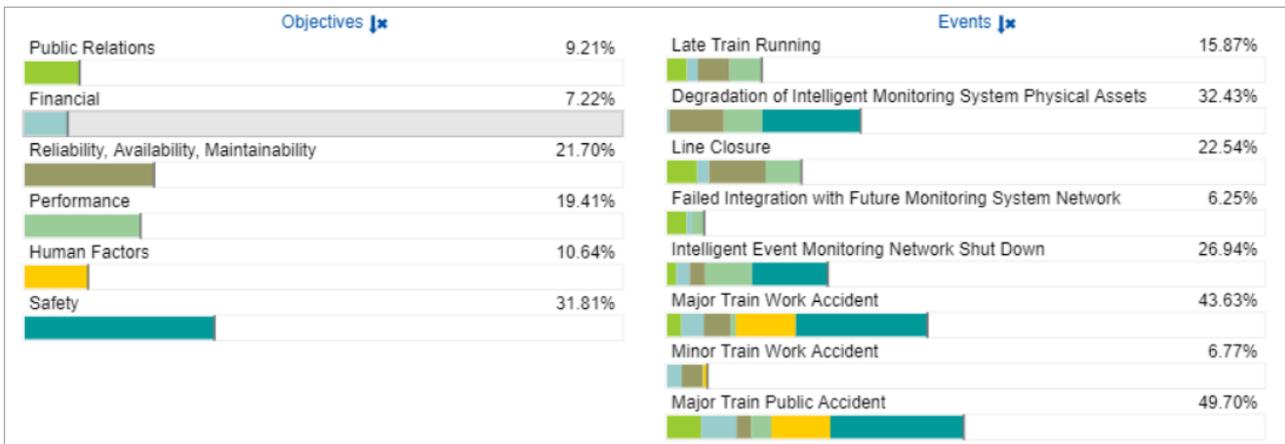
The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Events Components

Checking the  Show Components displays the breakdown of each of the objective's contributions or share to the impacts of each of the events.

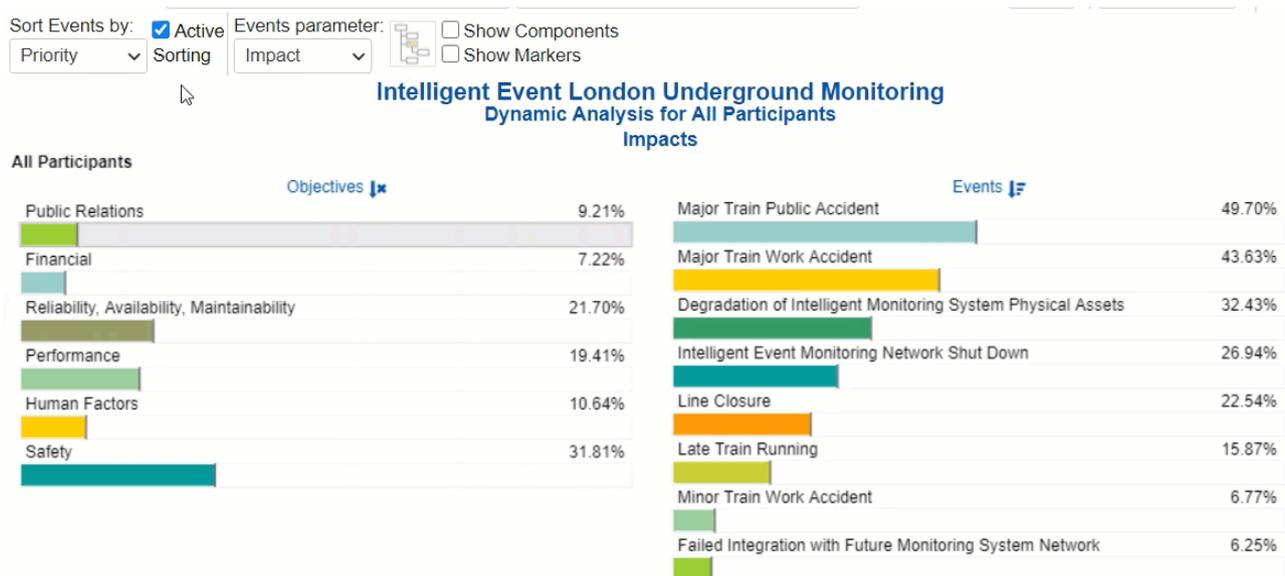


The breakdown colors of the event bars at the right corresponds to each of the objectives at the left.

## Active Sorting (Keep Sorting)

Active Sorting is only enabled when Events are Sorted by Impacts.

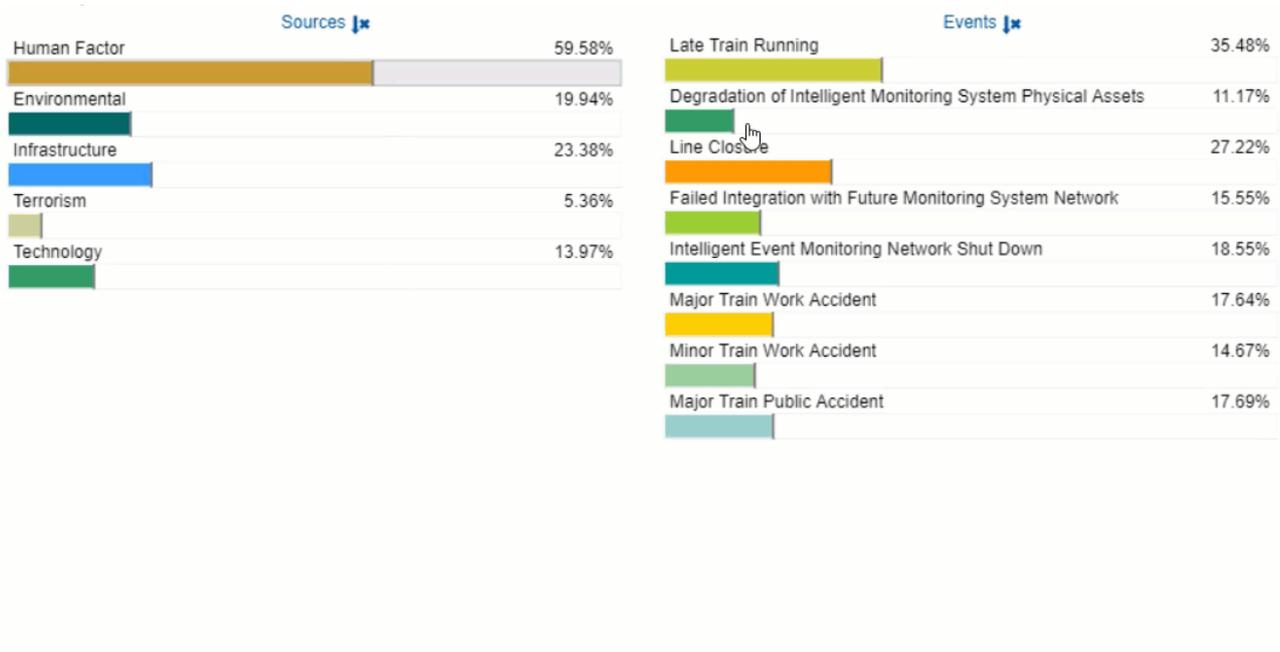
Checking the Active Sorting checkbox actively re-sorts the events as the objectives impacts are being adjusted.



When the Active Sorting is OFF, the initial sorting of the events will be remembered.

## Change Events Color

Clicking on the event bar will open a color picker where you can select and change the color assignment.



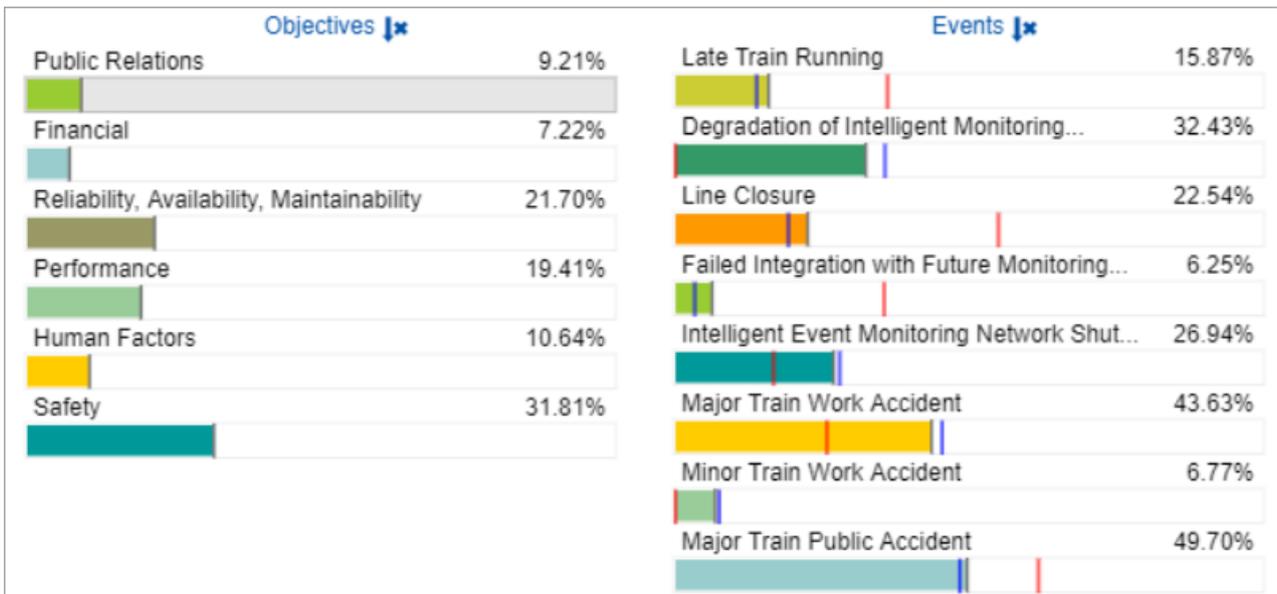
You can also change colors from the Events and Objectives Grid.

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Advanced Mode Options

### 4. Show Markers

Checking the  **Show Markers** checkbox displays red and blue markers on the events bars indicating the event impact when the selected objective is dragged to the maximum (100%) or minimum (0%) respectively.



The selected source in the example above is "Public Relations" as indicated by its light gray background. When the "Public Relations" bar is dragged to the maximum (100%), the events' bars at the right will be filled up to where the red marker is. When it is dragged to the minimum (0%), the events bars at the right will be filled up to where the blue marker is.

Depending on the event, red might be on the right and blue on the left, or vice-versa.

# Impact: Performance Analysis

## Overview

Impact's Performance analysis is used to dynamically change the impacts of the objectives to determine how these changes affect the impacts of the events.



Each performance sensitivity is composed of:

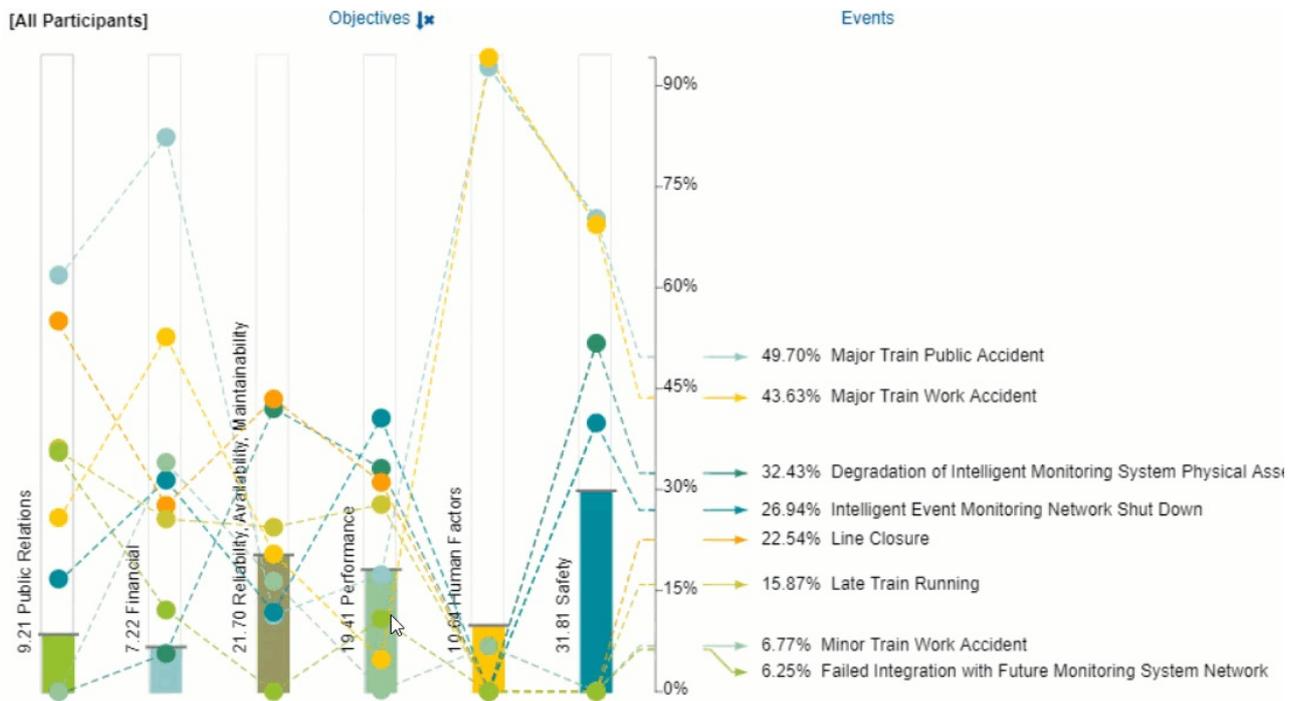
- The relative impact of the objectives is depicted by the vertical bars and shown numerically on the left side of each bar.
- The relative impact with respect to any of the objectives is shown by the intersection of that events line segment with the objective bars. Thus, for example, Major Train Public Accident has the highest impact due to Public Relations (blue bubble on the Public Relations bar).
- The intersection of the event line segment with the overall axis on the right shows the relative overall impact of the event.

The options above the chart are explained below:

- to display the lines connecting the events from one objective to another. Note: The connecting lines have no meaning; they are included to help you find where a particular event lies as you move from one objective to another.
- to hide the connecting lines and use horizontal ticks instead of circles to indicate the impact of the event due to the objective
- to align the event labels at the right to their corresponding overall impacts
- to expand the event labels
- to show the objectives as bars
- to display the performance sensitivity as a radar chart

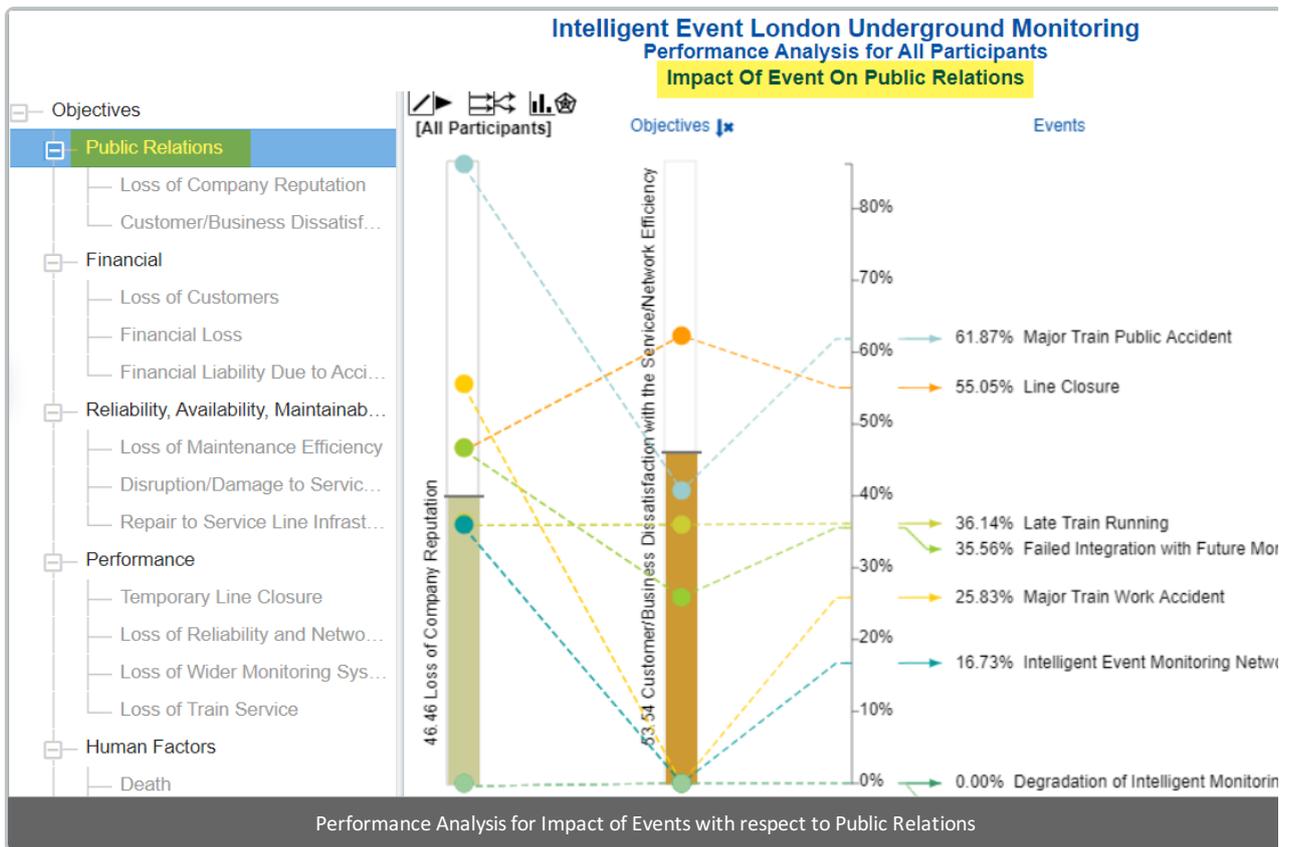
The Performance graph is also dynamic, so you can temporarily alter the relationship between the events and their objectives by dragging the objective bars up or down.

Note: If there is one event that is highest on every objective, there is probably something missing from the model, or specific objectives were not considered adequately when the judgments were. Iteration should be almost always be performed in such a case since it is extremely rare that any event is highest on every objective.



After temporarily changing the impacts of one or more of the objectives, you can press the  reset icon.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Objectives" node.



The performance above shows all the event impacts with respect to the selected node "Public Relations".

You can show the local and global objectives impacts on the Objectives Hierarchy at the right using the Local-Global buttons:

Objectives	All Participants	
	Local	Global
Objectives		
Public Relations	9.21%	9.21%
Loss of Compan...	46.46%	4.28%
Customer/Busin...	53.54%	4.93%
Financial	7.22%	7.22%
Loss of Customers	22.71%	1.64%
Financial Loss	21.79%	1.57%
Financial Liabilit...	55.5%	4.01%
Reliability, Availabilit...	21.7%	21.7%
Loss of Mainten...	28.23%	6.13%
Disruption/Dam...	36.65%	7.96%
Repair to Servic...	35.12%	7.62%
Performance	19.41%	19.41%
Temporary Line ...	24.91%	4.83%
Loss of Reliabilit...	32%	6.21%
Loss of Wider M...	23.86%	4.63%

You can hide the Objectives Hierarchy at the left using 

Click  to show/hide the toolbar options:

		Filter events:	Decimals:	Sort Objectives by:	Events parameter:
		Show all events	2	None	Impact

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using



Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

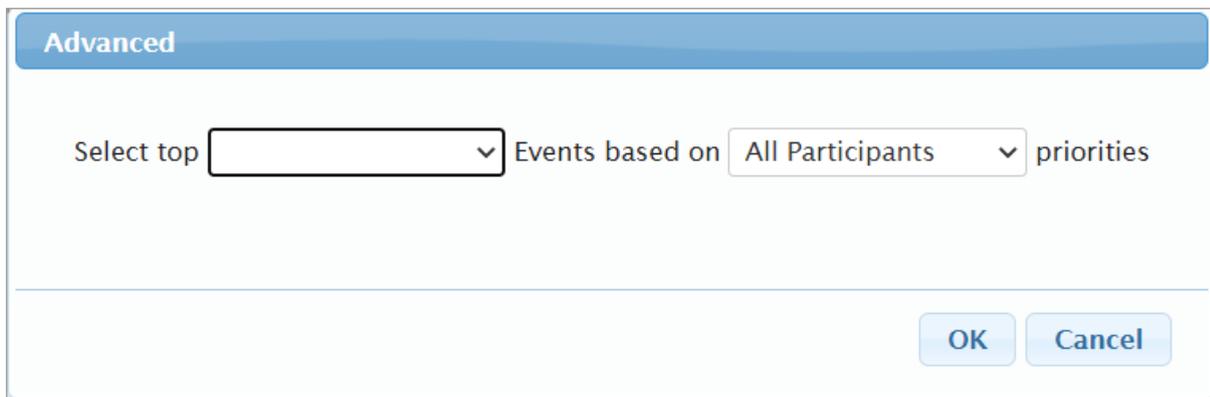
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group impacts.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.

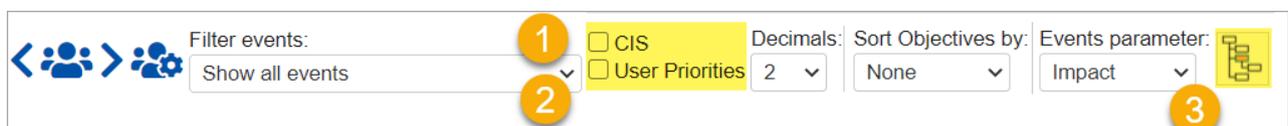


The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

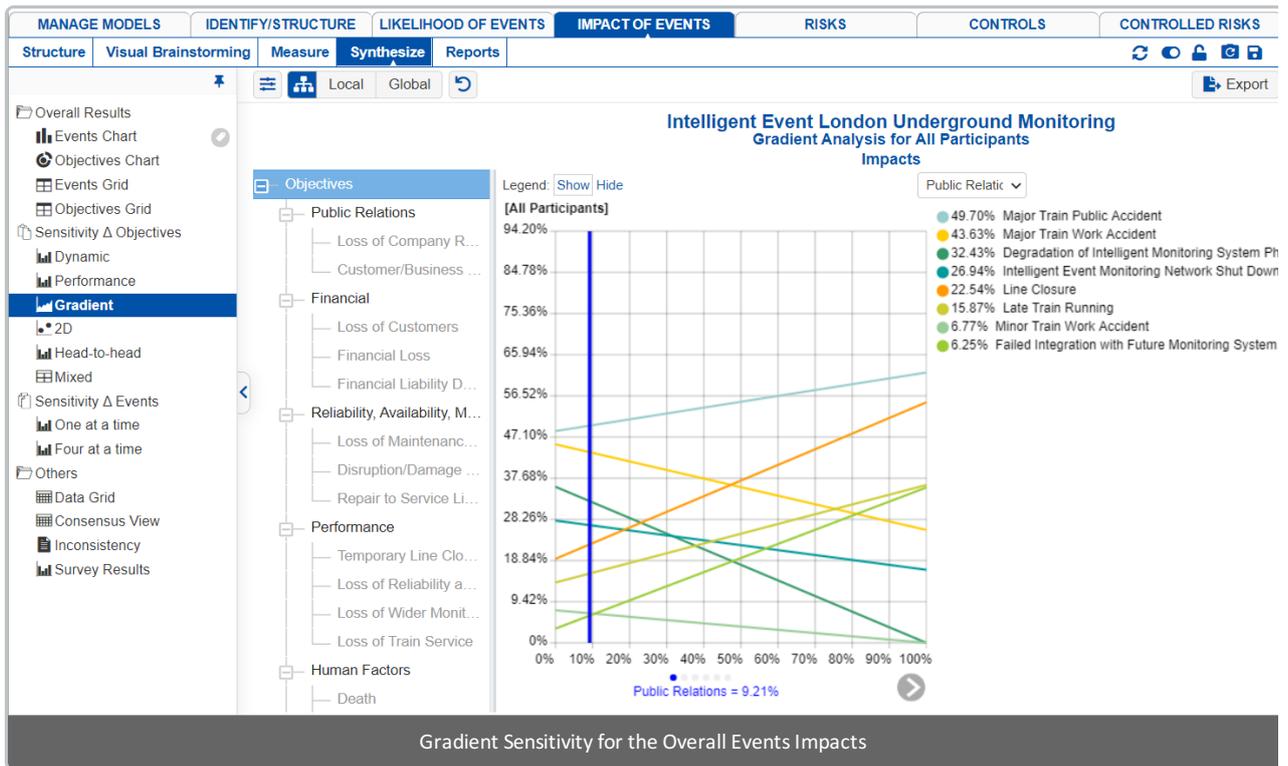




# Impact: Gradient Analysis

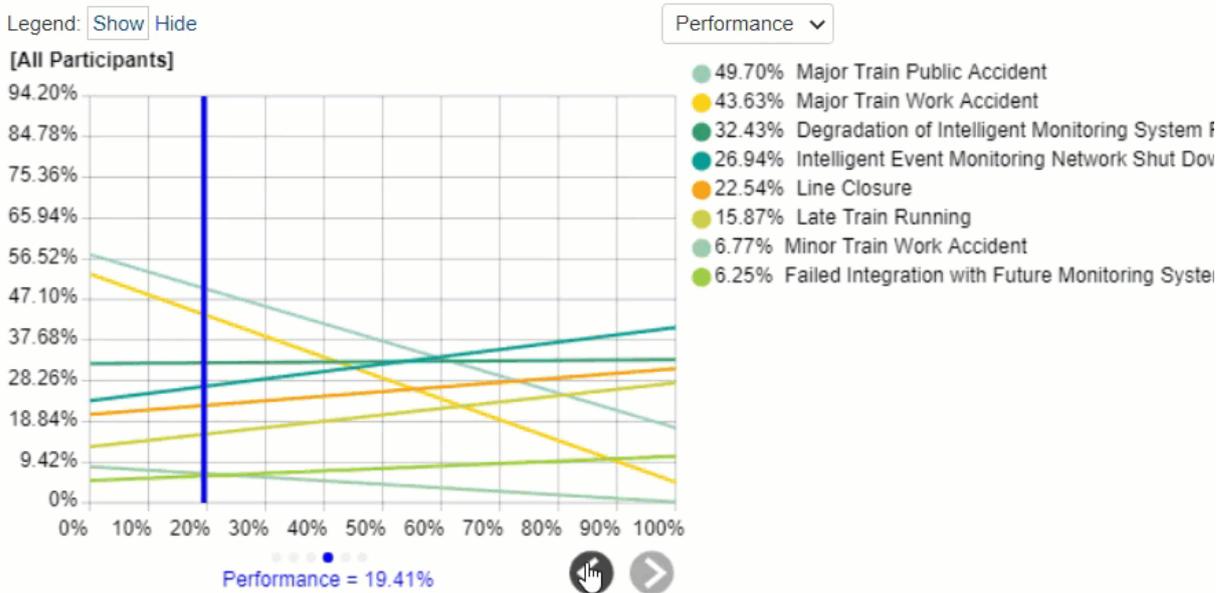
## Overview

The gradient analysis for Impact shows the rate of change of the impact of events due to the change in the impact of one of the objectives.



Gradient sensitivity is composed of:

- An objective on the x-axis -- which can be selected from or a pulldown menu

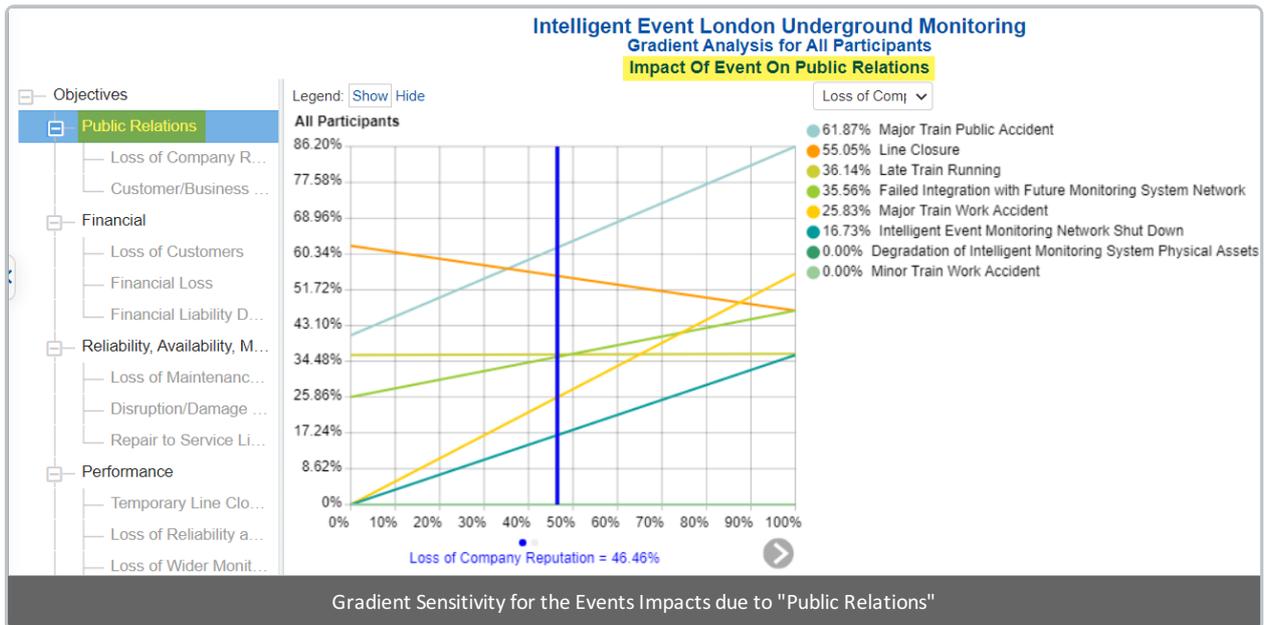


- A curve for each of the events
- A vertical blue bar representing the impact of the objectives being considered.

You can temporarily alter the relationship between the events and their objectives by dragging the blue vertical bar left or right. The original impacts are represented by the vertical gray bar.

After temporarily changing the impacts of one or more of the objectives, you can press the  reset icon.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Objectives" node.



The gradient analysis above shows all the event impacts due to the selected node Public Relations

You can show the local and global objective impacts on the Objectives Hierarchy at the right using the Local-Global buttons:

Objectives	All Participants	
	Local	Global
Objectives		
Public Relations	9.21%	9.21%
Loss of Compan...	46.46%	4.28%
Customer/Busin...	53.54%	4.93%
Financial	7.22%	7.22%
Loss of Customers	22.71%	1.64%
Financial Loss	21.79%	1.57%
Financial Liabilit...	55.5%	4.01%
Reliability, Availabilit...	21.7%	21.7%
Loss of Mainten...	28.23%	6.13%
Disruption/Dam...	36.65%	7.96%
Repair to Servic...	35.12%	7.62%
Performance	19.41%	19.41%
Temporary Line ...	24.91%	4.83%
Loss of Reliabilit...	32%	6.21%
Loss of Wider M...	23.86%	4.63%

You can hide the Objectives Hierarchy at the left using 

Click  to show/hide the toolbar options:

  	Filter events: Show all events <input type="button" value="v"/>	Decimals: 2 <input type="button" value="v"/>	Sort Objectives by: None <input type="button" value="v"/>	Sort Events by: Priority <input type="button" value="v"/>	Events parameter: Impact <input type="button" value="v"/>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------	-------------------------------------------------	--------------------------------------------------------------	--------------------------------------------------------------	--------------------------------------------------------------

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using 

Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

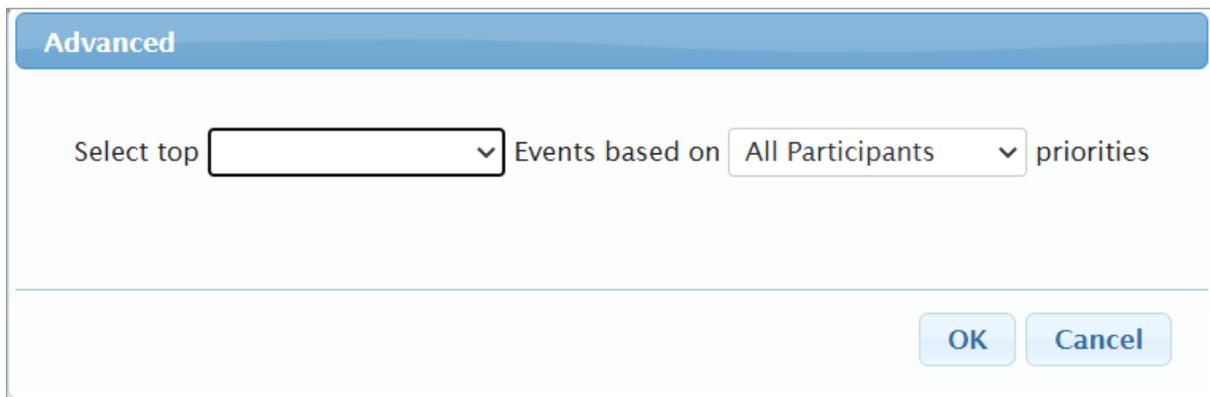
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group impacts.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.

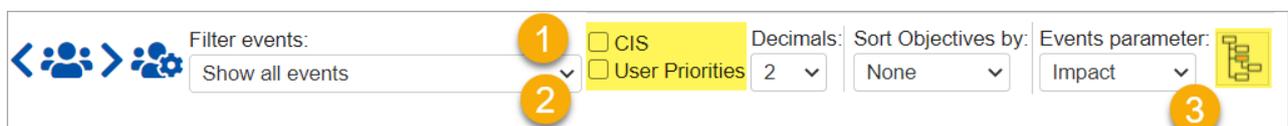


The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

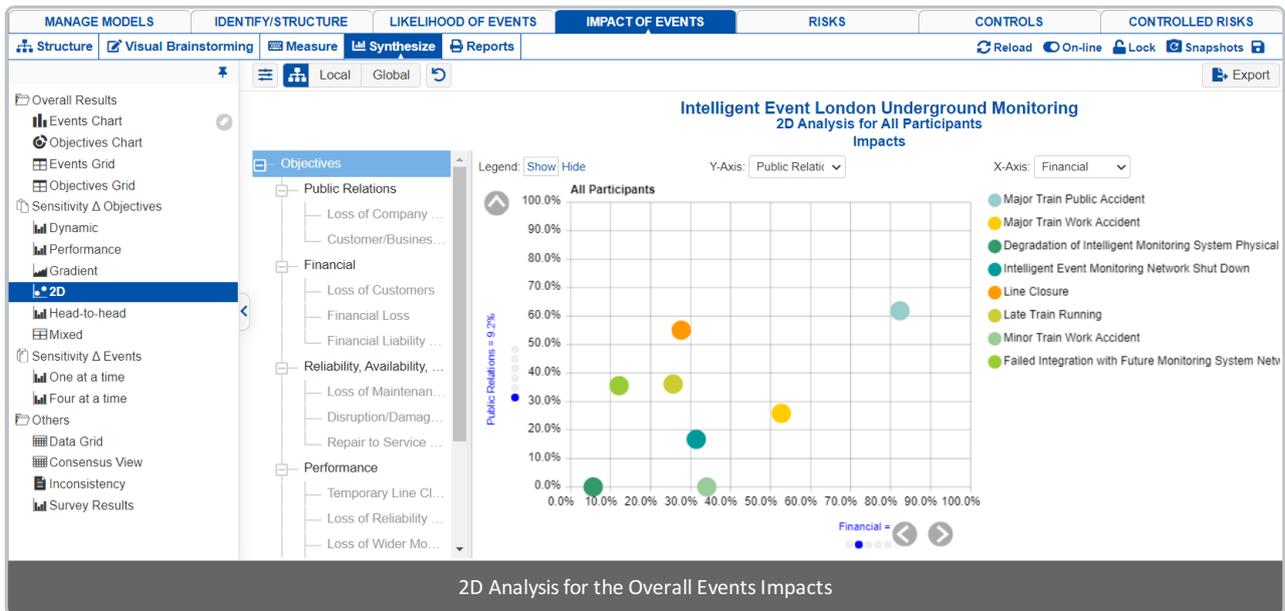




# Impact: 2D Analysis

## Overview

The Two Dimensional sensitivity for Impact shows how well the events perform given any two objectives.



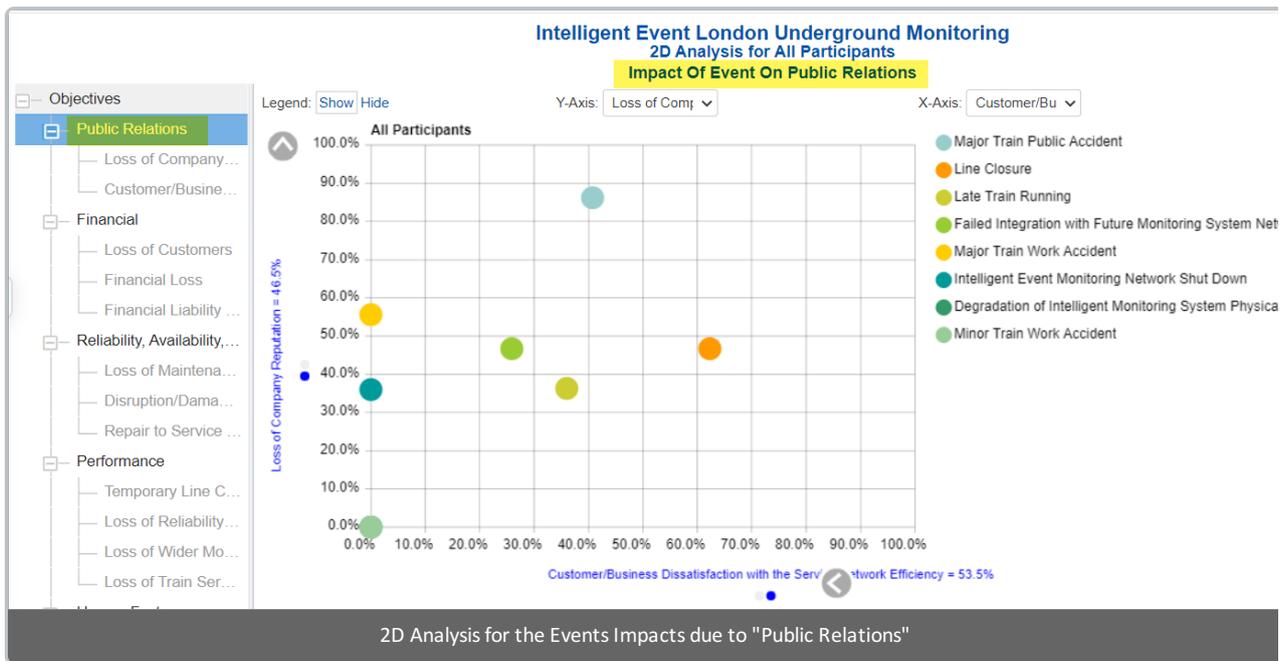
One objective is represented on the X-Axis and another on the Y-Axis. The circles represent the events.

You can change the objectives being displayed on the x and y axes by selecting them in the pull-down menus:

Y-Axis:  X-Axis:

or by clicking the   (x-axis), or   (y-axis)

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Objectives" node.



You can show the local and global objective's impacts on the Objectives Hierarchy at the right using the Local-Global buttons:

Objectives	All Participants	
	Local	Global
Objectives		
Public Relations	9.21%	9.21%
Loss of Compan...	46.46%	4.28%
Customer/Busin...	53.54%	4.93%
Financial	7.22%	7.22%
Loss of Customers	22.71%	1.64%
Financial Loss	21.79%	1.57%
Financial Liabilit...	55.5%	4.01%
Reliability, Availabilit...	21.7%	21.7%
Loss of Mainten...	28.23%	6.13%
Disruption/Dam...	36.65%	7.96%
Repair to Servic...	35.12%	7.62%
Performance	19.41%	19.41%
Temporary Line ...	24.91%	4.83%
Loss of Reliabilit...	32%	6.21%
Loss of Wider M...	23.86%	4.63%

You can hide the Objectives Hierarchy at the left using 

Click  to show/hide the toolbar options:

			Filter events:	Decimals:	Sort Objectives by:	Sort Events by:	Events parameter:
			Show all events	2	None	Priority	Impact

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using



Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

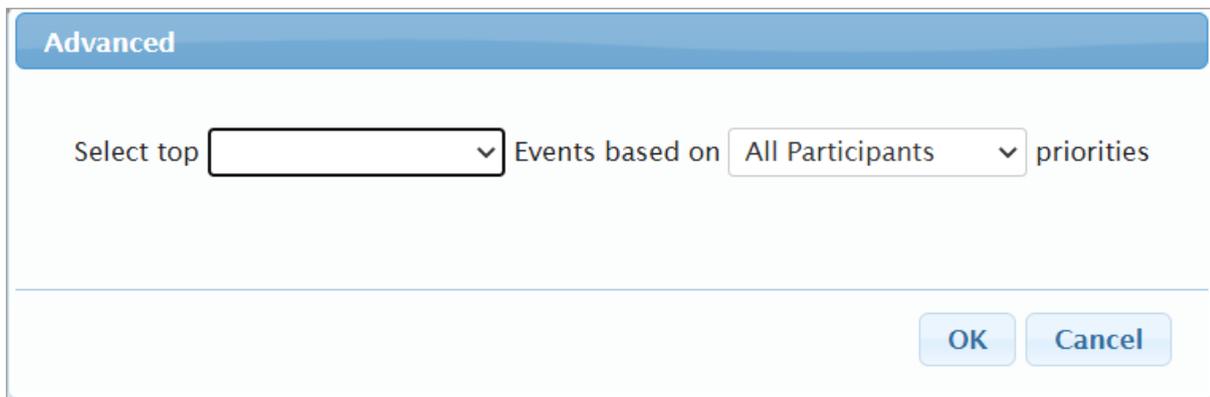
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group impacts.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.

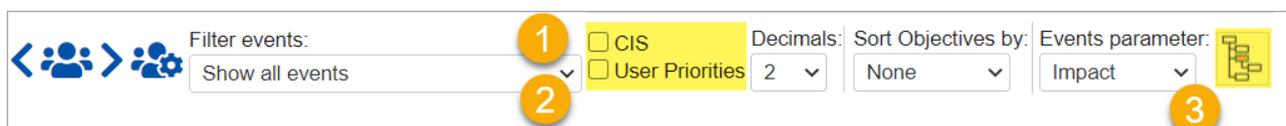


The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

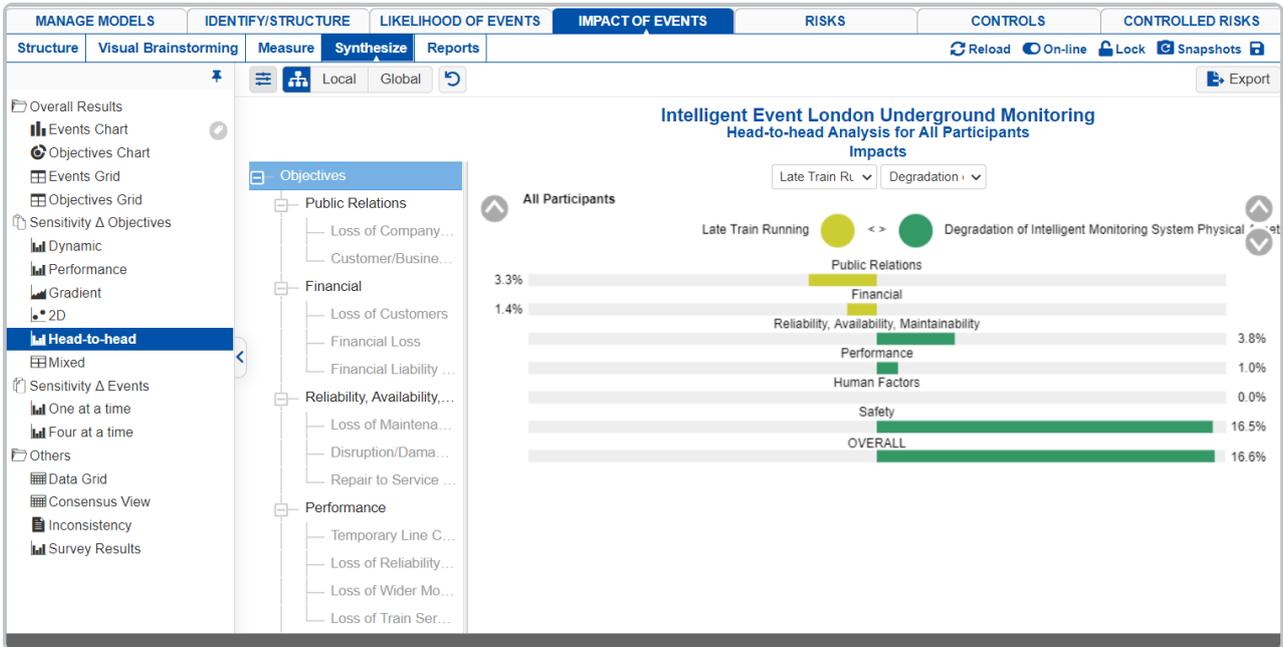




# Impact: Head to Head Analysis

## Overview

The Head-to-head analysis for Impacts shows how events compare to each other with respect to an Objective.



### Head to Head Analysis for the Overall Events Impacts

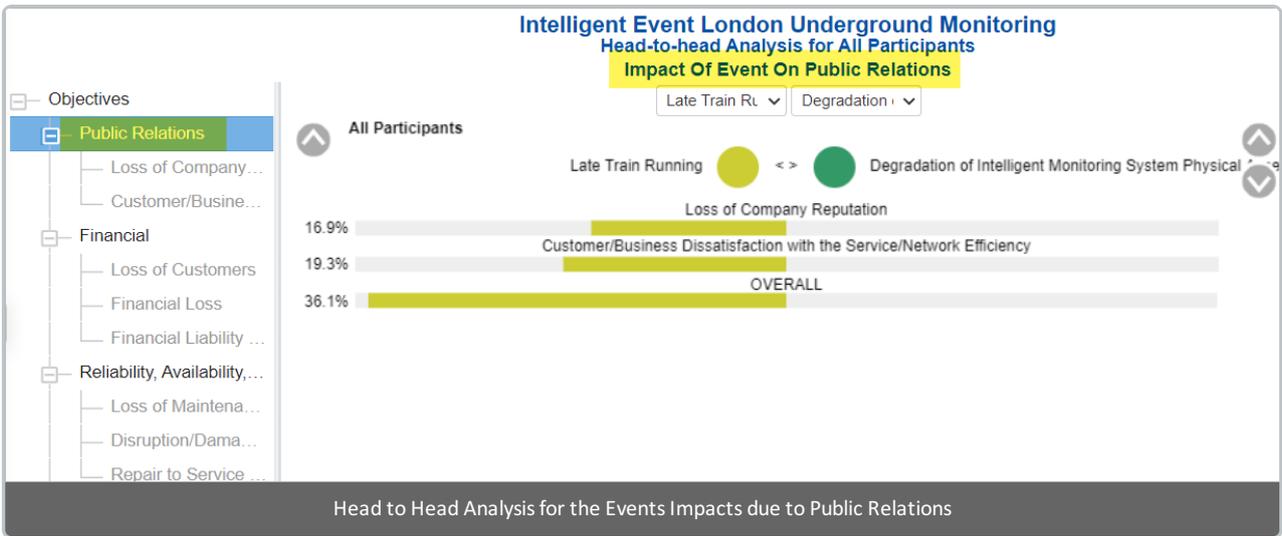
One event is listed on the left side of the graph and the other is listed on the right. Down the middle of the graph are listed the objectives in the model. If the left-hand event is preferred to the right-hand event given the objective, a horizontal bar is displayed towards the left. If the right-hand event is better, the horizontal bar will be on the right. If the two events are equal, no bar is displayed. The overall result is displayed at the bottom of the graph and shows the overall percentage that one event is better than the other; this is the difference.

You can change the events being compared using the pull-down menu:



or by clicking the icons.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Objectives" node.



You can show the local and global objectives impacts on the Objectives Hierarchy at the right using the Local-Global buttons:

Local Global

Objectives	All Participants	
	Local	Global
Objectives		
Public Relations	9.21%	9.21%
Loss of Compan...	46.46%	4.28%
Customer/Busin...	53.54%	4.93%
Financial	7.22%	7.22%
Loss of Customers	22.71%	1.64%
Financial Loss	21.79%	1.57%
Financial Liabilit...	55.5%	4.01%
Reliability, Availabilit...	21.7%	21.7%
Loss of Mainten...	28.23%	6.13%
Disruption/Dam...	36.65%	7.96%
Repair to Servic...	35.12%	7.62%
Performance	19.41%	19.41%
Temporary Line ...	24.91%	4.83%
Loss of Reliabilit...	32%	6.21%
Loss of Wider M...	23.86%	4.63%

You can hide the Objectives Hierarchy at the left using 

Click  to show/hide the toolbar options:

  	Filter events: Show all events	Decimals: 2	Sort Objectives by: None	Sort Events by: Priority	Events parameter: Impact
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**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the [Advanced Mode](#) switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using



Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

## Filter Events

By default, all events are displayed.



- Show all events
- Show all events
- Show top 5 events b...
- Show top 10 events ...
- Show top 25 events ...
- Advanced
- Show bottom 5 even...
- Show bottom 10 eve...
- Show bottom 25 eve...
- Select/deselect events
- Filter by event attrib...
- Show risks only
- Show opportunities ...

You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group impacts.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.

Advanced

Select top  Events based on  priorities

The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

### Advanced Mode Options

<
>

Filter events:

Show all events
v

1

CIS

User Priorities

Decimals:

2
v

Sort Sources by:

None
v

Sort Events by:

None
v

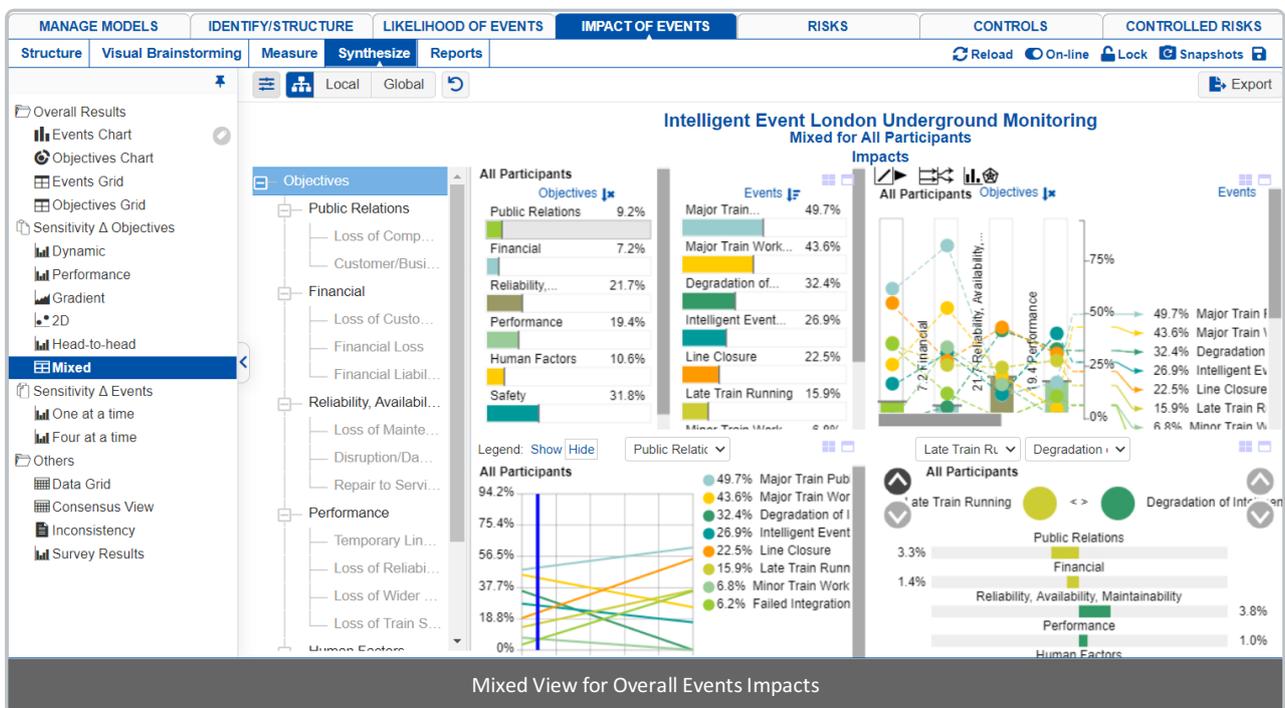
3

# Impact: Mixed

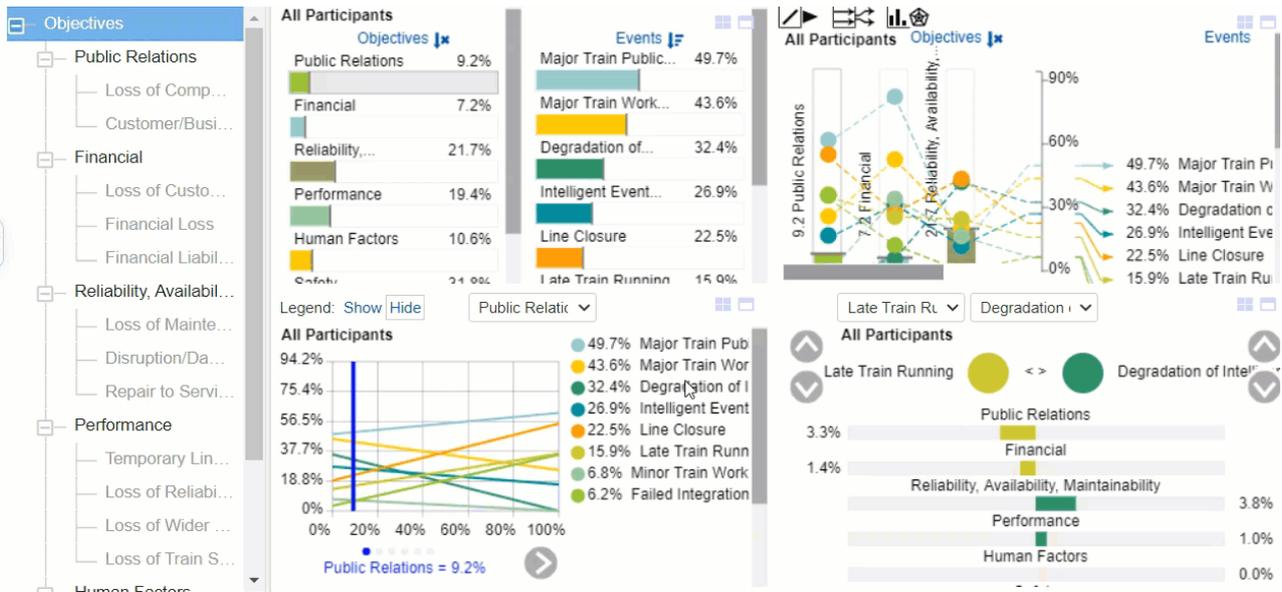
The Mixed screen for Impact displays the sensitivities and grids into one view:

- Dynamic Analysis
- Performance Analysis
- Gradient
- 2D plot
- Head to Head
- Events Grid
- Objectives Grid

By default, four sensitivities are displayed as shown below:



You can temporarily alter the relationship between the events and their objectives by dragging the bars/line (if applicable) on one sensitivity and it will be reflected on other sensitivities.



After temporarily changing the impacts of one or more of the objectives, you can press the  reset icon.

You can show the local and global objective's impacts on the Objectives Hierarchy at the right using the Local-Global buttons:

Objectives	All Participants	
	Local	Global
Objectives		
Public Relations	9.21%	9.21%
Loss of Compan...	46.46%	4.28%
Customer/Busin...	53.54%	4.93%
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Loss of Customers	22.71%	1.64%
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Loss of Mainten...	28.23%	6.13%
Disruption/Dam...	36.65%	7.96%
Repair to Servic...	35.12%	7.62%
Performance	19.41%	19.41%
Temporary Line ...	24.91%	4.83%
Loss of Reliabilit...	32%	6.21%
Loss of Wider M...	23.86%	4.63%

You can hide the Objectives Hierarchy at the left using 

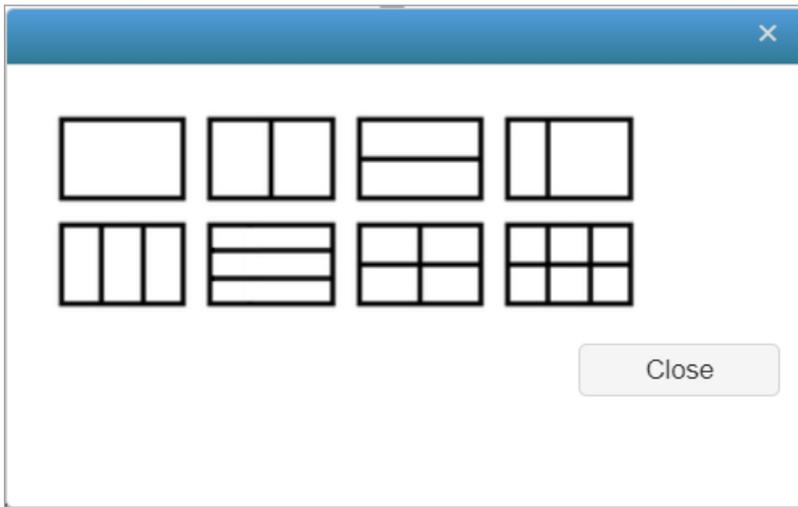
Click  to show/hide the toolbar options:

		Filter events: Show all events <input type="text"/>	Decimals: 1 <input type="text"/>	Sort Objectives by: None <input type="text"/>	Sort Events by: <input type="text"/>	<input checked="" type="checkbox"/> Active <input type="checkbox"/> Sorting	Events parameter: <input type="text"/>	<input type="checkbox"/> Show Components
-------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------	--------------------------------------------------------	----------------------------------	-----------------------------------------------	--------------------------------------	-----------------------------------------------------------------------------	----------------------------------------	------------------------------------------

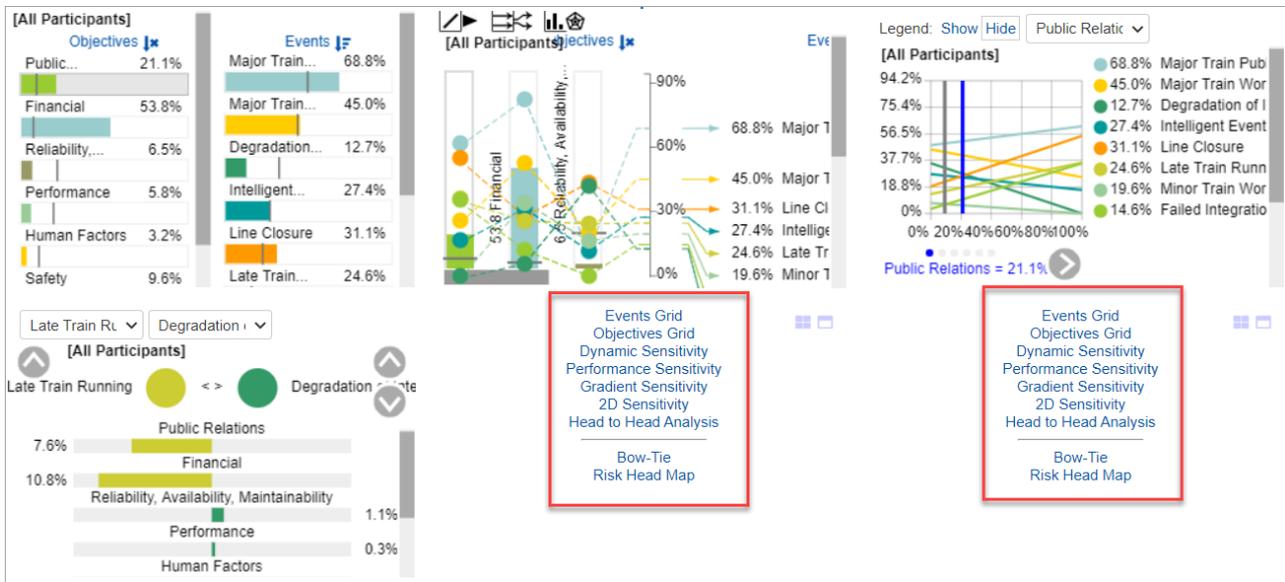
**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

The options available can be specific to a sensitivity.

Click  to select the layout how the sensitivities and/or grid will be displayed:



If you select the 6-widget layout, you will be able to select additional results widget:



## Select Participants and Groups

You can select to display results for **one** participant or group using 

Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

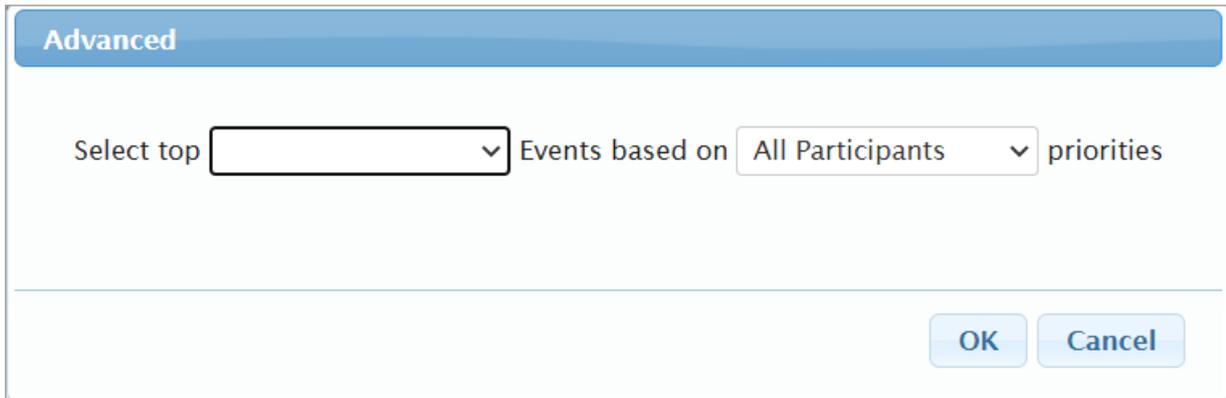
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group impacts.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



The select /deselection option, allows you to check/uncheck the events.

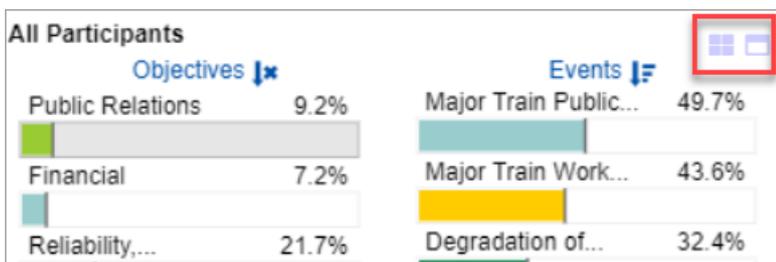
The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

### 4. Change or Maximize Widget

Two icons are displayed to the top right of each widget:



Clicking the first icon will show the list of all the available widget, simple click the widget you want to select:

- Events Grid
  - Sources Grid
  - Dynamic Sensitivity
  - Performance Sensitivity
  - Gradient Sensitivity
  - 2D Sensitivity
  - Head to Head Analysis
- 
- Bow-Tie
  - Risk Head Map

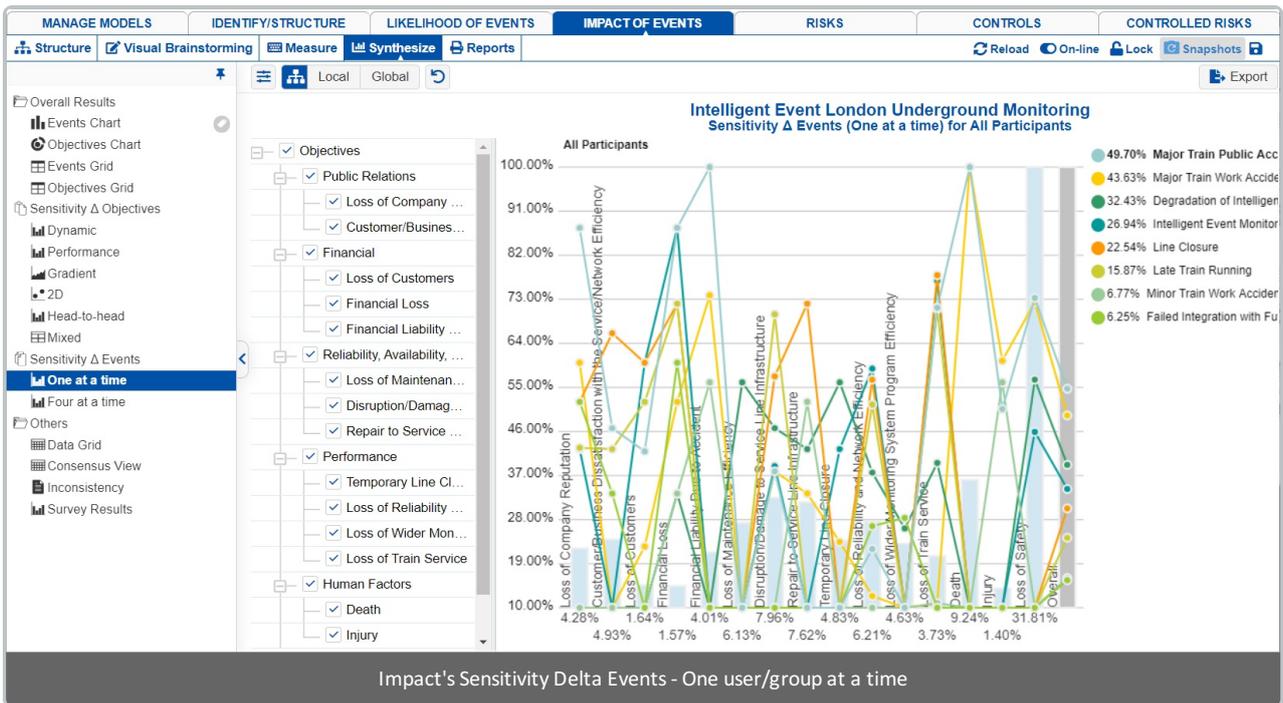
Clicking the second icon will open a modal where you can see the maximized view of the currently displayed widget.



# Impact: One at a time

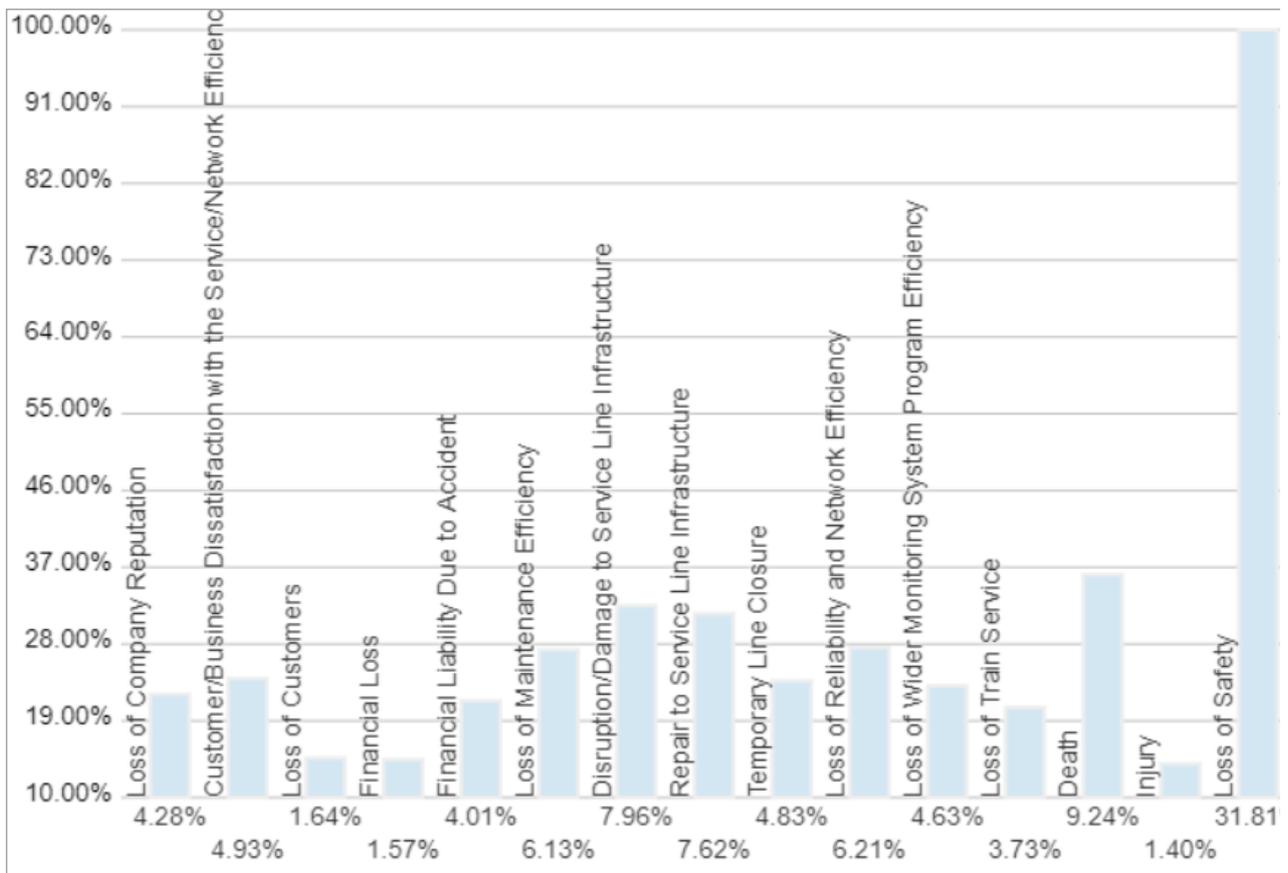
Sensitivity  $\Delta$  (delta) Events page for Impact shows the changes in overall event impacts when the event impact due to one or more covering objectives is changed. If you change an event's impact given a single objective, you'll see the effect on the event's overall impact.

When the impact of an event is changed with respect to an objective, we do not adjust the other event impact (normalize to 1) as we do when we change the objective impact Sensitivity  $\Delta$  delta Objectives.



Let's look at the information that is contained in this graph piece by piece.

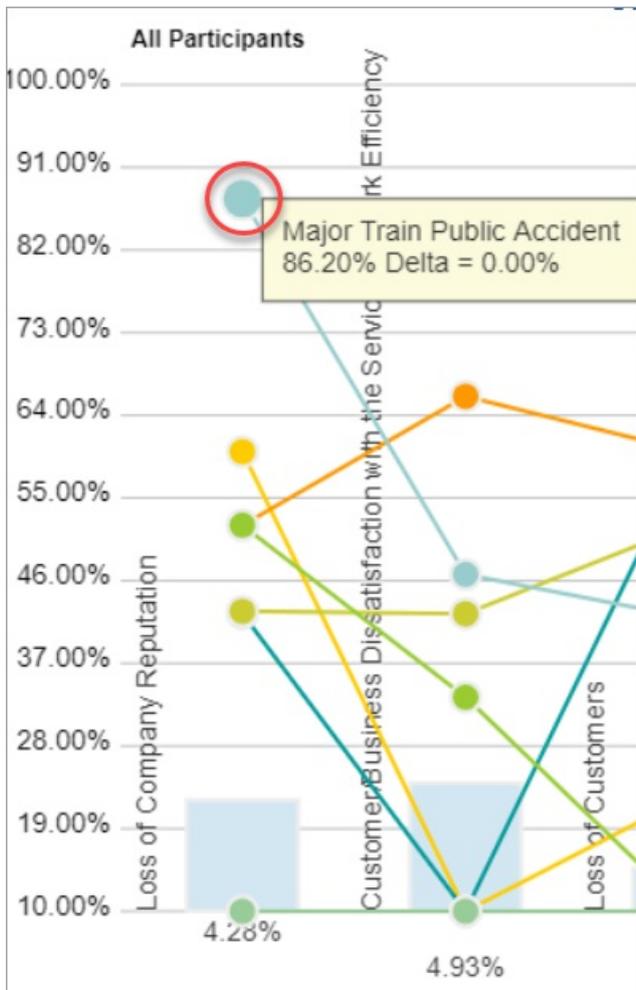
**First**, the impact of the covering objectives are depicted by the vertical blue bars and shown numerically at the side of each bar or by hovering on the bars:



**Secondly**, the impacts of events with respect to the covering objectives are shown by small circles representing each of the events.

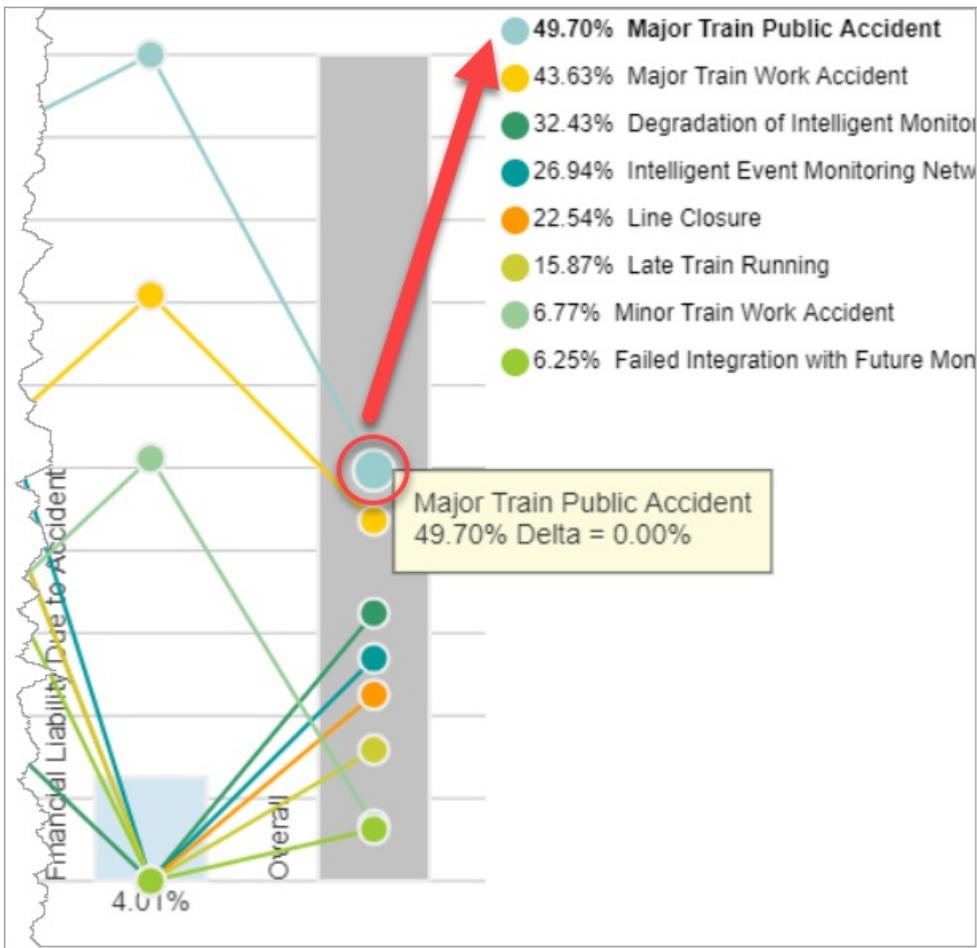
Hovering on a circle displays a tooltip with the event name it designates to, the impact due to the covering objective, and Delta (0% indicates that the impact is based on actual participant judgments).

Below it shows that the event Major Train Public Accident has the highest impact (86.20%) with respect to Loss Company Reputation.

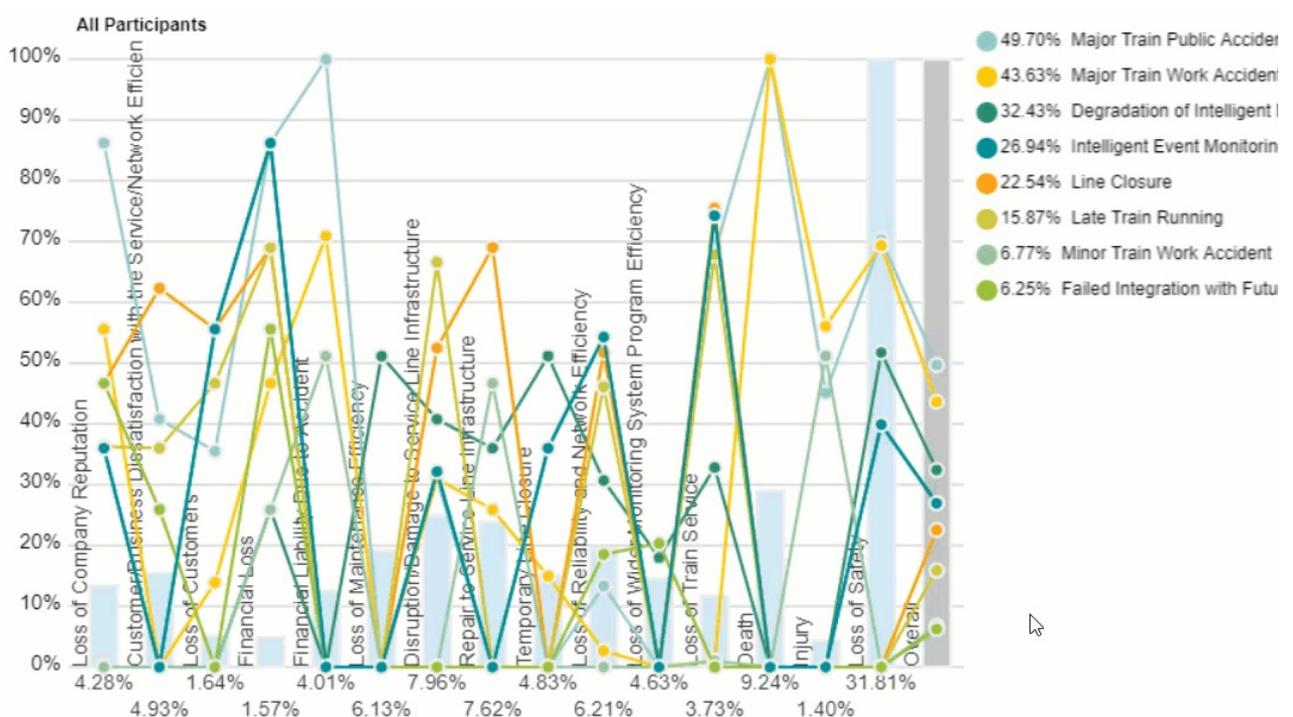


The lines connecting the events from one objective serve to help you find where a particular event lies as you move from one objective to another.

**Finally**, the intersection of the event line segment with the overall axis (gray vertical bar) shows the overall impacts of the events which are also displayed at the right with the event names.



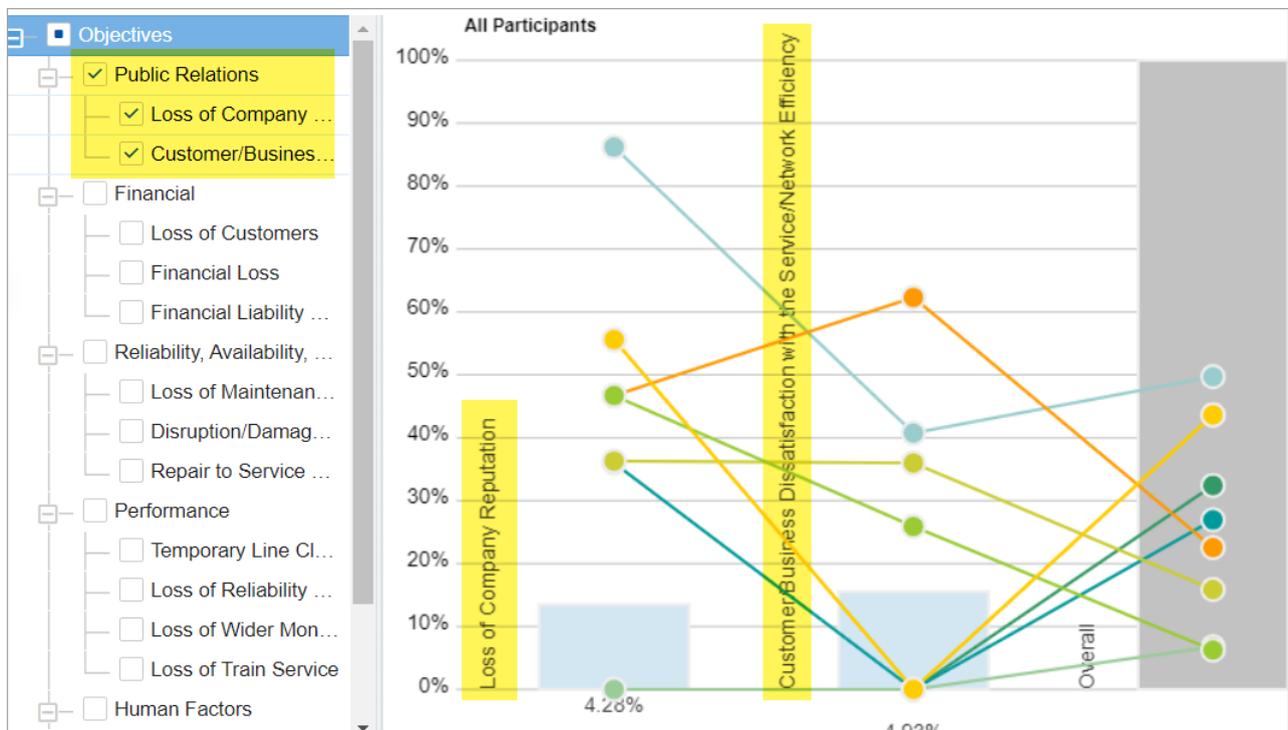
To temporarily change the impact of an event with respect to a covering objective, and see how it will affect the overall impact of the events, simply drag the event circles up (increase impact) or down (decrease impact). The %delta will increase or decrease as you drag the plot up or down.



From above, we see that the original impact of "Free Integration with Future Monitoring System with respect to Loss of

Safety is 0% and it's the 8th highest impact in the overall event impact at the right. As we increase its impact by dragging the green circle upward (Delta=+100%), we see that event becomes the third-highest impact in the overall event impacts.

You can select/deselect objectives so you can view the events for fewer covering objectives. This is done by checking/unchecking the checkboxes to the right of the objectives nodes.



Alternatively, you can use the pagination options to view fewer objectives at a time:

Page size: Page num:

The Page size is the number of threats/sources to display on each page, e.g. view 5 covering objectives at a time.

The Page Num is to paginate to another list or set of objectives if there is pagination.

## Select Participants and Groups

You can select to display results for **one** participant or group using



Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

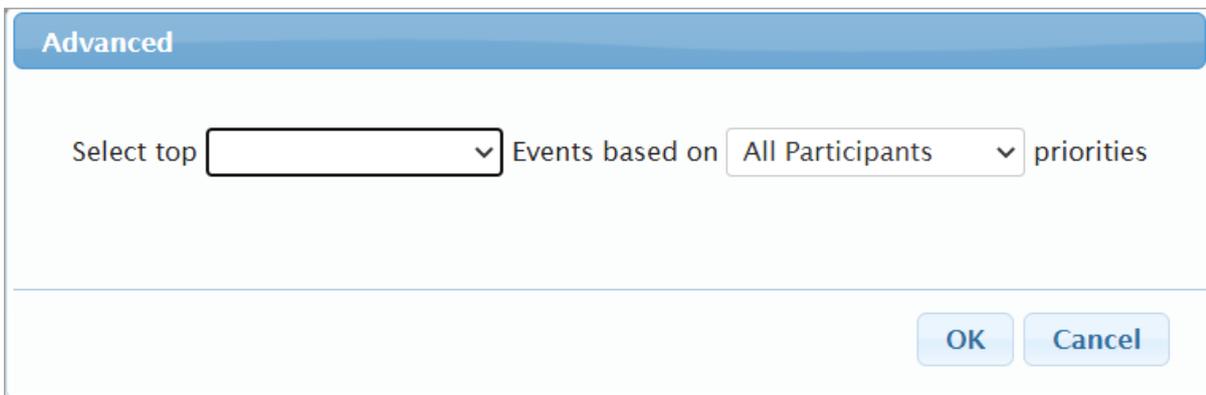
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group impacts.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



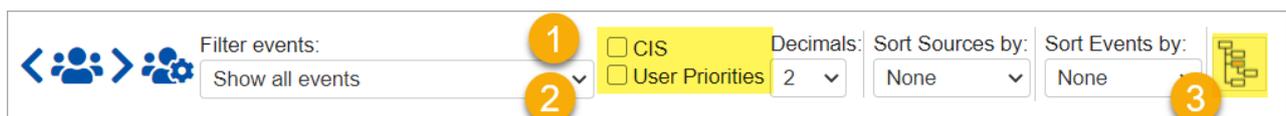
The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

The show risks only / Show opportunities only are applicable for the Mixed model where events can be Risk or Opportunity.

## Advanced Mode Options

When the [Advanced mode](#) is ON, you will see the advanced options on this page:



### 1. Combined Input Option (CIS)

If the Combined Input Option (CIS) is on (see below) then results for individuals are computed by combining the impacts derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.



## 2. Apply User Priorities

If priorities (weights) have been specified for participants, you can use the "User Priorities" check box will enable you to apply or ignore these priorities in generating the results.



## 3. Show Event's Overall Impacts

Enabling this button shows the impacts of the events due to the top node, instead of the lower node currently selected on the left hierarchy tree. This icon is disabled when the top node is currently selected on the tree.

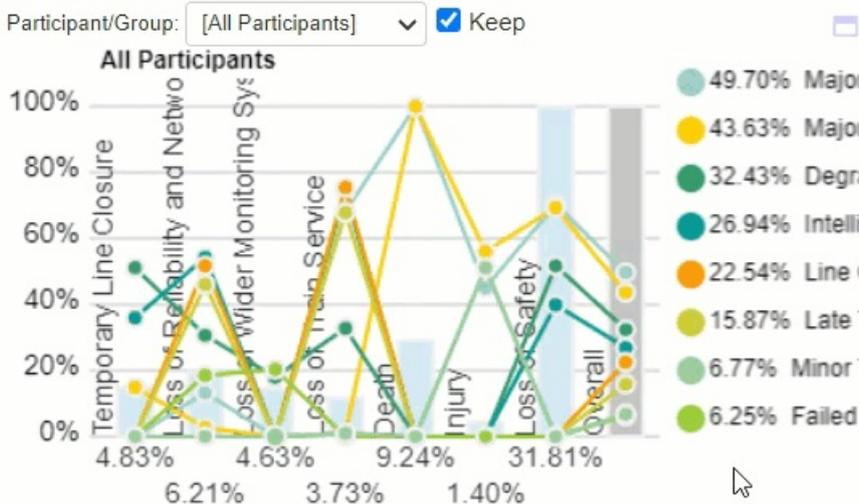


# Impact: Four at a Time

This page displays the same information as with the [Impact's Sensitivity Δ Events Sensitivity: One at a time](#) but with four participants or groups at a time.

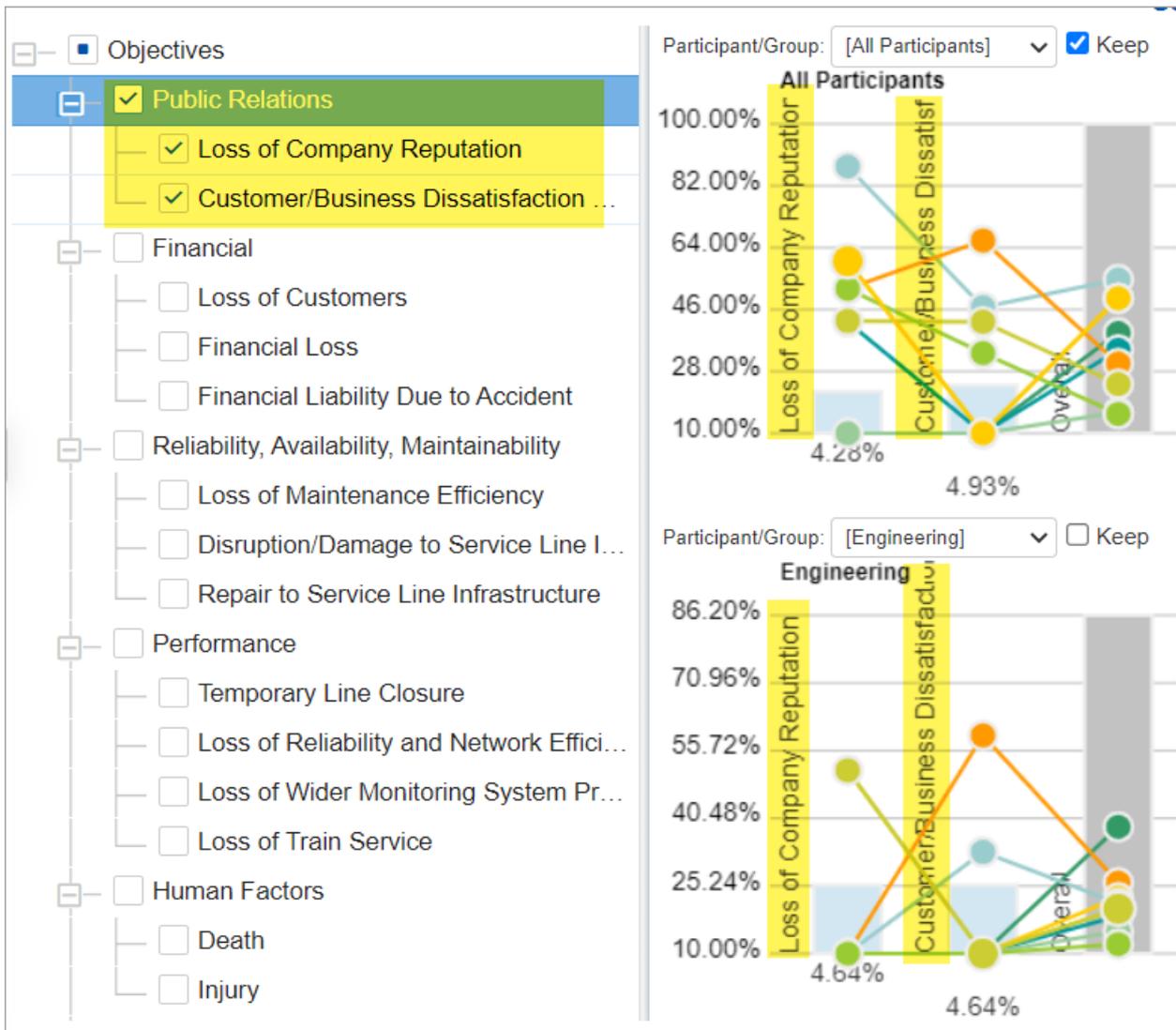


**Sensitivity Δ (delta) Events** page for Impact shows the changes in overall event impacts when the event impact due to one or more covering objectives is changed. If you change an event's impact given a single objective, you'll see the effect on the event's overall impact.



When the impact of an event is changed with respect to an objective, we do not adjust the other event impact (normalize to 1) as we do when we change the objective impact Sensitivity Δ delta Objectives.

You can select/deselect objectives so you can view the events for fewer covering objectives. This is done by checking/unchecking the checkboxes to the right of the objectives nodes.



Alternatively, you can use the pagination options to view fewer objectives bars at a time:

Page size: Page num:

The Page size is the number of objectives to display on each page, e.g. view 5 coverings objectives at a time.

The Page Num is to paginate to another list or set of objectives if there is pagination.

You can cycle through four participants/groups at a time by clicking < (previous) and > (next) buttons at the top.



When a participant/group is marked as "Keep", the participant/group will remain selected as you cycle through using the prev/next buttons.

Participant/Group:   Keep

You can click  at the top right of each sensitivity to maximize the view for one user/group.



# Common Synthesize Advanced Options: CIS, User Priorities, WRT top-node

When the [Advanced mode](#) is ON, you will see the advanced options of the page you are currently working on.

## 1. Combined Input Option (CIS)

If the Combined Input Option (CIS) is on (see below) then results for individuals are computed by combining the impacts derived from judgments/ratings for which they had roles, with the combined results for any parts of the model where they did not have a role.



## 2. Apply User Priorities

If [priorities \(weights\)](#) have been specified for participants, you can use the "User Priorities" check box will enable you to apply or ignore these priorities in generating the results.



## 3. Synthesize Events WRT top-node

This option is available on all the Sensitivity screens and can only be enabled when a non-covering node other than the top-node is selected on the hierarchy tree.



Enabling this option allows to temporarily change the impact of the children of the selected node and see how these changes will affect the **overall impact of the events**. If this is OFF, we can then see the change of the impact of the events WRT the selected node.

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# Impact: Datagrid

The Impact's Datagrid page displays the attributes of the events, events consequences with respect to each objective, and the overall event impact.

The screenshot shows the 'IMPACT OF EVENTS' tab in the software. A dropdown menu is set to '[All Participants]'. The main area displays a table with columns for 'Attributes' (Event History, Risk Owner, Total, Event Type) and 'Objectives' (Public Relations, Financial). The table lists 8 events, such as 'Late Train Running' and 'Major Train Public Accident', with their respective risk scores and impact values.

Events	Attributes				Objectives				
	Event History	Risk Owner	Total	Event Type	Public Relations		Financial		
					Loss of Company Reputation	Customer/Bu Dissatisfac with the Service/Netw Efficiency	Loss of Customers	Financial Loss	Financial Liability Due to Accident
1 Late Train Running	Often	John	0.1587499	Risk	0.363	0.36	0.467	0.69	
2 Degradation of Intelligent Monitoring System Physical Assets	no history	Carol	0.3242659	Risk				0.259	
3 Line Closure	Occasionally	Joe	0.2253728	Risk	0.467	0.623	0.556	0.69	
4 Failed Integration with Future Monitoring System Network	no history	Frank	0.06246674	Risk	0.467	0.259		0.556	
5 Intelligent Event Monitoring Network Shut Down	no history	Frank	0.2694342	Risk	0.36		0.556	0.862	
6 Major Train Work Accident	twice annually	Joe	0.4363098	Risk	0.556	0	0.139	0.467	0.709
7 Minor Train Work Accident	once monthly	Carol	0.06772637	Risk		0		0.259	0.5115
8 Major Train Public Accident	once every 2 years	John	0.4970434	Risk	0.862	0.4075	0.355	0.862	1

By default, the Datagrid for "All Participants" is displayed.

You can select another participant or group:



Groups are in [Group\_name] format.

Click **Download** to download the Datagrid into a .xlsx file.

Click **Select Columns** to hide some of the attribute columns.

### Select Columns

- Event History
- Risk Owner
- Total
- Event Type

All | None

OK

Cancel

# Impact: Consensus View

The consensus view shows the standard deviations (the square root of the variances) among evaluators for event impacts with respect to Objectives.

Rank	Objective / Event	With respect to: Objective / Covering ...	Standard Deviatio...	Step
1	Major Train Public Acci...	Injury	41.1%	117
2	Major Train Public Acci...	Loss of Customers	30.61%	56
3	Major Train Work Accid...	Injury	30.15%	115
4	Intelligent Event Monit...	Disruption/Damage to Service Line Infr...	28.02%	77
5	Major Train Public Acci...	Loss of Safety	27.87%	122
6	Intelligent Event Monit...	Loss of Safety	26.97%	120
7	Line Closure	Loss of Reliability and Network Efficiency	26.56%	94
8	Intelligent Event Monit...	Loss of Reliability and Network Efficiency	24.37%	96
9	Major Train Work Accid...	Loss of Safety	20.5%	121
10	Loss of Train Service	Performance	20.1%	30
11	Line Closure	Loss of Train Service	19.91%	105
12	Loss of Wider Monitori...	Performance	16.74%	29
13	Line Closure	Disruption/Damage to Service Line Infr...	16.5%	76
14	Degradation of Intellige...	Loss of Reliability and Network Efficiency	16.01%	93
15	Major Train Public Acci...	Loss of Reliability and Network Efficiency	16%	98

The entries are displayed for steps in the evaluation process, sorted from high to low standard deviation (square root of variance).

The standard deviation column has colored bars corresponding to the % to give a visual indication of the consensus but is not to be interpreted as being acceptable or not. The red bar indicates high %, yellow for medium, and green for low.

The main purpose of the consensus view is to make it easy to revisit those steps in the evaluation process where there is the greatest lack of consensus.

Clicking on the step number in a row will open TeamTime evaluation in another browser window, specific to the step for the chosen event/objective step. The variances are displayed in the TeamTime meeting instead of the Standard Deviation.

You can select only those portions of the hierarchy for which to view standard deviation.

For example:

Rank	Objective / Event	With respect to: Objective / Covering Objective	Standard Deviatio...	Step
22	Major Train Public Acci...	Customer/Business Dissatisfaction with the Service/N...	14.85%	50
33	Line Closure	Customer/Business Dissatisfaction with the Service/N...	6.7%	46

will only display variances for those judgments with respect to **Customer/Business Dissatisfaction with Service/Network Efficiency**.



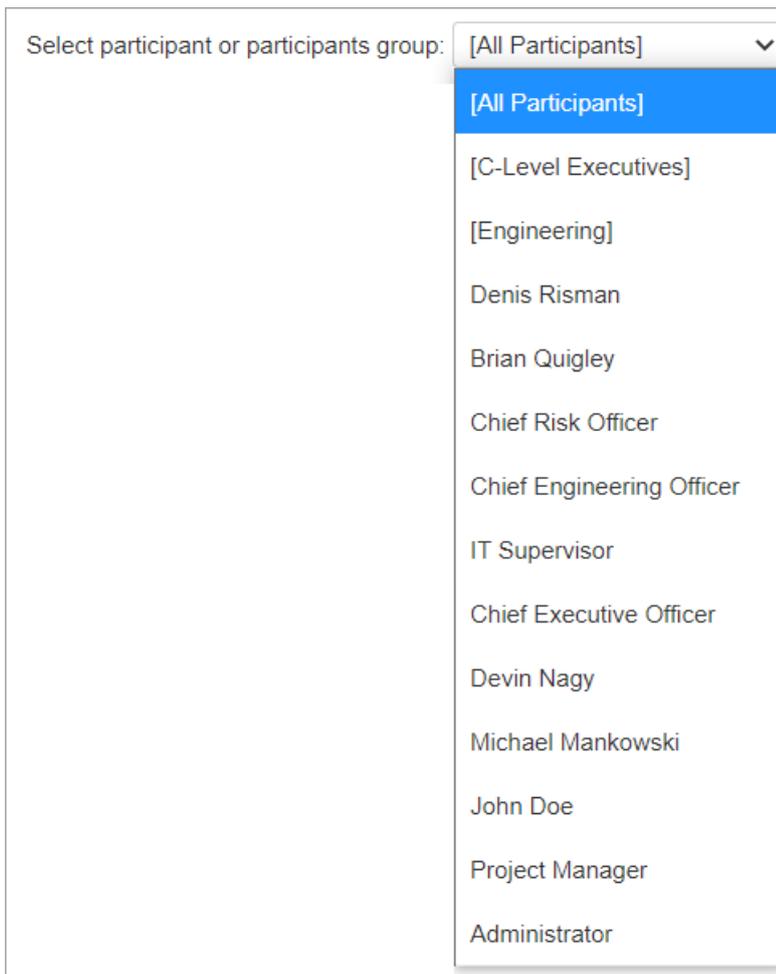
# Inconsistency Report

Depending on the model you are working on, the inconsistencies are shown for each cluster for which likelihoods or impacts were derived with **pairwise comparisons**.

This is found on:

- **Likelihood of Events > Synthesize > Others > INCONSISTENCIES** or
- **Impact of Events > Synthesize > Others > INCONSISTENCIES**

By default, "All Participants" is selected. This means that all participants will be included in the report. You can choose to select another group or a specific participant.



Select participant or participants group: [All Participants] ▼

- [All Participants]
- [C-Level Executives]
- [Engineering]
- Denis Risman
- Brian Quigley
- Chief Risk Officer
- Chief Engineering Officer
- IT Supervisor
- Chief Executive Officer
- Devin Nagy
- Michael Mankowski
- John Doe
- Project Manager
- Administrator

The "Threat" (for Likelihood) or "Objectives" (for Impact) column contains the cluster name and the "Path" column contains the full path to the cluster. The number of elements in each cluster is also shown.

Select participant or participants group: [All Participants] ▼

Refresh | RTF | PDF | XLS

Drag a column header here to group by that column

Name	Examine	Objective	Path	Inconsistency ▼	Number Of Children	Action
IT Supervisor	its@gwu.edu	Objectives	Objectives	0.1969	6	 
Chief Risk Officer	cro@gwu.edu	Objectives	Objectives	0.1871	6	 
Chief Risk Officer	cro@gwu.edu	Performance	Objectives   Performance	0.1235	4	 
Chief Executive Officer	che@gwu.edu	Performance	Objectives   Performance	0.0955	4	 
Chief Risk Officer	cro@gwu.edu	Reliability, Availability, Maintainability	Objectives   Reliability, Availability, Maintainability	0.0952	3	 
Chief Executive Officer	che@gwu.edu	Objectives	Objectives	0.0881	6	 
Chief Risk Officer	cro@gwu.edu	Financial	Objectives   Financial	0.0869	3	 
IT Supervisor	its@gwu.edu	Performance	Objectives   Performance	0.0844	4	 
Chief Engineering Officer	ceo@gwu.edu	Objectives	Objectives	0.0816	6	 
IT Supervisor	its@gwu.edu	Financial	Objectives   Financial	0.0538	3	 

Page 1 of 3 (24 items) < [1] 2 3 > All

[Create Filter](#)

You can sort either ascending or descending on any column -- in particular by the inconsistency column.

The action column has two options:



"View only" pipe - will open the "view only" pipe specific step on the pipe which shows the cluster results for the user. "View only" pipe means that the judgments can't be changed.



Login User - allows the Project Manager to be logged in as the specific user being examined

# Overall Risks

## Overview

This page displays the **Overall Likelihoods, Impacts, and Risks of each Event.**

ID ↑	Color	Event Name	Description	Likelihood	Impact	Risk
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.5%	15.9%	5.6%
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.2%	32.4%	3.6%
[05]	●	Line Closure	No train traffic allowed	27.2%	22.5%	6.1%
[06]	●	Failed Integration with Future Monitoring System Network		15.6%	6.2%	1.0%
[07]	●	Intelligent Event Monitoring Network Shut Down		18.6%	26.9%	5.0%
[08]	●	Major Train Work Accident	Death occurs	17.6%	43.6%	7.7%
[09]	●	Minor Train Work Accident	Injury occurs	14.7%	6.8%	1.0%
[10]	●	Major Train Public Accident	Death occurs	17.7%	49.7%	8.8%

Total Risk: 38.8%

The results for the "All Participants" group are displayed by default as indicated in the column name. Below the group name is the result columns for Likelihood, Impact, and Risk.

## Select Participants and Groups

By clicking the  "Participants and Groups" icon, you can select to display the results for participants or other groups.

Participant Name	Email Address	Has data?	Group name	Has data?	Select all users with data		
<input type="checkbox"/>	Brian Quigley	quigleybf@gwu.edu	Yes	<input checked="" type="checkbox"/>	All Participants	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Engineering Officer	ceo@gwu.edu	Yes	<input type="checkbox"/>	C-Level Executives	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Executive Officer	che@gwu.edu	Yes	<input type="checkbox"/>	Engineering	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Risk Officer	cro@gwu.edu	Yes				
<input type="checkbox"/>	Denis Risman	denisrisman@gwu.edu	Yes				
<input type="checkbox"/>	Devin Nagy	devinnagy@gwu.edu	Yes				
<input type="checkbox"/>	Grace	grace@eci.com					
<input type="checkbox"/>	IT Supervisor	its@gwu.edu	Yes				
<input type="checkbox"/>	James	james@eci.com					
<input type="checkbox"/>	John Doe	j.doe@eci.com					
<input type="checkbox"/>	Michael Mankowski	mmankowski@gwu.edu	Yes				

After selecting participants and groups to display, click OK. New columns for the results will be displayed with the

participant or group name as the column heading.

**Overall Likelihoods, Impacts, and Risks for Intelligent Event London Underground Monitoring**

Drag a column header here to group by that column

ID ↑	Color	Event Name	Description	All Participants			Chief Engineering Officer		
				Likelihood	Impact	Risk	Likelihood	Impact	Risk
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.5%	15.9%	5.6%	11.4%	11.4%	1.3%
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.2%	32.4%	3.6%	2.3%	32.3%	0.8%
[05]	●	Line Closure	No train traffic allowed	27.2%	22.5%	6.1%	8.3%	18.1%	1.5%
[06]	●	Failed Integration with Future Monitoring System Network		15.6%	6.2%	1.0%	0.0%	2.4%	0.0%
[07]	●	Intelligent Event Monitoring Network Shut Down		18.6%	26.9%	5.0%	2.1%	9.6%	0.2%
[08]	●	Major Train Work Accident	Death occurs	17.6%	43.6%	7.7%	7.5%	14.3%	1.1%
[09]	●	Minor Train Work Accident	Injury occurs	14.7%	6.8%	1.0%	1.2%	5.6%	0.1%
[10]	●	Major Train Public Accident	Death occurs	17.7%	49.7%	8.8%	7.5%	12.8%	1.0%
<b>Total Risk:</b>							<b>38.8%</b>		
							<b>5.9%</b>		

## Open Bow-tie diagram from Grid

Clicking the Event Name will open a modal that displays the bow-tie diagram for the selected event.

From the Bow-tie diagram, you analyze the **likelihoods** (left) and **impacts** (right) of the selected **event** (center). Click "Overall Bow-tie Diagram" for more details.

The screenshot shows the Riskion application interface. At the top, there is a header with the Riskion logo, a workgroup name 'Workgroup: Riskion Help', and a risk model 'Intelligent Event London Underground Monitoring'. Below the header are navigation tabs: 'MANAGE MODELS', 'IDENTIFY/STRUCTURE', 'LIKELIHOOD OF EVENTS', 'IMPACT OF EVENTS', 'RISKS' (selected), 'CONTROLS', and 'CONTROLLED RISKS'. There are also buttons for 'Risk Registers', 'Loss Exceedance...', 'Filter Events', 'Simulated Results', 'Timestamp', 'Show Monetary Values', 'Reload', 'On-line', 'Snapshots', and 'Preferences'. The main content area displays the same grid as shown in the previous image, titled 'Overall Likelihoods, Impacts, and Risks for Intelligent Event London Underground Monitoring'. At the bottom of the interface, there are 'Shortcuts', 'Advanced mode is OFF', and version information 'Version: 6.2.001.42282 © 2007-2021 Expert Choice, Inc. All Rights Reserved'.

## Export Grid into excel or image format



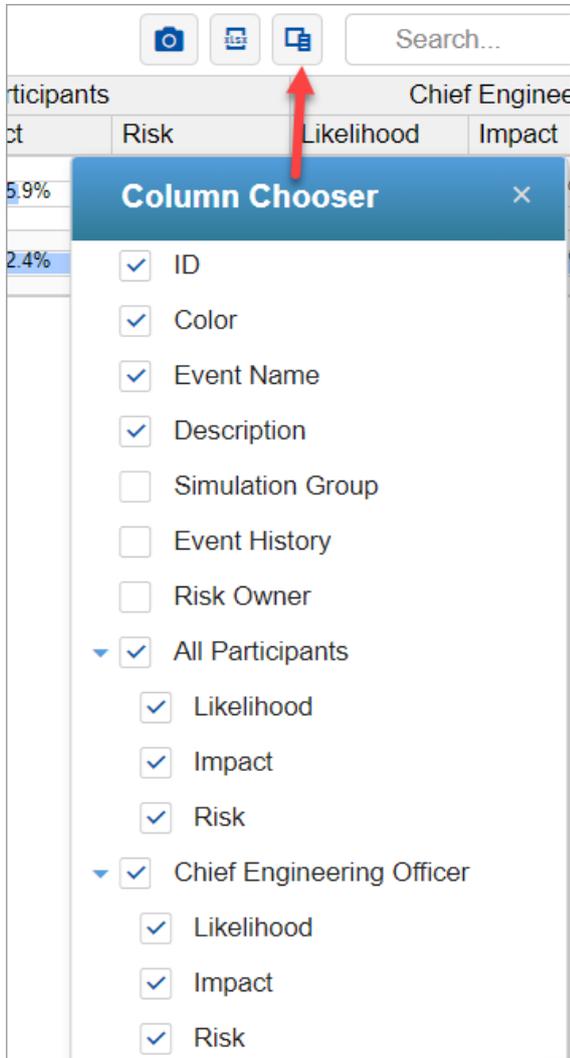
You can export the grid into a .xlsx file by clicking 

You can also export the results page into an image file (.png) by clicking



## Show or Hide columns

You can select to show/hide columns using the column chooser:



The events attributes can also be displayed on the grid, from above the "Event History" and "Risk Owner" are events attributes.

Clicking the column header can sort the grid in ascending or descending order by that header.

ID	Color	Event Name	Description	All Participants		
				Likelihood	Impact	Risk
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.5%	15.9%	5.6%
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.2%	32.4%	3.6%
[05]	●	Line Closure	No train traffic allowed	27.2%	22.5%	6.1%
[06]	●	Failed Integration with Future Monitoring System Network		15.6%	6.2%	1.0%
[07]	●	Intelligent Event Monitoring Network Shut Down		18.6%	26.9%	5.0%
[08]	●	Major Train Work Accident	Death occurs	17.6%	43.6%	7.7%
[09]	●	Minor Train Work Accident	Injury occurs	14.7%	6.8%	1.0%
[10]	●	Major Train Public Accident	Death occurs	17.7%	49.7%	8.8%

Total Risk:

38.8%

You can reset the sorting by pressing the Ctrl key + clicking again the column header where the sorting is currently active.

Show Monetary Values

Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

Preferences

---

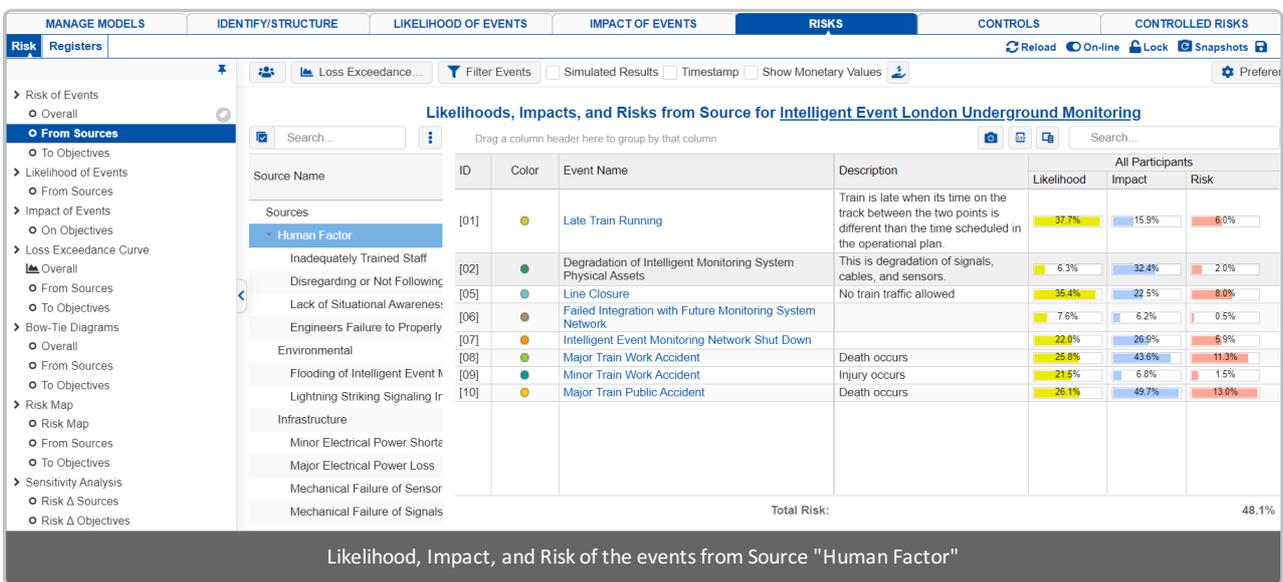
# Risk of Events From Threats

## Overview

This page displays the **Likelihoods, Impacts, and Risks** of each Event from **specific Threats**.

In Riskion, we refer to **threats, causes, hazards, and sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events). In our sample model, we are using the terminology "Source(s)".

The Likelihoods, Impacts, and Risks of the events from Source "**Human Factor**" is displayed below:



A Source is selected from the Sources Hierarchy at the left.

Source Name	ID	Color	Event Name	Description	All Participants		
					Likelihood	Impact	Risk
Sources	[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	37.7%	15.9%	6.0%
Human Factor	[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	6.3%	32.4%	2.0%
Inadequately Trained Staff	[05]	●	Line Closure	No train traffic allowed	35.4%	22.5%	8.0%
Disregarding or Not Following	[06]	●	Failed Integration with Future Monitoring System Network		7.6%	6.2%	0.5%
Lack of Situational Awareness	[07]	●	Intelligent Event Monitoring Network Shut Down		22.0%	26.9%	5.9%
Engineers Failure to Properly	[08]	●	Major Train Work Accident	Death occurs	25.8%	43.6%	11.3%
Environmental	[09]	●	Minor Train Work Accident	Injury occurs	21.5%	6.8%	1.5%
Flooding of Intelligent Event M	[10]	●	Major Train Public Accident	Death occurs	26.1%	49.7%	13.0%
Lightning Striking Signaling In							
Infrastructure							
Minor Electrical Power Shortc							
Major Electrical Power Loss							
Mechanical Failure of Sensor							
Mechanical Failure of Signals							
Total Risk:					48.1%		

You can also select the top node "Sources" which will show the same results as with the [Overall Risk Results](#) page.

The Events on the grid may vary depending on the **contributions of the events** given the selected source.

Note: It is possible to select multiple sources at once, this is explained [here](#).

## Select Participants and Groups

By default, the results shown are for the "All Participants" group.

By selecting from the  "Participants and Groups" icon, you can display the results for other participants or groups.

Participants and Groups

Search:

	Participant Name	Email Address	Has data?	
<input type="checkbox"/>	Brian Quigley	quigleybf@gwu.edu	Yes	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Chief Engineering Officer	ceo@gwu.edu	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Executive Officer	che@gwu.edu	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Chief Risk Officer	cro@gwu.edu	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Denis Risman	denisrisman@gwu.edu	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Devin Nagy	devinnagy@gwu.edu	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Grace	grace@eci.com		<input type="checkbox"/>
<input type="checkbox"/>	IT Supervisor	its@gwu.edu	Yes	<input type="checkbox"/>
<input type="checkbox"/>	James	james@eci.com		<input type="checkbox"/>
<input type="checkbox"/>	John Doe	j.doe@eci.com		<input type="checkbox"/>
<input type="checkbox"/>	Michael Mankowski	mmankowski@gwu.edu	Yes	<input type="checkbox"/>

	Group name	Has data?	Select all users with data
<input checked="" type="checkbox"/>	All Participants	Yes	<input type="checkbox"/>
<input type="checkbox"/>	C-Level Executives	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Engineering	Yes	<input type="checkbox"/>

[Select all](#) | [Deselect all](#)

After selecting participants and groups to display, click OK.

Source Name	ID	Color	Event Name	Description	All Participants			Chief Engineering Officer			
					Likelihood	Impact	Risk	Likelihood	Impact	Risk	
Sources											
Human Factor	[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	37.7%	15.9%	6.0%	4.6%	11.4%	0.5%	
Inadequately Trained Staff											
Disregarding or Not Following Proper Po	[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	6.3%	32.4%	2.0%	0.6%	32.3%	0.2%	
Lack of Situational Awareness	[05]	●	Line Closure	No train traffic allowed	35.4%	22.5%	8.0%	18.3%	18.1%	3.3%	
Engineers Failure to Properly Install Equi	[06]	●	Failed Integration with Future Monitoring System Network		7.6%	6.2%	0.5%	0.0%	2.4%	0.0%	
Environmental	[07]	●	Intelligent Event Monitoring Network Shut Down		22.0%	26.9%	5.9%	1.1%	9.6%	0.1%	
Flooding of Intelligent Event Monitoring I	[08]	●	Major Train Work Accident	Death occurs	25.9%	43.6%	11.3%	19.4%	14.3%	2.8%	
Lightning Striking Signaling Infrastructure	[09]	●	Minor Train Work Accident	Injury occurs	21.5%	6.8%	1.5%	2.2%	5.6%	0.1%	
Infrastructure	[10]	●	Major Train Public Accident	Death occurs	26.1%	49.7%	13.0%	19.4%	12.8%	2.5%	
Minor Electrical Power Shortage											
Major Electrical Power Loss											
Total Risk:								48.1%		9.5%	

## Open Bow-tie diagram from Grid

Clicking the Event Name will open a modal that displays the bow-tie diagram for the selected event.

From the Bow-tie diagram, you analyze the **likelihoods** (left) and **impacts** (right) of the selected **event** (center) For **Threats** with **controls**. Click "[Bow-tie Diagram From Threats](#)" for more details.

Expert Choice **riskion** Workgroup: Riskion Help  
 Risk model: Intelligent Event London Underground Monitoring

MANAGE MODELS IDENTIFY/STRUCTURE LIKELIHOOD OF EVENTS IMPACT OF EVENTS **RISKS** CONTROLS CONTROLLED RISKS

Risk Registers Reload On-line Snapshots

Loss Exceedance... Filter Events Simulated Results Timestamp Show Monetary Values Preferences

### Likelihoods, Impacts, and Risks from Source for Intelligent Event London Underground Monitoring

Search... Drag a column header here to group by that column

Source Name	Co...	Event Name	Description	All Participants		
				Likelihood	Impact	Risk
Human Factor	1	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	37.70%	15.87%	5.98%
Inadequately Trained Staff	2	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	6.30%	32.43%	2.04%
Disregarding or Not Following Proper Poli...	3	Line Closure	No train traffic allowed	35.40%	22.54%	7.98%
Lack of Situational Awareness	4	Failed Integration with Future Monitoring System Network		7.56%	6.25%	0.47%
Engineers Failure to Properly Install Equi...	5	Intelligent Event Monitoring Network Shut Down		21.97%	26.94%	5.92%
Environmental	6	Major Train Work Accident	Death occurs	25.88%	43.63%	11.28%
Flooding of Intelligent Event Monitoring In...	7	Minor Train Work Accident	Injury occurs	21.45%	6.77%	1.45%
Lightning Striking Signaling Infrastructure	8	Major Train Public Accident	Death occurs	26.09%	49.70%	12.97%
Infrastructure						
Minor Electrical Power Shortage						
Major Electrical Power Loss						
Mechanical Failure of Sensors						
Mechanical Failure of Signals						
Mechanical Failure of Cables						
Terrorism						
Conventional Attack on the Signalling Infr...						

Shortcuts Advanced mode is OFF Version: 6.2.001.42282 © 2007-2021 Expert Choice, Inc. All Rights Reserved

## Export Grid into excel or image format



You can export the grid into a .xlsx file by clicking 

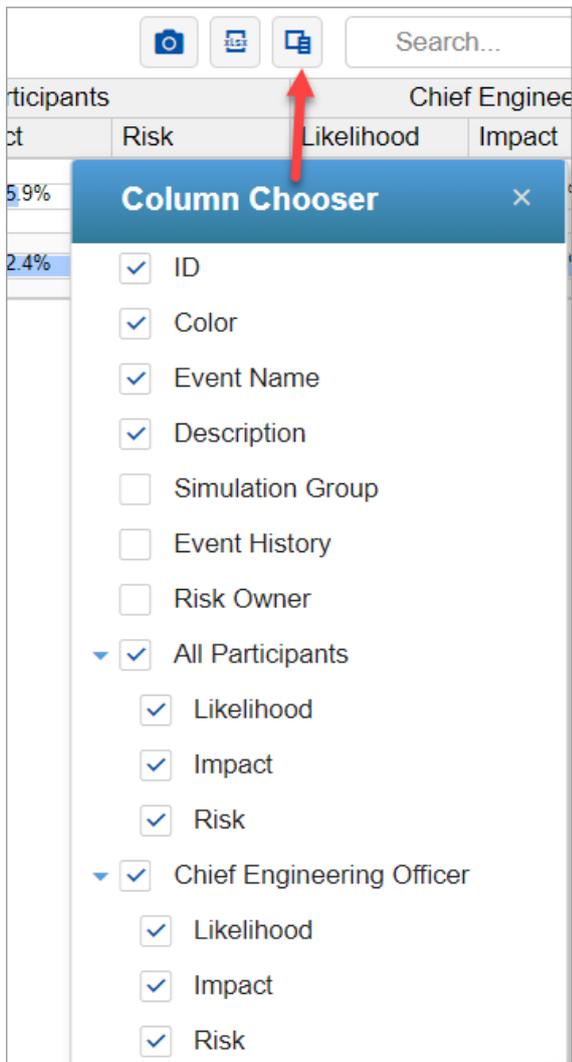
You can also export the results page into an image file (.png) by clicking 

## Show or Hide columns

You can show/hide columns both for:

- the main results grid at the right, and
- the hierarchy tree at the left

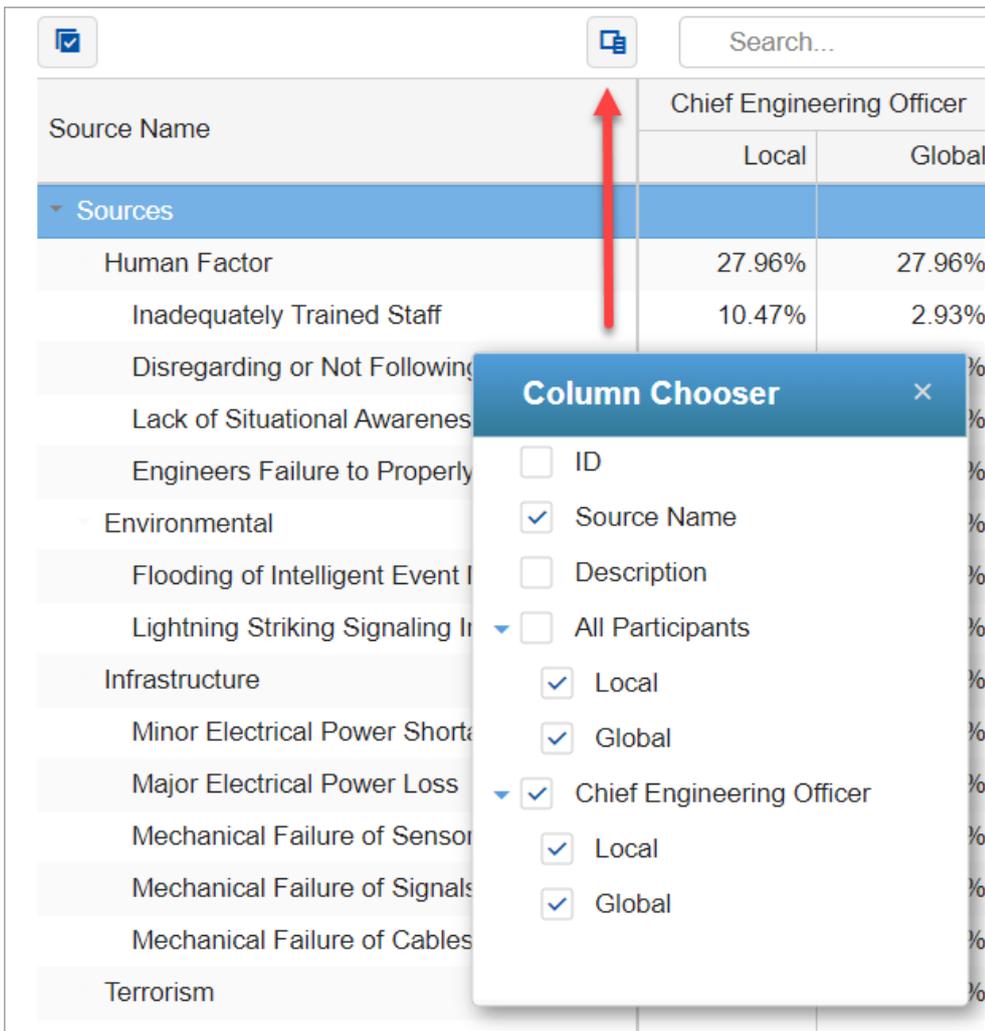
For the main results grid, click the column chooser at the top of the grid:



Simply check/uncheck the column(s) you want to show/hide.

The events attributes can also be displayed on the grid, from above the "Event History" and "Risk Owner" are events attributes.

For the Sources Hierarchy, click also the column choose on its top:



Here you can select:

- ID - Source ID
- Source Name
- Description - source's description or information document
- Local and Global - local or global likelihoods of the sources based on the selected participant/group judgments

## Sort by Column

Clicking the column header can sort the grid in ascending or descending order by that header.

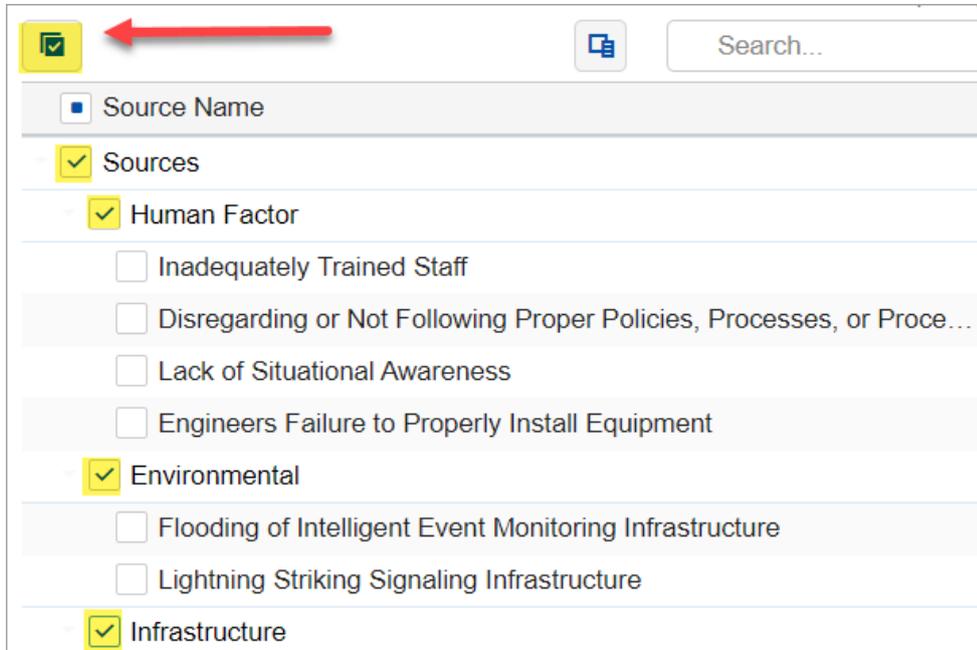
ID	Color	Event Name	Description	All Participants		
				Likelihood	Impact	Risk
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.5%	15.9%	5.6%
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.2%	32.4%	3.6%
[05]	●	Line Closure	No train traffic allowed	27.2%	22.5%	6.1%
[06]	●	Failed Integration with Future Monitoring System Network		15.6%	6.2%	1.0%
[07]	●	Intelligent Event Monitoring Network Shut Down		18.6%	26.9%	5.0%
[08]	●	Major Train Work Accident	Death occurs	17.6%	43.6%	7.7%
[09]	●	Minor Train Work Accident	Injury occurs	14.7%	6.8%	1.0%
[10]	●	Major Train Public Accident	Death occurs	17.7%	49.7%	8.8%
<b>Total Risk:</b>						<b>38.8%</b>

You can reset the sorting by pressing the Ctrl key on your keyboard and clicking again the column header where the sorting is currently active.

## Select Multiple Source Nodes

Instead of showing results only from one WRT Source, you can also select multiple source nodes at once.

To enable multi-select, click the multi-select icon at the top of the Sources Hierarchy. By doing so, you will see checkboxes to the right of the source names where you can select the WRT source nodes you want to see the results.



A new column, WRT Source, will be displayed on the main results grid to indicate the WRT nodes for each event.

ID	Color	Event Name	All Participants			WRT Source
			Likelihood	Impact	Risk	
[01]	●	Late Train Running	35.5%	15.9%	5.6%	Sources
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	11.2%	32.4%	3.6%	Sources
[05]	●	Line Closure	27.2%	22.5%	6.1%	Sources
[06]	●	Failed Integration with Future Monitoring System Network	15.6%	6.2%	1.0%	Sources
[07]	●	Intelligent Event Monitoring Network Shut Down	18.6%	26.9%	5.0%	Sources
[08]	●	Major Train Work Accident	17.6%	43.6%	7.7%	Sources
[09]	●	Minor Train Work Accident	14.7%	6.8%	1.0%	Sources
[10]	●	Major Train Public Accident	17.7%	49.7%	8.8%	Sources
[01]	●	Late Train Running	37.7%	15.9%	6.0%	Human Factor
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	6.3%	32.4%	2.0%	Human Factor
[05]	●	Line Closure	35.4%	22.5%	8.0%	Human Factor
[06]	●	Failed Integration with Future Monitoring System Network	7.6%	6.2%	0.5%	Human Factor
[07]	●	Intelligent Event Monitoring Network Shut Down	22.0%	26.9%	5.9%	Human Factor
[08]	●	Major Train Work Accident	25.8%	43.6%	11.3%	Human Factor
[09]	●	Minor Train Work Accident	21.5%	6.8%	1.5%	Human Factor
[10]	●	Major Train Public Accident	26.1%	49.7%	13.0%	Human Factor
[01]	●	Late Train Running	0.2%	15.9%	0.0%	Environmental
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	0.2%	32.4%	0.1%	Environmental
[05]	●	Line Closure	0.0%	22.5%	0.0%	Environmental

From above, we can see the likelihoods, impacts, and risks of the events WRT the Overall Sources (top-node), Human

Factor, and Environmental.

You can also group the grid by WRT source for better display, this is done by dragging the WRT column header to the top left of the grid:

Search...

Drag a column header here to group by that column

Search...

	ID	Color	Event Name	All Participants			WRT Source
				Likelihood	Impact	Risk	
<input checked="" type="checkbox"/> Source Name	[01]	●	Late Train Running	35.5%	15.9%	5.6%	Sources
<input checked="" type="checkbox"/> Sources	[02]	●	Degradation of Intelligent Monitoring System Physical Assets	11.2%	32.4%	3.6%	Sources
<input checked="" type="checkbox"/> Human Factor	[05]	●	Line Closure	27.2%	22.5%	6.1%	Sources
<input type="checkbox"/> Inadequately Trained Staff	[06]	●	Failed Integration with Future Monitoring System Network	15.6%	6.2%	1.0%	Sources
<input type="checkbox"/> Disregarding or Not Following Proper Policies, Proce...	[07]	●	Intelligent Event Monitoring Network Shut Down	18.6%	26.9%	5.0%	Sources
<input type="checkbox"/> Lack of Situational Awareness	[08]	●	Major Train Work Accident	17.6%	43.6%	7.7%	Sources
<input type="checkbox"/> Engineers Failure to Properly Install Equipment	[09]	●	Minor Train Work Accident	14.7%	6.8%	1.0%	Sources
<input checked="" type="checkbox"/> Environmental	[10]	●	Major Train Public Accident	17.7%	49.7%	8.8%	Sources
<input type="checkbox"/> Flooding of Intelligent Event Monitoring Infrastructure	[01]	●	Late Train Running	37.7%	15.9%	6.0%	Human Factor
<input type="checkbox"/> Lightning Striking Signaling Infrastructure	[02]	●	Degradation of Intelligent Monitoring System Physical Assets	6.3%	32.4%	2.0%	Human Factor
<input type="checkbox"/> Infrastructure	[05]	●	Line Closure	6.3%	32.4%	2.0%	Human Factor
<input type="checkbox"/> Minor Electrical Power Shortage	[06]	●	Failed Integration with Future Monitoring System Network	35.4%	22.5%	8.0%	Human Factor
<input type="checkbox"/> Major Electrical Power Loss	[07]	●	Intelligent Event Monitoring Network Shut Down	7.6%	6.2%	0.5%	Human Factor
<input type="checkbox"/> Mechanical Failure of Sensors	[08]	●	Major Train Work Accident	22.0%	26.9%	5.9%	Human Factor
<input type="checkbox"/> Mechanical Failure of Signals	[09]	●	Minor Train Work Accident	22.0%	26.9%	5.9%	Human Factor
<input type="checkbox"/> Mechanical Failure of Cables	[10]	●	Major Train Public Accident	25.8%	43.6%	11.3%	Human Factor
<input type="checkbox"/> Terrorism	[01]	●	Late Train Running	25.8%	43.6%	11.3%	Human Factor
<input type="checkbox"/> Conventional Attack on the Signalling Infrastructure	[01]	●	Degradation of Intelligent Monitoring System				Human Factor
<input type="checkbox"/> Cyber Attack on the Intelligent Event Monitoring Netw...							
<b>Total Risk:</b>						<b>87.1%</b>	

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

# Risk of Events To Objectives

## Overview

This page displays the **Likelihoods, Impacts, and Risks** of each Event to a specific **Objective**.

The Likelihoods, Impacts, and Risks of the events To Objective "**Public Relations**" is displayed below:

Objective Name		ID	Color	Event Name	Description	All Participants		
Objectives						Likelihood	Impact	Risk
Public Relations		[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.48%	36.14%	12.82%
Loss of Company Reputation		[05]	●	Line Closure	No train traffic allowed	27.22%	55.05%	14.99%
Customer/Business Dissatisfaction with the ...		[06]	●	Failed Integration with Future Monitoring System Network		15.55%	35.56%	5.53%
Financial		[07]	●	Intelligent Event Monitoring Network Shut Down		18.55%	16.73%	3.10%
Loss of Customers		[08]	●	Major Train Work Accident	Death occurs	17.64%	25.83%	4.56%
Financial Loss		[09]	●	Minor Train Work Accident	Injury occurs	14.67%	0.00%	0.00%
Financial Liability Due to Accident		[10]	●	Major Train Public Accident	Death occurs	17.69%	61.87%	10.94%
Reliability, Availability, Maintainability								
Loss of Maintenance Efficiency								
Disruption/Damage to Service Line Infrastr...								
Repair to Service Line Infrastructure								
Performance								
Total Risk:						51.94%		

An Objective is selected from the Objectives Hierarchy at the left.

Objective Name	ID	Color	Event Name	Description	All Participants		
Objectives					Likelihood	Impact	Risk
Public Relations	[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.48%	36.14%	12.82%
Loss of Company Reputation	[05]	●	Line Closure	No train traffic allowed	27.22%	55.05%	14.99%
Customer/Business Dissatisfaction with the ...	[06]	●	Failed Integration with Future Monitoring System Network		15.55%	35.56%	5.53%
Financial	[07]	●	Intelligent Event Monitoring Network Shut Down		18.55%	16.73%	3.10%
Loss of Customers	[08]	●	Major Train Work Accident	Death occurs	17.64%	25.83%	4.56%
Financial Loss	[09]	●	Minor Train Work Accident	Injury occurs	14.67%	0.00%	0.00%
Financial Liability Due to Accident	[10]	●	Major Train Public Accident	Death occurs	17.69%	61.87%	10.94%
Reliability, Availability, Maintainability							
Loss of Maintenance Efficiency							
Disruption/Damage to Service Line I...							
Repair to Service Line Infrastructure							
Performance							
Total Risk:						51.94%	

You can also select the top node "Objectives" which will show the same results as with the **Overall Risk Results** page.

The Events on the grid may vary depending on the **contributions of the events** given the selected objective.

Note: It is possible to select multiple objectives at once, this is explained [here](#).

## Select Participants and Groups

By default, the results shown are for the "All Participants" group.

By selecting from the  "Participants and Groups" icon, you can display the results for other participants or

groups.

Participants and Groups

Search:

	Participant Name	Email Address	Has data?	
<input type="checkbox"/>	Brian Quigley	quigleybf@gwu.edu	Yes	<input checked="" type="checkbox"/> All Participants
<input type="checkbox"/>	Chief Engineering Officer	ceo@gwu.edu	Yes	<input type="checkbox"/> C-Level Executives
<input type="checkbox"/>	Chief Executive Officer	che@gwu.edu	Yes	<input type="checkbox"/> Engineering
<input type="checkbox"/>	Chief Risk Officer	cro@gwu.edu	Yes	
<input type="checkbox"/>	Denis Risman	denisrisman@gwu.edu	Yes	
<input type="checkbox"/>	Devin Nagy	devinnagy@gwu.edu	Yes	
<input type="checkbox"/>	Grace	grace@eci.com		
<input type="checkbox"/>	IT Supervisor	its@gwu.edu	Yes	
<input type="checkbox"/>	James	james@eci.com		
<input type="checkbox"/>	John Doe	j.doe@eci.com		
<input type="checkbox"/>	Michael Mankowski	mmankowski@gwu.edu	Yes	

Select all | Deselect all

After selecting participants and groups to display, click OK.

Objective Name	ID	Color	Event Name	Description	All Participants			Chief Engineering Officer		
					Likelihood	Impact	Risk	Likelihood	Impact	Risk
Objectives										
Public Relations										
Loss of Company Reputation	[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.48%	36.14%	12.82%	11.39%	23.35%	2.66%
Customer/Business Dissatisfaction...	[05]	●	Line Closure	No train traffic allowed	27.22%	55.05%	14.99%	8.32%	27.80%	2.31%
Financial	[06]	●	Failed Integration with Future Monitoring System Network		15.55%	35.96%	5.53%	0.00%	0.00%	0.00%
Loss of Customers	[07]	●	Intelligent Event Monitoring Network Shut Down		18.55%	16.73%	3.10%	2.08%	0.00%	0.00%
Financial Loss	[08]	●	Major Train Work Accident	Death occurs	17.64%	25.83%	4.56%	7.52%	0.00%	0.00%
Financial Liability Due to Accident	[09]	●	Minor Train Work Accident	Injury occurs	14.67%	0.00%	0.00%	1.20%	0.00%	0.00%
Reliability, Availability, Maintainability	[10]	●	Major Train Public Accident	Death occurs	17.69%	61.87%	10.94%	7.52%	12.95%	0.97%
Loss of Maintenance Efficiency										
Disruption/Damage to Service Line...										
Repair to Service Line Infrastructure										
<b>Total Risk:</b>							51.94%			5.95%

## Open Bow-tie diagram from Grid

Clicking the Event Name will open a modal that displays the bow-tie diagram for the selected event.

From the Bow-tie diagram, you analyze the **likelihoods** (left) and **impacts** (right) of the selected **event** (center) To **Objectives** with **controls**. Click "[Bow-tie Diagram From Objectives](#)" for more details.

Expert Choice **riskion** Workgroup: Riskion Help  
 Risk model: Intelligent Event London Underground Monitoring

MANAGE MODELS IDENTIFY/STRUCTURE LIKELIHOOD OF EVENTS IMPACT OF EVENTS **RISKS** CONTROLS CONTROLLED RISKS

Risk Registers Filter Events Simulated Results Timestamp Show Monetary Values

### Likelihoods, Impacts and Risks to Objective for Intelligent Event London Underground Monitoring

Search...

Objective Name	I. ↑	Color	Event Name	Description	All Participants		
					Likelihood	Impact	Risk
Public Relations	1	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.48%	36.14%	12.02%
Loss of Company Reputation	3	●	Line Closure	No train traffic allowed	27.22%	55.05%	14.99%
Customer/Business Dissatisfi	4	●	Failed Integration with Future Monitoring System Network		15.55%	35.56%	5.53%
Financial	5	●	Intelligent Event Monitoring Network Shut Down		18.55%	16.73%	3.10%
Loss of Customers	6	●	Major Train Work Accident	Death occurs	17.64%	25.83%	4.56%
Financial Loss	7	●	Minor Train Work Accident	Injury occurs	14.67%	0.00%	0.00%
Financial Liability Due to Acci	8	●	Major Train Public Accident	Death occurs	17.69%	61.87%	10.94%
Reliability, Availability, Maintaine							
Loss of Maintenance Efficient							
Disruption/Damage to Servic							
Repair to Service Line Infrast							
Performance							
Temporary Line Closure							
Loss of Reliability and Netwo							
Loss of Wider Monitoring Sys							
Total Risk:							51.94%

Shortcuts Advanced mode is OFF Version: 6.2.001.42290 © 2007-2021 Expert Choice, Inc. All Rights Reserved

## Export Grid into excel or image format



You can export the grid into a .xlsx file by clicking 

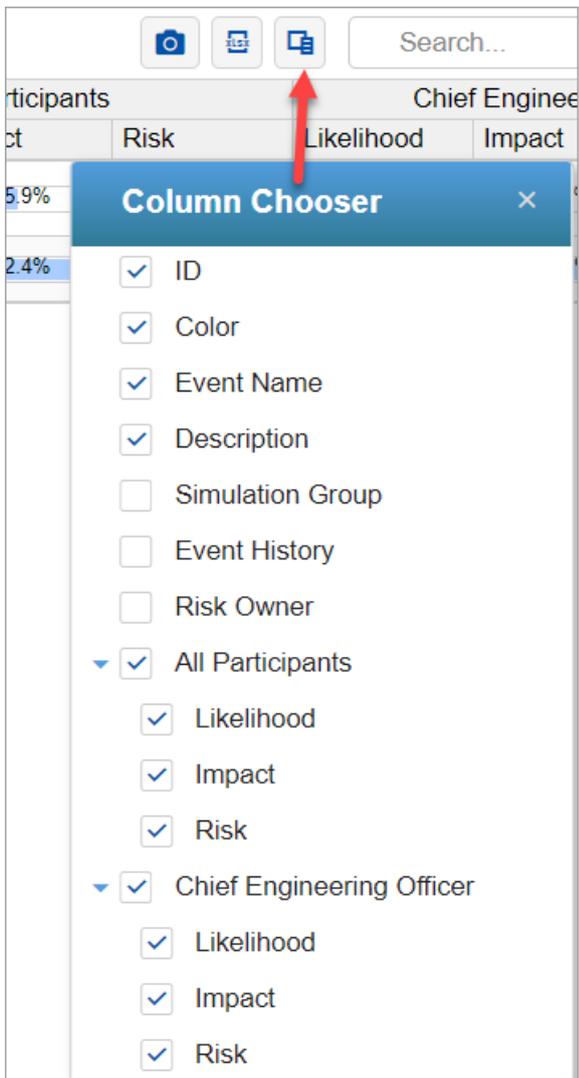
You can also export the results page into an image file (.png) by clicking 

## Show or Hide columns

You can show/hide columns both for:

- the main results grid at the right, and
- the hierarchy tree at the left

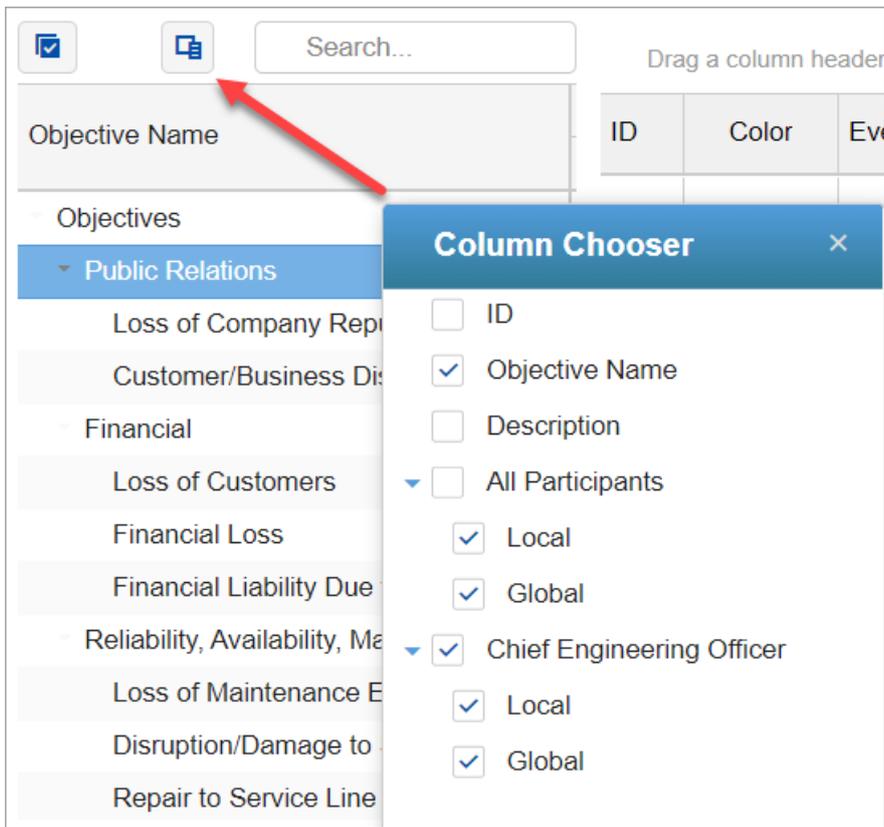
For the main results grid, click the column chooser at the top of the grid:



Simply check/uncheck the column(s) you want to show/hide.

The events attributes can also be displayed on the grid, from above the "Event History" and "Risk Owner" are events attributes.

For the Sources Hierarchy, click also the column choose on its top:



Here you can select:

- ID - Source ID
- Objective Name
- Description - source's description or information document
- Local and Global - local or global likelihoods of the sources based on the selected participant/group judgments

## Sort by Column

Clicking the column header can sort the grid in ascending or descending order by that header.

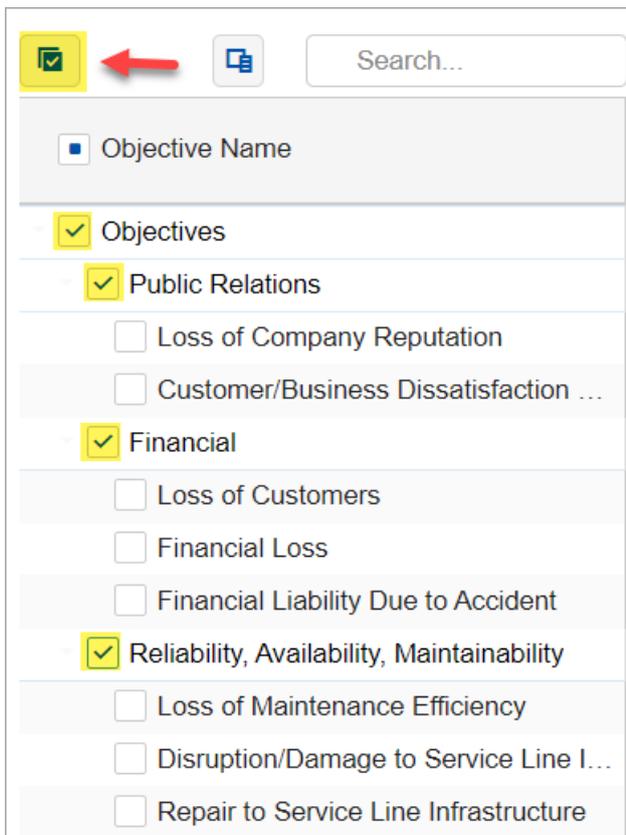
ID	Color	Event Name	Description	All Participants		
				Likelihood	Impact	Risk
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.5%	15.9%	5.6%
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.2%	32.4%	3.6%
[05]	●	Line Closure	No train traffic allowed	27.2%	22.5%	6.1%
[06]	●	Failed Integration with Future Monitoring System Network		15.6%	6.2%	1.0%
[07]	●	Intelligent Event Monitoring Network Shut Down		18.6%	26.9%	5.0%
[08]	●	Major Train Work Accident	Death occurs	17.6%	43.6%	7.7%
[09]	●	Minor Train Work Accident	Injury occurs	14.7%	6.8%	1.0%
[10]	●	Major Train Public Accident	Death occurs	17.7%	49.7%	8.8%
Total Risk:						38.8%

You can reset the sorting by pressing the Ctrl key on your keyboard and clicking again the column header where the sorting is currently active.

## Select Multiple Source Nodes

Instead of showing results only from one WRT Objective, you can also select multiple source nodes at once.

To enable multi-select, click the multi-select icon at the top of the Objectives Hierarchy. By doing so, you will see checkboxes to the right of the objective names where you can select the WRT objective nodes you want to see the results.



A new column, WRT Objective, will be displayed on the main results grid to indicate the WRT nodes for each event.

ID	Color	Event Name	Description	All Participants			WRT Objective
				Likelihood	Impact	Risk	
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.48%	15.87%	5.63%	Objectives
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.17%	32.43%	3.62%	Objectives
[05]	●	Line Closure	No train traffic allowed	27.22%	22.54%	6.13%	Objectives
[06]	●	Failed Integration with Future Monitoring System Network		15.55%	6.25%	0.97%	Objectives
[07]	●	Intelligent Event Monitoring Network Shut Down		18.55%	26.94%	5.00%	Objectives
[08]	●	Major Train Work Accident	Death occurs	17.64%	43.63%	7.69%	Objectives
[09]	●	Minor Train Work Accident	Injury occurs	14.67%	6.77%	0.99%	Objectives
[10]	●	Major Train Public Accident	Death occurs	17.69%	49.70%	8.79%	Objectives
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.48%	25.64%	9.10%	Financial
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.17%	5.64%	0.63%	Financial

From above, we can see the likelihoods, impacts, and risks of the events WRT the Overall Sources (top-node), Human Factor, and Environmental.

You can also group the grid by WRT source for better display, this is done by dragging the WRT column header to the top left of the grid:

Objective Name	ID	Color	Event Name	All Participants			WRT Objective
				Likelihood	Impact	Risk	
<input checked="" type="checkbox"/> Objectives	[01]	●	Late Train Running	35.48%	15.87%	5.63%	Objectives
<input checked="" type="checkbox"/> Public Relations	[02]	●	Degradation of Intelligent Monitoring System Physical Assets	11.17%	32.43%	3.62%	Objectives
<input type="checkbox"/> Loss of Company Reputation	[05]	●	Line Closure	27.22%	22.54%	6.13%	Objectives
<input type="checkbox"/> Customer/Business Dissatisfaction ...	[06]	●	Failed Integration with Future Monitoring System Network	15.55%	6.25%	0.97%	Objectives
<input checked="" type="checkbox"/> Financial	[07]	●	Intelligent Event Monitoring Network Shut Down	18.55%	26.94%	5.00%	Objectives
<input type="checkbox"/> Loss of Customers	[08]	●	Major Train Work Accident	17.64%	43.63%	7.69%	Objectives
<input type="checkbox"/> Financial Loss	[09]	●	Minor Train Work Accident	14.67%	6.77%	0.99%	Objectives
<input type="checkbox"/> Financial Liability Due to Accident	[10]	●	Major Train Public Accident	17.69%	49.70%	8.79%	Objectives
<input checked="" type="checkbox"/> Reliability, Availability, Maintainability	[01]	●	Late Train Running	35.48%	36.14%	12.82%	Public Relations
<input type="checkbox"/> Loss of Maintenance Efficiency	[05]	●	Line Closure	27.22%	55.05%	14.99%	Public Relations
<input type="checkbox"/> Disruption/Damage to Service Line I...	[06]	●	Failed Integration with Future Monitoring System Network	15.55%	35.56%	5.53%	Public Relations
<input type="checkbox"/> Repair to Service Line Infrastructure	[07]	●	Intelligent Event Monitoring Network Shut Down	18.55%	16.73%	3.10%	Public Relations
<input type="checkbox"/> Performance	[08]	●	Major Train Work Accident	17.64%	25.83%	4.56%	Public Relations
<input type="checkbox"/> Temporary Line Closure	[09]	●	Minor Train Work Accident	14.67%	0.00%	0.00%	Public Relations
<input type="checkbox"/> Loss of Reliability and Network Effici...	[10]	●	Major Train Public Accident	17.69%	61.87%	10.94%	Public Relations
<input type="checkbox"/> Loss of Wider Monitoring System Pr...	[01]	●	Late Train Running	35.48%	25.64%	9.10%	Financial
<input type="checkbox"/> Loss of Train Service	[02]	●	Degradation of Intelligent Monitoring System Physical Assets	11.17%	5.64%	0.63%	Financial

Show Monetary Values

Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

Preferences

# Show Monetary Values

Show Monetary Values 

You can show the Monetary Values for **Impacts** and **Risks**.

Clicking  will open a modal where you can specify the monetary values.

**Enter Value of Enterprise...** ×

You can either enter the monetary value for the organization or enterprise, from which monetary values of specific events will be computed in proportion to their priorities, or the monetary value of a specific event from which all other event values as well as the enterprise value will be computed.

---

Value of

# Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

The risk of an event is the product of the event's likelihood and impact. However, the computed likelihood of an event may depend on the event being caused by more than one threat. If these threats are not mutually exclusive, then the computed likelihood, based on the occurrence of the event from several can exceed the actual likelihood. If in the real world an event takes place due to one threat, it is irrelevant that it would have also occurred due to another threat had the first one not caused the event. This 'if' condition is a non-linearity in computation. To arrive at the actual likelihood of an event, we can use **simulations** that will avoid the 'double counting'.

Similarly, an objective that suffers consequences from one event, may also suffer consequences from other events. The consequences can be cumulative but they cannot exceed the entire value of the objective so that this is another non-linearity that can be addressed with simulation.

Riskion has an option to show **computed** and **simulated** results.

Calculated results are displayed by default, checking the Simulated checkbox displays the simulated results.

 Simulated Results

If all events have at most one threat, or all threats are mutually exclusive, then the computed and simulated event likelihoods will be the same -- but this is rarely the case.

If each objective has losses due to only one event, then the computed and simulated impacts will be the same -- but this is rarely the case.

---

# Preferences

Click the  button to open the display and simulation settings modal.

### Preferences

---

#### Events Display

Event Numbers

---

#### Display Settings

Consequences Simulation Mode

WRT Calculation

Show Total Risk (Total Average Loss)

Decimals

Show cents for monetary values

---

#### Simulations Settings

Number Of Trials   
[Get Optimal Number Of Trials](#)

Seed

Keep Seed

Use Source Groups

Use Event Groups

[Close](#)

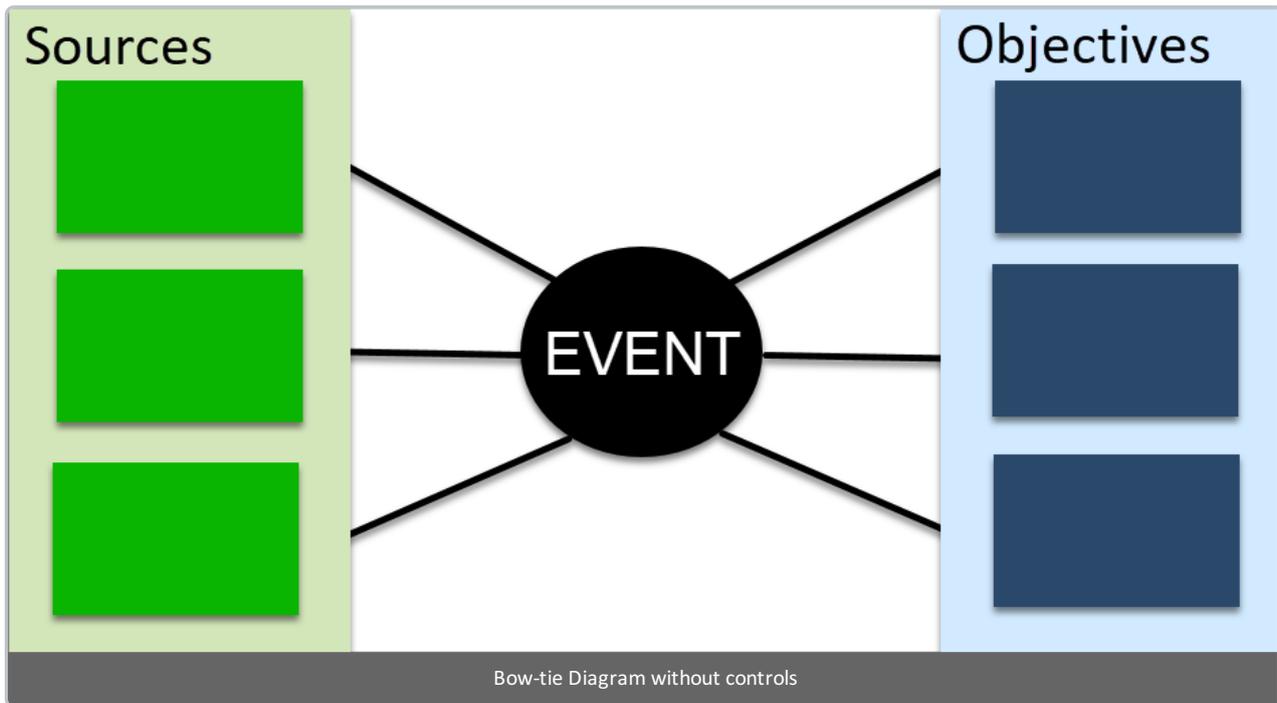
- Events Numbers - select from ID, Inder, or Rank
- Display Settings
  - Consequences simulation mode: Diluted or Undiluted
  - WRT calculation (applicable only when a lower node is selected)
  - Show Total Risk - show hide the Total Risk below the grid for Diluted
  - Decimals
  - Show cents of Monetary Values
- Simulation Settings
  - Number of trials
  - Seed
  - Keep Seed
  - User Source Groups
  - User Event Groups



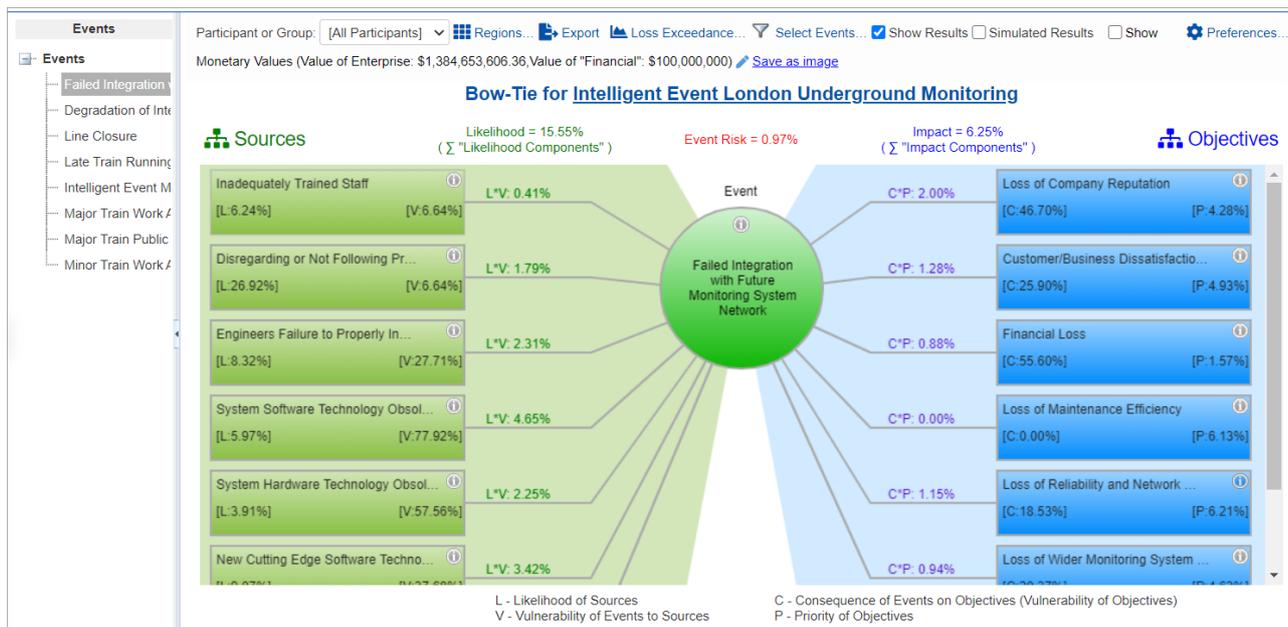
# Overall Bow-Tie Diagram

## Overview

The Bowtie method is a risk evaluation method that can be used to analyze and demonstrate causal relationships in risk scenarios. The method takes its name from the shape of the diagram that you create, which looks like a men's bowtie.



The bow-tie diagram for the Event "Failed Integration with Failure Monitoring System Network" from the Overall Source is displayed below.



The selected **Event** is displayed at the center of the diagram (circle). The event **background color** varies based on the event's %risk.

The **Sources** of the selected event are displayed on the left side of the diagram (green boxes).

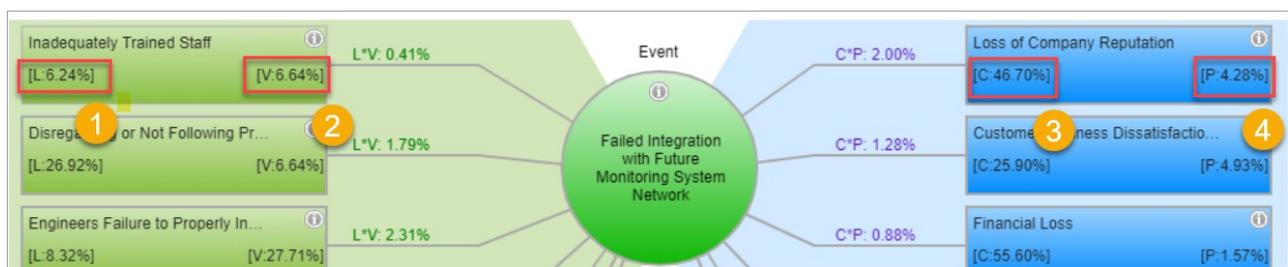
The **Objectives** of the selected Event are at the right (blue boxes).

You can also define and analyze controls in a [Bow-tie Diagram with Controls](#).

You can view and analyze the following information:

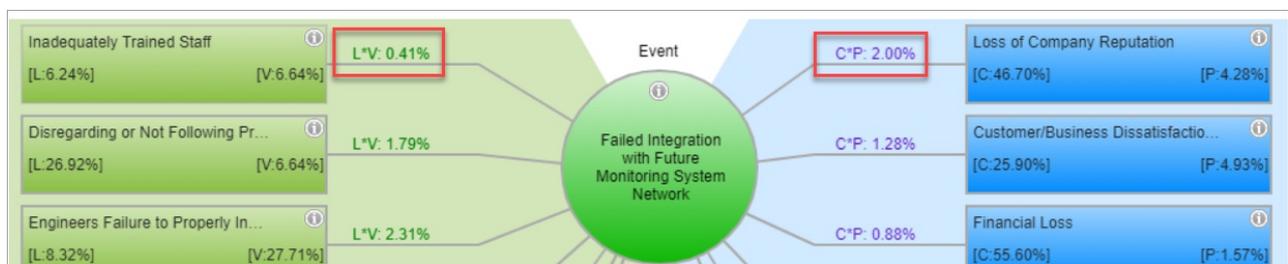
- L - Likelihood of Sources
- V - Vulnerabilities of events to sources
- C - Consequences of Events on Objectives
- P - Priority of Events on Objectives

Focusing on the first source and objective on the diagram:



1. The Likelihood (L) of the Source "Inadequate Trained Staff" is **6.24%** (overall or global likelihood)
2. The Vulnerability (V) of the Event "Failed Integration with Future Monitoring System Network" to the source "Inadequately Trained Staff" is **6.64%**
3. The Consequence (C) of the Event "Failed Integration with Future Monitoring System Network" on the Objective "Loss of Company Reputation" is **46.70%**
4. The Priority (P) of Objective "Loss of Company Reputation" is **4.28%** (overall or global impact)

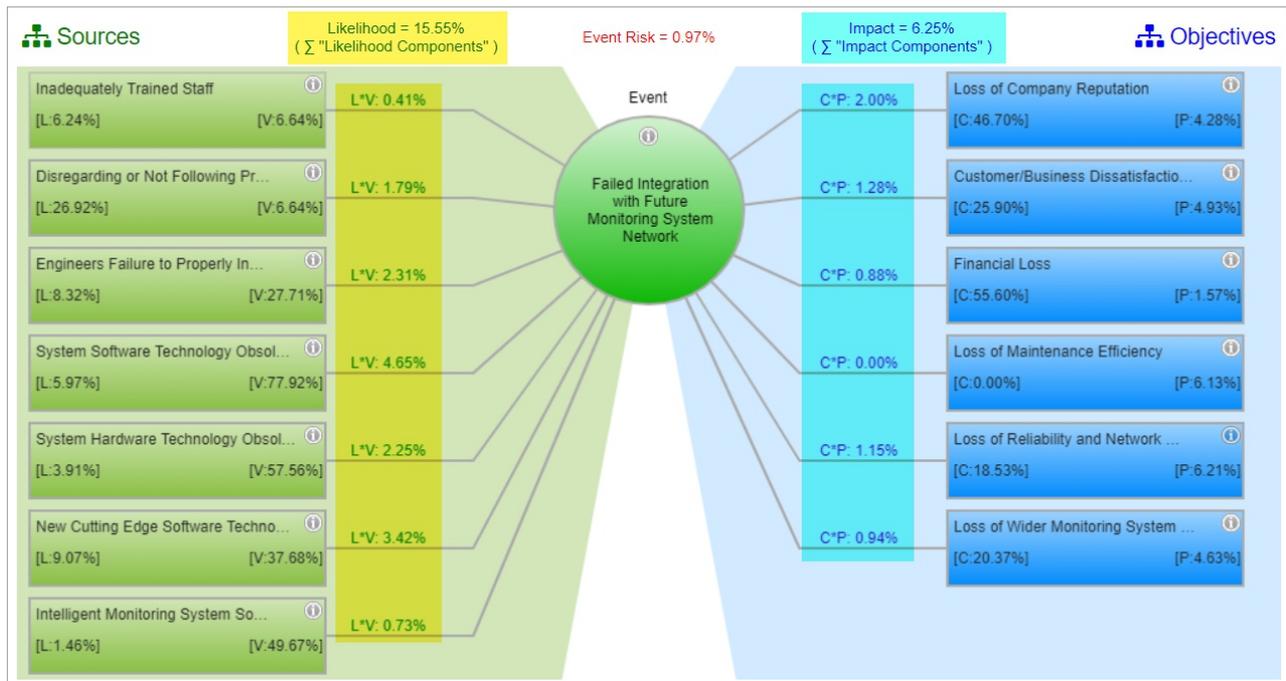
The Likelihood of the event to a given source (L\*V), and the Impact of the event (C\*P) on a given objective are shown on the connecting lines to the source/objective boxes:



- The Likelihood of the Event "Failed Integration with Future Monitoring System Network" to the source "Inadequately Trained Staff" is **0.41%**
- The Impact of the Event "Failed Integration with Future Monitoring System Network" on the Objective "Loss of Company Reputation" is **2.0%**

The summation of likelihoods ( $\sum$  "L\*V") of the event to each source is the Overall Likelihood of the event, and the

summation of impacts ( $\sum "C*P"$ ) of the event on each objective is the Overall Impact of the event.



The event "Failed Integration with Future Monitoring System Network" has Overall Likelihood and Impact **15.55%** and **6.25%** respectively.

The Overall Event Risk is then computed by Likelihoods \* Impacts, 15.55% \* 6.25% = **0.97%**

You can select another Event to analyze from the Events list at the left:



### Select Participant or Group

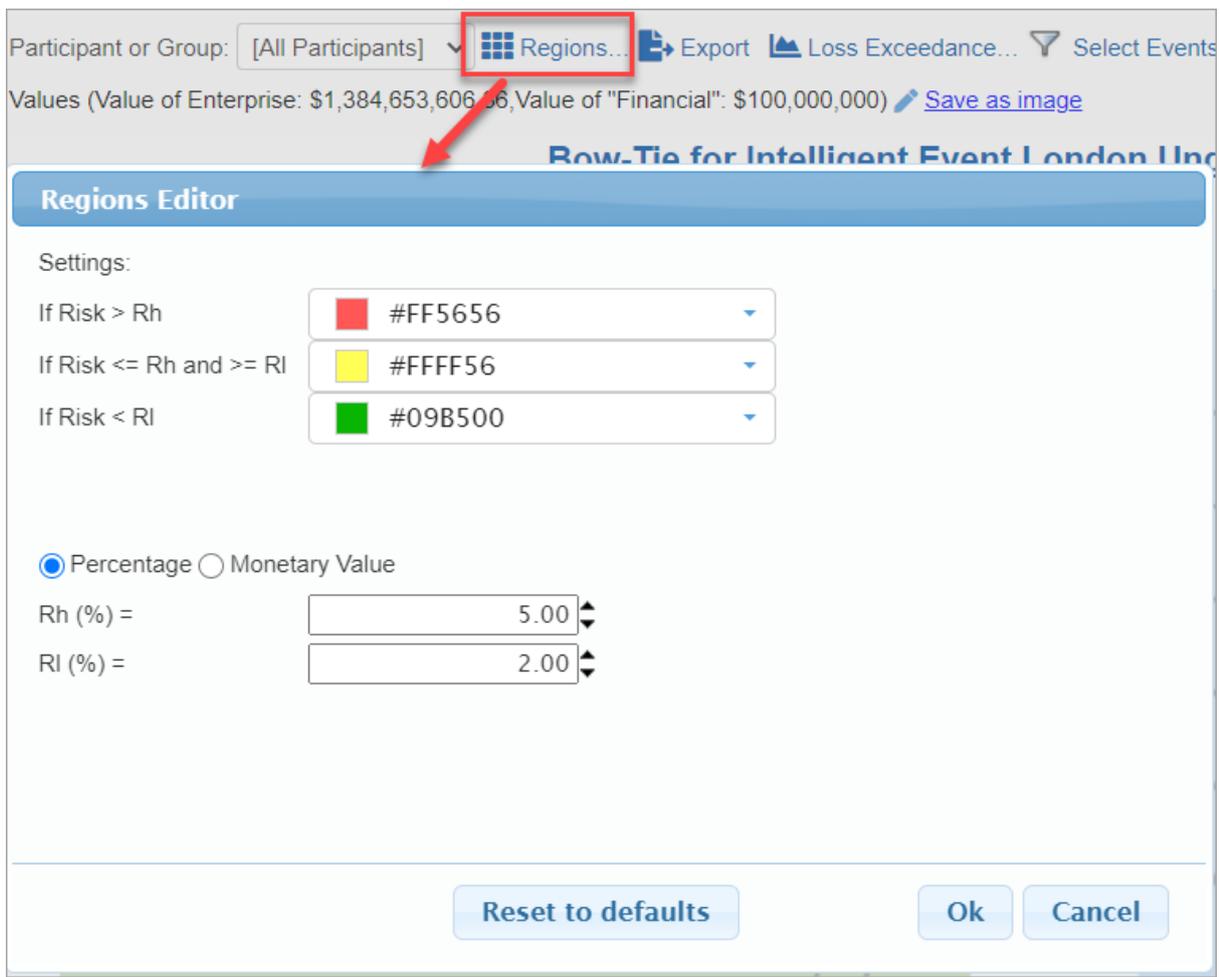
The bow-tie for the "All Participants" group is displayed by default. By selecting from the "Participants and Groups" dropdown, you can display the bow-tie analysis for another participants or group:

Participant or Group:	[All Participants] 
Show Monetary Value:	[All Participants]
	[C-Level Executives]
	[Engineering]
-----	
 Sources	
Inadequately Trained [L:6.24%]	Denis Risman
	Brian Quigley
Disregarding or Not [L:26.92%]	Chief Risk Officer
	Chief Engineering Officer
Engineers Failure to [L:8.32%]	IT Supervisor
	Chief Executive Officer
System Software Te [L:5.97%]	Devin Nagy
	Michael Mankowski
System Hardware Te	John Doe

## Define Event Color (Region)

Default colors are already provided for the events on the diagram based on the event's %risk.

You can change this by clicking  Regions...



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

## Export Bow-tie to Excel or Image Format

Click  [Export](#) to export the bowtie into a .xlsx file.

Click [Save as image](#) link to download the diagram as an image file (.jpeg)

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

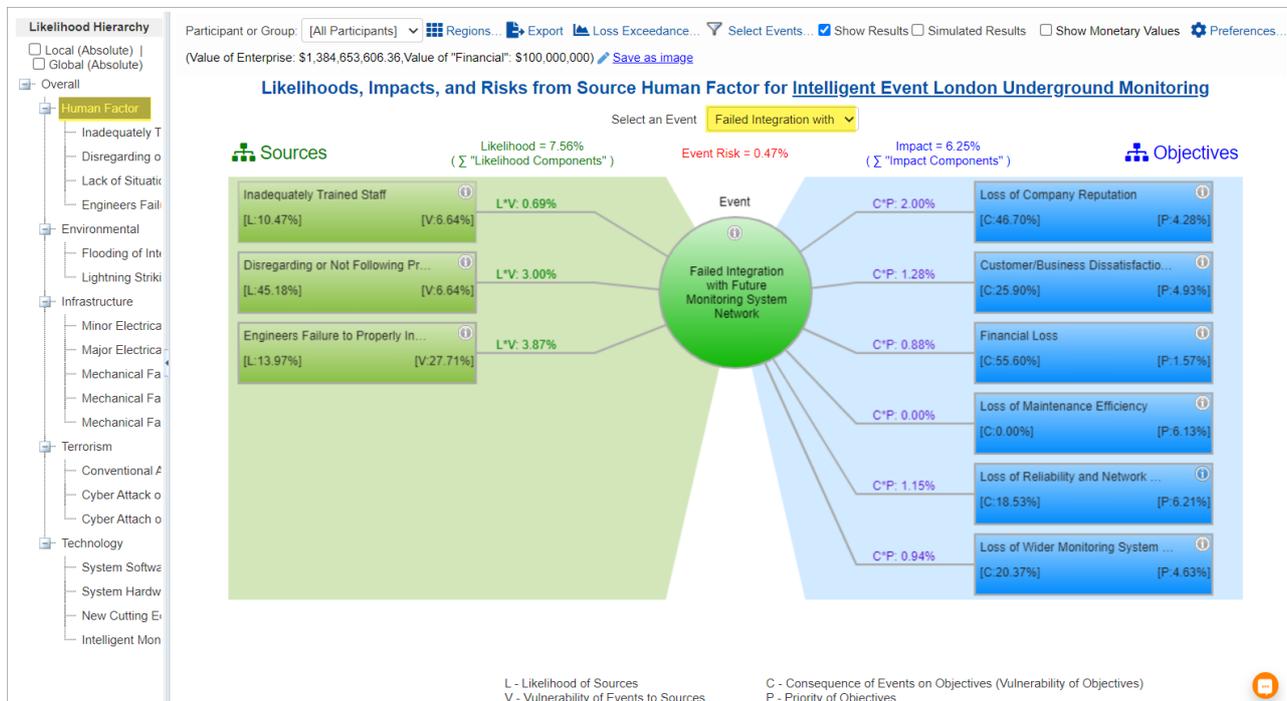
# Bow-Tie Diagram From Threats

## Overview

This page displays the **Bow-tie diagram from specific Threats**.

In Riskion, we refer to **threats, causes, hazards, and sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events). In our sample model, we are using the terminology "Source(s)".

The bow-tie diagram for the analysis of the Event "**Failed Integration with Failure Monitoring System Network**" from source "**Public Relations**" is displayed below.



The selected **Event** is displayed at the center of the diagram (circle). Its background color varies based on the event's %risk.

The **Sources** of the selected event are displayed on the left side of the diagram (green boxes).

The **Objectives** of the selected Event are at the right (blue boxes).

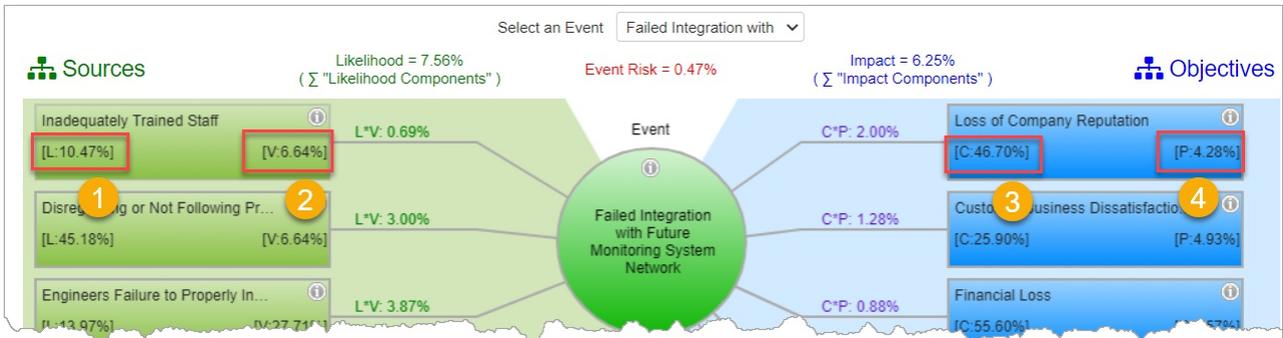
The specific Source ("**Human Factor**") from which the event is being analyzed is selected from the **Likelihood Hierarchy** at the left.

You can also define and analyze controls in a **bow-tie diagram with controls**.

You can view and analyze the following information:

- L - Likelihood of Sources
- V - Vulnerabilities of events to sources
- C - Consequences of Events on Objectives
- P - Priority of Events on Objectives

Focusing on the first source and objective on the diagram:



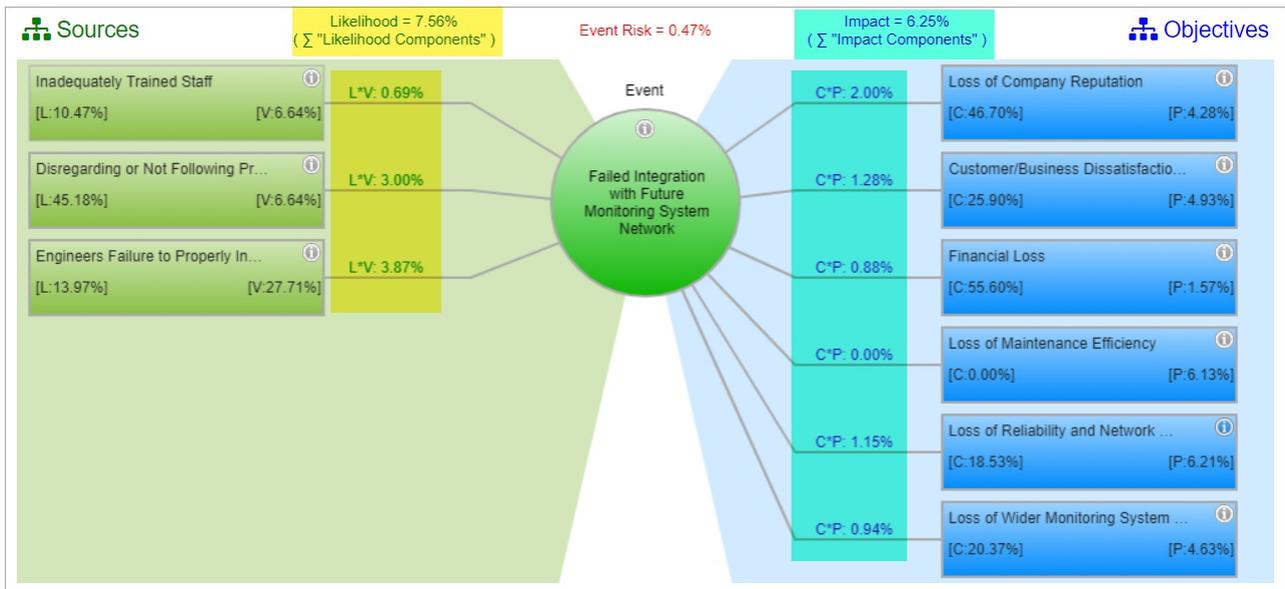
1. The Likelihood (L) of the Source "Inadequate Trained Staff" given the source "Human Factor" is **10.47%**
2. The Vulnerability (V) of the Event "Failed Integration with Future Monitoring System Network" from source "Inadequately Trained Staff" is **6.64%**
3. The Consequence (C) of the Event "Failed Integration with Future Monitoring System Network" on the Objective "Loss of Company Reputation" is **46.70%**
4. The Priority (P) of Objective "Loss of Company Reputation" is **4.28%** (overall or global impact)

The Likelihood of the event to a given source (L\*V), and the Impact of the event (C\*P) on a given objective are shown on the connecting lines to the source/objective boxes:



- The Likelihood of the Event "Failed Integration with Future Monitoring System Network" to the source "Inadequately Trained Staff" given "Human Factor" is **0.69%**
- The Impact of the Event "Failed Integration with Future Monitoring System Network" on the Objective "Loss of Company Reputation" is **2.0%**

The summation of ( $\sum$  "L\*V") event's likelihoods from each event is the Likelihood of the Event, and the summation ( $\sum$  "C\*P") event's impact on each objective is the Impact of the Event -- given the selected source.

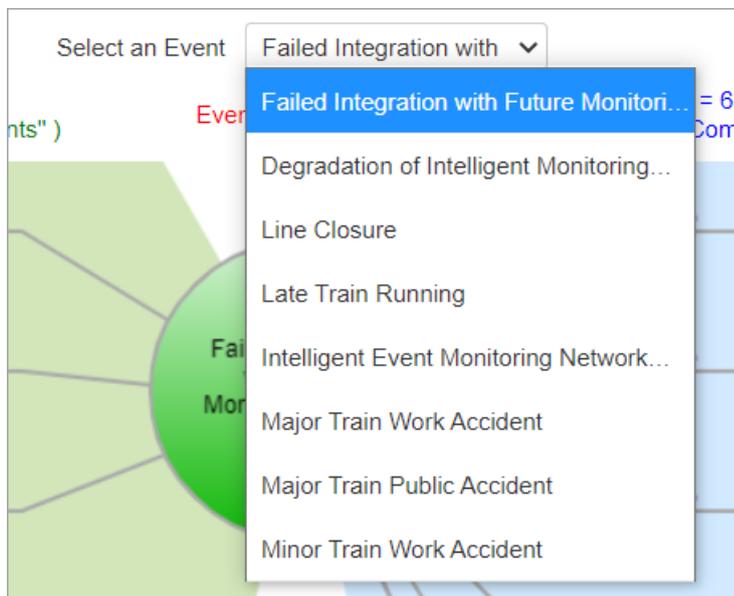


The event "Failed Integration with Future Monitoring System Network" has Likelihood and Impact due to source "Human Factor" **7.56%** and **6.25%** respectively.

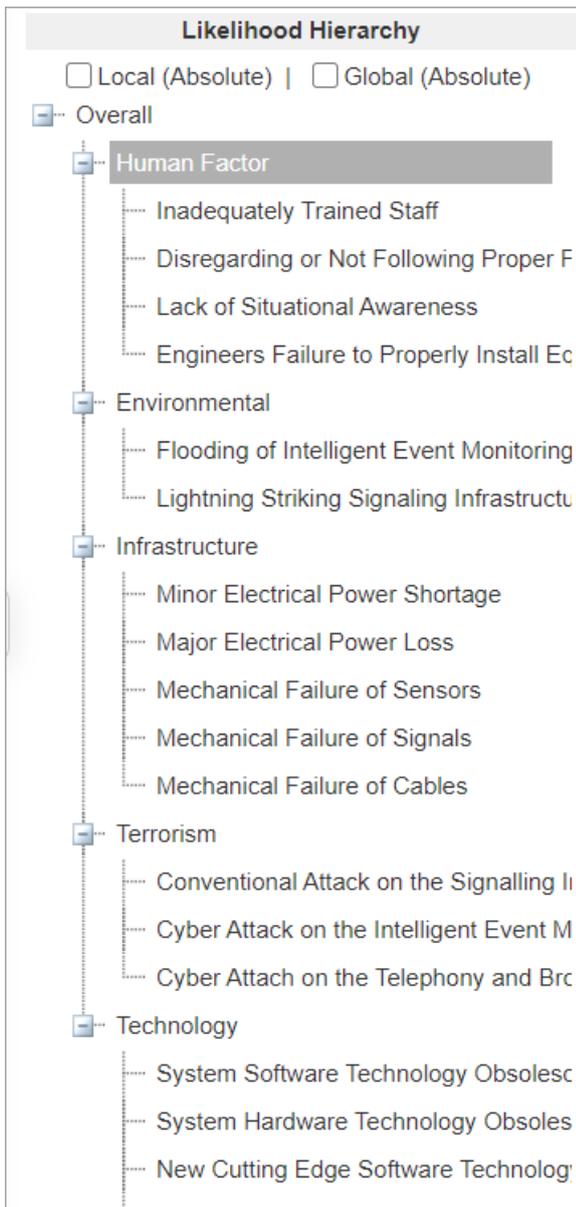
The Event's risk is then computed by Likelihood \* Impact:

$$4.51\% * 6.25\% = \mathbf{0.28\%} \text{ (as shown at the top of the Event)}$$

You can select another Event to analyze from the Events list pulldown at the top:



and you can select another source by clicking a node from the Likelihood Hierarchy at the left:



## Select Participant or Group

The bow-tie for the "All Participants" group is displayed by default. By selecting from the "Participants and Groups" dropdown, you can display the bow-tie analysis for another participants or group:

Participant or Group: [All Participants] 

Show Monetary Value: [All Participants]

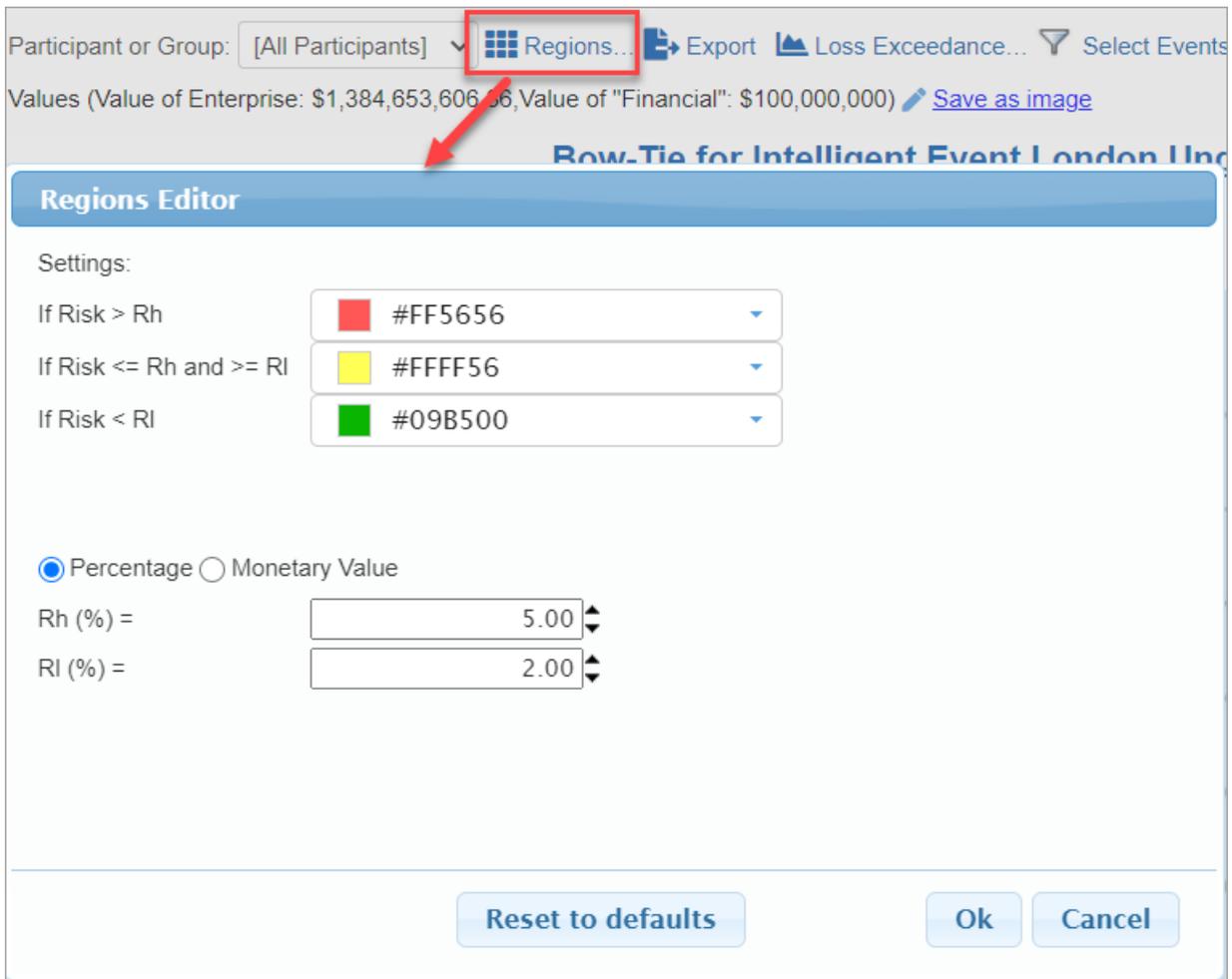
 Sources

Inadequately Trained [L:6.24%]	Denis Risman
Disregarding or Not [L:26.92%]	Brian Quigley
Engineers Failure to [L:8.32%]	Chief Risk Officer
System Software Te [L:5.97%]	Chief Engineering Officer
System Hardware Te	IT Supervisor
	Chief Executive Officer
	Devin Nagy
	Michael Mankowski
	John Doe

## Define Event Color (Region)

Default colors are already provided for the events on the diagram based on the event's %risk.

You can change this by clicking 



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

## Export Bow-tie to Excel or Image Format

Click [Export](#) to export the bowtie into a .xlsx file.

Click [Save as image](#) link to download the diagram as an image file (.jpeg)

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

# Bow-Tie Diagram To Objectives

## Overview

This page displays the **Bow-tie diagram To specific Objectives**.

The bow-tie diagram of the Event "**Failed Integration with Failure Monitoring System Network**" to the objective "**Public Relations**" is displayed below.



The selected **Event** is displayed at the center of the diagram (circle). Its background color varies based on the event's %risk.

The **Sources** of the selected event are on the left side of the diagram (green boxes).

The **Objectives** of the selected Event are on the right (blue boxes).

The Objective ("**Public Relations**") to which the event is being analyzed is selected from the **Impact Hierarchy** at the left.

You can also define and analyze controls in a **bow-tie diagram with controls**.

You can view and analyze the following information:

- L - Likelihood of Sources
- V - Vulnerabilities of events to sources
- C - Consequences of Events on Objectives
- P - Priority of Events on Objectives

Focusing on the first source and objective on the diagram:



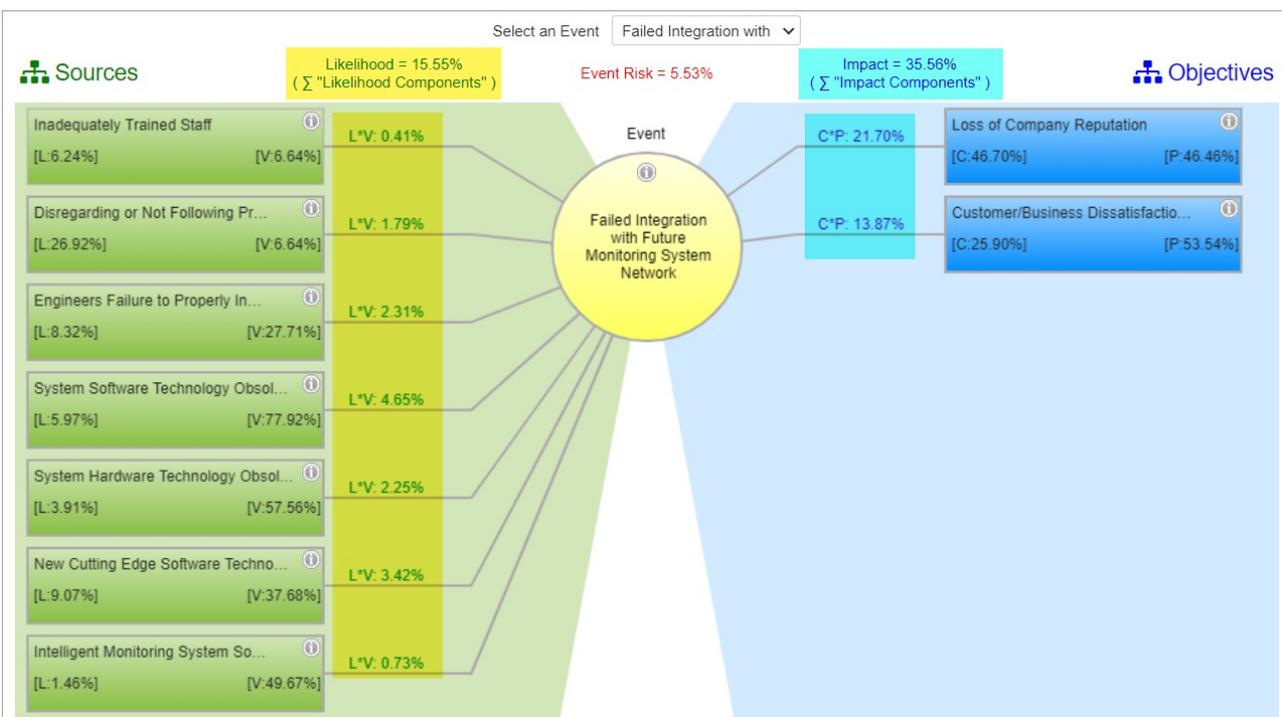
1. The Likelihood (L) of the Source "Inadequate Trained Staff" is **6.24%**
2. The Vulnerability (V) of the Event "Failed Integration with Future Monitoring System Network" from source "Inadequately Trained Staff" is **6.64%**
3. The Consequence (C) of the Event "Failed Integration with Future Monitoring System Network" on the Objective "Loss of Company Reputation" is **46.70%**
4. The Priority (P) of Objective "Loss of Company Reputation" wrt the objective "Public Relations" is **46.46%**

The Likelihood of the event to a given source (L\*V), and the Impact of the event (C\*P) on a given objective are shown on the connecting lines to the source/objective boxes:



- The Likelihood of the Event "Failed Integration with Future Monitoring System Network" to the source "Inadequately Trained Staff" is **0.41%**
- The Impact of the Event "Failed Integration with Future Monitoring System Network" on the Objective "Loss of Company Reputation" wrt "Public Relations" is **2.0%**

The summation of ( $\sum$  "L\*V") event's likelihoods from each event is the Likelihood of the Event, and the summation ( $\sum$  "C\*P") event's impact on each objective is the Impact of the Event -- given the selected source.

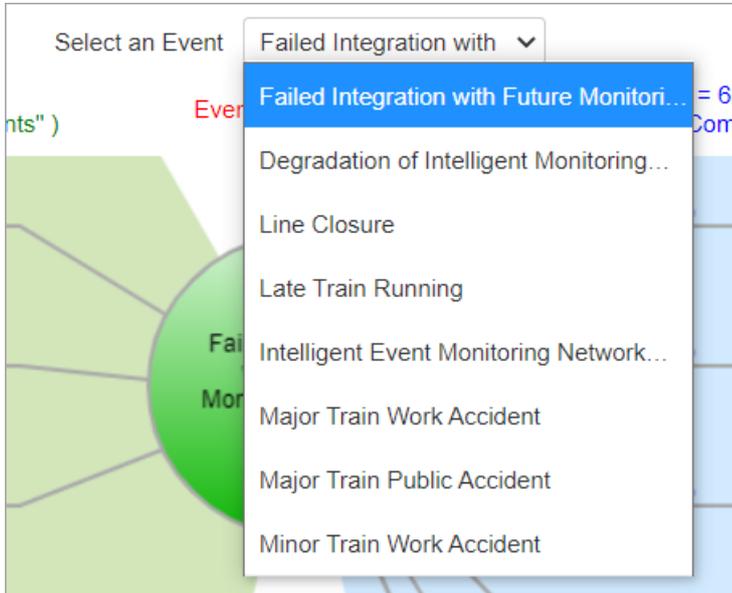


The event "Failed Integration with Future Monitoring System Network" has Likelihood and Impact wrt to objective "Public Relations" **15.55%** and **35.56%** respectively.

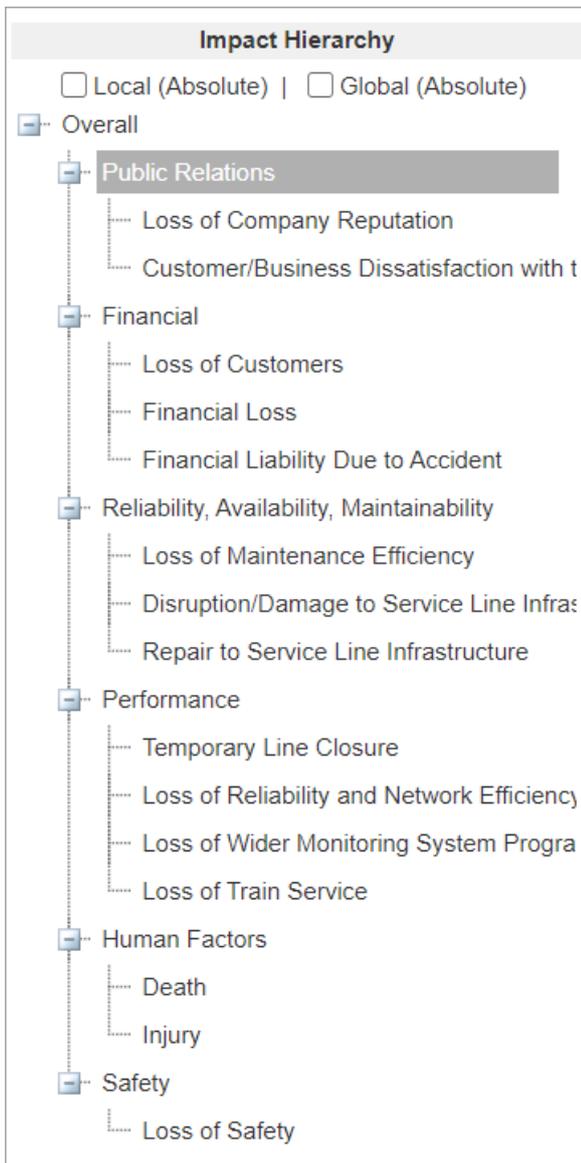
The Event's risk is then computed by Likelihood \* Impact:

$$15.55\% * 35.56\% = 5.53\% \text{ (as shown at the top of the Event)}$$

You can select another Event to analyze from the Events list pulldown at the top:



and you can select the wrt objective by clicking a node from the Impact Hierarchy at the left:



## Select Participant or Group

The bow-tie for the "All Participants" group is displayed by default. By selecting from the "Participants and Groups" dropdown, you can display the bow-tie analysis for another participants or group:

Participant or Group: [All Participants] 

Show Monetary Value: [All Participants]

 Sources

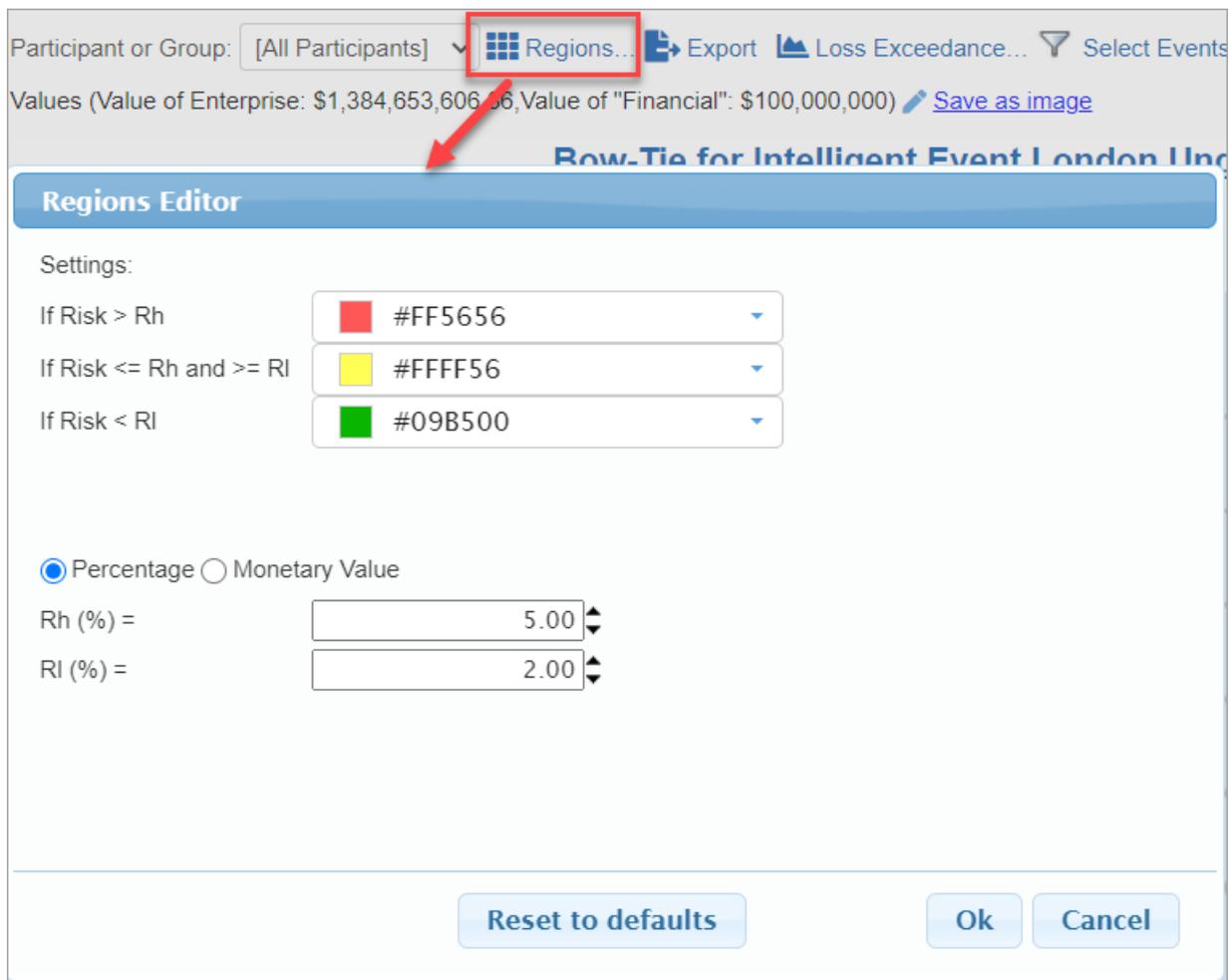
- Inadequately Trained [L:6.24%]
- Disregarding or Not [L:26.92%]
- Engineers Failure to [L:8.32%]
- System Software Te [L:5.97%]
- System Hardware Te

- [C-Level Executives]
- [Engineering]
- 
- Denis Risman
- Brian Quigley
- Chief Risk Officer
- Chief Engineering Officer
- IT Supervisor
- Chief Executive Officer
- Devin Nagy
- Michael Mankowski
- John Doe

## Define Event Color (Region)

Default colors are already provided for the events on the diagram based on the event's %risk.

You can change this by clicking 



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

## Export Bow-tie to Excel or Image Format

Click [Export](#) to export the bowtie into a .xlsx file.

Click [Save as image](#) link to download the diagram as an image file (.jpeg)

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

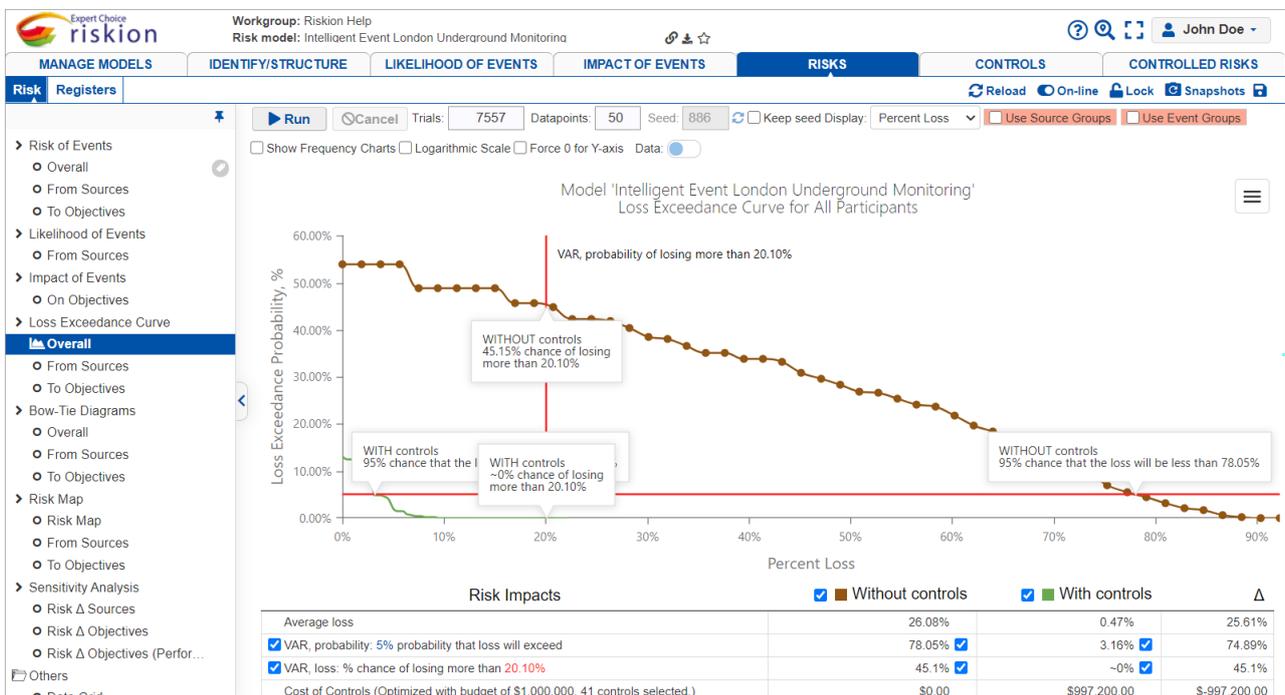
---

# Overall Less Exceedance Curve (LEC)

## Overview

The LEC represents the annual frequency whereupon a determining economic loss will be exceeded. It is the most important and strongest measurement of risk since it provides basic information for the planning and appropriation of the resources necessary to fulfill particular management objectives. The LEC can be calculated based on the greatest probable event of a year or uniformly for all possible events, based on their recurrence interval. The latter approach is preferred, given that it allows for considering more than one disaster event per year.

We can view the LEC both for "without controls" and "with controls". The LEC for "with controls" reflects the controls that are currently 'selected', either [manually](#) or via an [optimization](#). The brown curve represents the "Without Controls" and the green curve the "With Controls".

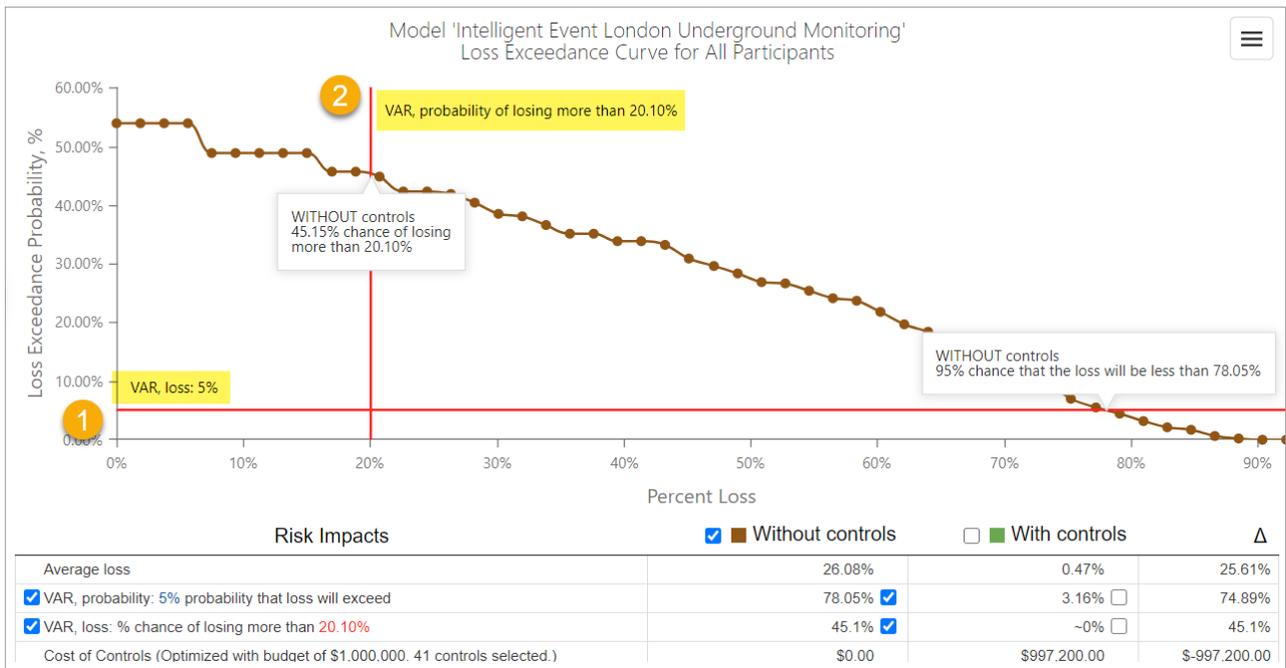


The **x-axis** represents the Percent Loss (or Monetary Loss).

The **y-axis** represents the Loss Exceedance Probability, %.

You can show/hide the with or without controls curve/tooltips by checking/unchecking the options from the bottom grid.

Below we only enabled the without controls options.

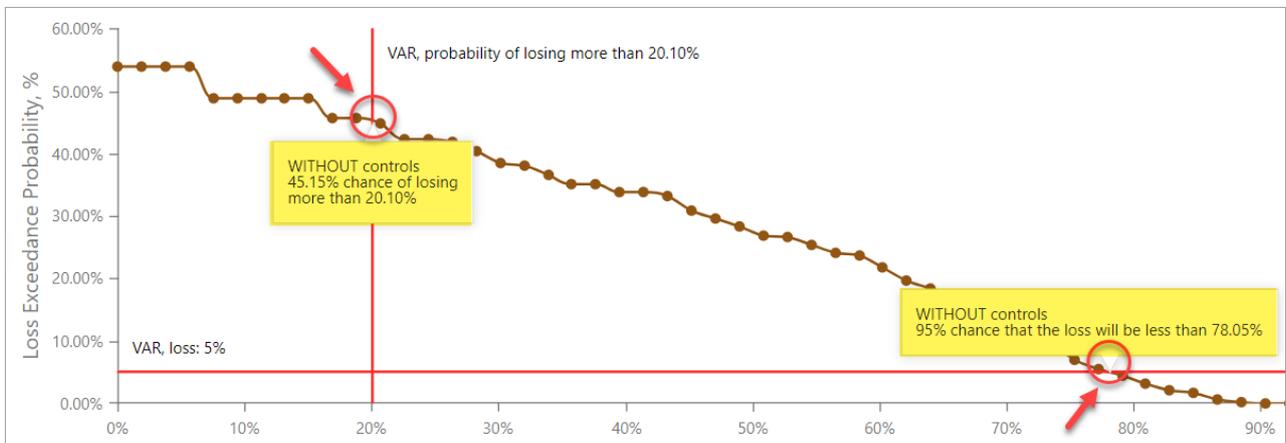


From the grid at the bottom, we can define the VARs represented by the horizontal and vertical red lines in the graph.

1. VAR, probability, n% probability that loss will exceed (horizontal red line)
2. VAR, loss % chance of losing more than n% (vertical red line)

You can edit the % by clicking on it, a prompt where you can enter the value will pop out.

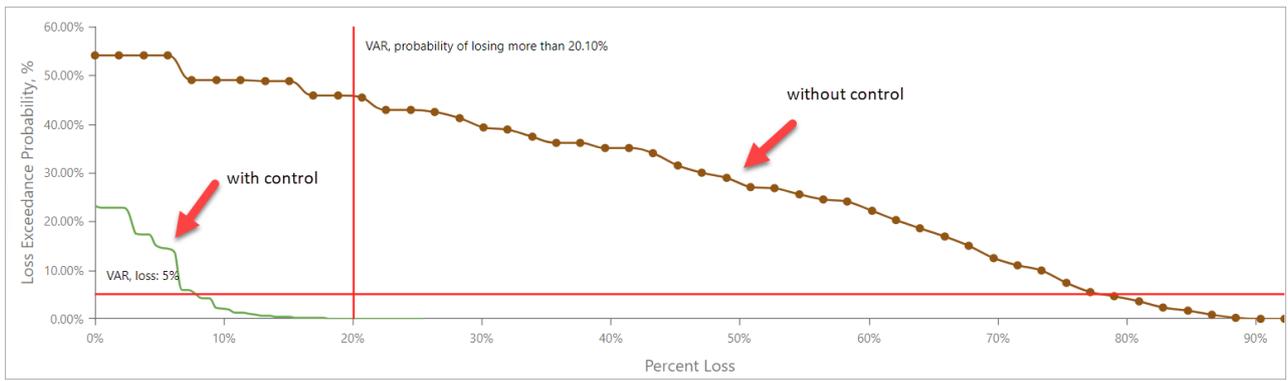
As these lines touch the "Without Controls" (or With Controls) curve, we can see the %probability.



The vertical red line %Loss = 20.1% (vertical red line) touches the curve at 45.15% which means that for "Without controls", there is a 45.15 % chance of losing more than 20.1%.

The horizontal line %Loss Exceedance Probability (horizontal line) = 5% touches the curve at 78.05%. This means that for "Without Controls", there is a 95% chance that the loss will be less than 78.05%.

Notice how the curve is flattened/shortened for LEC with controls -- loss is reduced when controls are in effect.



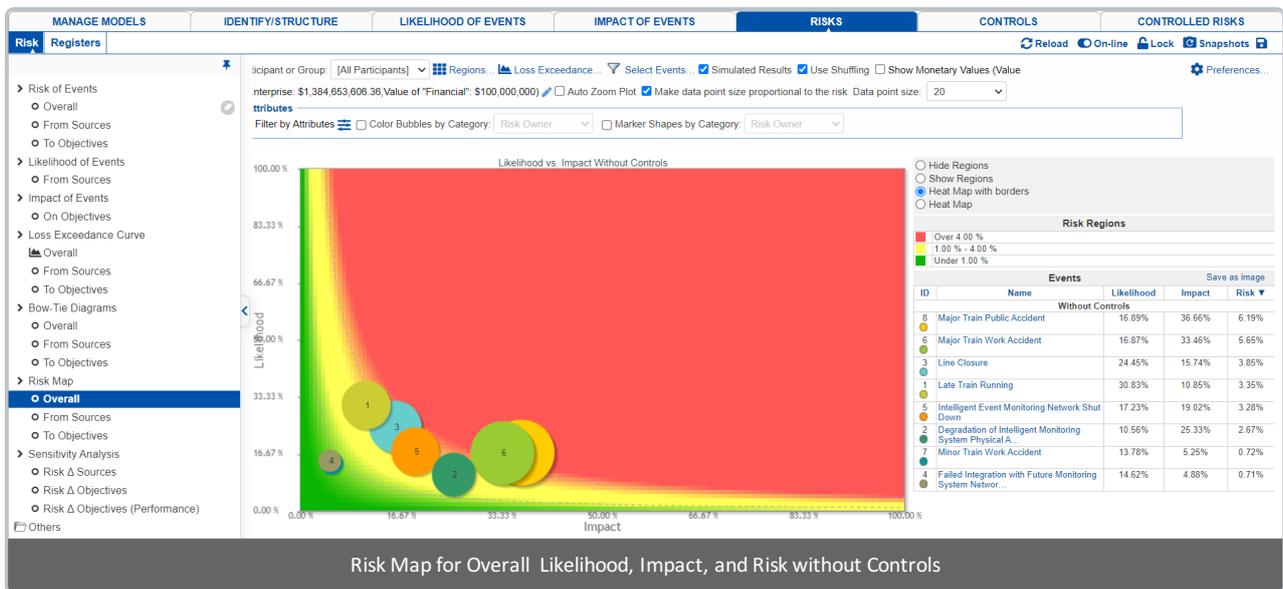
# Risk Map Overall

## Overview

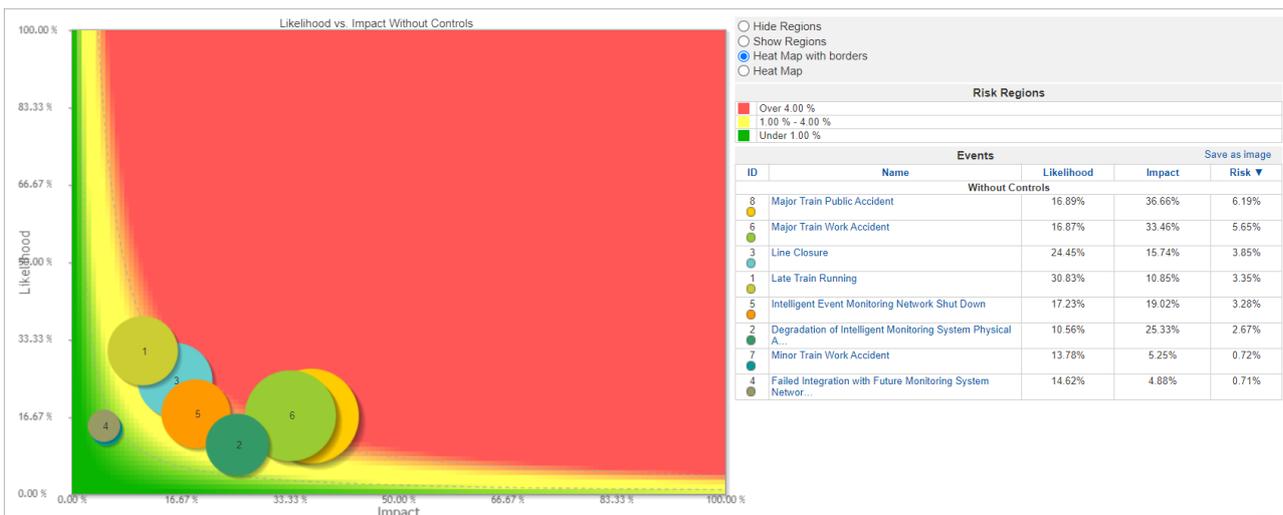
**Risk Map** is a graphical visualization of the **events' risks** designed to illustrate the **likelihood of events** on one axis and the **impact of events** on the other.

Here we see the Risk Map for **Overall Likelihood, Impact, and Risk without Controls**.

Risk Maps can also be **From Sources** or **To Objectives**.



The risk heat map is on the left, and the legend and grid showing the likelihoods, impacts, and risk are on the right side.



The **X-axis** represents the likelihood of events, and the **Y-axis** represents the impact of events (Note: You can interchange the axes from the Preferences)

The **bubbles** represent the **Events**. By default, the size of the bubble is proportional to the risk of the event. The biggest bubble size represents the largest risk and the smallest bubble size represents the smallest risk. All values in between are

sized proportionally in relation to the highest and lowest risk values. You can make all the bubble size the same by unchecking  Make data point size proportional to the risk

Each event has unique bubble color which doesn't have any meaning. You can choose to color the bubbles based on **Event Attributes**.

Riskion provides the default risk map color based on the risk region. Red represents high-risk, green represents low-risk, yellow represents in between. You can modify the **risk region** color.

Hovering over an Event bubble will show the likelihood, impact, and risk of the event on a tooltip -- Additionally, it will highlight the corresponding risk region and the likelihood, impact, and risk of the hovered event on the grid at the right.



For the event "Major Train Public Accident" -- its likelihood, impact, and risk are 16.89%, 36.66%, 6.19% respectively -- the bubble is in the red or high-risk region.

## Select Participant and Group

The results for the "All Participants" group are displayed by default as shown above.

By selecting from the participants and groups menu, you can also see the risk map for an individual participant or a group.

Participant or Group: [All Participants] ▾ 

- [All Participants]
- [C-Level Executives]
- [Engineering]

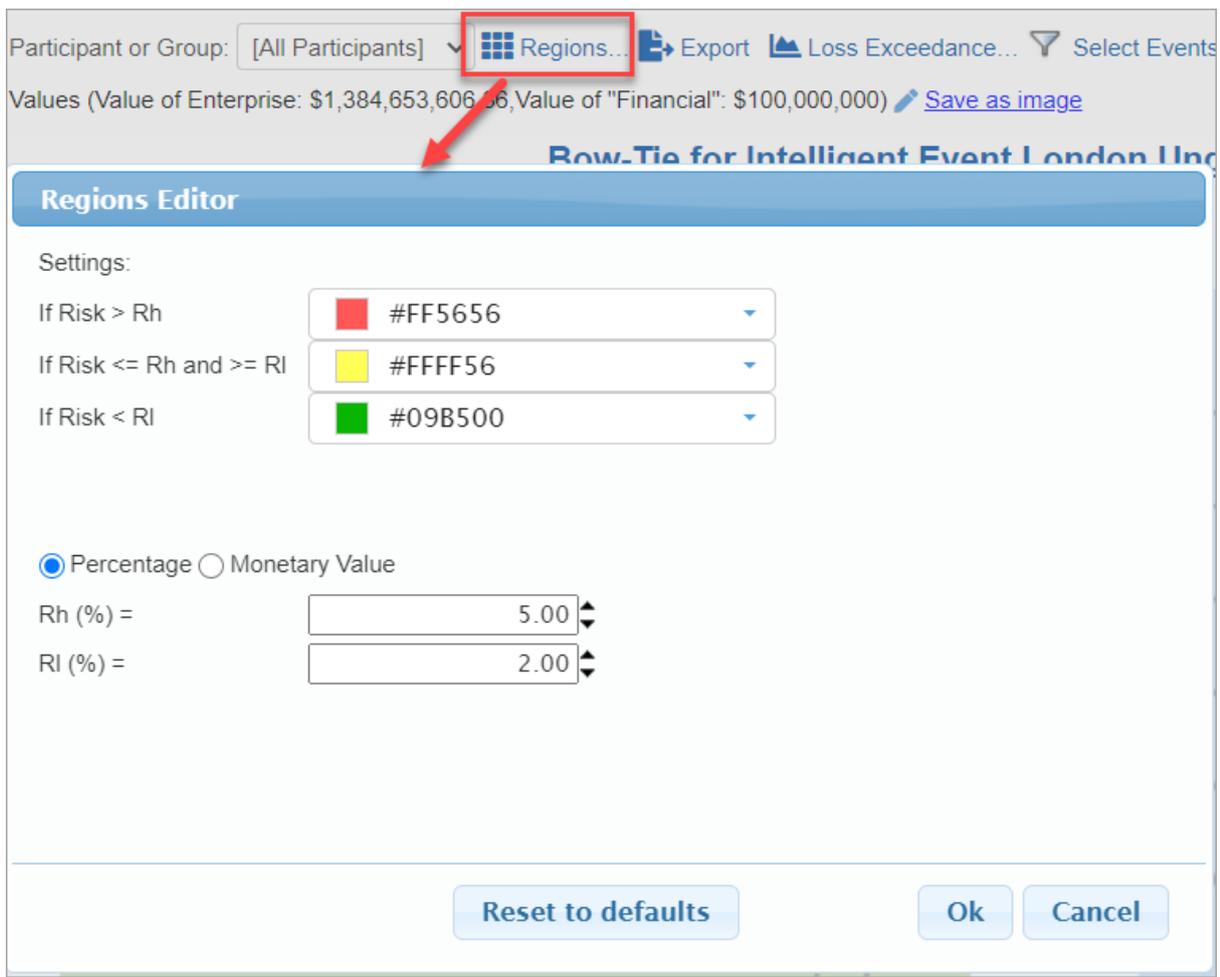
---

- Denis Risman
- Brian Quigley
- Chief Risk Officer
- Chief Engineering Officer
- IT Supervisor
- Chief Executive Officer
- Devin Nagy
- Michael Mankowski
- John Doe
- Project Manager
- Control Expert

## Risk Map Region

Default colors are already provided for the risk map region.

You can change this by clicking  [Regions...](#)



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

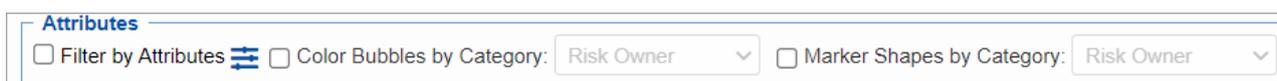
Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

The color specified here is used on the Event's color on the bow-tie diagram.

## Risk Map with Event Attributes

When Event Attributes are defined in the model, additional options are available on the toolbar.



Here you can filter, color, and use shapes other than bubble based on the event attributes.

- **Filter by Attributes** - checking this option will filter the events on the risk map based on the conditions specified. You need to click  to define the conditional statement for the attributes.

Filter by Attributes

Event Attributes

Use: AND ▼ Add Rule Reset

<input checked="" type="checkbox"/>	Event History	▼	Equal	▼	no history	x
<input checked="" type="checkbox"/>	Risk Owner	▼	Equal	▼	John	x

Apply
Close

- **Color Bubbles by Category** - checking this allows you to select an event attribute in the dropdown. Selecting a category will have the event of the same attribute to have the same color.
- **Marker Shapes by Category** - similar to Color bubbles by category, but this option will have the events of the same attribute to have the same shape (instead of a bubble).

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

---

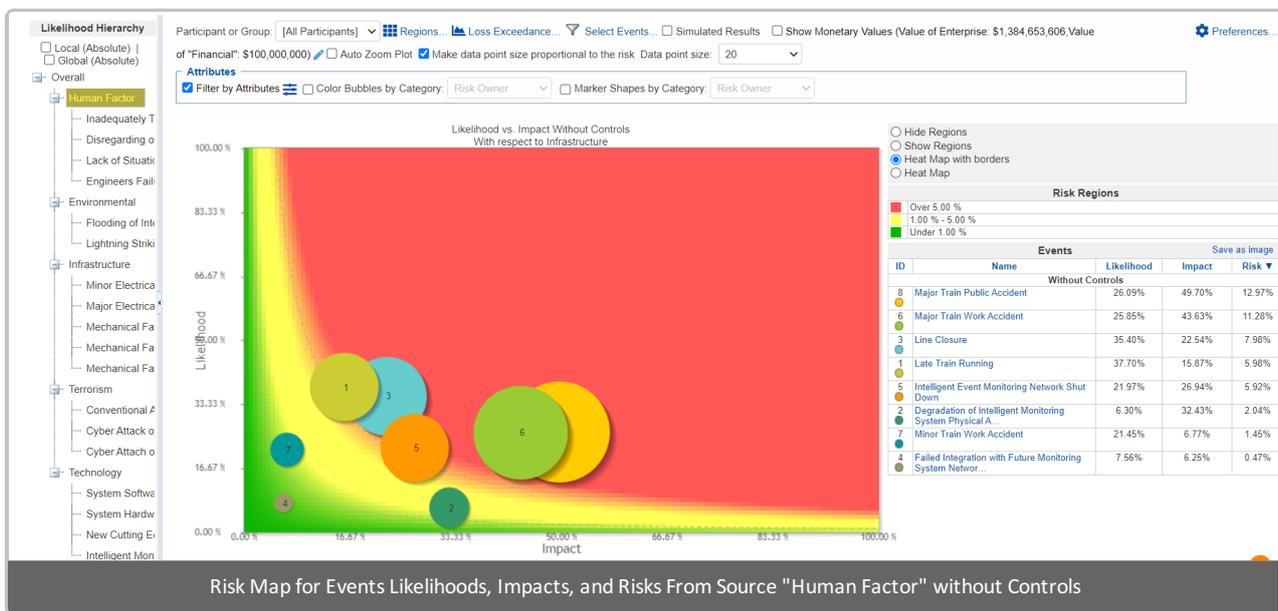
# Risk Map From Sources

## Overview

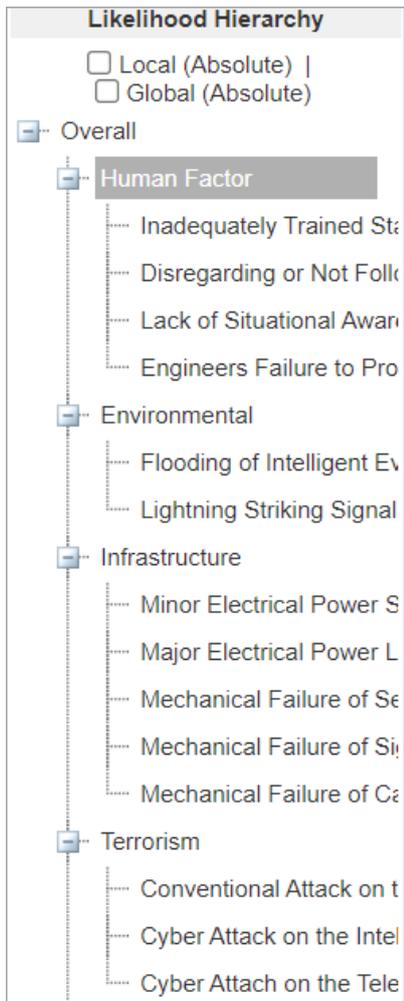
**Risk Map** is a graphical visualization of the **events' risks** designed to illustrate the **likelihood of events** on one axis and the **impact of events** on the other.

In Riskion, we refer to **threats, causes, hazards, and sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events). In our sample model, we are using the terminology "Source(s)".

Here we see the **Risk Map for the Likelihoods, Impacts, and Risks of the events from Source "Human Factor" without Controls**.



A source is selected from the Sources Hierarchy at the left.



You can also select the top node "Overall" which will show the same results as with the [Overall Risk Map](#) page.

The **X-axis** represents the likelihood of events, and the **Y-axis** represents the impact of events (Note: You can interchange the axes from the Preferences)

The **bubbles** represent the **Events**. By default, the size of the bubble is proportional to the risk of the event. The biggest bubble size represents the largest risk and the smallest bubble size represents the smallest risk. All values in between are sized proportionally in relation to the highest and lowest risk values. You can make all the bubble size the same by

unchecking  Make data point size proportional to the risk

Each event has unique bubble color which doesn't have any meaning. You can choose to color the bubbles based on [Event Attributes](#).

Riskion provides the default risk map color based on the risk region. Red represents high-risk, green represents low-risk, yellow represents in between. You can modify the [risk region](#) color.

Hovering over an Event bubble will show the likelihood, impact, and risk of the event on a tooltip -- Additionally, it will highlight the corresponding risk region and the likelihood, impact, and risk of the hovered event on the grid at the right.



For the event "Late Train Running" -- its likelihood, impact, and risk are 37.70%, 15.87%, 5.98% respectively -- the bubble is in the red or high-risk region.

## Select Participant and Group

The results for the "All Participants" group are displayed by default as shown above.

By selecting from the participants and groups menu, you can also see the risk map for an individual participant or a group.

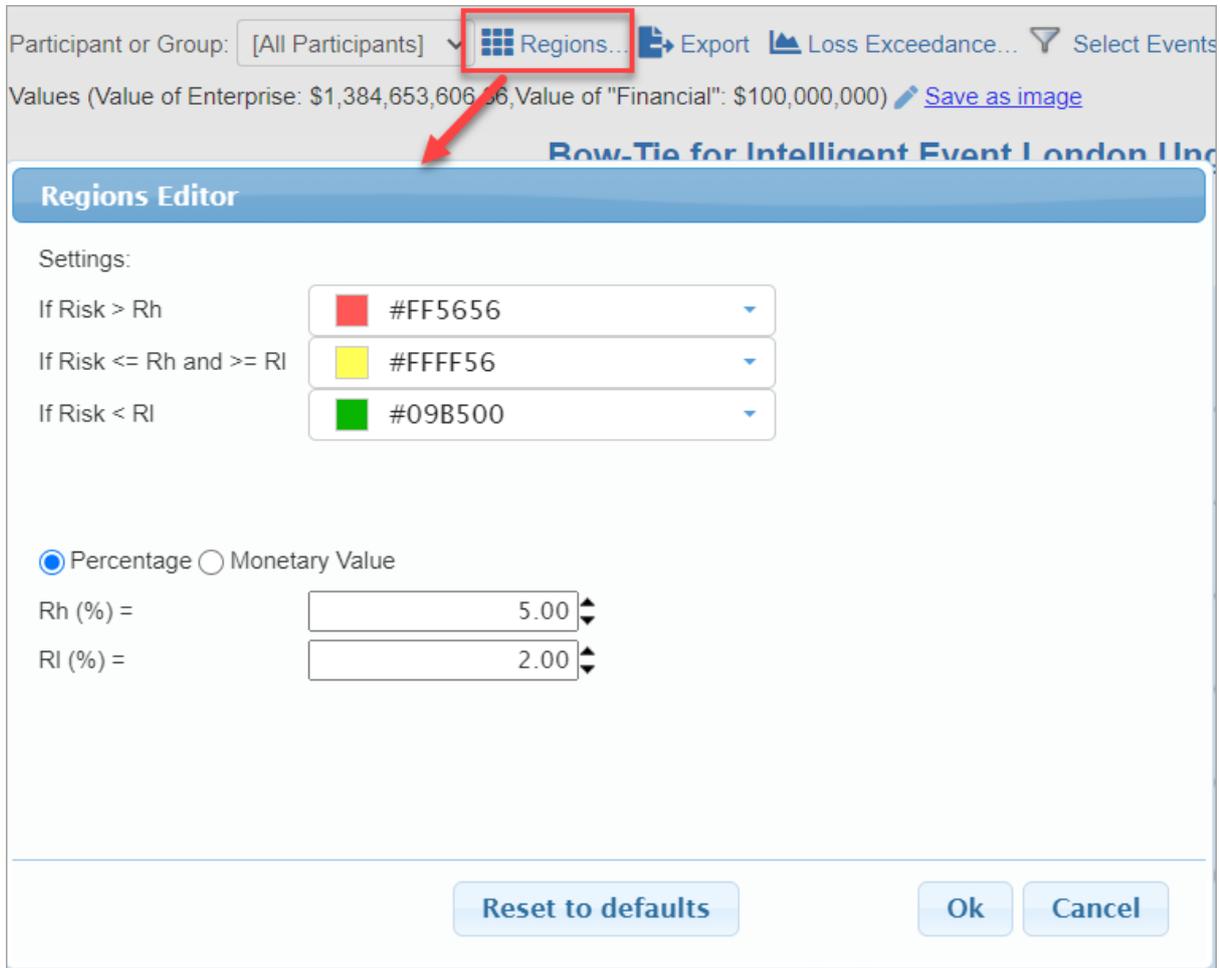
Participant or Group: [All Participants] ▾

- [All Participants]
- [C-Level Executives]
- [Engineering]
- 
- Denis Risman
- Brian Quigley
- Chief Risk Officer
- Chief Engineering Officer
- IT Supervisor
- Chief Executive Officer
- Devin Nagy
- Michael Mankowski
- John Doe
- Project Manager
- Control Expert

## Risk Map Region

Default colors are already provided for the risk map region.

You can change this by clicking 



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

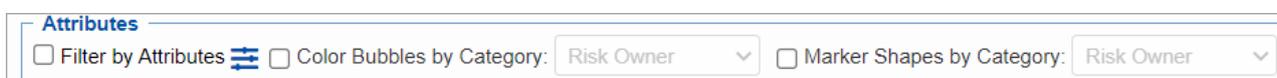
Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

The color specified here is used on the Event's color on the bow-tie diagram.

## Risk Map with Event Attributes

When Event Attributes are defined in the model, additional options are available on the toolbar.



Here you can filter, color, and use shapes other than bubble based on the event attributes.

- **Filter by Attributes** - checking this option will filter the events on the risk map based on the conditions specified. You need to click  to define the conditional statement for the attributes.

Filter by Attributes

Event Attributes

Use: AND ▼ Add Rule Reset

<input checked="" type="checkbox"/>	Event History	▼	Equal	▼	no history	x
<input checked="" type="checkbox"/>	Risk Owner	▼	Equal	▼	John	x

Apply
Close

- **Color Bubbles by Category** - checking this option lists the categorical attributes of the model in a dropdown. Selecting a category will have the event of the same attribute to have the same color.
- **Marker Shapes by Category** - similar to Color bubbles by category, but this option will have the events of the same attribute to have the same shape (instead of a bubble).

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

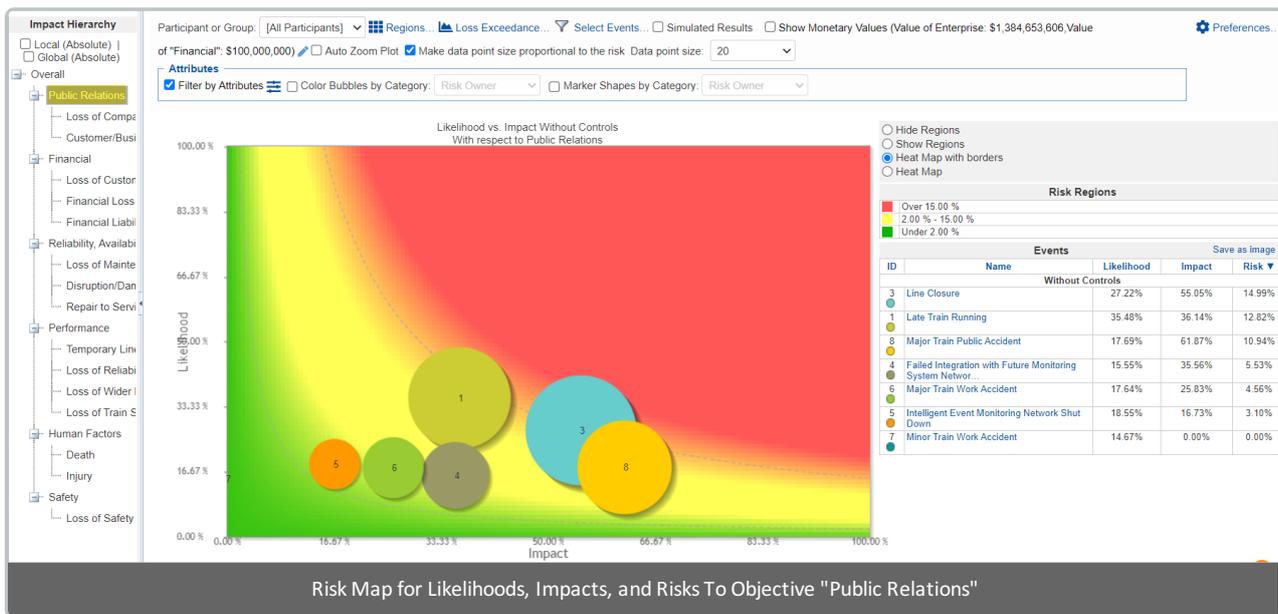
---

# Risk Map To Objectives

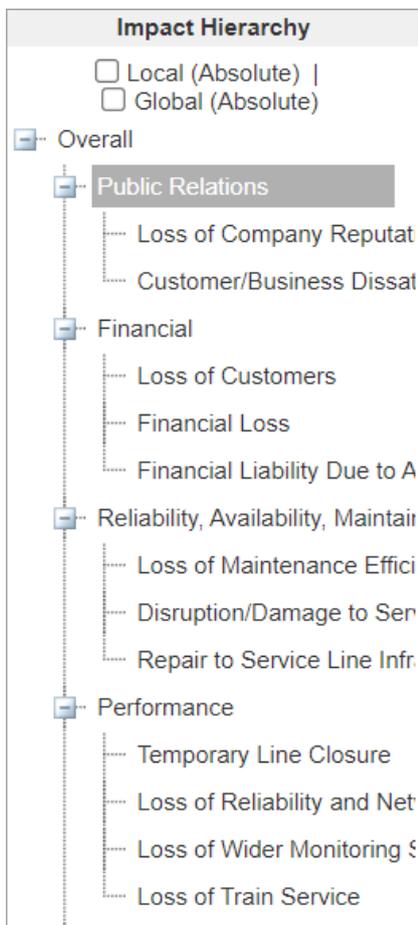
## Overview

**Risk Map** is a graphical visualization of the **events' risks** designed to illustrate the **likelihood of events** on one axis and the **impact of events** on the other.

Here we see the **Risk Map for the Likelihoods, Impacts, and Risks of the events To Objective "Public Relations"** without Controls.



An Objective is selected from the Objectives Hierarchy at the left.



You can also select the top node "Overall" which will show the same results as with the [Overall Risk Map](#) page.

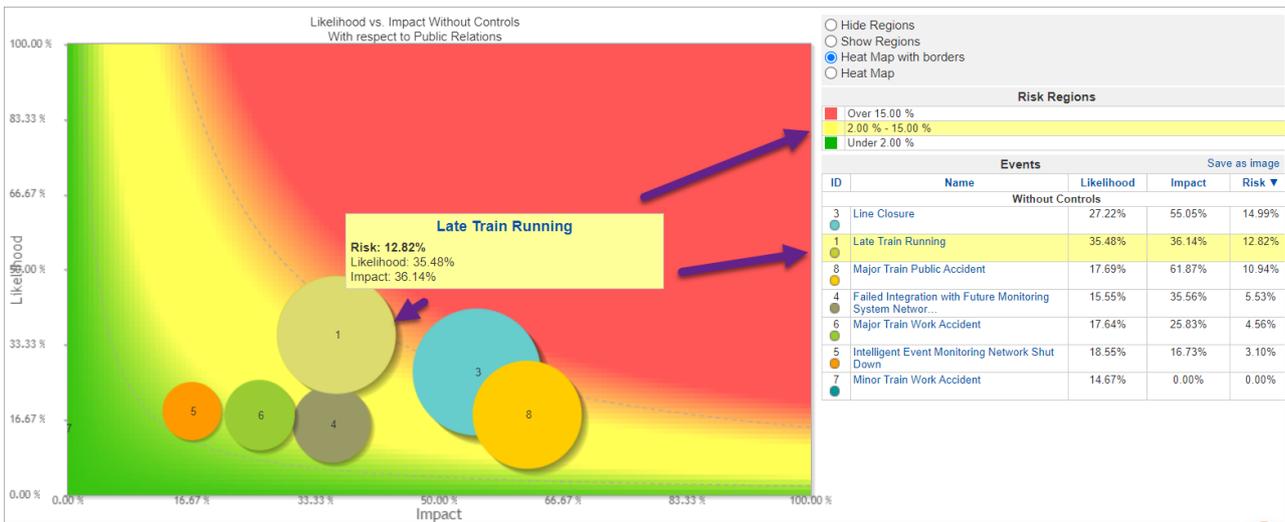
The **X-axis** represents the likelihood of events, and the **Y-axis** represents the impact of events (Note: You can interchange the axes from the Preferences)

The **bubbles** represent the **Events**. By default, the size of the bubble is proportional to the risk of the event. The biggest bubble size represents the largest risk and the smallest bubble size represents the smallest risk. All values in between are sized proportionally in relation to the highest and lowest risk values. You can make all the bubble size the same by unchecking  **Make data point size proportional to the risk**

Each event has unique bubble color which doesn't have any meaning. You can choose to color the bubbles based on [Event Attributes](#).

Riskion provides the default risk map color based on the risk region. Red represents high-risk, green represents low-risk, yellow represents in between. You can modify the [risk region](#) color.

Hovering over an Event bubble will show the likelihood, impact, and risk of the event on a tooltip -- Additionally, it will highlight the corresponding risk region and the likelihood, impact, and risk of the hovered event on the grid at the right.



For the event "Late Train Running" -- its likelihood, impact, and risk are 35.48%, 36.14%, 12.82% respectively -- the bubble is in the yellow risk region.

## Select Participant and Group

The results for the "All Participants" group are displayed by default as shown above.

By selecting from the participants and groups menu, you can also see the risk map for an individual participant or a group.

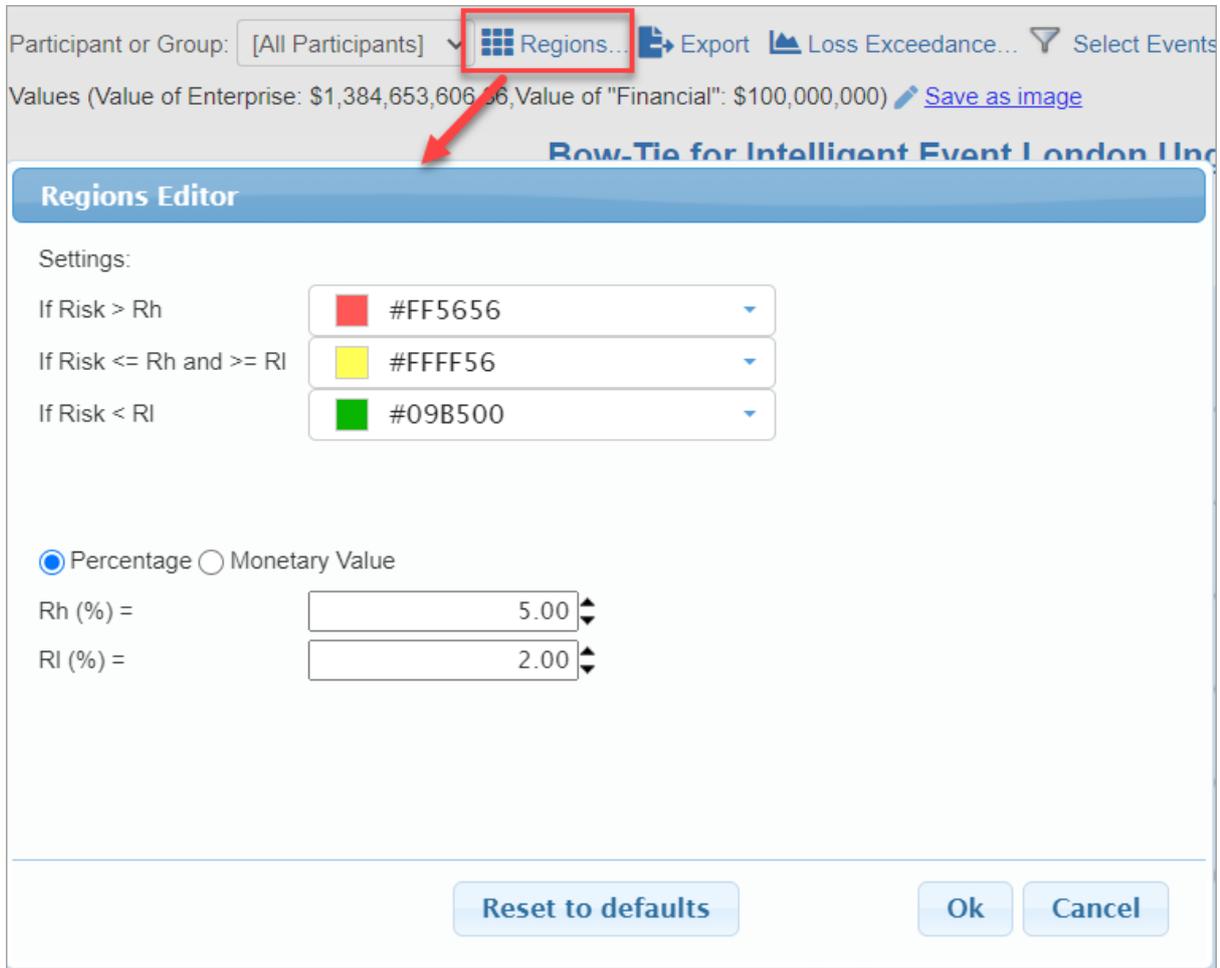
Participant or Group: [All Participants]

- [All Participants]
- [C-Level Executives]
- [Engineering]
- 
- Denis Risman
- Brian Quigley
- Chief Risk Officer
- Chief Engineering Officer
- IT Supervisor
- Chief Executive Officer
- Devin Nagy
- Michael Mankowski
- John Doe
- Project Manager
- Control Expert

## Risk Map Region

Default colors are already provided for the risk map region.

You can change this by clicking 



Participant or Group: [All Participants]  Export Loss Exceedance... Select Events

Values (Value of Enterprise: \$1,384,653,606.56, Value of "Financial": \$100,000,000) [Save as image](#)

### Regions Editor

Settings:

If Risk > Rh  #FF5656

If Risk <= Rh and >= RI  #FFFF56

If Risk < RI  #09B500

Percentage  Monetary Value

Rh (%) =

RI (%) =

[Reset to defaults](#) [Ok](#) [Cancel](#)

Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

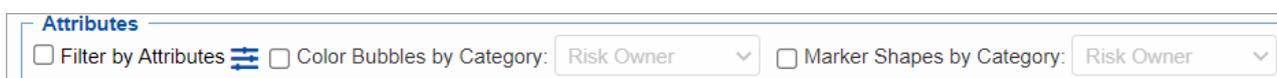
Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

The color specified here is used on the Event's color on the bow-tie diagram.

## Risk Map with Event Attributes

When Event Attributes are defined in the model, additional options are available on the toolbar.



**Attributes**

Filter by Attributes   Color Bubbles by Category: Risk Owner  Marker Shapes by Category: Risk Owner

Here you can filter, color, and use shapes other than bubble based on the event attributes.

- **Filter by Attributes** - checking this option will filter the events on the risk map based on the conditions specified. You need to click  to define the conditional statement for the attributes.

**Filter by Attributes**

**Event Attributes**

Use: AND ▼ Add Rule Reset

<input checked="" type="checkbox"/>	Event History	Equal	no history	✕
<input checked="" type="checkbox"/>	Risk Owner	Equal	John	✕

Apply
Close

- **Color Bubbles by Category** - checking this option lists the categorical attributes of the model in a dropdown. Selecting a category will have the event of the same attribute to have the same color.
- **Marker Shapes by Category** - similar to Color bubbles by category, but this option will have the events of the same attribute to have the same shape (instead of a bubble).

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

---

# Risk $\Delta$ (delta) Threats

## Overview

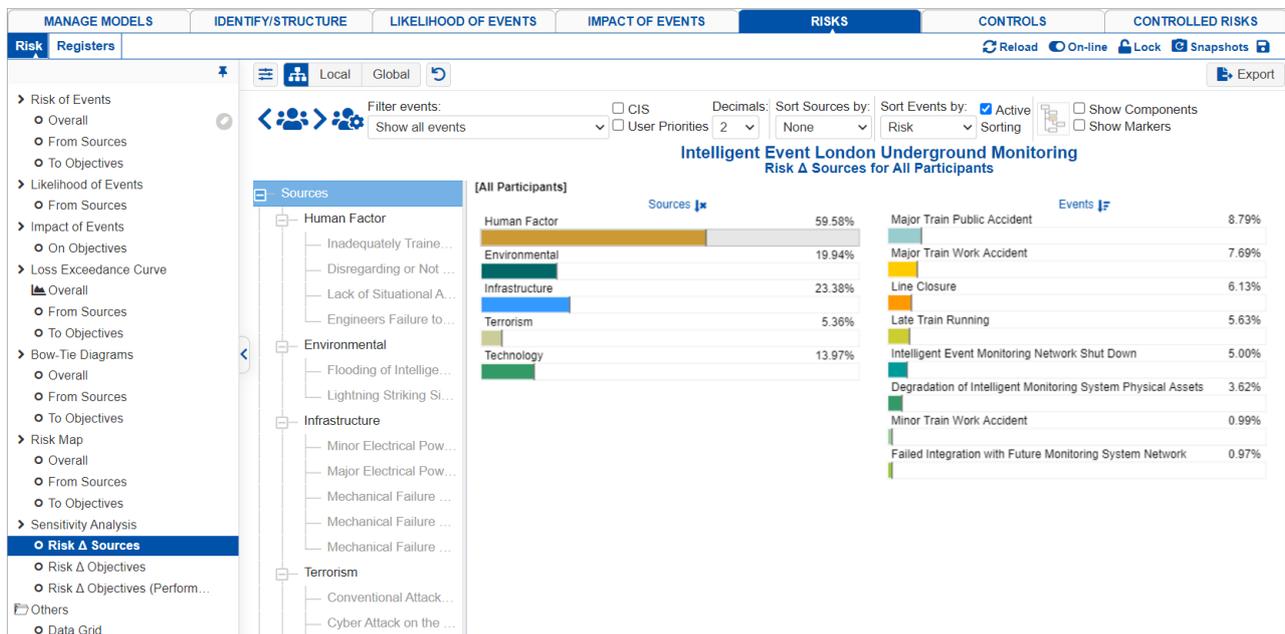
The **Risk  $\Delta$  (delta) Threats** is a Dynamic Sensitivity analysis used to dynamically change the likelihoods of the threats to determine how these changes affect the **risks of the events**.

This page works similarly as with **Likelihood's Dynamic Sensitivity**, where you can also dynamically change the likelihood of the threats, except that it is to determine its effect on the likelihoods of events, instead of on the risks of the events.

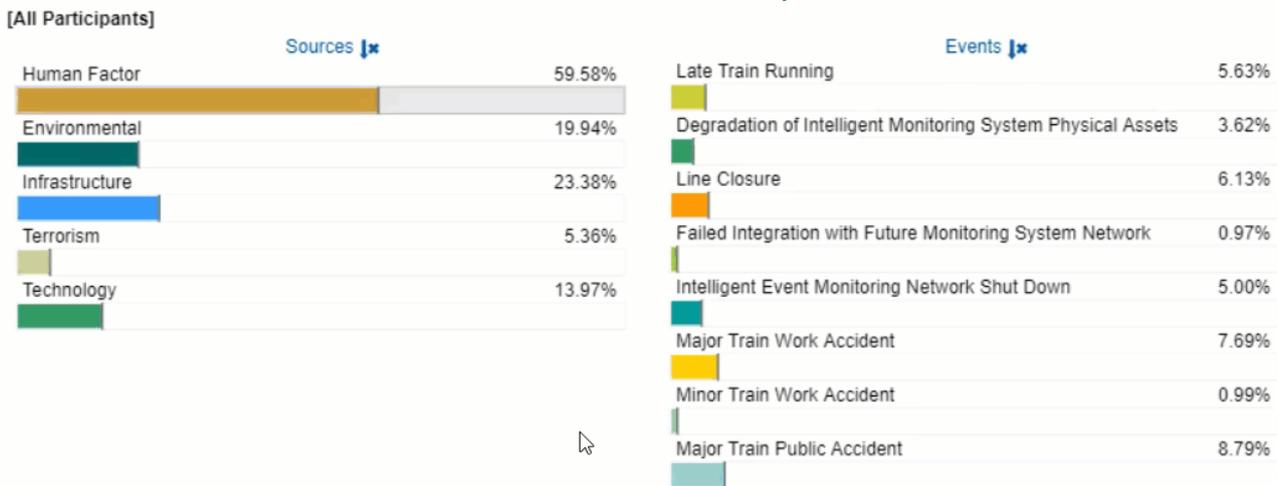
In Riskion, we refer to **threats, causes, hazards, and sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

In our sample model, we are using the terminology "Source(s)".

The bars at the left represent the likelihood of the sources, while the bars at the right are the risks of the events.



By dragging the source's likelihoods back and forth in the left column, the risks of the events will change in the right column.

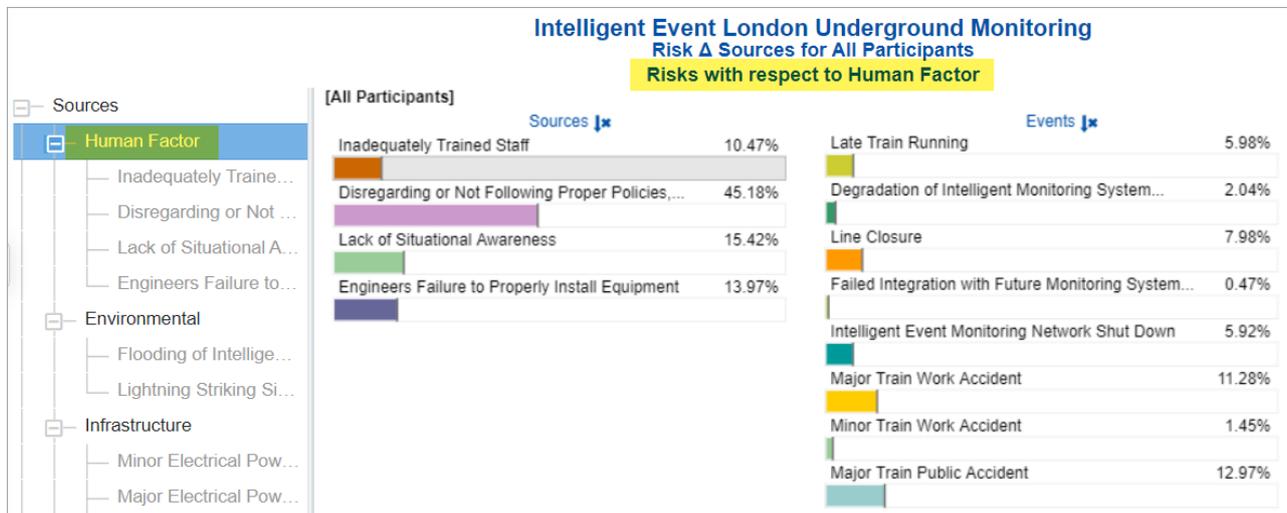


The black | markers on the source and event bars indicate the original sources' and events' risks.



After temporarily changing the likelihoods of one or more of the sources, you can press the  reset icon.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Sources" node.



You can show the local and global source's likelihoods on the Source Hierarchy at the right using the Local-Global buttons:

Sources	All Participants	
	Local	Global
<ul style="list-style-type: none"> <li>Sources           <ul style="list-style-type: none"> <li>Human Factor               <ul style="list-style-type: none"> <li>Inadequately T... 10.47%</li> <li>Disregarding o... 45.18%</li> <li>Lack of Situati... 15.42%</li> <li>Engineers Fail... 13.97%</li> </ul> </li> <li>Environmental               <ul style="list-style-type: none"> <li>Flooding of Int... 2.03%</li> <li>Lightning Striki... 1.08%</li> </ul> </li> <li>Infrastructure               <ul style="list-style-type: none"> <li>Minor Electrica... 19.22%</li> <li>Major Electrica... 7.91%</li> </ul> </li> </ul> </li> </ul>	59.58%	59.58%

You can hide the Sources Hierarchy at the left using 

Click  to show/hide the toolbar options:

			Filter events:	Decimals:	Sort Sources by:	Sort Events by:	<input type="checkbox"/> Active	<input type="checkbox"/> Show Components
			Show all events	2	None	Risk	Sorting	

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the [Advanced Mode](#) switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using 

Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

## Filter Events

By default, all events are displayed.

The screenshot shows a dropdown menu titled 'Filter events:'. The current selection is 'Show all events'. To the right, there are fields for 'Decimals: 2' and 'So N'. The dropdown menu is open, showing the following options: 'Show all events' (highlighted in blue), 'Show top 5 events based on All Participants risks', 'Show top 10 events based on All Participants risks', 'Show top 25 events based on All Participants risks', 'Show bottom 5 events based on All Participants risks', 'Show bottom 10 events based on All Participants risks', 'Show bottom 25 events based on All Participants risks', 'Advanced: show top X events', 'Show funded events - Default Scenario', 'Select/deselect events', and 'Filter by event attributes'.

You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group risks.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.

The screenshot shows a dialog box titled 'Advanced'. It contains the text 'Select top' followed by a text input field, a dropdown arrow, 'Events based on', another dropdown menu showing 'All Participants', and the word 'priorities'. At the bottom right, there are 'OK' and 'Cancel' buttons.

The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

## Events Components

Checking the  **Show Components** displays the breakdown of each of the source's contributions or share to the risks of each of the events.

The breakdown colors of the event bars at the right corresponds to each of the sources at the left.

## Active Sorting (Keep Sorting)

Active Sorting is only enabled when Events are Sorted by Risks.

Checking the Active Sorting checkbox actively re-sorts the events as the source likelihoods are being adjusted.

When the Active Sorting is OFF, the initial sorting of the events will be remembered.

## Change Events Color

Clicking on the event bar will open a color picker where you can select and change the color assignment.

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the [Advanced Mode](#) switch at the bottom of the page, this will show the advanced options on this page.

## Advanced Mode Options

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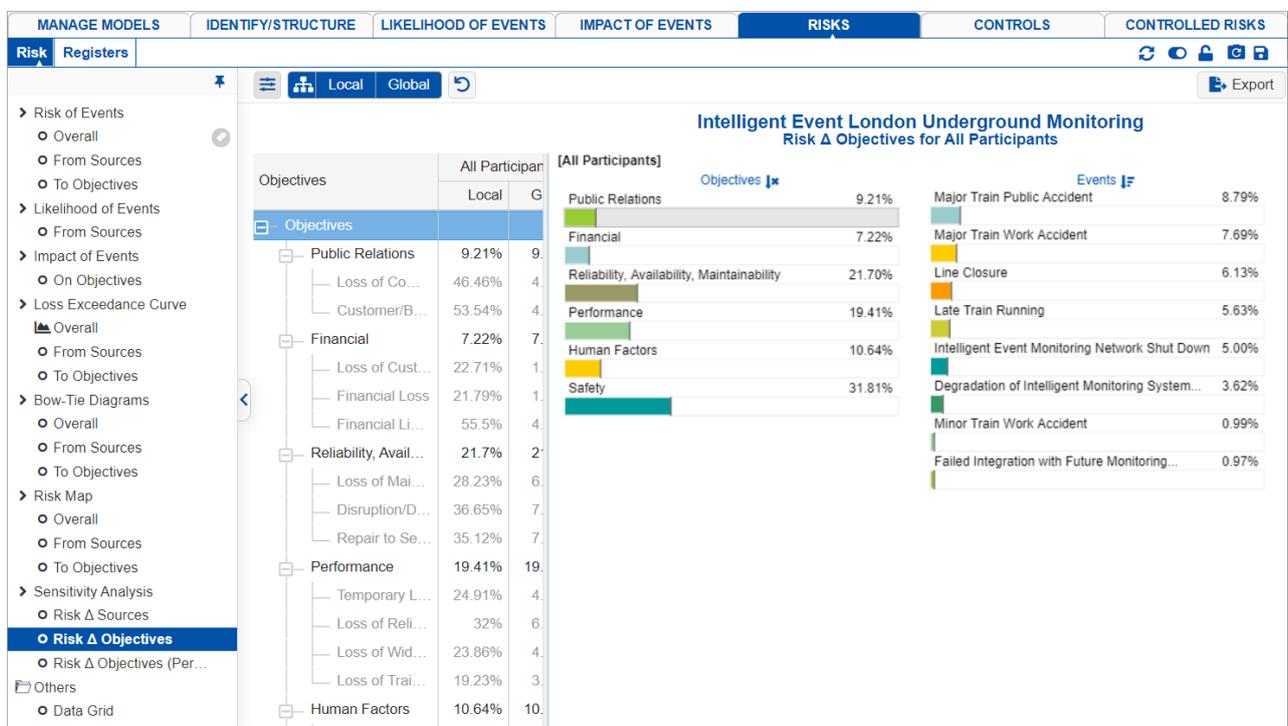
# Risk $\Delta$ (delta) Objectives

## Overview

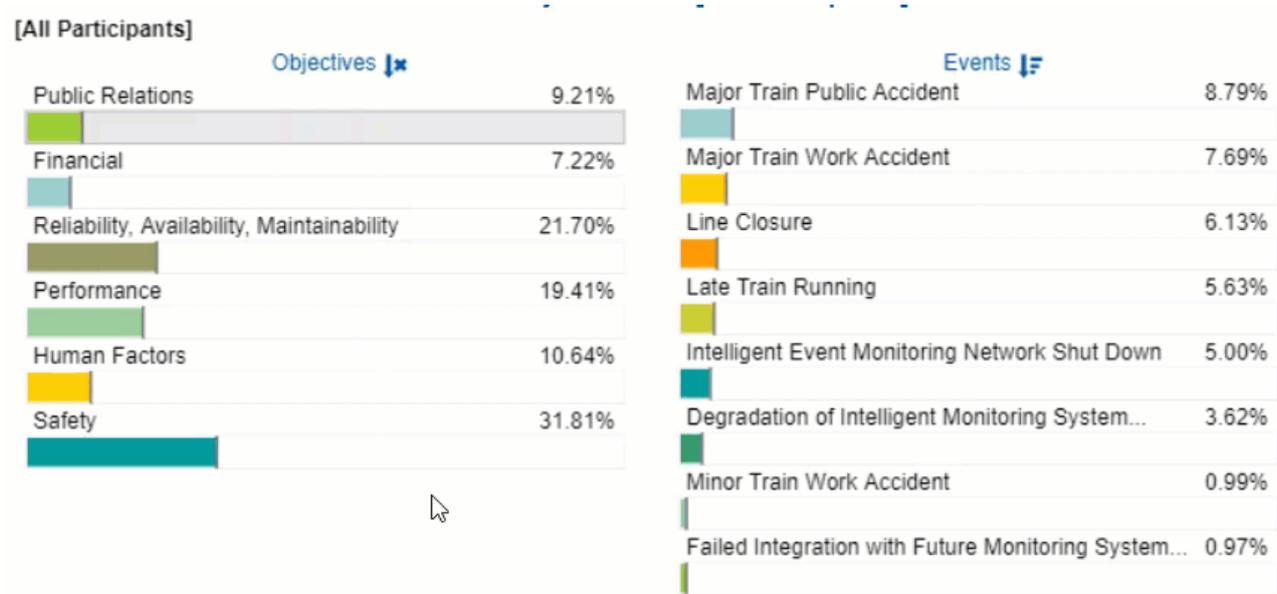
The **Risk  $\Delta$  (delta) Objectives** is a Dynamic Sensitivity analysis used to dynamically change the impact of the objectives to determine how these changes affect the **risks of the events**.

This page works similarly as with **Impact's Dynamic Sensitivity**, where you can also dynamically change the impact of the objectives, except that it is to determine its effect on the impacts of events, instead of on the risks of events.

The bars at the left represent the impact of the objectives, while the bars at the right are the risks of the events.



By dragging the objective's impacts back and forth in the left column, the risks of the events will change in the right column.

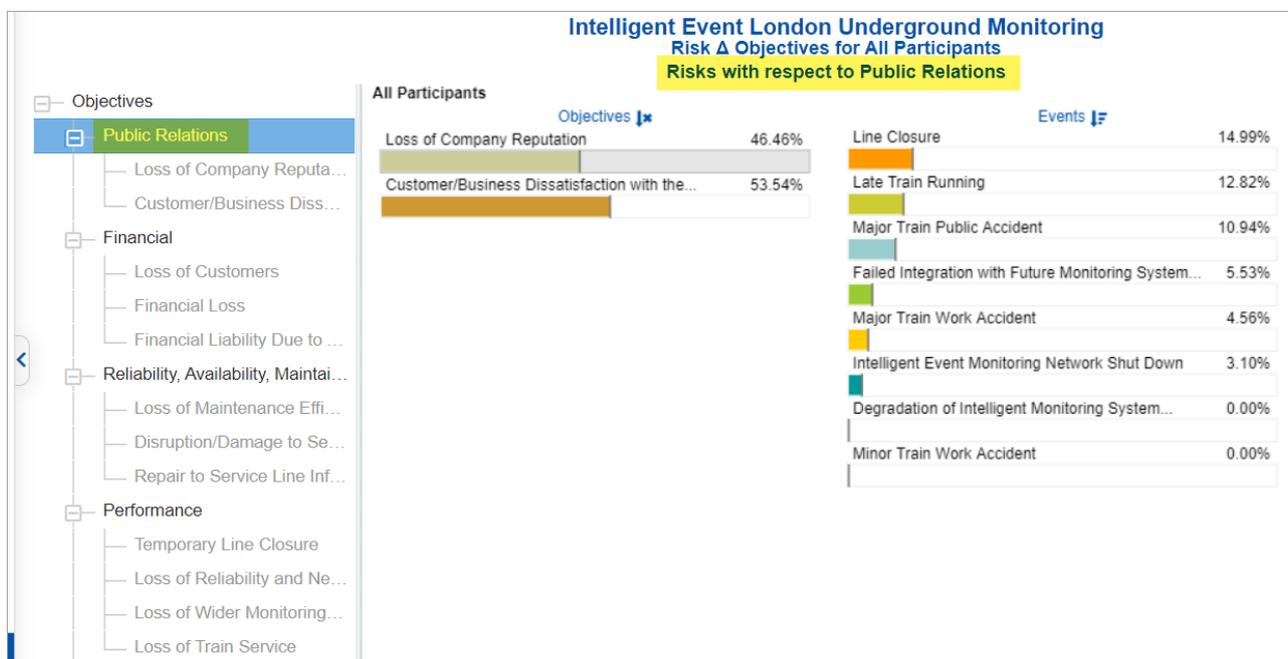


The black | markers on the objective and event bars indicate the original objective and event impacts.



After temporarily changing the impacts of one or more of the objectives, you can press the reset icon.

By selecting an element in the hierarchy other than the top node, you can see the results due to this element rather than the overall results due to the "Objectives" node.



You can show the local and global objectives impacts on the Objectives Hierarchy at the right using the Local-Global buttons:

Objectives	All Participants	
	Local	Global
Objectives		
Public Relations	9.21%	9.21%
Loss of Compan...	46.46%	4.28%
Customer/Busin...	53.54%	4.93%
Financial	7.22%	7.22%
Loss of Customers	22.71%	1.64%
Financial Loss	21.79%	1.57%
Financial Liabilit...	55.5%	4.01%
Reliability, Availabilit...	21.7%	21.7%
Loss of Mainten...	28.23%	6.13%
Disruption/Dam...	36.65%	7.96%
Repair to Servic...	35.12%	7.62%
Performance	19.41%	19.41%
Temporary Line ...	24.91%	4.83%
Loss of Reliabilit...	32%	6.21%
Loss of Wider M...	23.86%	4.63%

You can hide the Objectives Hierarchy at the left using 

Click  to show/hide the toolbar options:

			Filter events:	Decimals:	Sort Objectives by:	Sort Events by:	<input type="checkbox"/> Active	<input type="checkbox"/> Show Components
			Show all events	2	None	Risk	Sorting	

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using

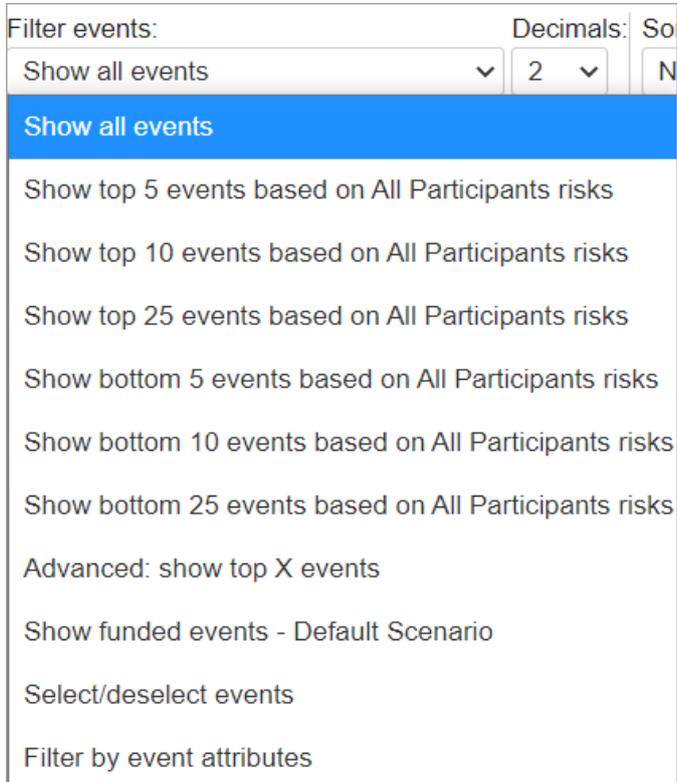


Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

## Filter Events

By default, all events are displayed.

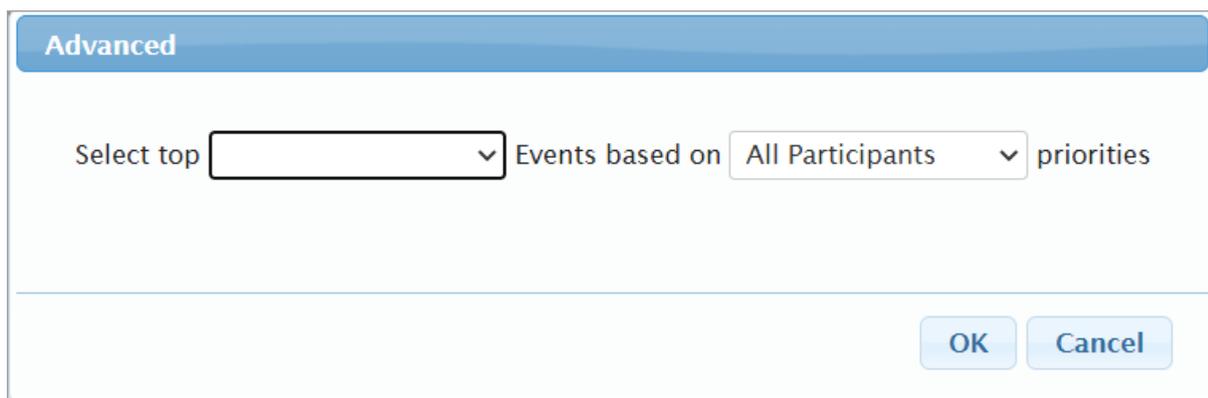


Filter events: Show all events ▾ Decimals: 2 ▾ So N

- Show all events
- Show top 5 events based on All Participants risks
- Show top 10 events based on All Participants risks
- Show top 25 events based on All Participants risks
- Show bottom 5 events based on All Participants risks
- Show bottom 10 events based on All Participants risks
- Show bottom 25 events based on All Participants risks
- Advanced: show top X events
- Show funded events - Default Scenario
- Select/deselect events
- Filter by event attributes

You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group risks.

The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



Advanced

Select top  Events based on All Participants ▾ priorities

OK Cancel

The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

## Events Components

Checking the  Show Components displays the breakdown of each of the objectives' contributions or share to the

risks of each of the events.

The breakdown colors of the event bars at the right corresponds to each of the objectives at the left.

## Active Sorting (Keep Sorting)

Active Sorting is only enabled when Events are Sorted by Risks.

Checking the Active Sorting checkbox actively re-sorts the events as the objective impacts are being adjusted.

When the Active Sorting is OFF, the initial sorting of the events will be remembered.

## Change Events Color

Clicking on the event bar will open a color picker where you can select and change the color assignment.

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Advanced Mode Options

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# Risk $\Delta$ (delta) Objectives Performance

## Overview

The **Risk  $\Delta$  (delta) Objectives** is a Performance Sensitivity analysis used to dynamically change the impact of the objectives to determine how these changes affect the **risks of the events**.



This page works similarly as with **Impact's Dynamic Sensitivity**, where you can also dynamically change the impact of the objectives, except that it is to determine its effect on the impacts of events instead of on the risks of the events.

Each performance sensitivity is composed of:

- The relative impact of the objectives is depicted by the vertical bars and shown numerically on the left side of each bar.
- The relative risk with respect to any of the objectives is shown by the intersection of that events line segment with the objective bars. Thus, for example, Major Train Public Accident has the highest risk due to Public Relations (orange bubble on the Public Relations bar).
- The intersection of the event line segment with the overall axis on the right shows the relative overall risk of the event.

The options above the chart are explained below:

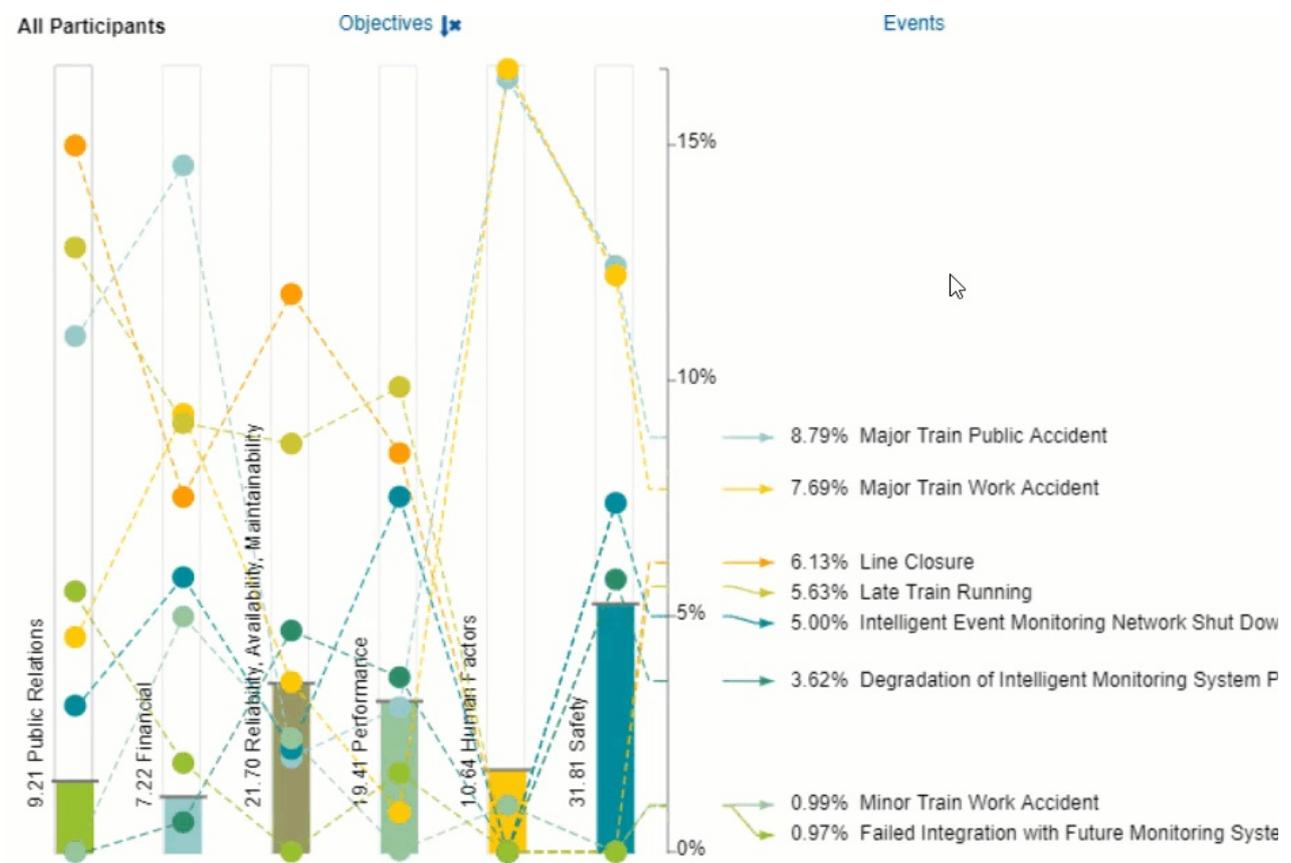
-  to display the lines connecting the events from one objective to another. Note: The connecting lines have no meaning; they are included to help you find where a particular event lies as you move from one objective to another.
-  to hide the connecting lines and use horizontal ticks instead of circles to indicate the risk of the event due to the

objective

-  to align the event labels at the right to their corresponding overall risks
-  to expand the event labels
-  to show the objectives as bars
-  to display the performance sensitivity as a radar chart

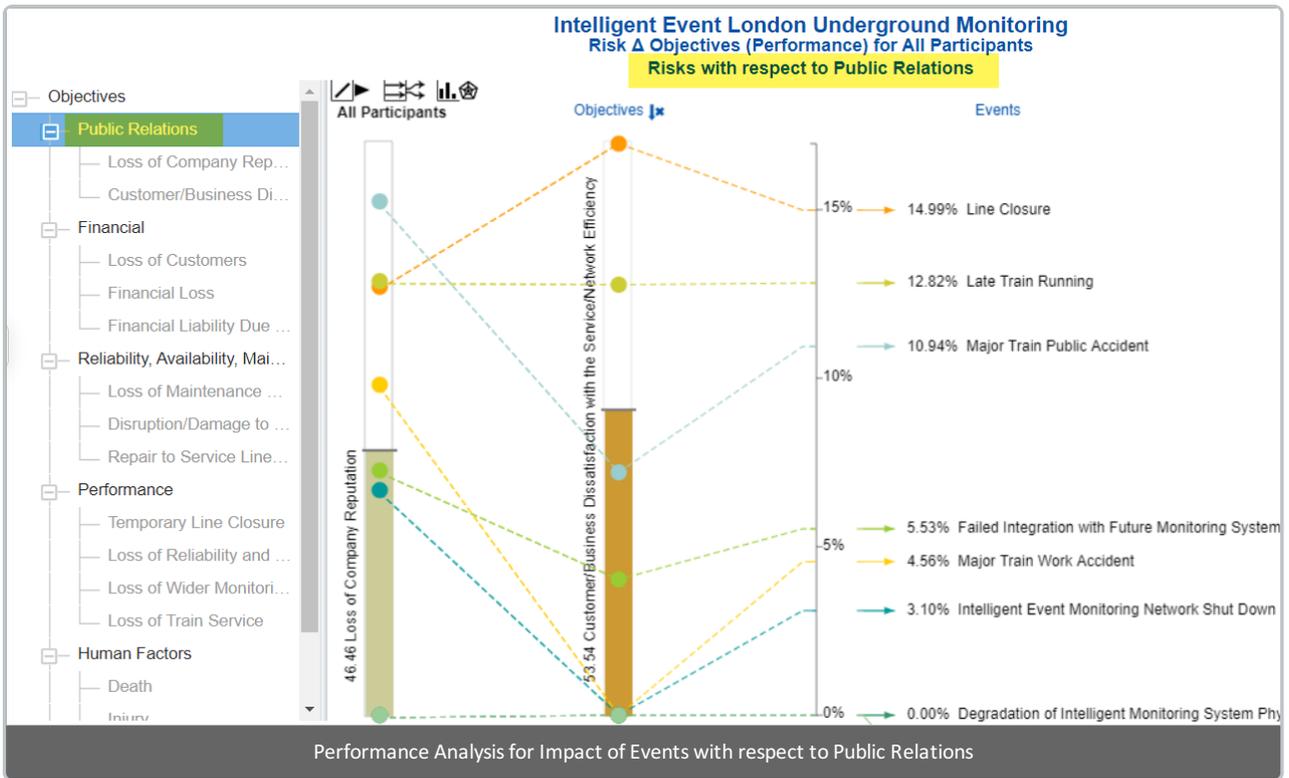
The Performance graph is also dynamic, so you can temporarily alter the relationship between the events and their objectives by dragging the objective bars up or down.

Note: If there is one event that is highest on every objective, there is probably something missing from the model, or specific objectives were not considered adequately when the judgments were. Iteration should be almost always be performed in such a case since it is extremely rare that any event is highest on every objective.



After temporarily changing the impacts of one or more of the objectives, you can press the  reset icon.

By selecting an element in the hierarchy other than the top node, you can see the results with respect to this element rather than the overall results due to the "Objectives" node.



The performance above shows all the event impacts with respect to the selected node "Public Relations".

You can show the local and global objectives impacts on the Objectives Hierarchy at the right using the Local-Global buttons:

Objectives	All Participants	
	Local	Global
Objectives		
Public Relations	9.21%	9.21%
Loss of Compan...	46.46%	4.28%
Customer/Busin...	53.54%	4.93%
Financial	7.22%	7.22%
Loss of Customers	22.71%	1.64%
Financial Loss	21.79%	1.57%
Financial Liabilit...	55.5%	4.01%
Reliability, Availabilit...	21.7%	21.7%
Loss of Mainten...	28.23%	6.13%
Disruption/Dam...	36.65%	7.96%
Repair to Servic...	35.12%	7.62%
Performance	19.41%	19.41%
Temporary Line ...	24.91%	4.83%
Loss of Reliabilit...	32%	6.21%
Loss of Wider M...	23.86%	4.63%

You can hide the Objectives Hierarchy at the left using

Click to show/hide the toolbar options:

	Filter events:	Decimals:	Sort Objectives by:	Events parameter:
	Show all events	2	None	Impact

**DIDN'T SEE WHAT YOU ARE LOOKING FOR?** Try enabling the **Advanced Mode** switch at the bottom of the page, this will show the advanced options on this page.

## Select Participants and Groups

You can select to display results for **one** participant or group using



Clicking the  button will open a window where you can select a participant or a group.

You can use the prev  and the next  buttons to cycle through each participant or group.

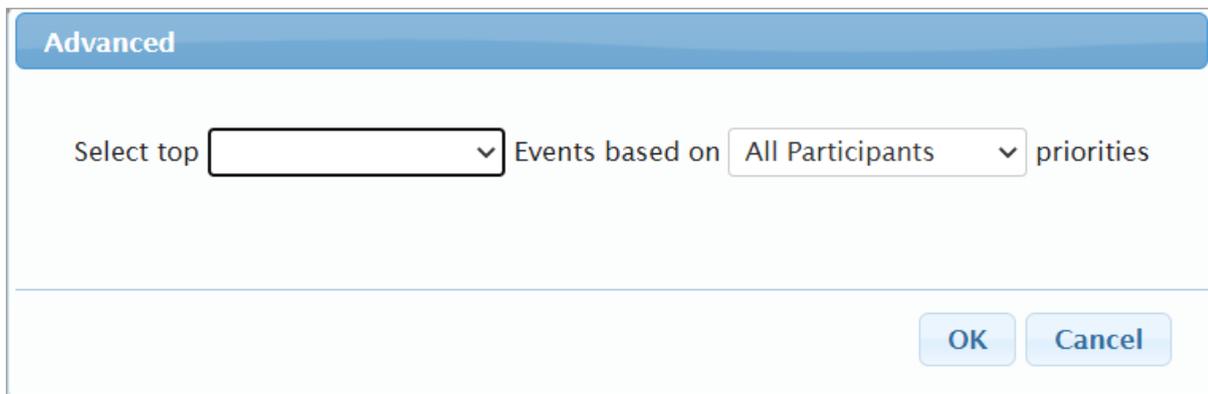
## Filter Events

By default, all events are displayed.



You can select to display the top or bottom 5, 10, or 25 events based on the "All Participants" group risks.

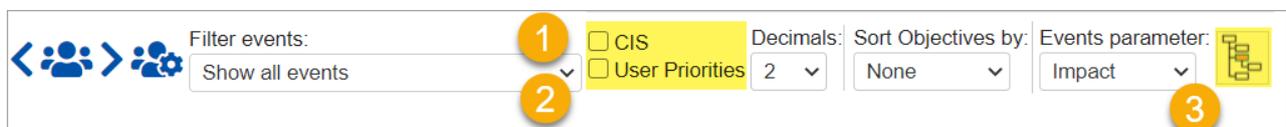
The Advanced filter, allows you to select a specific number for the top N, and base it on another group or participant.



The select /deselection option, allows you to check/uncheck the events.

The filter by events attributes, filter the events base on the attributes specified on the Events page.

## Advanced Mode Options





# Identify Controls

## Overview

**Controls** can be a combination of people, processes, and tools that are put in place to prevent, detect, or correct issues caused by unwanted events. Controls can also be referred to as **Treatments**, or as specified from the Workgroup Wording.

In Riskion, all controls that are identified are referred to as **Potential Controls**.

**Controls to be in effect** can either be selected **manually** or by **optimization**.

A Potential Control can be applied to one or more applications below:

- **Likelihood Of Sources**
- **Vulnerabilities of Events From Sources**
- **Consequences of Events To Objectives**

You can view and identify the potential controls on the **CONTROLS > Identify > All Controls > Details page**. You can also manage controls from the "Bow-Time Diagram with Controls" page.

Note: There are also separate pages where you can identify (and assign) controls specific to their applications. You can be redirected to these specific pages when clicking the "No application" or the number (of applications) link under the "Applications" column.

In...	A...	Control Name	Selected	Disabled	Cost	Applica...	Categ...	M
01	<input type="checkbox"/>	Monthly Performance Review	Yes	<input type="checkbox"/>	10000	2		<input type="checkbox"/>
02	<input type="checkbox"/>	Schedule Proper Maintenance	Yes	<input type="checkbox"/>	150000	4		<input type="checkbox"/>
03	<input type="checkbox"/>	Upgrade Signals	Yes	<input type="checkbox"/>	20000	1		<input type="checkbox"/>
04	<input type="checkbox"/>	Mandatory Training for Engineers	Yes	<input type="checkbox"/>	60000	1		<input type="checkbox"/>
05	<input type="checkbox"/>	Periodic Proficiency Training	Yes	<input type="checkbox"/>	20000	3		<input type="checkbox"/>
06	<input type="checkbox"/>	Identify Staff requiring additional training	Yes	<input type="checkbox"/>	15000	1		<input type="checkbox"/>
07	<input type="checkbox"/>	Update Sensor	Yes	<input type="checkbox"/>	50000	1		<input type="checkbox"/>
08	<input type="checkbox"/>	Back-up Generator Power	Yes	<input type="checkbox"/>	15000	1		<input type="checkbox"/>
09	<input type="checkbox"/>	Periodic Inspection/Maintenance of Power Relay Station	Yes	<input type="checkbox"/>	15000	2		<input type="checkbox"/>
10	<input type="checkbox"/>	Predeployment Software Testing		<input type="checkbox"/>	72000	1		<input type="checkbox"/>
11	<input type="checkbox"/>	Quality Control of Cables	Yes	<input type="checkbox"/>	2000	1		<input type="checkbox"/>
12	<input type="checkbox"/>	Employ Higher Security	Yes	<input type="checkbox"/>	4000	1		<input type="checkbox"/>
13	<input type="checkbox"/>	Increase physical security	Yes	<input type="checkbox"/>	19000	1		<input type="checkbox"/>
14	<input type="checkbox"/>	Emplace flood prevention material		<input type="checkbox"/>	13000	1		<input type="checkbox"/>

## Add Controls

Click the 'Add a control...' button.

Here you can specify the Control Name, Cost, and categories.

The Control name is required, once you enter the control name the OK button will be enabled.

Add a control

Control name:

Cost:

Category:

Add category:  +

## Control Applications

The created control will be displayed as a new row on the Controls grid as shown below:

In...	A...	Control Name	Selected	Disabled	Cost	Applica...	Categ...	Must	Must Not
1	<input type="checkbox"/>	Monthly Performance Review	<input type="checkbox"/>	<input type="checkbox"/>	10000	<a href="#">No applications</a>		<input type="checkbox"/>	<input type="checkbox"/>

Clicking "No applications" will open a dialog:

Controls Applications ✕

**"Monthly Performance Review" is applied to:**

Source/Objective Name	Event Name	Assignment Type	Measure Type	Effectiveness
<a href="#">Apply this control to sources</a> <a href="#">Apply this control to vulnerabilities</a> <a href="#">Apply this control to consequences</a>				

Depending on the control application, click the "Apply this control to...." link, this will redirect you to one of the following pages:

- [Controls for Sources](#)
- [Controls for Events Vulnerabilities \(by Control\)](#)
- [Controls for Events Consequences \(by Control\)](#)

From our example, clicking the "Apply this control to sources" redirects us to the "Controls for Sources" page where we can select the Sources the control can be applied to.

MANAGE MODELS IDENTIFY/STRUCTURE LIKELIHOOD OF EVENTS IMPACT OF EVENTS RISKS CONTROLS COM

Identify Measurement Methods Participants Combined Effectiveness Manually Select Optimize Efficient Frontier Reload On-line Lock

Add a control... Paste controls Upload .xml... Delete Edit Attributes... Options

Controls for "Intelligent Event London Underground Monitoring" Default Scenario

Selected controls: 0  
Cost Of Selected Controls: \$0 (unfunded: \$10,000)  
Total Cost Of All Controls: \$10,000 (with applications: \$0)

Search...

In...	A...	Control Name	Selected	Disabled	Cost	Applica...	Categ...	M	M
1		Monthly Performance Review		<input type="checkbox"/>	10000	No applications		<input type="checkbox"/>	<input type="checkbox"/>

After selecting the Sources where the control can be applied as demonstrated above: (1) Disregarding or Not Following Proper Policies, Processes, or Procedures (2) Engineers Failure to Properly Install Equipment, the number of control applications changed to 2.

Clicking "2" will open the same dialog box, now listing the control application details:

Controls Applications

"Monthly Performance Review" is applied to:

Source/Objective Name	Event Name	Assignment Type	Measure Type	Effectiveness
Disregarding or Not Following Proper Policies, Processes, or Procedures		Likelihood Of Sources	Direct	0.0000
Engineers Failure to Properly Install Equipment		Likelihood Of Sources	Direct	0.0000

[Apply this control to sources](#)  
[Apply this control to vulnerabilities](#)  
[Apply this control to consequences](#)

After identifying all the potential controls, controls are to be evaluated to measure their effectiveness. And measuring, controls to be in effect are to be selected either manually or using optimization.

You can click the Effectiveness (0.0000) which will redirect you to the controls evaluation page to evaluate the effectiveness of the control given the source. From above, the effectiveness is 0 since the controls are just added and not yet evaluated.

You can still add more applications by clicking the "Apply this control..." links.

You can define if control is a Must or Must Not. This setting is used on Controls Optimization.

- Must - the control must be selected or funded
- Must not - the control must not be selected or funded

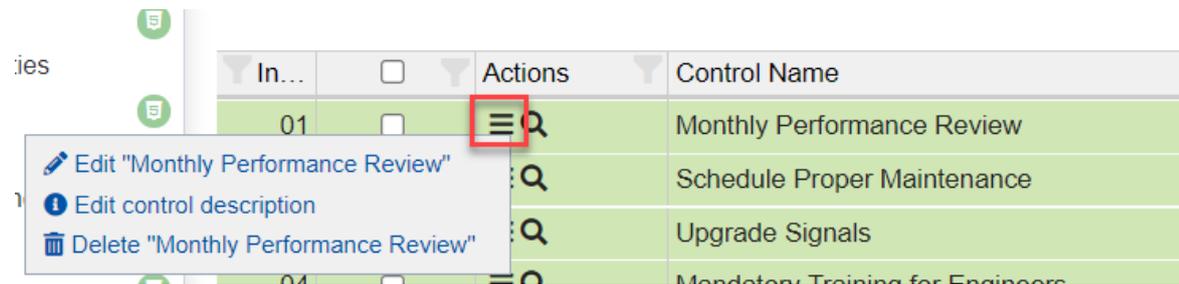
Controls can also be enabled/disabled by checking/unchecking the checkbox on the "Disabled" column.

You can change the Cost from the Costs column.

You can change the "Cost" for multiple rows at once by selecting the controls using the checkboxes at the left of their names, and then changing the setting from one of the selected rows.

## Edit Controls

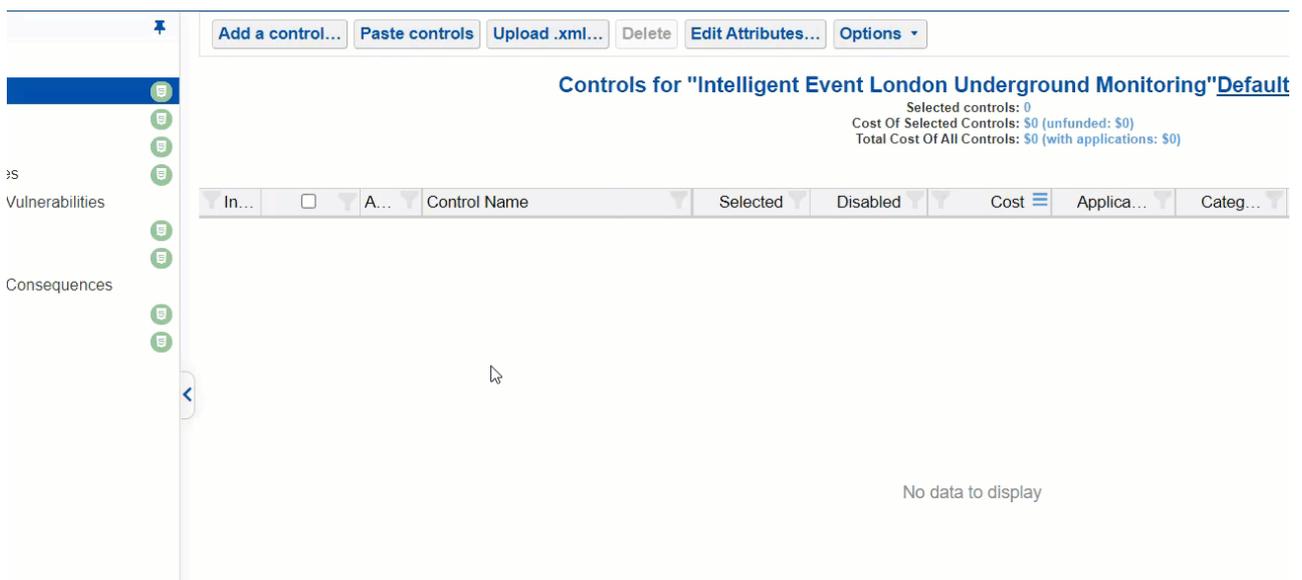
You can edit the controls by clicking the hamburger icon under the Action column:



- Edit ControlName - open a dialog where you can edit the name, cost, categories of the control
- Edit control description - open the **rich text editor** where you can edit the control description. If a control has a description, you will see a magnifying glass icon under the actions column.
- Delete control

## Control Categories

Control Categories can be defined when adding or editing a control:



The added categories on this page are used on the [Categories report](#).

You can also use these categories to sort and filter the controls on different pages such as this page, optimization, manually select control pages.

You can also add categories from the Edit Attributes button (not included on the Categories report).

## Control Attributes

Click [Edit Attributes...](#)

**Manage Attributes**

**Attributes:**

	Attribute Name	Type	Categories / Default value	Action
⋮	Milestone	String		🗑️
⋮	PMs	Floating point		🗑️
	<input type="text"/>	Categorical		+

[Close](#)

Here you can add different attribute types:

Categorical ▾

Categorical

Multi-Categorical

---

String

Integer

Floating point

Boolean

Added attributes are added as new columns on the Controls grid.

In...	Sel...	A...	Control Name	Selected	Disabled	Cost	Applica...	Cat...	M	I	Milestone	PMs
01	<input checked="" type="checkbox"/>	≡ Q	Monthly Performance Review	Yes	<input type="checkbox"/>	10000	2		<input type="checkbox"/>	<input type="checkbox"/>	2018Q3	0.5
02	<input checked="" type="checkbox"/>	≡ Q	Schedule Proper Maintenance	Yes	<input type="checkbox"/>	150000	4		<input type="checkbox"/>	<input type="checkbox"/>		0
03	<input checked="" type="checkbox"/>	≡ Q	Upgrade Signals	Yes	<input type="checkbox"/>	20000	1		<input type="checkbox"/>	<input type="checkbox"/>		0
04	<input checked="" type="checkbox"/>	≡ Q	Mandatory Training for Engineers	Yes	<input type="checkbox"/>	60000	1		<input type="checkbox"/>	<input type="checkbox"/>		0
05	<input checked="" type="checkbox"/>	≡ Q	Periodic Proficiency Training	Yes	<input type="checkbox"/>	20000	3		<input type="checkbox"/>	<input type="checkbox"/>		0
06	<input checked="" type="checkbox"/>	≡ Q	Identify Staff requiring additional training	Yes	<input type="checkbox"/>	15000	1		<input type="checkbox"/>	<input type="checkbox"/>		0
07	<input checked="" type="checkbox"/>	≡ Q	Update Sensor	Yes	<input type="checkbox"/>	50000	1		<input type="checkbox"/>	<input type="checkbox"/>		0
08	<input checked="" type="checkbox"/>	≡ Q	Back-up Generator Power	Yes	<input type="checkbox"/>	15000	1		<input type="checkbox"/>	<input type="checkbox"/>		0
09	<input checked="" type="checkbox"/>	≡ Q	Periodic Inspection/Maintenance of Power Relay Station	Yes	<input type="checkbox"/>	15000	2		<input type="checkbox"/>	<input type="checkbox"/>		0
10	<input type="checkbox"/>	≡ Q	Predeployment Software Testing		<input type="checkbox"/>	72000	1		<input type="checkbox"/>	<input type="checkbox"/>		0
11	<input checked="" type="checkbox"/>	≡ Q	Quality Control of Cables	Yes	<input type="checkbox"/>	2000	1		<input type="checkbox"/>	<input type="checkbox"/>	2019Q2	1

You can also use the attributes to sort and filter the controls on different pages such as this page, optimization, manually select control pages.

# Where Applied

This page displays the summary of all the potential controls, their applications, and the control cost:

MANAGE MODELS		IDENTIFY/STRUCTURE		LIKELIHOOD OF EVENTS		IMPACT OF EVENTS		RISKS		CONTROLS		CONTROLLED RISKS	
Identify	Measurement Methods	Participants	Combined Effectiveness	Manually Select	Optimize	Efficient Frontier				Reload	On-line	Lock	Snapshots
Controls and their Targets													
<ul style="list-style-type: none"> <li>▶ All Controls</li> <li>○ Details</li> <li>○ Where Applied</li> <li>○ Categories</li> <li>▶ Controls for Sources</li> <li>▶ Controls for Event Vulnera...</li> <li>○ by Event</li> <li>○ by Control</li> <li>▶ Controls for Event Conseq...</li> <li>○ by Event</li> <li>○ by Control</li> </ul>		Control Name		Targets			Control Cost						
		Source	Vulnerability of Events to Sources	Consequences									
		Monthly Performance Review	✓			\$10,000							
		Schedule Proper Maintenance	✓			\$150,000							
		Upgrade Signals	✓			\$20,000							
		Mandatory Training for Engineers	✓			\$60,000							
		Periodic Proficiency Training	✓			\$20,000							
		Identify Staff requiring additional training	✓			\$15,000							
		Update Sensor	✓			\$50,000							
		Back-up Generator Power	✓			\$15,000							
		Periodic Inspection/Maintenance of Power Relay Station	✓			\$15,000							
		Predeployment Software Testing	✓			\$72,000							
		Quality Control of Cables	✓			\$2,000							
		Employ Higher Security	✓			\$4,000							
		Increase physical security	✓			\$19,000							
		Emplace flood prevention material	✓			\$13,000							
		Employ Water Pumps	✓			\$4,000							
		Periodic System Functional Checks	✓			\$10,000							
		Planned System Software Upgrades	✓			\$13,000							
		Prevent External Network Attacks	✓			\$10,000							
		Network Access Protocols	✓			\$8,000							
		Monthly Software Control Board	✓			\$5,000							
		Internal Emergency Communication System	✓			\$14,000							
		Monitoring Gate System Approach		✓		\$5,000							
		Reprimand		✓		\$500							
		Frequent Monitoring and Replacement (Signals/Sensors/Cables)		✓		\$5,000							
		Engineer Credentials		✓		\$11,000							
		On the spot training		✓		\$6,000							
		Replace Operator		✓		\$200							
		Implement External Emergency Power Support		✓		\$20,000							
		Power Redistribution via National Grid		✓		\$80,000							
		Reboot from Software back-up		✓		\$30,000							
		Disaster Recovery System by different ISP		✓		\$75,000							
		Increase Security Measures		✓		\$20,000							
		Purchase and install latest bespoke and COTS SW version		✓		\$50,000							
		Isolate Network from external access		✓		\$100,000							
		Monthly safety meeting to review safety protocols			✓	\$500							
		Implement high vis personal protective equipment			✓	\$2,500							
		Maintain proper insurance policy			✓	\$500							
		Follow safety protocols for moving trains into and out of sidings			✓	\$2,000							
		Use emergency response team to assess and repair damage			✓	\$20,000							
		Use media to demonstrate safety record and following safety protocols			✓	\$8,000							
		Implement 24h repair schedule			✓	\$40,000							
		Follow safety protocols for running trains on the main track			✓	\$2,000							
		Public media campaign awareness to promote safety on trains			✓	\$100,000							
		Public media campaign to promote better service			✓	\$75,000							
		Maintain regular maintenance schedule			✓	\$100,000							
		Install state of the art software and hardware equipment			✓	\$250,000							
		Install wider network monitoring system compatible software and hardware			✓	\$250,000							

Clicking the checkmark  to the right of a control will open a dialog with the control details: applications and %effectiveness.

Control Name	Event Name	Source/Objective Name	Effectiveness
Monthly Performance Review		Disregarding or Not Following Proper Policies, ...	25%
Monthly Performance Review		Engineers Failure to Properly Install Equipment	10%

The control "Monthly Performance Review" is a control for Sources: "Disregarding or Not Following Proper Policies" and "Engineers Failure to Properly Install Equipment", with 25% and 10% effectiveness respectively.



# Categories

This page lists the summary of the controls categories, the targets (controls for Sources, Vulnerabilities of Events From Sources, and Consequences), and the Total Cost of the Controls given the category.

Control Categories	Targets			Total Cost
	Source	Vulnerability of Events to Sources	Consequences	
	Category A	✓		
Category B	✓		\$80,000	

Note: This page will only have information if there are existing controls categories.

Clicking the checkmark ✓ will open a dialog listing the control(s) of a given category, their applications, and %effectiveness. Below are the details for the "Category A" category:

Control Name	Event Name	Source/Objective Name	Effectiveness
Monthly Performance Review		Disregarding or Not Following Proper Policies, ...	25%
Monthly Performance Review		Engineers Failure to Properly Install Equipment	10%

The control "Monthly Performance Review" is a control for Sources: "Disregarding or Not Following Proper Policies" and "Engineers Failure to Properly Install Equipment", with 25% and 10% effectiveness respectively.

The categories on this page are specified from the **CONTROLS > Identify > All Controls > Details** page, when adding/editing the controls:

**Add a control...** **Paste controls** **Upload .xml...** **Delete** **Edit Attributes...** **Options**

**Controls for "Intelligent Event London Underground Monitoring"Default**

Selected controls: 0  
 Cost Of Selected Controls: \$0 (unfunded: \$0)  
 Total Cost Of All Controls: \$0 (with applications: \$0)

		A...	Control Name	Selected	Disabled	Cost	Applica...	Categ...
No data to display								

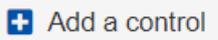


# Controls for Threats

Controls for Threats/Sources can be viewed, added, and assigned to this page.

Index	Control Name	Sources	Human Factor	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Environmental	Flooding of Intelligent Event Monitoring Infrastructure	Lightning Striking Signaling Infrastructure	Infrastructure	Minor Electrical Power Shortage
01	Monthly Performance Review				✓		✓					
02	Schedule Proper Maintenance					✓						
03	Upgrade Signals											
04	Mandatory Training for Engineers						✓					
05	Periodic Proficiency Training			✓		✓						
06	Identify Staff requiring additional training			✓								
07	Update Sensor											
08	Back-up Generator Power											
	Periodic											

The Controls for Threats/Sources are listed as rows under the "Control Name" column, and the succeeding column headings to the right are the threats/sources. You can assign controls for covering and non-covering sources.

To add a threat/source control, click the  **Add a control** button.

**Add a control**

Control name:

Cost:

Category:

Add category:  +

Here you can specify the Control Name, Cost, and categories. The Control name is required, once you enter the control name the OK button will be enabled.

The added control will be displayed as a new row on the Source Controls grid.

Index	Control Name	Sources	Human Factor	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Environmental	Flooding of Intelligent Event Monitoring Infrastructure	Lightning Striking Signaling Infrastructure	Infrastructure	Minor Electrical Power Shortage	Major Electrical Power Loss	Mechanical Failure of Sensors	Me	Fai	Sig
1	Monthly Performance Review																

To assign the control as a potential control for the source(s), simply check the corresponding cells.

### Controls for Source Likelihoods

Index	Control Name	Sources	Human Factor	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Environmental	Flooding of Intelligent Event Monitoring Infrastructure
1	Monthly Performance Review								

Clicking again a checked cell will uncheck (un-assigned) a control.

You can add multiple controls at once by pasting them from the clipboard.

You can see the format by hovering on the Paste controls button

The screenshot shows a toolbar with a 'Paste controls' button. A tooltip is displayed over the button, providing instructions on how to paste controls from the clipboard. The tooltip text reads: 'To paste controls from clipboard, include these columns, separated by a tab, or in separate worksheet columns: - Control name, - Control description, - Control cost, - Control category 1 (if applicable), - Control category 2 (if applicable), - Control category n (if applicable)'. Below the text, a partial view of a table with columns like 'Index', 'Control', 'Sources', 'Human', 'Inadequately', and 'Disregarding or Not Following Proper' is visible.

Once you are ready, click "Paste controls".

Note: You can not assign controls for Threats/Sources that are "categories", thus cells for categorical threats/sources are disabled or greyed out.

# Controls for Event Vulnerabilities (by Event)

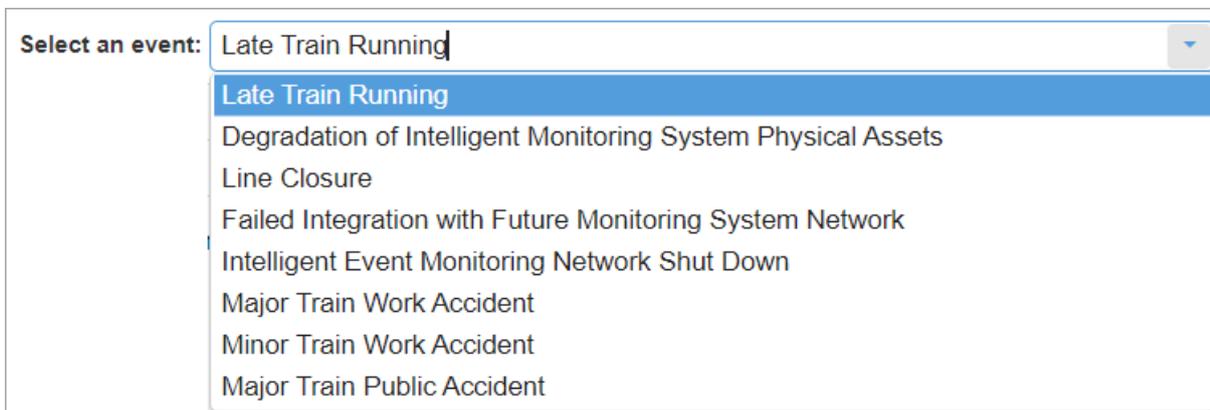
Controls for Events Vulnerabilities can be viewed, added, and assigned to this page.

Here the controls are being assigned to one selected event given the threats/sources.

Index	Control Name	Sources								
		Human Factor			Environmental		Infrastructure			
		Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Flooding of Intelligent Event Monitoring Infrastructure	Lightning Striking Signaling Infrastructure	Minor Electrical Power Shortage	Major Electrical Power Loss	Mechanical Failure of Sensors
22	Monitoring Gate System Approach		✓							
23	Reprimand		✓		✓					
24	Frequent Monitoring and Replacement (Signals/Sensors/Cables)									✓
25	Engineer Credentials				✓					
26	On the spot training	✓								
27	Replace Operator	✓	✓							
28	Implement External Emergency Power							✓	✓	

From the grid above, you can assign the potential controls to mitigate the vulnerabilities of the selected event "Late Train Running" given Threats/Sources.

You can select another event using the "Select an event:" dropdown:



Next to the index column is the "Control Name" column which lists all the controls for "Event Vulnerabilities" as rows.

The succeeding column headings correspond to the Sources Hierarchy of your Riskion model.

The intersecting cells given the controls (row) and the covering sources (column) are clickable. Clicking a cell will show a

checkmark  which means that the control is a potential control of the event given the source. Clicking the same cell will uncheck the cell.

From below, the control "Monitoring Gate System" is a potential control to reduce the vulnerability of the selected event "Late Train Running" given the source "Disregarding or Not Following Proper Policies, Processes, or Procedures".

Select an event: <b>Late Train Running</b>					
Index	Control Name	Sources			
		Human Factor			
		Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment
22	Monitoring Gate System Approach				
23	Reprimand				

The dark gray cells (disabled) mean that the source is not contributing to the selected event (event is not vulnerable to the source), thus you will not be able to assign a control for it. This is true for the **"Lack of Situational Awareness"** source in our example. You can assign to which sources an event is vulnerable on the ["Vulnerabilities Grid"](#).

Select an event: <b>Late Train Running</b>					
Control Name	Sources				
	Human Factor				
	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	
Monitoring Gate System Approach					
Reprimand					
Frequent Monitoring and Replacement (Signals/Sensors/Cables)					
Engineer Credentials					
On the spot training					
Replace Operator					

To add a new control to mitigate "Event Vulnerabilities, click the  button.

Add a control

Control name:

Cost:

Category:

Add category:  +

Here you can specify the Control Name, Cost, and categories. The Control name is required, once you enter the control name the OK button will be enabled.

The added control will be displayed as a new row on the Controls column.

You can add multiple controls at once by pasting them from the clipboard.

You can see the format by hovering on the Paste controls button

+
Add a control
Paste controls
 Descriptions

To paste controls from clipboard, include these columns, separated by a tab, or in separate worksheet columns:

- Control name
- Control description
- Control cost
- Control category 1 (if applicable)
- Control category 2 (if applicable)
- Control category n (if applicable)

Once you are ready, click "Paste controls".

# Controls for Event Vulnerabilities (by Control)

In addition to managing (view, add, assign) the [Controls for Events Vulnerabilities for one selected event at a time \(by Event\)](#), you can also perform the same actions for one selected control at a time (by Control).

		Sources									
		Human Factor				Environmental			Infrastructure		
Index	Event Name	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Flooding of Intelligent Event Monitoring Infrastructure	Lightning Striking Signaling Infrastructure	Minor Electrical Power Shortage	Major Electrical Power Loss	Mechanical Failure of Sensors	Mechanical Failure of Signals
1	Late Train Running		✓								
2	Degradation of Intelligent Monitoring System Physical Assets										
5	Line Closure		✓	✓							
	Failed Integration with Future										

From the grid above, you can specify to which events the selected control "Monitoring Gate System Approach" can be applied to mitigate its vulnerabilities given threats/sources.

You can select another control using the "Select a control:" dropdown:

Next to the index column is the "Event Name" column which lists all the events as rows. The succeeding column headings correspond to the Sources Hierarchy of your Riskion model.

The intersecting cells given the events (row) and the covering sources (column) are clickable. Clicking a cell will show a

checkmark  which means that the selected control is a control of the event given the source. Clicking the same

cell will uncheck the cell.

From below, the selected control "**Monthly Gate System Approach**" is a potential control to mitigate the vulnerability of the event "**Late Train Running**" given the source "**Disregarding or Not Following Proper Policies, Processes, or Procedures**".

		Select a control: Monitoring Gate System Approach				
Index	Event Name	Sources				
		Human Factor				Environmental
		Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Flooding of Intelligent Event Monitoring Infrastructure
1	Late Train Running					
2	Degradation of Intelligent Monitoring System Physical Assets					

The dark gray cells (disabled) mean that the source is not contributing to the event (event is not vulnerable to the source), thus you will not be able to assign a control for it. This is true for "Late Train Running" given "Lack of Situational Awareness". You can assign to which sources an event is vulnerable on the "[Vulnerabilities Grid](#)".

		Select a control: Monitoring Gate System Approach				
Index	Event Name	Sources				
		Human Factor				Environmental
		Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Flooding of Intelligent Event Monitoring Infrastructure
1	Late Train Running					

To add a new control to mitigate "Event Consequences", click the  button.

Add a control

Control name:

Cost:

Category:

Add category:  +

Here you can specify the Control Name, Cost, and categories. The Control name is required, once you enter the control name the OK button will be enabled.

The added control will be displayed as a new row on the Controls column.

You can add multiple controls at once by pasting them from the clipboard.

You can see the format by hovering on the Paste controls button

+
+ Add a control
Paste controls
 Descriptions

To paste controls from clipboard, include these columns, separated by a tab, or in separate worksheet columns:

- Control name
- Control description
- Control cost
- Control category 1 (if applicable)
- Control category 2 (if applicable)
- Control category n (if applicable)

Once you are ready, click "Paste controls".

# Controls for Event Consequences (by Event)

Controls to mitigate Events Consequences can be viewed, added, and assigned to this page.

Here the controls are being assigned to one selected event with respect to Objectives.

Index	Control Name	Objectives								
		Public Relations		Financial			Reliability, Availability, Maintainability			Performance
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Financial Loss	Financial Liability Due to Accident	Loss of Maintenance Efficiency	Disruption/Damage to Service Line Infrastructure	Repair to Service Line Infrastructure	Temporary Line Closure
36	Monthly safety meeting to review safety protocols			✓				✓		
37	Implement high vis personal protective equipment						✓			
38	Maintain proper insurance									

From the grid above, you can assign the potential controls to mitigate the consequences of the selected event "Late Train Running" given Objectives.

You can select another event using the "Select an event:" dropdown:

Next to the index column is the "Control Name" column which lists all the controls for "Event Consequences" as rows.

The succeeding column headings correspond to the Objectives Hierarchy of your Riskion model.

The intersecting cells given the controls (row) and the covering Objectives (column) are clickable. Clicking a cell will show a

checkmark



which means that the control is a potential control of the event given the objective. Clicking the same cell will uncheck the cell.

From below, the control "Monthly safety meeting to review safety protocols" is a potential control to mitigate the consequence of the selected event "Late Train Running" given the objective "Loss of Customers".

		Select an event: Late Train Running				
Index	Control Name	Objectives				
		Public Relations		Financial		
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Financial Loss	Financial Liability Due to Accident
36	Monthly safety meeting to review safety protocols					

The dark gray cells (disabled) mean that the event is not contributing to the objective, thus you will not be able to assign a control for it. This is true for the selected event given the "Financial Liability Due to Accident" objective in our example. You can assign to which objectives an event is contributing on the "[Consequences Grid](#)".

Index	Control Name	Objectives				
		Public Relations		Financial		
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Financial Loss	Financial Liability Due to Accident
36	Monthly safety meeting to review safety protocols					
37	Implement high vis personal protective equipment					
38	Maintain proper insurance					

To add a new control to mitigate "Event Consequences", click the  button.

Here you can specify the Control Name, Cost, and categories. The Control name is required, once you enter the control name the OK button will be enabled.

The added control will be displayed as a new row on the Controls column.

You can add multiple controls at once by pasting them from the clipboard.

You can see the format by hovering on the Paste controls button

Once you are ready, click "Paste controls".

# Controls for Event Consequences (by Control)

In addition to managing (view, add, assign) the [Controls for Events Consequences for one selected event at a time \(by Event\)](#), you can also perform the same actions for one selected control at a time (by Control).

Index	Event Name	Objectives								
		Public Relations		Financial			Reliability, Availability, Maintainability			Performance
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Financial Loss	Financial Liability Due to Accident	Loss of Maintenance Efficiency	Disruption/Damage to Service Line Infrastructure	Repair to Service Line Infrastructure	Temporary Line Closure
1	Late Train Running			✓				✓		
2	Degradation of Intelligent Monitoring System Physical Assets						✓			✓
5	Line Closure									
6	Failed Integration with Future Monitoring									

From the grid above, you can specify to which events the selected control "Monitoring Gate System Approach" can be applied to mitigate its consequences given objectives.

You can select another control using the "Select a control:" dropdown:

Next to the index column is the "Event Name" column which lists all the events as rows. The succeeding column headings correspond to the Objectives Hierarchy of your Riskion model.

The intersecting cells given the events (row) and the covering objectives (column) are clickable. Clicking a cell will show a

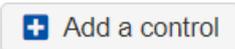


checkmark which means that the selected control is a control of the event given the objective. Clicking the same cell will uncheck the cell.

From below, the selected control "**Monitoring Gate System**" is a potential control to mitigate the consequence of the event "**Late Train Running**" given the objective "**Loss of Customers**".

		Select a control: Monthly safety meeting to review safety protocols					
Index	Event Name	Objectives					
		Public Relations		Financial			Reliability, Availa
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Financial Loss	Financial Liability Due to Accident	Loss of Maintenance Efficiency
1	Late Train Running			✔			

The dark gray cells (disabled) mean that the event is not contributing to the objective, thus you will not be able to assign a control for it. This is true for "Late Train Running" given "Loss of Maintenance Efficiency". You can assign to which objectives an event is contributing on the "[Consequences Grid](#)".

To add a new control to mitigate "Event Consequences", click the  button.

Add a control

Control name:

Cost:

Category:

Add category:  +

Here you can specify the Control Name, Cost, and categories. The Control name is required, once you enter the control name the OK button will be enabled.

The added control will be displayed as a new row on the Controls column.

You can add multiple controls at once by pasting them from the clipboard.

You can see the format by hovering on the Paste controls button

    Descriptions

To paste controls from clipboard, include these columns, separated by a tab, or in separate worksheet columns:

- Control name
- Control description
- Control cost
- Control category 1 (if applicable)
- Control category 2 (if applicable)
- Control category n (if applicable)

Index	Control	Sources	Human	Inadequately	Disregarding or Not Following Proper
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Once you are ready, click "Paste controls".

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# Measurement Methods for Controls for Threats

On this page, you can define the measurement method to use when evaluating the Controls for Threats/Sources.

Index	Control Name	Sources	Human Factor	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Environmental	Flooding of Intelligent Event Monitoring Infrastructure
01	Monthly Performance Review				Direct		Direct		
02	Schedule Proper Maintenance					Direct			
03	Upgrade Signals								
04	Mandatory Training for Engineers						Direct		
05	Periodic Proficiency Training			Direct		Direct			
06	Identify Staff requiring			Direct					

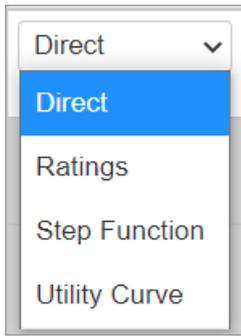
The Controls for Threats/Sources are listed as rows under the "Control Name" column, and the succeeding column headings to the right are the threats/sources. You can assign controls for covering and non-covering sources. The intersecting cell of the controls (row) and the sources (column) is where you can define the measurement method.

Note: You can only assign measurement methods for controls that are previously identified for the Sources. The control identification is done from the [Controls > Identify > Controls for Threats/Sources](#) page. Those un-assigned controls to a given Source have **disabled or greyed cells**.

From our example, the control "**Monthly Performance Review**" is a potential control for "**Disregarding Not Following Proper Policies...**", thus the measurement method selection is available:

Index	Control Name	Sources	Human Factor	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures
01	Monthly Performance Review				Direct

You can select from four possible methods:



All the measurement methods except Direct have a measuring default scale which is already defined by Riskion.

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# Measurement Methods for Controls for Event Vulnerabilities (by Event)

On this page, you can define the measurement method to use when evaluating the Controls for Event Vulnerabilities (by Event).

This is found on **CONTROLS > Measure > Measurement Methods > for Controls for Event Vulnerabilities (by Event)**.

		Sources							
		Human Factor			Environmental		Infrastructure		
Index	Control Name	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Flooding of Intelligent Event Monitoring Infrastructure	Lightning Striking Signaling Infrastructure	Minor Electrical Power Shortage	Major Elec Power Los
22	Monitoring Gate System Approach		Direct						
23	Reprimand		Direct		Direct				
24	Frequent Monitoring and Replacement (Signals/Sensors/Cables)								
25	Engineer Credentials				Direct				
26	On the spot training	Direct							

From the grid above, you can assign the measurement method to use when evaluating the potential controls to mitigate the vulnerabilities of the selected event "Late Train Running" from Threats/Sources.

You can select another event using the "Select an event:" dropdown at the top of the grid:

Select an event: Late Train Running

- Late Train Running
- Degradation of Intelligent Monitoring System Physical Assets
- Line Closure
- Failed Integration with Future Monitoring System Network
- Intelligent Event Monitoring Network Shut Down
- Major Train Work Accident
- Minor Train Work Accident
- Major Train Public Accident

The Controls for Event Vulnerabilities are listed as rows under the "Control Name" column, and the succeeding column headings to the right are the Hierarchy of Sources. The intersecting cell of the controls (row) and the covering sources (column) is where you can define the measurement method.

Note: You can only assign measurement methods for controls that are previously identified for the selected Event. The control identification is done from the [Controls > Identify > Controls for Event Vulnerabilities](#) page. Those un-assigned controls to the selected Event have **disabled or greyed cells**.

From below, the control "**Monitoring Gate System**" is a potential control to reduce the vulnerability of the selected event "**Late Train Running**" given the source "**Disregarding or Not Following Proper Policies, Processes, or Procedures**", thus the measurement method dropdown selection is available.

		Select an event: Late Train Running		
Index	Control Name	Sources		
		Human Factor		
		Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness
22	Monitoring Gate System Approach		Direct	

You can select from four possible methods:

All the measurement methods except Direct have a measuring default scale which is already defined by Riskion.

# Measurement Methods for Controls for Event Vulnerabilities (by Control)

On this page, you can define the measurement method to use when evaluating the Controls for Event Vulnerabilities (by Control).

This is found on **CONTROLS > Measure > Measurement Methods > for Controls for Event Vulnerabilities (by Control)**.

The screenshot displays the 'Measurement Methods for Controls for Vulnerabilities' interface. On the left, a navigation menu lists various categories, with 'for Controls for Event Vulnerabilities (by Control)' highlighted. The main content area shows a table with the following structure:

Index	Event Name	Sources								
		Human Factor			Environmental		Infrastructure			
		Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Flooding of Intelligent Event Monitoring Infrastructure	Lightning Striking Signaling Infrastructure	Minor Electrical Power Shortage	Major Electrical Power Loss	Mechanical Failure of Sensors
1	Late Train Running		Direct							
2	Degradation of Intelligent Monitoring System Physical Assets									
5	Line Closure		Direct	Direct						
6	Failed Integration with Future Monitoring		Direct							

From the grid above, you can assign the measurement method to use when evaluating the selected control to mitigate the vulnerabilities of the events due to Threats/Sources.

You can select another control using the "Select a control:" dropdown:

The dropdown menu shows the following options:

- Monitoring Gate System Approach
- Reprimand
- Frequent Monitoring and Replacement (Signals/Sensors/Cables)
- Engineer Credentials
- On the spot training
- Replace Operator
- Implement External Emergency Power Support
- Power Redistribution via National Grid
- Reboot from Software back-up
- Disaster Recovery System by different ISP
- Increase Security Measures
- Purchase and install latest bespoke and COTS SW version
- Isolate Network from external access
- Purchase latest hardware technology

The Events are listed as rows under the "Event Name" column, and the succeeding column headings to the right are the Hierarchy of Sources. The intersecting cell of the event(row) and the covering sources (column) is where you can define

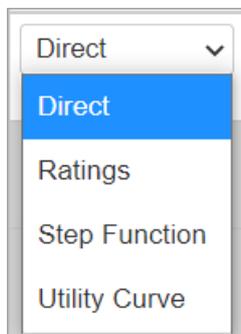
the measurement method.

You can only assign measurement methods for the controls that are previously identified to reduce the given event's vulnerabilities. The control identification is done from the [Controls > Identify > Controls for Event Vulnerabilities](#) page. Those un-assigned controls to the selected Event are disabled or greyed out.

From below, the selected control "**Monitoring Gate System**" is a potential control to reduce the vulnerability of the event "**Late Train Running**" given the source "**Disregarding or Not Following Proper Policies, Processes, or Procedures**", thus the measurement method dropdown selection is available.

		Select a control: <b>Monitoring Gate System Approach</b>			
Index	Event Name	Sources			
		Human Factor			
		Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment
1	Late Train Running		<input type="text" value="Direct"/>		

You can select from four possible methods:



All the measurement methods except Direct have a measuring default scale which is already defined by Riskion.

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# Measurement Methods for Controls for Event Consequences (by Event)

On this page, you can define the measurement method to use when evaluating the Controls for Event Consequences (by Event).

This is found on **CONTROLS > Measure > Measurement Methods > for Controls for Event Consequences (by Event)**.

Index	Control Name	Objectives								
		Public Relations			Financial			Reliability, Availability, Maintainability		
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Financial Loss	Financial Liability Due to Accident	Loss of Maintenance Efficiency	Disruption/Damage to Service Line Infrastructure	Repair to Service Line Infrastructure	
36	Monthly safety meeting to review safety protocols			Direct				Direct		
37	Implement high vis personal protective equipment							Direct		
38	Maintain proper insurance policy									

From the grid above, you can assign the measurement method to use when evaluating the potential controls to mitigate the consequences of the selected event "Late Train Running" to the Objectives.

You can select another event using the "Select an event:" dropdown at the top of the grid:

The Controls for Event Consequences are listed as rows under the "Control Name" column, and the succeeding column headings to the right are the Hierarchy of Objectives. The intersecting cell of the controls (row) and the covering objectives (column) is where you can define the measurement method.

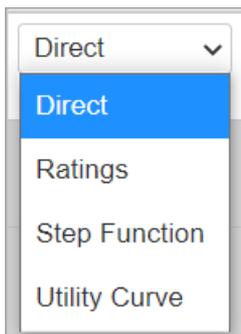
You can only assign measurement methods for controls that are previously identified for the selected Event. The control identification is done from the [Controls > Identify > Controls for Event Consequences page](#). Those un-assigned controls to the selected Event are disabled or greyed out.

From below, the control "Monthly safety meeting to review safety protocols" is a potential control to reduce the

consequence of the selected event "Late Train Running" to the objective "Loss of Customers", thus the measurement method dropdown selection is available.

		Select an event: Late Train Running			
Index	Control Name	Objectives			
		Public Relations		Financial	
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Fin
36	Monthly safety meeting to review safety protocols			Direct	

You can select from four possible methods:



All the measurement methods except Direct have a measuring default scale which is already defined by Riskion.

# Measurement Methods for Controls for Event Consequences (by Control)

On this page, you can define the measurement method to use when evaluating the Controls for Event Consequences (by Control).

This is found on **CONTROLS > Measure > Measurement Methods > for Controls for Event Consequences (by Control)**.

The screenshot displays the 'Measurement Methods for Controls for Consequences' interface. On the left, a navigation menu lists various measurement methods, with 'for Controls to Objectives (by Control)' highlighted. The main content area shows a table with columns for Objectives (Public Relations, Financial, Reliability, Availability, Maintainability) and rows for Events (Late Train Running, Degradation of Intelligent Monitoring System Physical Assets, Line Closure, Failed Integration with Future Monitoring System). A dropdown menu at the top allows selecting a control, currently set to 'Monthly safety meeting to review safety protocols'.

From the grid above, you can assign the measurement method to use when evaluating the selected control to mitigate the consequences of the events to Objectives.

You can select another control using the "Select a control:" dropdown:

The screenshot shows the 'Select a control:' dropdown menu. The menu is open, displaying a list of control options. The selected option is 'Monitoring Gate System Approach'. Other options include 'Reprimand', 'Frequent Monitoring and Replacement (Signals/Sensors/Cables)', 'Engineer Credentials', 'On the spot training', 'Replace Operator', 'Implement External Emergency Power Support', 'Power Redistribution via National Grid', 'Reboot from Software back-up', 'Disaster Recovery System by different ISP', 'Increase Security Measures', 'Purchase and install latest bespoke and COTS SW version', 'Isolate Network from external access', and 'Purchase latest hardware technology'.

The Events are listed as rows under the "Event Name" column, and the succeeding column headings to the right are the Hierarchy of Objectives. The intersecting cell given the event(row) and the covering objectives (column) is where you can

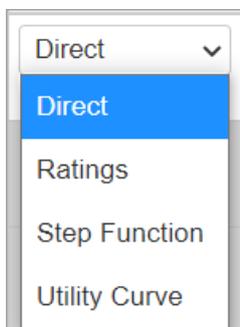
define the measurement method.

You can only assign measurement methods for the controls that are previously identified to reduce the given event's consequences. The control identification is done from the [Controls > Identify> Controls for Event Consequences page](#). Those un-assigned controls to the selected Event are disabled or greyed out.

From below, the selected control "**Monthly safety meeting to review safety protocols**" is a potential control to reduce the consequence of the event "**Late Train Running**" given the source "**Loss of Customers**", thus the measurement method dropdown selection is available.

Select a control: Monthly safety meeting to review safety protocols					
Index	Event Name	Objectives			
		Public Relations		Financial	
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Financial Loss
1	Late Train Running			Direct	

You can select from four possible methods:



All the measurement methods except Direct have a measuring default scale which is already defined by Riskion.

# Participant Roles for Evaluating Controls

Participants' roles can be defined when evaluating controls:

- for Sources
- for Event Vulnerabilities
- for Event Consequences

This can be found on the **CONTROLS > Measure > Participants > Participant Roles** page:

The screenshot shows the 'Participant Roles' page with a navigation menu on the left and a main grid. The grid has columns for participants: Chief Engineering Officer(ceo@gw...), Chief Executive Officer(che@gw...), Control Expert(control\_...), Chief Risk Officer(cro@gw...), Denis Risman(denisris...), Devin Nagy(devinnagy...), IT Supervisor(its@...), John Doe(j.doe@eci...), and Mar. The grid lists various controls under the heading 'Controls for Sources', such as 'Monthly Performance Review' and 'Schedule Proper Maintenance'. Checkmarks in the grid indicate assigned roles.

The controls are listed on the first column, and the participants in the model are shown on the succeeding column headers.

You can choose to display all the controls in the grid, or based on the control application: Sources, Vulnerabilities, and Consequences.

Show:  All  Controls for Sources  Controls for Vulnerabilities  Controls for Consequences

To assign a participant to evaluate a given control, simply check the checkbox where the source (row) and participant (column) intersects.

This close-up shows the intersection of the 'Control Expert' column and the 'Monthly Performance Review' row. The checkbox is checked, indicating that this participant is assigned to evaluate this control.

In our example above, the participant named "Control Expert" is allowed to evaluate the control for sources "Monthly Performance Review".

You can use the Allow All or Drop All buttons at the top, to check all or uncheck all the checkboxes.

You can also check/uncheck by row or column using the checkboxes to the right of the Control names, or at the top of the participant names.

---

# Combined Effectiveness of Controls for Threats

After **identifying** and measuring the controls, the Controls Effectiveness for groups and participants can be viewed on the Combined Effectiveness pages.

Depending on the control application, the %effectiveness can be viewed by:

- Controls for Threats/Sources - *(this page)*
- **Controls for Event Vulnerabilities (by Event)**
- Controls for Event Vulnerabilities (by Control)
- Controls for Event Consequences (by Event)
- Controls for Event Consequences (by Control)

The Combined Effectiveness for the **Controls for Sources** of the "All Participants" group is displayed below.

MANAGE MODELS		IDENTIFY/STRUCTURE		LIKELIHOOD OF EVENTS		IMPACT OF EVENTS		RISKS		CONTROLS		CONTROLLED RISKS																																																																									
Identify	Measure	Manually Select	Optimize	Efficient Frontier						Reload	On-line	Lock	Snapshots																																																																								
<div style="display: flex; justify-content: space-between;"> <span>All Participants</span> <span>Add a control</span> <span>Paste controls</span> <span>Descriptions</span> </div> <h3 style="text-align: center;">Effectiveness of Source Controls</h3> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Index</th> <th>Control Name</th> <th>Sources</th> <th>Human Factor</th> <th>Inadequately Trained Staff</th> <th>Disregarding or Not Following Proper Policies, Processes, or Procedures</th> <th>Lack of Situational Awareness</th> <th>Engineers Failure to Properly Install Equipment</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>Monthly Performance Review</td> <td></td> <td></td> <td></td> <td style="text-align: center;">0.88</td> <td></td> <td style="text-align: center;">0.71</td> </tr> <tr> <td>02</td> <td>Schedule Proper Maintenance</td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: center;">0.75</td> <td></td> </tr> <tr> <td>03</td> <td>Upgrade Signals</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>04</td> <td>Mandatory Training for Engineers</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td style="text-align: center;">0.3</td> </tr> <tr> <td>05</td> <td>Periodic Proficiency Training</td> <td></td> <td></td> <td style="text-align: center;">0.82</td> <td></td> <td style="text-align: center;">0.8</td> <td></td> </tr> <tr> <td>06</td> <td>Identify Staff requiring additional training</td> <td></td> <td></td> <td style="text-align: center;">0.55</td> <td></td> <td></td> <td></td> </tr> <tr> <td>07</td> <td>Update Sensor</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>08</td> <td>Back-up Generator Power</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>														Index	Control Name	Sources	Human Factor	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	01	Monthly Performance Review				0.88		0.71	02	Schedule Proper Maintenance					0.75		03	Upgrade Signals							04	Mandatory Training for Engineers						0.3	05	Periodic Proficiency Training			0.82		0.8		06	Identify Staff requiring additional training			0.55				07	Update Sensor							08	Back-up Generator Power						
Index	Control Name	Sources	Human Factor	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment																																																																														
01	Monthly Performance Review				0.88		0.71																																																																														
02	Schedule Proper Maintenance					0.75																																																																															
03	Upgrade Signals																																																																																				
04	Mandatory Training for Engineers						0.3																																																																														
05	Periodic Proficiency Training			0.82		0.8																																																																															
06	Identify Staff requiring additional training			0.55																																																																																	
07	Update Sensor																																																																																				
08	Back-up Generator Power																																																																																				

The "All Participants" group is the average of the %effectiveness of all the participants who made the evaluation.

Note: You can also manually add or edit the %effectiveness for the "All Participants" group, which will override the calculated average, if any.

The Controls for Threats/Sources are listed as rows under the "Control Name" column, and the succeeding column headings to the right are the threats/sources. The intersecting cell of the controls (row) and the sources (column) displays the %Effectiveness of the selected group or participant.

You can view the %Effectiveness for another group or individual participant by selecting from the pull-down menu:

- All Participants ▾
- All Participants
- [C-Level Executives]
- [Engineering]
- Brian Quigley
- Chief Engineering Of...
- Chief Executive Officer
- Chief Risk Officer
- Control Expert
- Denis Risman
- Devin Nagy
- IT Supervisor
- John Doe
- Michael Mankowski
- Project Manager

Note: The %Effectiveness is only available for the controls that are previously identified and measured (evaluated) for the Sources. The control identification is done from the [Controls > Identify > Controls for Threats/Sources](#) page. Those un-assigned controls to a given Source have **disabled or greyed cells**.

From our example, the control "**Monthly Performance Review**" is a potential control for "**Disregarding Not Following Proper Policies...**", thus the %effectinesss is displayed:

Index	Control Name	Sources	Human Factor	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures
01	Monthly Performance Review				0.88

# Combined Effectiveness of Controls for Event Vulnerabilities (by Event)

After [identifying](#) and measuring the controls, the Controls Effectiveness for groups and participants can be viewed on the Combined Effectiveness pages.

Depending on the control application, the %effectiveness can be viewed by:

- [Controls for Threats/Sources](#)
- **Controls for Event Vulnerabilities (by Event) - (this page)**
- [Controls for Event Vulnerabilities \(by Control\)](#)
- [Controls for Event Consequences \(by Event\)](#)
- [Controls for Event Consequences \(by Control\)](#)

The Combined Effectiveness for the **Controls for Event Vulnerabilities (by Event)** of the "All Participants" group is displayed below.

MANAGE MODELS		IDENTIFY/STRUCTURE		LIKELIHOOD OF EVENTS		IMPACT OF EVENTS		RISKS		CONTROLS		CONTROLLED RISKS	
Identify	Measure	Manually Select	Optimize	Efficient Frontier	<input type="button" value="Reload"/> <input type="checkbox"/> On-line <input type="checkbox"/> Lock <input type="checkbox"/> Snapshots								
> Measurement Methods <ul style="list-style-type: none"> <li>○ for Controls for Sources</li> <li>○ for Controls for Event Vulnerabilities (by Event)</li> <li>○ for Controls for Event Vulnerabilities (by Control)</li> <li>○ for Controls for Event Consequences (by Event)</li> <li>○ for Controls for Event Consequences (by Control)</li> </ul>		All Participants <input type="button" value="Add a control"/> <input type="button" value="Paste controls"/> <input type="checkbox"/> Descriptions											
<b>Effectiveness of Vulnerabilities Controls</b>													
Select an event: <span>Late Train Running</span>													
		Sources				Environmental							
		Human Factor											
Index	Control Name	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Flooding of Intelligent Event Monitoring Infrastructure	Lightning Striking Signaling Infrastructure						
23	Monitoring Gate System Approach		<input type="text" value="0.35"/>										
24	Reprimand		<input type="text" value="0.05"/>		<input type="text" value="0.05"/>								
25	Frequent Monitoring and Replacement (Signals/Sensors/Cables)												
26	Engineer Credentials				<input type="text" value="0.65"/>								
27	On the spot training	<input type="text" value="0.5"/>											
28	Replace Operator	<input type="text" value="0.4"/>	<input type="text" value="0.9"/>										
29	Implement External Emergency Power												

The "All Participants" group is the average of the %effectiveness of all the participants who made the evaluation.

Note: You can also manually add or edit the %effectiveness for the "All Participants" group, which will override the calculated average, if any.

The Controls for Event Vulnerabilities are listed as rows under the "Control Name" column, and the succeeding column headings to the right are the Hierarchy of Sources. The intersecting cell of the controls (row) and the covering sources (column) display the %Effectiveness of the selected group or participant.

You can view the %Effectiveness for another group or individual participant by selecting from the pull-down menu:

- All Participants ▾
- All Participants
- [C-Level Executives]
- [Engineering]
- Brian Quigley
- Chief Engineering Of...
- Chief Executive Officer
- Chief Risk Officer
- Control Expert
- Denis Risman
- Devin Nagy
- IT Supervisor
- John Doe
- Michael Mankowski
- Project Manager

Note: The %Effectiveness is only available for the controls that are previously identified for the selected Event. The control identification is done from the [Controls > Identify > Controls for Event Vulnerabilities](#) page. Those un-assigned controls to the selected Event have **disabled or greyed cells**.

From below, the control "**Monitoring Gate System**" is a potential control to reduce the vulnerability of the selected event "**Late Train Running**" given the source "**Disregarding or Not Following Proper Policies, Processes, or Procedures**", thus the %effectinesss is displayed:

Select an event: <b>Late Train Running</b>					
Index	Control Name	Sources			
		Human Factor			
		Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment
23	Monitoring Gate System Approach		0.35		

# Combined Effectiveness of Controls for Event Vulnerabilities (by Control)

After [identifying](#) and measuring the controls, the Controls Effectiveness for groups and participants can be viewed on the Combined Effectiveness pages.

Depending on the control application, the %effectiveness can be viewed by:

- [Controls for Threats/Sources](#)
- [Controls for Event Vulnerabilities \(by Event\)](#)
- **Controls for Event Vulnerabilities (by Control)** - this page
- [Controls for Event Consequences \(by Event\)](#)
- [Controls for Event Consequences \(by Control\)](#)

The Combined Effectiveness for the **Controls for Event Vulnerabilities (by Control)** of the "All Participants" group is displayed below.

MANAGE MODELS		IDENTIFY/STRUCTURE		LIKELIHOOD OF EVENTS		IMPACT OF EVENTS		RISKS		CONTROLS		CONTROLLED RISKS	
Identify	Measure	Manually Select	Optimize	Efficient Frontier						Reload	On-line	Lock	Snapshots
All Participants <span>+</span> Add a control <span>+</span> Paste controls <input type="checkbox"/> Descriptions													
<b>Effectiveness of Vulnerabilities Controls</b>													
Select a control: Monitoring Gate System Approach													
		Sources											
		Human Factor						Environmental					
Index	Event Name	Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures	Lack of Situational Awareness	Engineers Failure to Properly Install Equipment	Flooding of Intelligent Event Monitoring Infrastructure	Lightning Striking Signaling Infrastructure						
1	Late Train Running		0.35										
2	Degradation of Intelligent Monitoring System Physical Assets												
5	Line Closure		0.75	0.5									
6	Failed Integration with Future Monitoring System Network		0.75										
7	Intelligent Event Monitoring Network Shut Down		0.75										
8	Major Train Work Accident		0.9	0.9									
9	Minor Train Work Accident												
10	Major Train Public Accident		0.9	0.9									

The "All Participants" group is the average of the %effectiveness of all the participants who made the evaluation.

Note: You can also manually add or edit the %effectiveness for the "All Participants" group, which will override the calculated average, if any.

The Events are listed as rows under the "Event Name" column, and the succeeding column headings to the right are the Hierarchy of Sources. The intersecting cell of the event(row) and the covering sources (column) display the %Effectiveness of the selected group or participant.

You can view the %Effectiveness for another group or individual participant by selecting from the pull-down menu:

- All Participants ▾
- All Participants
- [C-Level Executives]
- [Engineering]
- Brian Quigley
- Chief Engineering Of...
- Chief Executive Officer
- Chief Risk Officer
- Control Expert
- Denis Risman
- Devin Nagy
- IT Supervisor
- John Doe
- Michael Mankowski
- Project Manager

Note: The %Effectiveness is only available for the controls that are previously identified to reduce the given event's vulnerabilities. The control identification is done from the [Controls > Identify > Controls for Event Vulnerabilities](#) page. Those un-assigned controls to the selected Event have **disabled or greyed cells**.

From below, the selected control "**Monitoring Gate System**" is a potential control to reduce the vulnerability of the event "**Late Train Running**" given the source "**Disregarding or Not Following Proper Policies, Processes, or Procedures**", thus the %effectinesss is displayed:

Select a control: <span style="background-color: yellow;">Monitoring Gate System Approach</span>			
Index	Event Name	Sources	
		Human Factor	
		Inadequately Trained Staff	Disregarding or Not Following Proper Policies, Processes, or Procedures
1	Late Train Running		0.35

# Combined Effectiveness of Controls for Event Consequences (by Event)

After **identifying** and measuring the controls, the Controls Effectiveness for groups and participants can be viewed on the Combined Effectiveness pages.

Depending on the control application, the %effectiveness can be viewed by:

- [Controls for Threats/Sources](#)
- [Controls for Event Vulnerabilities \(by Event\)](#)
- [Controls for Event Vulnerabilities \(by Control\) - this page](#)
- [Controls for Event Consequences \(by Event\)](#)
- [Controls for Event Consequences \(by Control\)](#)

The Combined Effectiveness for the **Controls for Event Consequences (by Event)** of the "All Participants" group is displayed below.

MANAGE MODELS		IDENTIFY/STRUCTURE		LIKELIHOOD OF EVENTS		IMPACT OF EVENTS		RISKS		CONTROLS		CONTROLLED RISKS																																																																					
Identify	Measure	Manually Select	Optimize	Efficient Frontier				Reload	On-line	Lock	Snapshots																																																																						
<div style="display: flex; justify-content: space-between;"> <span>All Participants</span> <span>+ Add a control</span> <span>📄 Paste controls</span> <span>📄 Descriptions</span> </div> <div style="text-align: center; margin-top: 10px;"> <h3>Effectiveness of Consequence Controls</h3> <p>Select an event: <span>Late Train Running</span></p> </div> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3">Index</th> <th rowspan="3">Control Name</th> <th colspan="6">Objectives</th> </tr> <tr> <th colspan="3">Public Relations</th> <th colspan="3">Financial</th> </tr> <tr> <th>Loss of Company Reputation</th> <th>Customer/Business Dissatisfaction with the Service/Network Efficiency</th> <th>Loss of Customers</th> <th>Financial Loss</th> <th>Financial Liability Due to Accident</th> <th></th> </tr> </thead> <tbody> <tr> <td>37</td> <td>Monthly safety meeting to review safety protocols</td> <td></td> <td></td> <td>0.75</td> <td></td> <td></td> <td></td> </tr> <tr> <td>38</td> <td>Implement high vis personal protective equipment</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>39</td> <td>Maintain proper insurance policy</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>40</td> <td>Follow safety protocols for moving trains into and out of sidings</td> <td></td> <td></td> <td>0.9</td> <td>0.9</td> <td></td> <td></td> </tr> <tr> <td>41</td> <td>Use emergency response team to assess and repair damage</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>42</td> <td>Use media to demonstrate safety record and following safety protocols</td> <td>0.1</td> <td>0.1</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>														Index	Control Name	Objectives						Public Relations			Financial			Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Financial Loss	Financial Liability Due to Accident		37	Monthly safety meeting to review safety protocols			0.75				38	Implement high vis personal protective equipment							39	Maintain proper insurance policy							40	Follow safety protocols for moving trains into and out of sidings			0.9	0.9			41	Use emergency response team to assess and repair damage							42	Use media to demonstrate safety record and following safety protocols	0.1	0.1				
Index	Control Name	Objectives																																																																															
		Public Relations			Financial																																																																												
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Financial Loss	Financial Liability Due to Accident																																																																											
37	Monthly safety meeting to review safety protocols			0.75																																																																													
38	Implement high vis personal protective equipment																																																																																
39	Maintain proper insurance policy																																																																																
40	Follow safety protocols for moving trains into and out of sidings			0.9	0.9																																																																												
41	Use emergency response team to assess and repair damage																																																																																
42	Use media to demonstrate safety record and following safety protocols	0.1	0.1																																																																														

The "All Participants" group is the average of the %effectiveness of all the participants who made the evaluation.

Note: You can also manually add or edit the %effectiveness for the "All Participants" group, which will override the calculated average, if any.

The Controls for Event Effectiveness are listed as rows under the "Control Name" column, and the succeeding column headings to the right are the Hierarchy of Objectives. The intersecting cell of the controls (row) and the covering objectives (column) displays the %Effectiveness of the selected group or participant.

You can view the %Effectiveness for another group or individual participant by selecting from the pull-down menu:

- All Participants ▾
- All Participants
- [C-Level Executives]
- [Engineering]
- Brian Quigley
- Chief Engineering Of...
- Chief Executive Officer
- Chief Risk Officer
- Control Expert
- Denis Risman
- Devin Nagy
- IT Supervisor
- John Doe
- Michael Mankowski
- Project Manager

Note: The %Effectiveness is only available for the controls that are previously identified for the selected Event. The control identification is done from the [Controls > Identify > Controls for Event Consequences](#) page. Those un-assigned controls to the selected Event have **disabled or greyed cells**.

From below, the control "**Monthly safety meeting to review safety protocols**" is a potential control to reduce the consequence of the selected event "**Late Train Running**" given the objective "**Loss of Customers**", thus the %effectiveness is displayed:

Select an event: <span style="background-color: yellow;">Late Train Running</span>				
Index	Control Name	Objectives		
		Public Relations		Financial
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers
37	Monthly safety meeting to review safety protocols			0.75

# Combined Effectiveness of Controls for Event Consequences (by Control)

After **identifying** and measuring the controls, the Controls Effectiveness for groups and participants can be viewed on the Combined Effectiveness pages.

Depending on the control application, the %effectiveness can be viewed by:

- **Controls for Threats/Sources**
- **Controls for Event Vulnerabilities (by Event)**
- **Controls for Event Vulnerabilities (by Control)**
- **Controls for Event Consequences (by Event)**
- **Controls for Event Consequences (by Control)** - this page

The Combined Effectiveness for the **Controls for Event Consequences (by Control)** of the "All Participants" group is displayed below.

MANAGE MODELS		IDENTIFY/STRUCTURE		LIKELIHOOD OF EVENTS		IMPACT OF EVENTS		RISKS		CONTROLS		CONTROLLED RISKS	
Identify	Measure	Manually Select	Optimize	Efficient Frontier	<input type="button" value="Reload"/> <input type="button" value="On-line"/> <input type="button" value="Lock"/> <input type="button" value="Snapshots"/>								
<ul style="list-style-type: none"> <li>Measurement Methods               <ul style="list-style-type: none"> <li>for Controls for Sources</li> <li>for Controls for Event Vulnerabilities (by Event)</li> <li>for Controls for Event Vulnerabilities (by Control)</li> <li>for Controls for Event Consequences (by Event)</li> <li>for Controls for Event Consequences (by Control)</li> </ul> </li> <li>Participants               <ul style="list-style-type: none"> <li>Invite participants</li> <li>Participant Roles</li> <li>Participant evaluate controls                   <ul style="list-style-type: none"> <li>Evaluation status</li> <li>Collect my input</li> </ul> </li> <li>Combined effectiveness                   <ul style="list-style-type: none"> <li>of Controls for Sources</li> <li>of Controls for Event Vulnerabilities (by Event)</li> <li>of Controls for Event Vulnerabilities (by Control)</li> <li>of Controls for Event Consequences (by Event)</li> <li><b>of Controls for Event Consequences (by Control)</b></li> </ul> </li> </ul> </li> </ul>		All Participants		<input type="button" value="Add a control"/> <input type="button" value="Paste controls"/> <input type="checkbox"/> Descriptions		<b>Effectiveness of Consequence Controls</b> Select a control: Monthly safety meeting to review safety protocols							
					Objectives								
					Public Relations		Financial						
					Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers	Financial Loss			Financial Liability Due to Accident		
	Index	Event Name											
	1	Late Train Running					0.75						
	2	Degradation of Intelligent Monitoring System Physical Assets											
	5	Line Closure											
	6	Failed Integration with Future Monitoring System Network											
	7	Intelligent Event Monitoring Network Shut Down											
	8	Major Train Work Accident	0.75					0.75		0.5			

The "All Participants" group is the average of the %effectiveness of all the participants who made the evaluation.

Note: You can also manually add or edit the %effectiveness for the "All Participants" group, which will override the calculated average, if any.

The Events are listed as rows under the "Event Name" column, and the succeeding column headings to the right are the Hierarchy of Objectives. The intersecting cell of the event(row) and the covering objectives (column) display the %Effectiveness of the selected group or participant.

You can view the %Effectiveness for another group or individual participant by selecting from the pull-down menu:

- All Participants ▾
- All Participants
- [C-Level Executives]
- [Engineering]
- Brian Quigley
- Chief Engineering Of...
- Chief Executive Officer
- Chief Risk Officer
- Control Expert
- Denis Risman
- Devin Nagy
- IT Supervisor
- John Doe
- Michael Mankowski
- Project Manager

Note: The %Effectiveness is only available for the controls that are previously identified to reduce the given event's consequences. The control identification is done from the [Controls > Identify> Controls for Event Consequences](#) page. Those un-assigned controls to the selected Event have **disabled or greyed cells**.

From below, the selected control "**Monthly safety meeting to review safety protocols**" is a potential control to reduce the vulnerability of the event "**Late Train Running**" given the source "**Loss of Customers**", thus the %effectiness is displayed:

Select a control: Monthly safety meeting to review safety protocols				
Index	Event Name	Objectives		
		Public Relations		Financial
		Loss of Company Reputation	Customer/Business Dissatisfaction with the Service/Network Efficiency	Loss of Customers
1	Late Train Running			0.75

# Manually Select Controls to be in effect

After identifying and measuring all the potential controls, you can now select which of these controls will be in effect either:

- manually, or
- by optimization

On this page, the controls are being selected manually.

Here you see a grid listing all the potential controls and their details such as the "Control for", Cost, Disabled, Application, Attributes. etc.

The screenshot shows the 'Select Controls' interface with the following data in the grid:

In...	Sele...	Ac...	Control Name	Control for	Sele...	Disa...	Cost	Appli...	Cat
01	<input checked="" type="checkbox"/>		Monthly Performance Review	Likelihood Of Sources	Yes	<input type="checkbox"/>	10000	2	
02	<input checked="" type="checkbox"/>		Schedule Proper Maintenance	Likelihood Of Sources	Yes	<input type="checkbox"/>	10000	4	
03	<input checked="" type="checkbox"/>		Upgrade Signals	Likelihood Of Sources	Yes	<input type="checkbox"/>	10000	1	
04	<input checked="" type="checkbox"/>		Mandatory Training for Engineers	Likelihood Of Sources	Yes	<input type="checkbox"/>	60000	1	
05	<input type="checkbox"/>		Periodic Proficiency Training	Likelihood Of Sources		<input type="checkbox"/>	20000	3	
06	<input checked="" type="checkbox"/>		Identify Staff requiring additional training	Likelihood Of Sources	Yes	<input type="checkbox"/>	15000	1	
07	<input checked="" type="checkbox"/>		Update Sensor	Likelihood Of Sources	Yes	<input type="checkbox"/>	50000	1	
08	<input checked="" type="checkbox"/>		Back-up Generator Power	Likelihood Of Sources	Yes	<input type="checkbox"/>	15000	1	
09	<input checked="" type="checkbox"/>		Periodic Inspection/Maintenance of Power Rela...	Likelihood Of Sources	Yes	<input type="checkbox"/>	15000	2	
10	<input checked="" type="checkbox"/>		Predeployment Software Testing	Likelihood Of Sources	Yes	<input type="checkbox"/>	72000	1	
11	<input checked="" type="checkbox"/>		Quality Control of Cables	Likelihood Of Sources	Yes	<input type="checkbox"/>	2000	1	
12	<input checked="" type="checkbox"/>		Employ Higher Security	Likelihood Of Sources	Yes	<input type="checkbox"/>	4000	1	
13	<input type="checkbox"/>		Increase physical security	Likelihood Of Sources		<input type="checkbox"/>	19000	1	
14	<input checked="" type="checkbox"/>		Emplace flood prevention material	Likelihood Of Sources	Yes	<input type="checkbox"/>	13000	1	

You can manually select a control to be in effect by checking the "Selected" checkbox of the control:

In...	Selected
01	<input checked="" type="checkbox"/>
02	<input checked="" type="checkbox"/>
03	<input checked="" type="checkbox"/>
04	<input checked="" type="checkbox"/>
05	<input type="checkbox"/>
06	<input checked="" type="checkbox"/>
07	<input checked="" type="checkbox"/>

Selected controls have green background color as shown above.

Here we will discuss some of the details of the controls in the grid:

- **Control for** -- this is a control type which can be:
  - "Likelihood Of Sources" - control to reduce the likelihood of the sources
  - "Likelihood of Events" - control to reduce the Vulnerabilities of Events to Sources
  - "Consequences of Events to Objectives" - control to reduce the Consequences of Events to Objectives"
- **Disabled** - you can temporarily disable a control to not include them on the selection either manually or by

optimizing.

- **Cost** - the costs of the control
- **Applications** - display the number of applications of the control. Clicking the number will open a model listing the applications, measurement type to evaluate, and the effectiveness of the control. You can click on the effectiveness (X.XXXX which will redirect you to the evaluation page of the specified control.

Source Name	Measure Type	Effectiveness
Disregarding or Not Following Proper Policies, Processes, or Procedures	Direct	0.8800
Engineers Failure to Properly Install Equipment	Direct	0.7100

- **Must** - the control must be selected on the optimization. This setting is ignored when manually selecting a control.
- **Must Not** - the control must not be selected on the optimization. This setting is ignored when manually selecting a control.
- **Categories and Control Attributes** - additional information that is created on the [Identify Controls](#) page.

Additional information is also displayed at the top of the grid. The data are changing automatically whenever the selection of the controls is changed, as applicable

<b>Total Risk:</b> 38.84%	<b>Selected controls:</b> 46
<b>Risk With Selected Controls:</b> 0.25% (Δ: 38.59%)	<b>Cost Of Selected Controls:</b> \$1,668,200 (unfunded: \$39,000)
<b>Risk With All Controls:</b> 0.23% (Δ: 38.61%)	<b>Total Cost Of All Controls:</b> \$1,707,200 (with applications: \$1,707,200)

- **Total Risk** - the sum of all the risks without controls  $\Sigma(\text{Likelihood} * \text{Impact})$
- **Risk With Selected Controls** - Total risk when the selected controls are applied (delta = Total Risk - Risk with selected controls)
- **Risk With All Controls** - Total risk if All the Controls are applied, excluding the disabled control(s)
- **Selected controls** - Total number of the currently selected controls
- **Cost Of Selected Controls** - Sum of costs of the currently selected controls (Sum Costs of the unfunded controls)
- **Total Cost of All Controls** -- Total cost of all the controls, excluding the disabled control(s)

# Optimize Controls to be in effect

After identifying and measuring all the potential controls, you can now select which of these controls will be in effect either:

- manually, or
- by optimization

On this page, we will determine the controls to be funded by Optimization.

The Portfolio View displays a similar grid as with the [manually select control](#) grid.

On the Optimization page, we can define the **Budget Limit** and other **constraints** (Musts, Must Not, Groups, Dependencies, Funding Pools) to be used or ignored in order to determine the controls to be in effect.

The screenshot shows the 'Controls optimization' interface. At the top, there are tabs for 'MANAGE MODELS', 'IDENTIFY/STRUCTURE', 'LIKELIHOOD OF EVENTS', 'IMPACT OF EVENTS', 'RISKS', 'CONTROLS', and 'CONTROLLED RISKS'. The 'CONTROLS' tab is active. Below the tabs, there are buttons for 'Identify', 'Measure', 'Manually Select', 'Optimize', and 'Efficient Frontier'. The 'Optimize' button is selected. The main area displays 'Controls optimization for "Intelligent Event London Underground Monitoring" Default Scenario'. It shows a 'Budget Limit' of \$100,000. Below this, there are checkboxes for 'Musts', 'Must Not', 'Groups', 'Dependencies', and 'Funding Pools'. A table lists various controls with columns for 'In...', 'Sele...', 'Ac...', 'Control Name', 'Control for', 'Sele...', 'Disa...', 'Cost', 'Appli...', 'Cate...', and 'M'. The table contains 14 rows of control data.

In...	Sele...	Ac...	Control Name	Control for	Sele...	Disa...	Cost	Appli...	Cate...	M
01	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Monthly Performance Review	Likelihood Of Sources	Yes	<input type="checkbox"/>	10000	2		<input type="checkbox"/>
02	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Schedule Proper Maintenance	Likelihood Of Sources	Yes	<input type="checkbox"/>	10000	4		<input type="checkbox"/>
03	<input type="checkbox"/>	<input type="checkbox"/>	Upgrade Signals	Likelihood Of Sources		<input type="checkbox"/>	10000	1		<input type="checkbox"/>
04	<input type="checkbox"/>	<input type="checkbox"/>	Mandatory Training for Engineers	Likelihood Of Sources		<input type="checkbox"/>	60000	1		<input type="checkbox"/>
05	<input type="checkbox"/>	<input type="checkbox"/>	Periodic Proficiency Training	Likelihood Of Sources		<input type="checkbox"/>	20000	3		<input type="checkbox"/>
06	<input type="checkbox"/>	<input type="checkbox"/>	Identify Staff requiring additional training	Likelihood Of Sources		<input type="checkbox"/>	15000	1		<input type="checkbox"/>
07	<input type="checkbox"/>	<input type="checkbox"/>	Update Sensor	Likelihood Of Sources		<input type="checkbox"/>	50000	1		<input type="checkbox"/>
08	<input type="checkbox"/>	<input type="checkbox"/>	Back-up Generator Power	Likelihood Of Sources		<input type="checkbox"/>	15000	1		<input type="checkbox"/>
09	<input type="checkbox"/>	<input type="checkbox"/>	Periodic Inspection/Maintenance of Power Rela...	Likelihood Of Sources		<input type="checkbox"/>	15000	2		<input type="checkbox"/>
10	<input type="checkbox"/>	<input type="checkbox"/>	Predeployment Software Testing	Likelihood Of Sources		<input type="checkbox"/>	72000	1		<input type="checkbox"/>
11	<input type="checkbox"/>	<input type="checkbox"/>	Quality Control of Cables	Likelihood Of Sources		<input type="checkbox"/>	2000	1		<input type="checkbox"/>
12	<input type="checkbox"/>	<input type="checkbox"/>	Employ Higher Security	Likelihood Of Sources		<input type="checkbox"/>	4000	1		<input type="checkbox"/>
13	<input type="checkbox"/>	<input type="checkbox"/>	Increase physical security	Likelihood Of Sources		<input type="checkbox"/>	19000	1		<input type="checkbox"/>
14	<input type="checkbox"/>	<input type="checkbox"/>	Emplace flood prevention material	Likelihood Of Sources		<input type="checkbox"/>	13000	1		<input type="checkbox"/>

The **Must** and **Must Not** are defined from the controls grid by checking from the "Must" and "Must Not" columns.

- **Must** - the control must be selected on the optimization. This setting is ignored when manually selecting a control.
- **Must Not** - the control must not be selected on the optimization. This setting is ignored when manually selecting a control.

Other constraints are defined from their specific pages ([Dependencies](#), Groups, Funding Pools)

The budget limit is entered here:

Budget Limit \$

This means that the solution should have total costs for the funded controls not exceeding the specified budget limit.

In our example above, we do not have any other constraints defined as determined from the Ignore options:

Ignore:

Musts  Must Not  Groups

Dependencies

Funding Pools

When a constraint is defined, the constraint name will be **bold**, see Groups and Dependencies.

**Ignore:**

**Musts**  **Must Not**  **Groups**

**Dependencies**

**Funding Pools**

You can check the constraints you want to ignore in the optimization.

Click  to solve.

The funded controls are selected and will have a green background color. If you have many controls, use the scroll to the right of the grid to view more controls.

**Controls optimization for "Intelligent Event London Underground Monitoring" Default Scenario**

**Total Risk: 38.84%**  
**Risk With Selected Controls: 1.68% (Δ: 37.16%)**  
**Risk With All Controls: 0.23% (Δ: 38.61%)**

**Selected controls: 13**  
**Cost Of Selected Controls: \$98,200 (unfunded: \$51,604,000)**  
**Total Cost Of All Controls: \$51,702,200 (with applications: \$51,702,200)**

Budget Limit: \$

**Ignore:**

**Musts**  **Must Not**  **Groups**

**Dependencies**

**Funding Pools**

**Simulations Settings**

Number of trials:

Seed:   **Keep Seed**

Select: All | None  Show Monetary Values (Value of Enterprise: \$1,384,653,606.36, Value of "Financial": \$100,000,000) Search...

In...	Sele...	Ac...	Control Name	Control for	Sele...	Disa...	Cost	Appli...	Cate...	M	M
01	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Monthly Performance Review	Likelihood Of Sources	Yes	<input type="checkbox"/>	10000	2		<input type="checkbox"/>	<input type="checkbox"/>
02	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Schedule Proper Maintenance	Likelihood Of Sources	Yes	<input type="checkbox"/>	10000	4		<input type="checkbox"/>	<input type="checkbox"/>
03	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Upgrade Signals	Likelihood Of Sources		<input type="checkbox"/>	10000	1		<input type="checkbox"/>	<input type="checkbox"/>
04	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Mandatory Training for Engineers	Likelihood Of Sources		<input type="checkbox"/>	60000	1		<input type="checkbox"/>	<input type="checkbox"/>
05	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic Proficiency Training	Likelihood Of Sources		<input type="checkbox"/>	20000	3		<input type="checkbox"/>	<input type="checkbox"/>
06	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Identify Staff requiring additional training	Likelihood Of Sources		<input type="checkbox"/>	15000	1		<input type="checkbox"/>	<input type="checkbox"/>
07	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Update Sensor	Likelihood Of Sources		<input type="checkbox"/>	50000	1		<input type="checkbox"/>	<input type="checkbox"/>
08	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Back-up Generator Power	Likelihood Of Sources		<input type="checkbox"/>	15000	1		<input type="checkbox"/>	<input type="checkbox"/>
09	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Periodic Inspection/Maintenance of Power Rel...	Likelihood Of Sources		<input type="checkbox"/>	15000	2		<input type="checkbox"/>	<input type="checkbox"/>
10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Predeployment Software Testing	Likelihood Of Sources		<input type="checkbox"/>	72000	1		<input type="checkbox"/>	<input type="checkbox"/>
11	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Quality Control of Cables	Likelihood Of Sources		<input type="checkbox"/>	2000	1		<input type="checkbox"/>	<input type="checkbox"/>
12	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Employ Higher Security	Likelihood Of Sources		<input type="checkbox"/>	4000	1		<input type="checkbox"/>	<input type="checkbox"/>
13	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Increase physical security	Likelihood Of Sources		<input type="checkbox"/>	19000	1		<input type="checkbox"/>	<input type="checkbox"/>
14	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Emplace flood prevention material	Likelihood Of Sources		<input type="checkbox"/>	13000	1		<input type="checkbox"/>	<input type="checkbox"/>
15	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Employ Water Pumps	Likelihood Of Sources		<input type="checkbox"/>	4000	1		<input type="checkbox"/>	<input type="checkbox"/>

Additional information is also displayed at the top of the grid. The data are changing automatically whenever the selection of the controls is changed, as applicable

<p><b>Total Risk: 38.84%</b>  <b>Risk With Selected Controls: 1.68% (Δ: 37.16%)</b>  <b>Risk With All Controls: 0.23% (Δ: 38.61%)</b></p>	<p><b>Selected controls: 13</b>  <b>Cost Of Selected Controls: \$98,200 (unfunded: \$51,604,000)</b>  <b>Total Cost Of All Controls: \$51,702,200 (with applications: \$51,702,200)</b></p>
---------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

- **Total Risk** - the sum of all the risks without controls  $\sum(\text{Likelihood} * \text{Impact})$
- **Risk With Selected Controls** - Total risk when the selected controls are applied (delta = Total Risk - Risk with selected controls)
- **Risk With All Controls** - Total risk if All the Controls are applied, excluding the disabled control(s)
- **Selected controls** - Total number of the currently selected controls
- **Cost Of Selected Controls** - Sum of costs of the currently selected controls (Sum Costs of the unfunded controls)
- **Total Cost of All Controls** -- Total cost of all the controls, excluding the disabled control(s)

Other than the Budget Limit, you can also optimize by "Risk" and "Risk Reduction".

These two options can be enabled from Options > Show Risk Reduction Options:

**Options** ▾

Show descriptions

S.A. Reduction

Show Risk Reduction Options

By doing so, you will see two tabs to the right of Budget:

**Budget** Risk Risk Reduction

Budget Limit: \$

- **Risk** - instructs the optimizer that the resulting solution should have Risk with controls should not exceeding %risk you specified

Budget **Risk** Risk Reduction

Risk with controls should not exceed:  %

- **Risk Reduction** - instructs the optimizer that the resulting solution's Risk (Total Risk - Risk with Selected Controls) should be reduced by X%.

Budget Risk **Risk Reduction**

Risk should be reduced at least by:  %

# Dependencies Constraints

Dependencies are one of the constraints that can be defined when determining the controls to be selected in an [Optimization](#).

You can view the dependencies in **Table** or **List** view.

Dependencies are displayed in the Table view by default as shown below:

The "List View" will be ON by default (grid view is disabled) when the system detected that there are so many controls that will make the grid view slow or hang up.

By single-clicking on the intersecting cell of the column and row, you can specify one of the three dependencies between controls in the Resource Allocation process:

- **D (Depends on)** – the row control depends upon the column control. The optimization assures that the row control is not funded unless the column control is funded. When there are Time Periods, the "depends on" dependency can either be **concurrent** or **non-concurrent**. **Concurrent** means that the row and column controls can be funded at the same period, while non-concurrent is not.
- **M (Mutually dependent)** – the row and the column are mutually dependent; both must be funded or neither is funded.
- **X (Mutually Exclusive)**– the row and the column are mutually exclusive; funding one precludes funding the other.

The clicked cell will display any of the letters explained above (**D**, **M**, **X**) depending on the currently selected dependency type (or clear to remove) on the button at the top.

**D Depends On**

**D** Depends On

**M** Mutually Dependent

**X** Mutually Exclusive

---

Clear Cell

Alternatively, you can right-click on a cell and then select the dependency you want to define for that row and column controls:

Controls	1. Monthly Performance Review	2. Schedule Proper Maintenance	3. Upgrade Signals	4. Mandatory Training for Engineers	5. Periodic Proficiency Training	6. Identify Staff requiring additional training	7. Update Sensor	8. Back-up Generator Power	9. Periodic Inspection of Power Relay Station	10. Predeploy Software Testing	11. Quality Control of Cables	12. Employ Higher Security
1. Monthly Performance Review												
2. Schedule Proper Maintenance												
3. Upgrade Signals												
4. Mandatory Training for Engineers												
5. Periodic Proficiency Training												
6. Identify Staff requiring additional training												
7. Update Sensor												

right-click on a cell to see the context-menu

**D** 4. Mandatory Training for Engineers **Depends On** 3. Upgrade Signals, **Can be concurrent**

**D** 4. Mandatory Training for Engineers **Depends On** 3. Upgrade Signals, **Non-concurrent**

**M** 4. Mandatory Training for Engineers **and** 3. Upgrade Signals **are Mutually Dependent**

**X** 4. Mandatory Training for Engineers **and** 3. Upgrade Signals **are Mutually Exclusive**

Clear

The row and column controls are being highlighted with yellow as you hover on their intersecting cells.

Toggle the List View switch List View:  to display the dependencies in list view:

Dependencies for scenario "Default Scenario"

Depends On (Can be concurrent) ↓

+ Depends On (Non-concurrent) ↑

Mutually Dependent

"1. Monthly Performance Review" and "12. Employ Higher Security" are Mutually Dependent

Mutually Exclusive

"14. Emplace flood prevention material" and "15. Employ Water Pumps" are Mutually Exclusive

Click the + icon to add a new dependency.

Click the ▾ to see options to edit and delete.

When there are Dependencies (or any other constraint) specified, that constraint will be **bold** on the [Optimization](#) ignore options.

**Ignore:**

Musts  Must Nots  Groups

**Dependencies**

Funding Pools

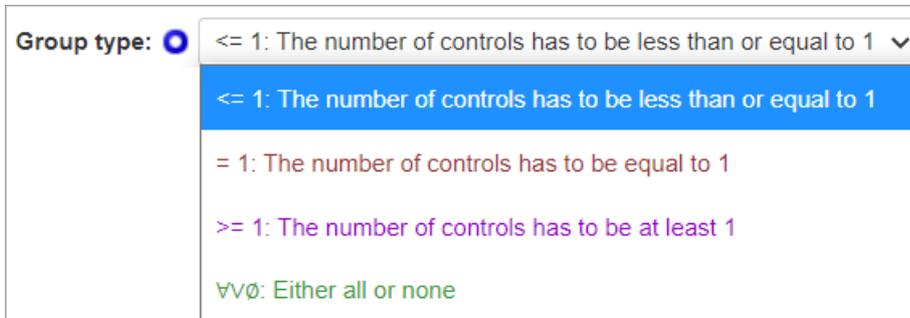
You can choose to use or ignore the dependencies and other constraints when optimizing.

---

# Groups Constraints

Groups are one of the constraints that can be defined when determining the controls to be selected in an [Optimization](#).

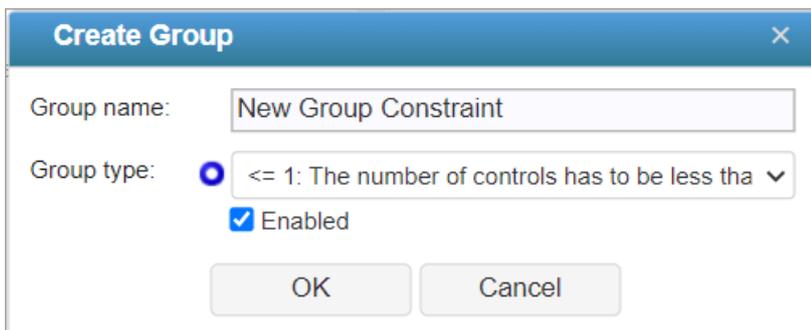
When optimizing, groups can be defined to assure that one of the following four relationships exist among the controls in a group:



A screenshot of a dropdown menu for selecting a group type. The menu is open, showing five options. The first option, '<= 1: The number of controls has to be less than or equal to 1', is highlighted in blue. The other options are: '= 1: The number of controls has to be equal to 1', '>= 1: The number of controls has to be at least 1', and '∀∅: Either all or none'.

- At most one control in the group will be selected (that is no control or one control in the group will be selected)
- Exactly one control in the group will be selected
- At least one control in the group will be selected
- Either all or none

Click  to add a new group constraint.



A screenshot of the 'Create Group' dialog box. The dialog has a title bar with 'Create Group' and a close button. It contains a text input field for 'Group name' with the value 'New Group Constraint'. Below it is a 'Group type' dropdown menu with the selected option '<= 1: The number of controls has to be less than or equal to 1'. There is a checked checkbox labeled 'Enabled'. At the bottom are 'OK' and 'Cancel' buttons.

Enter the group constraint name and select from the group type pull-down menu.

Click OK.

The added group will be displayed on the right:

**All Controls:** Search:  All | None

- 1. Monthly Performance Review
- 2. Schedule Proper Maintenance
- 3. Upgrade Signals
- 4. Mandatory Training for Engineers
- 5. Periodic Proficiency Training
- 6. Identify Staff requiring additional training
- 7. Update Sensor
- 8. Back-up Generator Power
- 9. Periodic Inspection/Maintenance of Power Relay Station
- 10. Predeployment Software Testing
- 11. Quality Control of Cables
- 12. Employ Higher Security
- 13. Increase physical security
- 14. Emplace flood prevention material
- 15. Employ Water Pumps
- 16. Periodic System Functional Checks
- 17. Planned System Software Upgrades
- 18. Prevent External Network Attacks
- 19. Network Access Protocols
- 20. Monthly Software Control Board
- 21. Internal Emergency Communication System
- 22. Monitoring Gate System Approach
- 23. Reprimand
- 24. Frequent Monitoring and Replacement (Signals/Sensors/Cables)
- 25. Engineer Credentials
- 26. On the spot training

Show costs Total Cost: 1,857,200

**Groups:** All | None

**#1 New Group Constraint**

Select controls (if any) on the left and click **»** to add them into this group

Click **+** on top to add a new group

You can add controls to be a member of the group by selecting from the controls at the left and then clicking the



You can then remove controls from the group by selecting them from the right side list and then clicking the

**All Controls:** Search:  All | None

- 1. Monthly Performance Review
- 2. Schedule Proper Maintenance
- 3. Upgrade Signals
- 4. Mandatory Training for Engineers
- 5. Periodic Proficiency Training
- 6. Identify Staff requiring additional training
- 7. Update Sensor
- 8. Back-up Generator Power
- 9. Periodic Inspection/Maintenance of Power Relay Station
- 10. Predeployment Software Testing
- 11. Quality Control of Cables
- 12. Employ Higher Security
- 13. Increase physical security
- 14. Emplace flood prevention material
- 15. Employ Water Pumps
- 16. Periodic System Functional Checks
- 17. Planned System Software Upgrades
- 18. Prevent External Network Attacks
- 19. Network Access Protocols
- 20. Monthly Software Control Board

**Groups:** All | None

**#1 New Group Constraint**

Select controls (if any) on the left and click **»** to add them into this group

Click **+** on top to add a new group

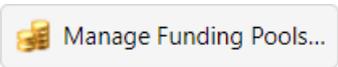
# Funding Pools

Funding Pools allow specification of sources of funds as well as what the funds can be used for. For example, funds from state governments and local governments might be restricted to be used only for certain controls. When setting up a funding pool, the total amount for that pool is specified as well as how much of the pool can be used for each of the controls.

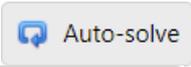
When funding pools are added to the model two sub-columns will be displayed. The first column shows each pool limit while the second column shows what is allocated. The controls funded are highlighted in green.

You can specify the funding pools for each scenario by selecting the desired scenario in the scenario drop-down:

Scenario:  ▼

Click  to add, edit or delete funding pools.

You can ignore a funding pool individually using the Ignore check box.

If  is enabled, then a solution is sought whenever a limit is changed or do it manually using the  button.

When Funding Pool is ignored in the selected scenario, a message will be displayed as shown below:

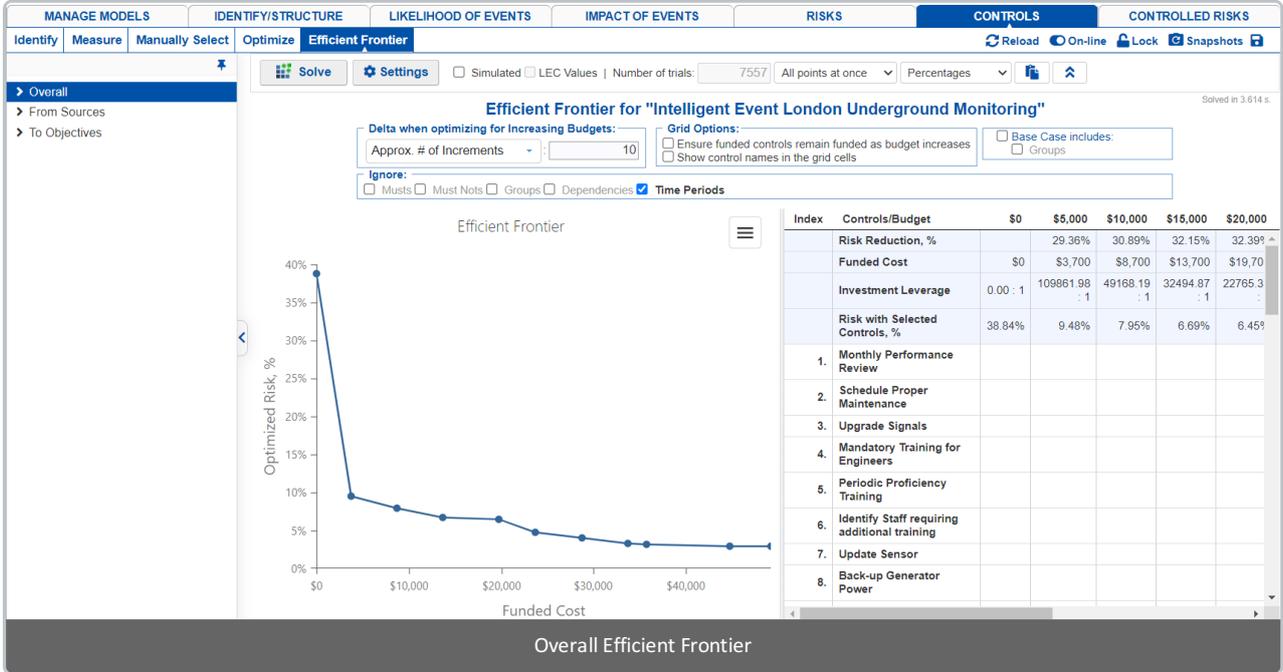
"Funding Pools" are ignored for this scenario. Funding Pools Solve will not work and no Allocated values will be displayed.

Simply click the **Enable Funding Pools** button to enable it without going to the [Portfolio View](#) grid.

# Overall Efficient Frontier

The Efficient Frontier results make it easy to compare several scenarios and see the effects of lower or higher budgets.

Click  to display results:



The Efficient Frontier page displays a curve(s) at the left and a grid at the right.

You can ignore constraints:

**Ignore:**  **Musts**  **Must Nots**  **Groups**  **Dependencies**  **Time Periods**

Constraints that are defined have the **bold** font.

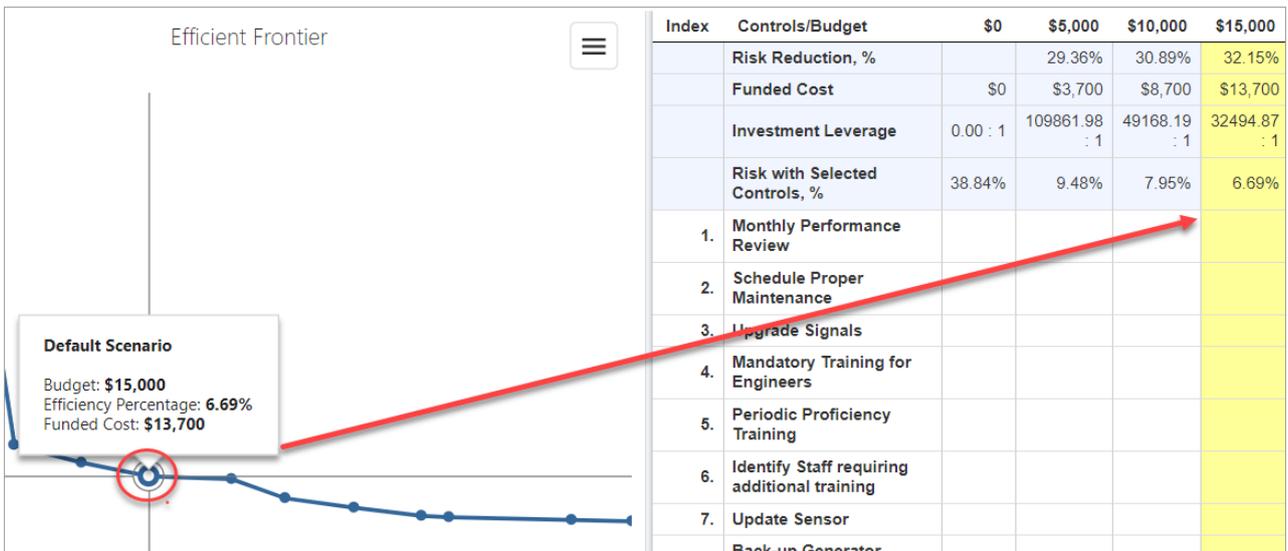
You can select the delta when optimizing:

**Delta when optimizing for Increasing Budgets:**

Approx. # of Increments: 10

- Min Benefit Increase, %
- Specified Amount
- Approx. # of Increments**
- All Solutions, Δ

Hovering on a plot in the Chart will show a tooltip with its details and will highlight the corresponding column in the Grid.



You can see the controls that are funded on the grid. There will be FUNDED on the cell intersecting the control (row) given the budget (column).

Index	Controls/Budget	\$0	\$5,000	\$10,000	\$15,000	\$20,000	\$25,000	\$30,000
	Risk Reduction, %		29.36%	30.89%	32.15%	32.39%	34.02%	34.87%
	Funded Cost	\$0	\$3,700	\$8,700	\$13,700	\$19,700	\$23,700	\$28,700
	Investment Leverage	0.00 : 1	109861.98 : 1	49168.19 : 1	32494.87 : 1	22765.37 : 1	19878.66 : 1	16821.57 : 1
	Risk with Selected Controls, %	38.84%	9.48%	7.95%	6.69%	6.45%	4.81%	3.97%
1.	Monthly Performance Review							
2.	Schedule Proper Maintenance							
3.	Upgrade Signals							
4.	Mandatory Training for Engineers							
5.	Periodic Proficiency Training							
6.	Identify Staff requiring additional training							
7.	Update Sensor							
8.	Back-up Generator Power							
	Periodic							

Alternatively, you can turn on the show control names option to list the funded controls in the cell.

**Grid Options:**

- Ensure funded controls remain funded as budget increases
- Show control names in the grid cells

- Base Case includes:
- Groups

Time Periods

Controls/Budget	\$0	\$5,000	\$10,000	\$15,000	\$20,000	\$25,000	\$30,000
<b>Risk Reduction, %</b>		29.36%	30.89%	32.15%	32.39%	34.02%	34.87%
<b>Funded Cost</b>	\$0	\$3,700	\$8,700	\$13,700	\$19,700	\$23,700	\$28,700
<b>Investment Leverage</b>	0.00 : 1	109861.98 : 1	49168.19 : 1	32494.87 : 1	22765.37 : 1	19878.66 : 1	16821.57 : 1
<b>Risk with Selected Controls, %</b>	38.84%	9.48%	7.95%	6.69%	6.45%	4.81%	3.97%
<b>Funded controls</b>		23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain proper insurance policy 43. Follow safety	22. Monitoring Gate System Approach 23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain	22. Monitoring Gate System Approach 23. Reprimand Operator 24. Frequent Monitoring and Replacement ... 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain	12. Employ Higher Security 22. Monitoring Gate System Approach 23. Reprimand Operator 24. Frequent Monitoring and Replacement ... 27. Replace Operator 36. Monthly safety	23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain proper insurance policy 40. Use emergency	22. Monitoring Gate System Approach 23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain

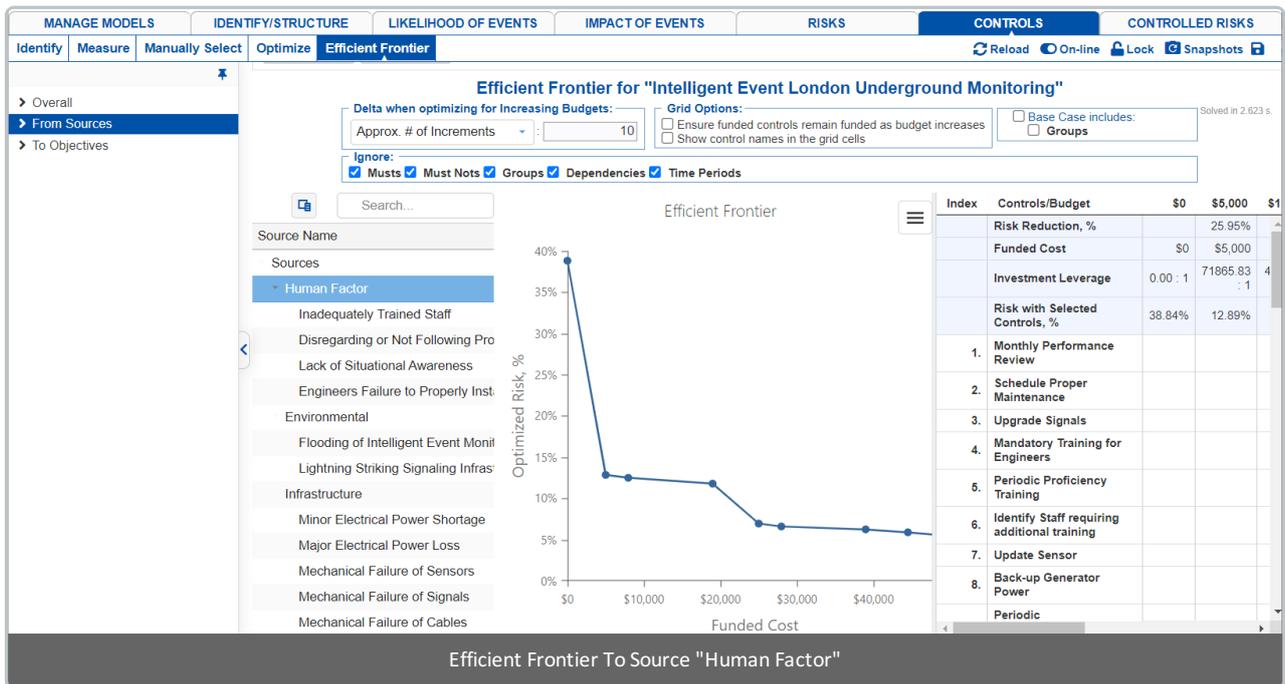
# Efficient Frontier From Threats

The Efficient Frontier results make it easy to compare several scenarios and see the effects of lower or higher budgets.

This page displays the **Efficient Frontier from specific Threats**.

In Riskion, we refer to **threats, causes, hazards, and sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events). In our sample model, we are using the terminology "Source(s)".

Click  to display results:



This page is just similar to [Overall Efficient Frontier](#), except that we can select a specific source to calculate the results.

From the above the Efficient Frontier solved is due to the source "**Human Factor**". You can select another source from the Sources Hierarchy at the left.

Source Name
Sources
Human Factor
Inadequately Trained Staff
Disregarding or Not Following Pro
Lack of Situational Awareness
Engineers Failure to Properly Inst
Environmental
Flooding of Intelligent Event Monit
Lightning Striking Signaling Infrast
Infrastructure
Minor Electrical Power Shortage
Major Electrical Power Loss
Mechanical Failure of Sensors
Mechanical Failure of Signals
Mechanical Failure of Cables

Once solved, the Efficient Frontier page displays a curve(s) at the left and a grid at the right.

You can ignore constraints:

**Ignore:**  **Musts**  **Must Nots**  **Groups**  **Dependencies**  **Time Periods**

Constraints that are defined have a **bold** font.

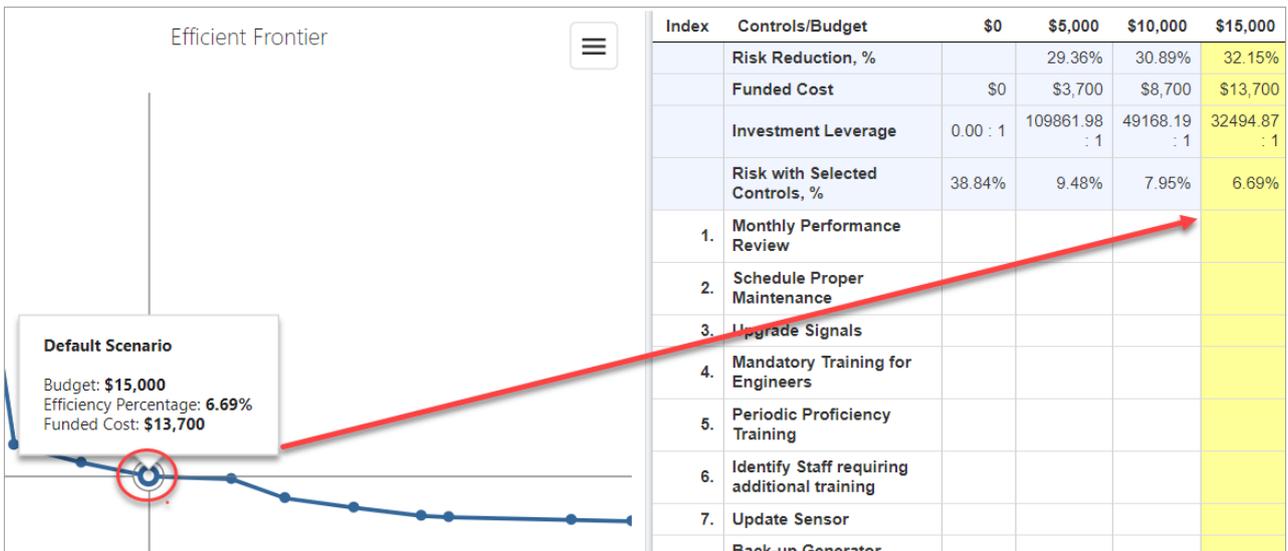
You can select the delta when optimizing:

**Delta when optimizing for Increasing Budgets:**

Approx. # of Increments

- Min Benefit Increase, %
- Specified Amount
- Approx. # of Increments**
- All Solutions,  $\Delta$

Hovering on a plot in the Chart will show a tooltip with its details and will highlight the corresponding column in the Grid.



You can see the controls that are funded on the grid. There will be FUNDED on the cell intersecting the control (row) given the budget (column).

Index	Controls/Budget	\$0	\$5,000	\$10,000	\$15,000	\$20,000	\$25,000	\$30,000
	Risk Reduction, %		29.36%	30.89%	32.15%	32.39%	34.02%	34.87%
	Funded Cost	\$0	\$3,700	\$8,700	\$13,700	\$19,700	\$23,700	\$28,700
	Investment Leverage	0.00 : 1	109861.98 : 1	49168.19 : 1	32494.87 : 1	22765.37 : 1	19878.66 : 1	16821.57 : 1
	Risk with Selected Controls, %	38.84%	9.48%	7.95%	6.69%	6.45%	4.81%	3.97%
1.	Monthly Performance Review							
2.	Schedule Proper Maintenance							
3.	Upgrade Signals							
4.	Mandatory Training for Engineers							
5.	Periodic Proficiency Training							
6.	Identify Staff requiring additional training							
7.	Update Sensor							
8.	Back-up Generator Power							
	Periodic							

Alternatively, you can turn on the show control names option to list the funded controls in the cell.

**Grid Options:**

- Ensure funded controls remain funded as budget increases
- Show control names in the grid cells

- Base Case includes:
- Groups

Time Periods

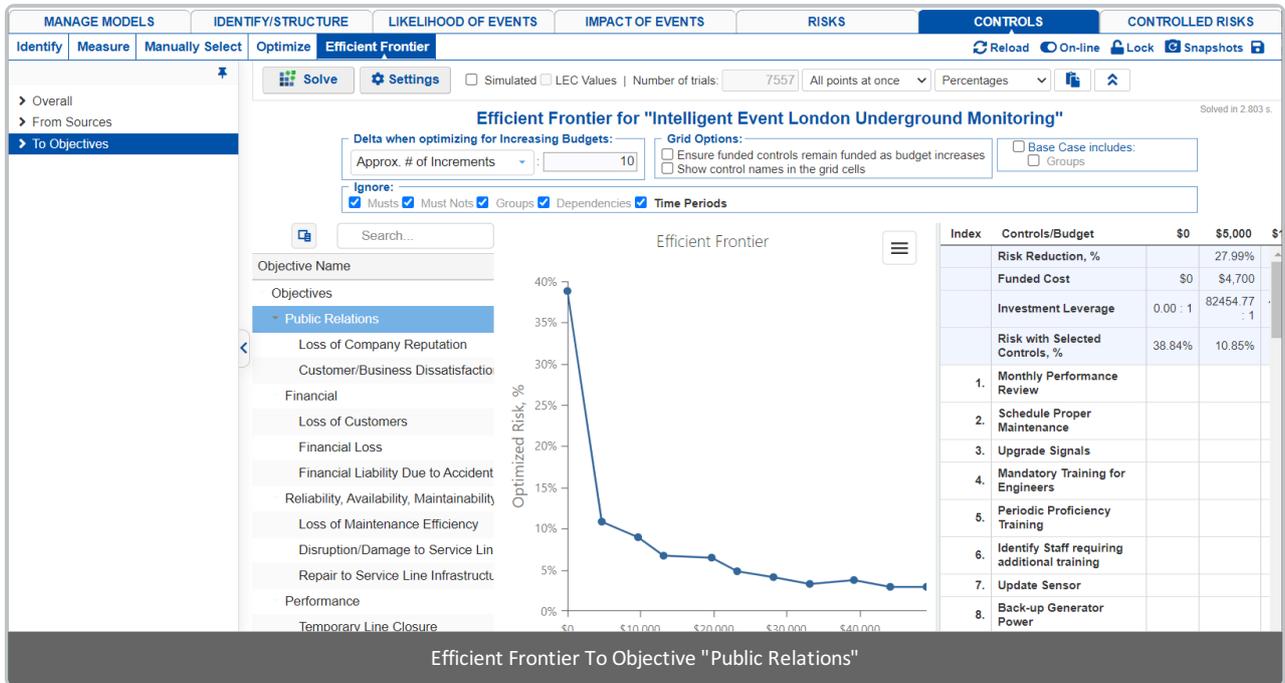
Controls/Budget	\$0	\$5,000	\$10,000	\$15,000	\$20,000	\$25,000	\$30,000
<b>Risk Reduction, %</b>		29.36%	30.89%	32.15%	32.39%	34.02%	34.87%
<b>Funded Cost</b>	\$0	\$3,700	\$8,700	\$13,700	\$19,700	\$23,700	\$28,700
<b>Investment Leverage</b>	0.00 : 1	109861.98 : 1	49168.19 : 1	32494.87 : 1	22765.37 : 1	19878.66 : 1	16821.57 : 1
<b>Risk with Selected Controls, %</b>	38.84%	9.48%	7.95%	6.69%	6.45%	4.81%	3.97%
<b>Funded controls</b>		23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain proper insurance policy 43. Follow safety	22. Monitoring Gate System Approach 23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain	22. Monitoring Gate System Approach 23. Reprimand Operator 24. Frequent Monitoring and Replacement ... 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain	12. Employ Higher Security 22. Monitoring Gate System Approach 23. Reprimand Operator 24. Frequent Monitoring and Replacement ... 27. Replace Operator 36. Monthly safety	23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain proper insurance policy 40. Use emergency	22. Monitoring Gate System Approach 23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain

# Efficient Frontier To Objectives

The Efficient Frontier results make it easy to compare several scenarios and see the effects of lower or higher budgets.

This page displays the **Efficient Frontier To specific Objectives**.

Click  to display results:



This page is just similar to [Overall Efficient Frontier](#), except that we can select a specific objective to calculate the results.

From the above the Efficient Frontier solved is with respect to the objective **"Public Relations"**. You can select another objective from the Objectives Hierarchy at the left.

Objective Name
Objectives
Public Relations
Loss of Company Reputation
Customer/Business Dissatisfactio
Financial
Loss of Customers
Financial Loss
Financial Liability Due to Accident
Reliability, Availability, Maintainability
Loss of Maintenance Efficiency
Disruption/Damage to Service Lin
Repair to Service Line Infrastruct.
Performance
Temporary Line Closure
Loss of Reliability and Network Ef

Once solved, the Efficient Frontier page displays a curve(s) at the left and a grid at the right.

You can ignore constraints:

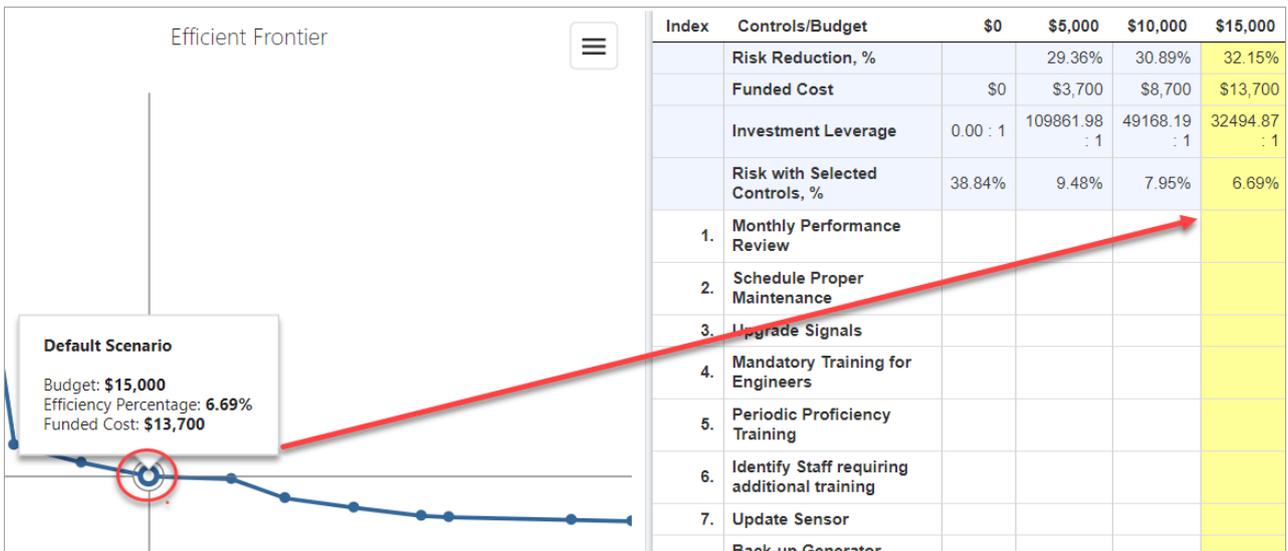
Ignore:
<input type="checkbox"/> <b>Musts</b> <input type="checkbox"/> <b>Must Nots</b> <input type="checkbox"/> <b>Groups</b> <input type="checkbox"/> <b>Dependencies</b> <input checked="" type="checkbox"/> <b>Time Periods</b>

Constraints that are defined have a **bold** font.

You can select the delta when optimizing:

<b>Delta when optimizing for Increasing Budgets:</b>	
Approx. # of Increments	10
Min Benefit Increase, %	
Specified Amount	
Approx. # of Increments	
All Solutions, $\Delta$	

Hovering on a plot in the Chart will show a tooltip with its details and will highlight the corresponding column in the Grid.



You can see the controls that are funded on the grid. There will be FUNDED on the cell intersecting the control (row) given the budget (column).

Index	Controls/Budget	\$0	\$5,000	\$10,000	\$15,000	\$20,000	\$25,000	\$30,000
	Risk Reduction, %		29.36%	30.89%	32.15%	32.39%	34.02%	34.87%
	Funded Cost	\$0	\$3,700	\$8,700	\$13,700	\$19,700	\$23,700	\$28,700
	Investment Leverage	0.00 : 1	109861.98 : 1	49168.19 : 1	32494.87 : 1	22765.37 : 1	19878.66 : 1	16821.57 : 1
	Risk with Selected Controls, %	38.84%	9.48%	7.95%	6.69%	6.45%	4.81%	3.97%
1.	Monthly Performance Review							
2.	Schedule Proper Maintenance							
3.	Upgrade Signals							
4.	Mandatory Training for Engineers							
5.	Periodic Proficiency Training							
6.	Identify Staff requiring additional training							
7.	Update Sensor							
8.	Back-up Generator Power							
	Periodic							

Alternatively, you can turn on the show control names option to list the funded controls in the cell.

**Grid Options:**

- Ensure funded controls remain funded as budget increases
- Show control names in the grid cells

- Base Case includes:
- Groups

Time Periods

Controls/Budget	\$0	\$5,000	\$10,000	\$15,000	\$20,000	\$25,000	\$30,000
<b>Risk Reduction, %</b>		29.36%	30.89%	32.15%	32.39%	34.02%	34.87%
<b>Funded Cost</b>	\$0	\$3,700	\$8,700	\$13,700	\$19,700	\$23,700	\$28,700
<b>Investment Leverage</b>	0.00 : 1	109861.98 : 1	49168.19 : 1	32494.87 : 1	22765.37 : 1	19878.66 : 1	16821.57 : 1
<b>Risk with Selected Controls, %</b>	38.84%	9.48%	7.95%	6.69%	6.45%	4.81%	3.97%
<b>Funded controls</b>		23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain proper insurance policy 43. Follow safety	22. Monitoring Gate System Approach 23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain	22. Monitoring Gate System Approach 23. Reprimand Operator 24. Frequent Monitoring and Replacement ... 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain	12. Employ Higher Security 22. Monitoring Gate System Approach 23. Reprimand Operator 24. Frequent Monitoring and Replacement ... 27. Replace Operator 36. Monthly safety	23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain proper insurance policy 40. Use emergency	22. Monitoring Gate System Approach 23. Reprimand Operator 27. Replace Operator 36. Monthly safety meeting to review saf... 38. Maintain

# Overall Risks with Controls

## Overview

This page displays a similar grid as with the **Overall Risk Results** (without controls), with additional columns for results when Controls are in effect.

**Overall Likelihoods, Impacts, and Risks (With Controls) for Intelligent Event London Underground Monitoring**

Selected controls: 13 Cost Of Selected Controls: \$98,200 (unfunded: \$51,604,000) Total Cost Of All Controls: \$51,702,200 How Selected: Optimized with budget of \$100,000

Color	Event Name	Description	All Participants					
			W.O. Controls			With Controls		
			Likelihood	Impact	Risk	Likelihood	Impact	Risk
●	Major Train Public Accident	Death occurs	17.69%	49.70%	8.79%	1.44%	2.28%	0.03%
●	Major Train Work Accident	Death occurs	17.64%	43.63%	7.69%	1.41%	6.55%	0.09%
●	Line Closure	No train traffic allowed	27.22%	22.54%	6.13%	6.44%	5.20%	0.34%
●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.48%	15.87%	5.63%	8.81%	3.35%	0.29%
●	Intelligent Event Monitoring Network Shut Down		18.55%	26.94%	5.00%	4.05%	2.54%	0.10%
●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.17%	32.43%	3.62%	6.20%	2.98%	0.19%
●	Minor Train Work Accident	Injury occurs	14.67%	6.77%	0.99%	1.35%	0.09%	0.00%
●	Failed Integration with Future Monitoring System Network		15.55%	6.25%	0.97%	10.11%	6.25%	0.63%

Overall Likelihoods, Impacts, and Risks of each Event without and with Controls.

The combined results for "All Participants" are displayed by default. The W.O. (without ) Controls and With Controls are displayed below the "All Participants" column heading.

All Participants					
W.O. Controls			With Controls		
Likelihood	Impact	Risk	Likelihood	Impact	Risk
17.69%	49.70%	8.79%	1.44%	2.28%	0.03%
17.64%	43.63%	7.69%	1.41%	6.55%	0.09%
27.22%	22.54%	6.13%	6.44%	5.20%	0.34%
35.48%	15.87%	5.63%	8.81%	3.35%	0.29%
18.55%	26.94%	5.00%	4.05%	2.54%	0.10%
11.17%	32.43%	3.62%	6.20%	2.98%	0.19%
14.67%	6.77%	0.99%	1.35%	0.09%	0.00%
15.55%	6.25%	0.97%	10.11%	6.25%	0.63%

Notice from the above results that the Likelihoods, Impacts, and Risks decreased when controls are in effect.

The details for the controls in effect are displayed at the top of the grid.

Selected controls: 13 Cost Of Selected Controls: \$98,200 (unfunded: \$51,604,000) Total Cost Of All Controls: \$51,702,200 How Selected: Optimized with budget of \$100,000

In our example, 13 controls are in effect and were selected by Optimizing with a budget of \$100,000.

## Select Participants and Groups

By clicking the  "Participants and Groups" icon, you can select to display the results for participants or other groups.

### Participants and Groups

Search:

	Participant Name	Email Address	Has data?	
<input type="checkbox"/>	Brian Quigley	quigleybf@gwu.edu	Yes	
<input type="checkbox"/>	Chief Engineering Officer	ceo@gwu.edu	Yes	
<input type="checkbox"/>	Chief Executive Officer	che@gwu.edu	Yes	
<input type="checkbox"/>	Chief Risk Officer	cro@gwu.edu	Yes	
<input type="checkbox"/>	Denis Risman	denisrisman@gwu.edu	Yes	
<input type="checkbox"/>	Devin Nagy	devinnagy@gwu.edu	Yes	
<input type="checkbox"/>	Grace	grace@eci.com		
<input type="checkbox"/>	IT Supervisor	its@gwu.edu	Yes	
<input type="checkbox"/>	James	james@eci.com		
<input type="checkbox"/>	John Doe	j.doe@eci.com		
<input type="checkbox"/>	Michael Mankowski	mmankowski@owu.edu	Yes	

	Group name	Has data?	Select all users with data
<input checked="" type="checkbox"/>	All Participants	Yes	<input type="checkbox"/>
<input type="checkbox"/>	C-Level Executives	Yes	<input type="checkbox"/>
<input type="checkbox"/>	Engineering	Yes	<input type="checkbox"/>

Select all | Deselect all

After selecting participants and groups to display, click OK. New columns for the results will be displayed with the participant or group name as the column heading.

Overall Likelihoods, Impacts, and Risks (With Controls) for Intelligent Event London Underground Monitoring														
Selected controls: 13		Cost Of Selected Controls: \$98,200 (unfunded: \$51,604,000)			Total Cost Of All Controls: \$51,702,200			How Selected: Optimized with budget of \$100,000						
ID	Co...	Event Name	All Participants						Chief Engineering Officer					
			W.O. Controls			With Controls			W.O. Controls			With Controls		
			Likelihood	Impact	Risk	Likelihood	Impact	Risk	Likelihood	Impact	Risk	Likelihood	Impact	Risk
[01]		Late Train Running	35.5%	15.9%	5.6%	8.8%	3.3%	0.3%	12.4%	14.3%	1.8%	4.2%	3.9%	0.2%
[02]		Degradation of Intelligent Monitoring System Physical Assets	11.2%	32.4%	3.6%	6.2%	3.0%	0.2%	4.7%	33.3%	1.5%	3.7%	1.6%	0.1%
[05]		Line Closure	27.2%	22.5%	6.1%	6.4%	5.2%	0.3%	9.1%	21.6%	2.0%	3.2%	4.9%	0.2%
[06]		Failed Integration with Future Monitoring System Network	15.6%	6.2%	1.0%	10.1%	6.2%	0.6%	11.1%	6.4%	0.7%	8.8%	6.4%	0.6%
[07]		Intelligent Event Monitoring Network Shut Down	18.6%	26.9%	5.0%	4.0%	2.5%	0.1%	3.9%	12.8%	0.5%	2.8%	2.7%	0.1%
[08]		Major Train Work Accident	12.6%	43.6%	7.7%	1.4%	6.6%	0.1%	7.7%	31.1%	2.4%	0.8%	3.9%	0.0%
[09]		Minor Train Work Accident	14.7%	6.8%	1.0%	1.3%	0.1%	0.0%	1.3%	8.5%	0.1%	0.3%	0.1%	0.0%
[10]		Major Train Public Accident	12.7%	49.7%	8.8%	1.4%	2.3%	0.0%	8.3%	32.9%	2.7%	1.4%	2.5%	0.0%

## Open Bow-tie diagram from Grid

Clicking the Event Name will open a modal that displays the bow-tie diagram for the selected event.

From the Bow-tie diagram, you analyze the **likelihoods** (left) and **impacts** (right) of the selected **event** (center) with **controls**. Click "Overall Bow-tie Diagram" for more details.

Expert Choice **riskion** Workgroup: Riskion Help Risk model: Intelligent Event London Underground Monitoring John Doe

MANAGE MODELS IDENTIFY/STRUCTURE LIKELIHOOD OF EVENTS IMPACT OF EVENTS RISKS CONTROLS CONTROLLED RISKS

Risk with Controls Registers Filter Events Simulated Results Timestamp Show Monetary Values Preferences

Overall Likelihoods, Impacts, and Risks (With Controls) for Intelligent Event London Underground Monitoring

Selected controls: 13 Cost Of Selected Controls: \$98,200 (unfunded: \$51,804,000) Total Cost Of All Controls: \$51,702,200 How Selected: Optimized with budget of \$100,000

Drag a column header here to group by that column Search...

ID ↑	Co...	Event Name	Description	All Participants					
				W.O. Controls			With Controls		
				Likelihood	Impact	Risk	Likelihood	Impact	Risk
[01]		Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.6%	15.9%	5.6%	8.8%	3.3%	0.3%
[02]		Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.2%	32.4%	3.6%	6.2%	3.0%	0.2%
[05]		Line Closure	No train traffic allowed	27.2%	22.5%	6.1%	6.4%	5.2%	0.3%
[06]		Failed Integration with Future Monitoring System Network		15.6%	6.2%	1.0%	10.1%	6.2%	0.6%
[07]		Intelligent Event Monitoring Network Shut Down		18.6%	26.9%	5.0%	4.0%	2.5%	0.1%
[08]		Major Train Work Accident	Death occurs	17.6%	43.6%	7.7%	1.4%	6.6%	0.1%
[09]		Minor Train Work Accident	Injury occurs	14.7%	6.8%	1.0%	1.3%	0.1%	0.0%
[10]		Major Train Public Accident	Death occurs	17.7%	49.7%	8.8%	1.4%	2.3%	0.0%

Shortcuts Advanced mode is OFF Version: 6.2.001.42282 © 2007-2021 Expert Choice, Inc. All Rights Reserved

## Export Grid into excel or image format

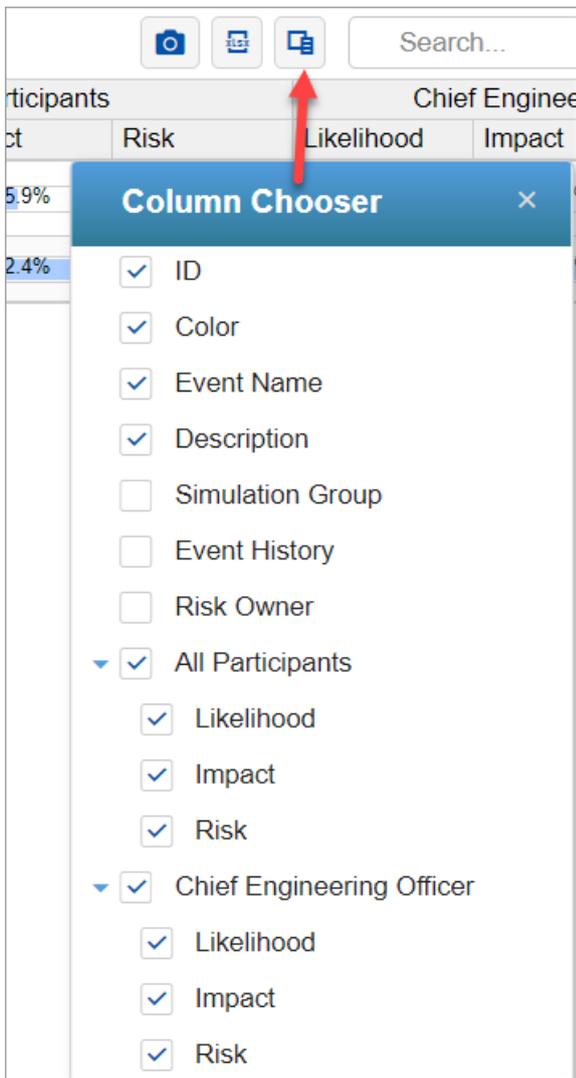


You can export the grid into a .xlsx file by clicking 

You can also export the results page into an image file (.png) by clicking 

## Show or Hide columns

You can select to show/hide columns using the column chooser:



The events attributes can also be displayed on the grid, "Event History" and "Risk Owner" are events attributes above.

Clicking the column header can sort the grid in ascending or descending order by that header.

ID	Color	Event Name	Description	All Participants		
				Likelihood	Impact	Risk
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.5%	15.9%	5.6%
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.2%	32.4%	3.6%
[05]	●	Line Closure	No train traffic allowed	27.2%	22.5%	6.1%
[06]	●	Failed Integration with Future Monitoring System Network		15.6%	6.2%	1.0%
[07]	●	Intelligent Event Monitoring Network Shut Down		18.6%	26.9%	5.0%
[08]	●	Major Train Work Accident	Death occurs	17.6%	43.6%	7.7%
[09]	●	Minor Train Work Accident	Injury occurs	14.7%	6.8%	1.0%
[10]	●	Major Train Public Accident	Death occurs	17.7%	49.7%	8.8%
Total Risk:						38.8%

You can reset the sorting by pressing the Ctrl key + clicking again the column header where the sorting is currently active.

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences



# Risk of Events From Threats with Controls

## Overview

This page displays a similar grid as with the **Risk of Events From Threats** (without controls), but with added columns for results when Controls are in effect.

In Riskion, we refer to **threats, causes, hazards, and sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events).

In our sample model, we are using the terminology "Source(s)".

The Likelihoods, Impacts, and Risks of the events from Source **"Human Factor"** without and with controls are displayed below:

**Likelihood, Impact, and Risk from Source (With Controls) for Intelligent Event London Underground Monitoring**

Selected controls: 13 Cost Of Selected Controls: \$98,200 (unfunded: \$51,604,000) Total Cost Of All Controls: \$51,702,200 How Selected: Optimized with budget of \$100,000

I. ↑	Color	Event Name	All Participants					
			W.O. Controls			With Controls		
			Likelihood	Impact	Risk	Likelihood	Impact	Risk
1	●	Late Train Running	37.70%	15.87%	5.98%	4.61%	3.35%	0.15%
2	●	Degradation of Intelligent Monitoring System Physical Assets	6.30%	32.43%	2.04%	1.64%	2.98%	0.05%
3	●	Line Closure	35.40%	22.54%	7.98%	5.84%	5.20%	0.30%
4	●	Failed Integration with Future Monitoring System Network	7.56%	6.25%	0.47%	0.33%	6.25%	0.02%
5	●	Intelligent Event Monitoring Network Shut Down	21.97%	26.94%	5.92%	0.56%	2.54%	0.01%
6	●	Major Train Work Accident	25.85%	43.63%	11.28%	0.62%	6.55%	0.04%
7	●	Minor Train Work Accident	21.45%	6.77%	1.45%	0.74%	0.09%	0.00%
8	●	Major Train Public Accident	26.09%	49.70%	12.97%	0.62%	2.28%	0.01%
Total Risk:			48.10%			0.60%		

The combined results for **"All Participants"** are displayed by default. The W.O. (without ) Controls and With Controls are displayed below the "All Participants" column heading.

I. ↑	Color	Event Name	All Participants					
			W.O. Controls			With Controls		
			Likelihood	Impact	Risk	Likelihood	Impact	Risk
1	●	Late Train Running	37.70%	15.87%	5.98%	4.61%	3.35%	0.15%
2	●	Degradation of Intelligent Monitoring System Physical Assets	6.30%	32.43%	2.04%	1.64%	2.98%	0.05%
3	●	Line Closure	35.40%	22.54%	7.98%	5.84%	5.20%	0.30%
4	●	Failed Integration with Future Monitoring System Network	7.56%	6.25%	0.47%	0.33%	6.25%	0.02%
5	●	Intelligent Event Monitoring Network Shut Down	21.97%	26.94%	5.92%	0.56%	2.54%	0.01%
6	●	Major Train Work Accident	25.85%	43.63%	11.28%	0.62%	6.55%	0.04%
7	●	Minor Train Work Accident	21.45%	6.77%	1.45%	0.74%	0.09%	0.00%
8	●	Major Train Public Accident	26.09%	49.70%	12.97%	0.62%	2.28%	0.01%
Total Risk:			48.10%			0.60%		

A Source is selected from the Sources Hierarchy at the left.

Source Name	↑	Co...	Event Name	All Participants					
				W.O. Controls			With Controls		
				Likelihood	Impact	Risk	Likelihood	Impact	Risk
Human Factor	1	●	Late Train Running	37.70%	15.87%	5.98%	4.61%	3.35%	0.15%
Inadequately Trained Staff	2	●	Degradation of Intelligent Monitoring System Physical Assets	6.30%	32.43%	2.04%	1.64%	2.98%	0.05%
Disregarding or Not Following	3	●	Line Closure	35.40%	22.54%	7.98%	5.84%	5.20%	0.30%
Lack of Situational Awareness	4	●	Failed Integration with Future Monitoring System Network	7.56%	6.25%	0.47%	0.33%	6.25%	0.02%
Engineers Failure to Properly	5	●	Intelligent Event Monitoring Network Shut Down	21.97%	26.94%	5.92%	0.56%	2.54%	0.01%
Environmental	6	●	Major Train Work Accident	25.85%	43.63%	11.28%	0.62%	6.55%	0.04%
Flooding of Intelligent Event M	7	●	Minor Train Work Accident	21.45%	6.77%	1.45%	0.74%	0.09%	0.00%
Lightning Striking Signaling In	8	●	Major Train Public Accident	26.09%	49.70%	12.97%	0.62%	2.28%	0.01%
Infrastructure									
Minor Electrical Power Shorta									
Major Electrical Power Loss									
Mechanical Failure of Sensor:									
Mechanical Failure of Signals									
Mechanical Failure of Cables									

You can also select the top node "Sources" which will show the same results as with the [Overall Risk Results](#) page.

The Events on the grid may vary depending on the [contributions of the events](#) given the selected source.

## Select Participants and Groups

By default, the results shown are for the "All Participants" group.

By selecting from the  "Participants and Groups" icon, you can display the results for other participants or groups.

Participants and Groups

Search:

	Participant Name	Email Address	Has data?		
<input type="checkbox"/>	Brian Quigley	quigleybf@gwu.edu	Yes	<input checked="" type="checkbox"/>	All Participants
<input type="checkbox"/>	Chief Engineering Officer	ceo@gwu.edu	Yes	<input type="checkbox"/>	C-Level Executives
<input type="checkbox"/>	Chief Executive Officer	che@gwu.edu	Yes	<input type="checkbox"/>	Engineering
<input type="checkbox"/>	Chief Risk Officer	cro@gwu.edu	Yes		
<input type="checkbox"/>	Denis Risman	denisrisman@gwu.edu	Yes		
<input type="checkbox"/>	Devin Nagy	devinnagy@gwu.edu	Yes		
<input type="checkbox"/>	Grace	grace@eci.com			
<input type="checkbox"/>	IT Supervisor	its@gwu.edu	Yes		
<input type="checkbox"/>	James	james@eci.com			
<input type="checkbox"/>	John Doe	j.doe@eci.com			
<input type="checkbox"/>	Michael Mankowski	mmankowski@gwu.edu	Yes		

Select all | Deselect all

After selecting participants and groups to display, click OK.

Likelihood, Impact, and Risk from Source (With Controls) for Intelligent Event London Underground Monitoring														
Selected controls: 13		Cost Of Selected Controls: \$98,200 (unfunded: \$51,604,000)			Total Cost Of All Controls: \$51,702,200			How Selected: Optimized with budget of \$100,000						
All Participants														
Source Name	Co...	Event Name	W.O. Controls			With Controls			W.O. Controls			With Controls		
			Likelihood	Impact	Risk	Likelihood	Impact	Risk	Likelihood	Impact	Risk	Likelihood	Impact	Risk
Sources		1	37.70%	15.87%	5.96%	4.61%	3.35%	0.15%	4.58%	14.32%	0.66%	0.85%	3.85%	0.03%
Human Factor		2	6.30%	32.43%	2.04%	1.64%	2.98%	0.05%	0.56%	33.27%	0.19%	0.15%	1.56%	0.00%
Inadequately Trained Staff		3	35.40%	22.54%	7.98%	5.84%	5.20%	0.30%	18.28%	21.58%	3.94%	4.41%	4.91%	0.22%
Disregarding or Not Following Proper Policies		4	7.56%	6.25%	0.47%	0.33%	6.25%	0.02%	4.29%	6.36%	0.27%	0.25%	6.36%	0.02%
Lack of Situational Awareness		5	21.97%	26.94%	5.92%	0.56%	2.54%	0.01%	1.12%	12.78%	0.14%	0.04%	2.69%	0.00%
Engineers Failure to Properly Install Equipment		6	25.85%	43.63%	11.28%	0.62%	6.55%	0.04%	19.97%	31.05%	6.02%	0.35%	3.87%	0.01%
Environmental		7	21.45%	6.77%	1.45%	0.74%	0.09%	0.00%	2.22%	8.46%	0.19%	0.13%	0.12%	0.00%
Flooding of Intelligent Event Monitoring Infrastructure		8	26.09%	49.70%	12.97%	0.62%	2.28%	0.01%	19.97%	32.96%	8.37%	0.35%	2.48%	0.01%
Lightning Striking Signaling Infrastructure														
Infrastructure														
Minor Electrical Power Shortage														
Major Electrical Power Loss														
Mechanical Failure of Sensors														
Mechanical Failure of Signals														
Mechanical Failure of Cables														
Terrorism														
Conventional Attack on the Signalling Infrastructure														

## Open Bow-tie diagram from Grid

Clicking the Event Name will open a modal that displays the bow-tie diagram for the selected event.

From the Bow-tie diagram, you analyze the **likelihoods** (left) and **impacts** (right) of the selected **event** (center) For **Threats with controls**. Click "[Bow-tie Diagram From Threats](#)" for more details.

Workgroup: Riskion Help  
Risk model: Intelligent Event London Underground Monitoring

John Doe

MANAGE MODELS
IDENTIFY/STRUCTURE
LIKELIHOOD OF EVENTS
IMPACT OF EVENTS
RISKS
CONTROLS
CONTROLLED RISKS

Risk Registers
Reload
On-line
Snapshots

Loss Exceedance...
Filter Events
Simulated Results
Timestamp
Show Monetary Values
Preferences

### Likelihoods, Impacts, and Risks from Source for Intelligent Event London Underground Monitoring

Source Name	Co...	Event Name	Description	All Participants		
				Likelihood	Impact	Risk
Human Factor		1 Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	37.70%	15.87%	5.96%
Inadequately Trained Staff		2 Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	6.30%	32.43%	2.04%
Disregarding or Not Following Proper Policies		3 Line Closure	No train traffic allowed	35.40%	22.54%	7.98%
Lack of Situational Awareness		4 Failed Integration with Future Monitoring System Network		7.56%	6.25%	0.47%
Engineers Failure to Properly Install Equipment		5 Intelligent Event Monitoring Network Shut Down		21.97%	26.94%	5.92%
Environmental		6 Major Train Work Accident	Death occurs	25.85%	43.63%	11.28%
Flooding of Intelligent Event Monitoring Infrastructure		7 Minor Train Work Accident	Injury occurs	21.45%	6.77%	1.45%
Lightning Striking Signaling Infrastructure		8 Major Train Public Accident	Death occurs	26.09%	49.70%	12.97%

Shortcuts
Advanced mode is OFF
Version: 6.2.001.42282  
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## Export Grid into excel or image format



You can export the grid into a .xlsx file by clicking



You can also export the results page into an image file (.png) by clicking

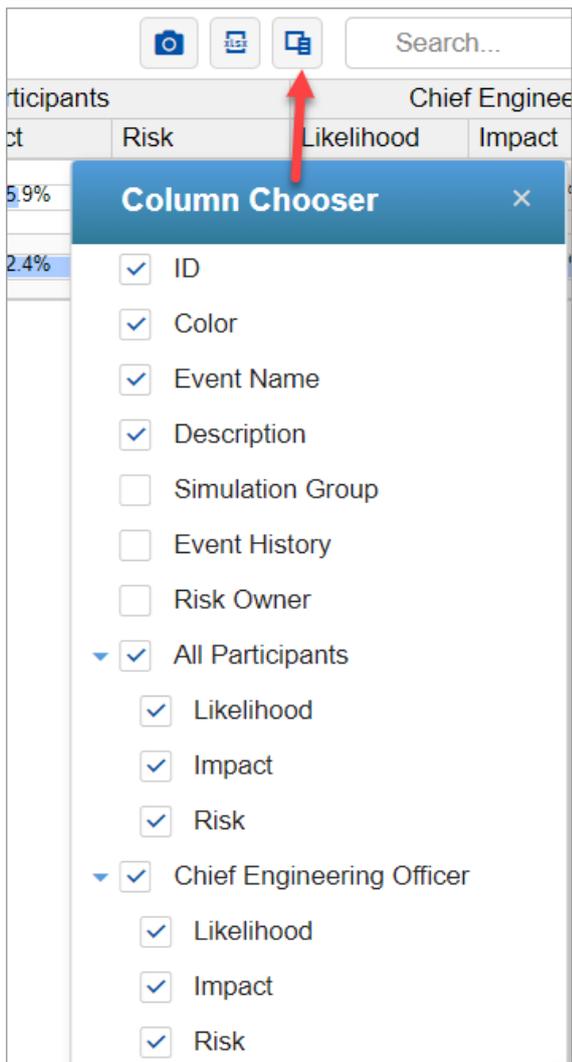


## Show or Hide columns

You can show/hide columns both for:

- the main results grid at the right, and
- the hierarchy tree at the left

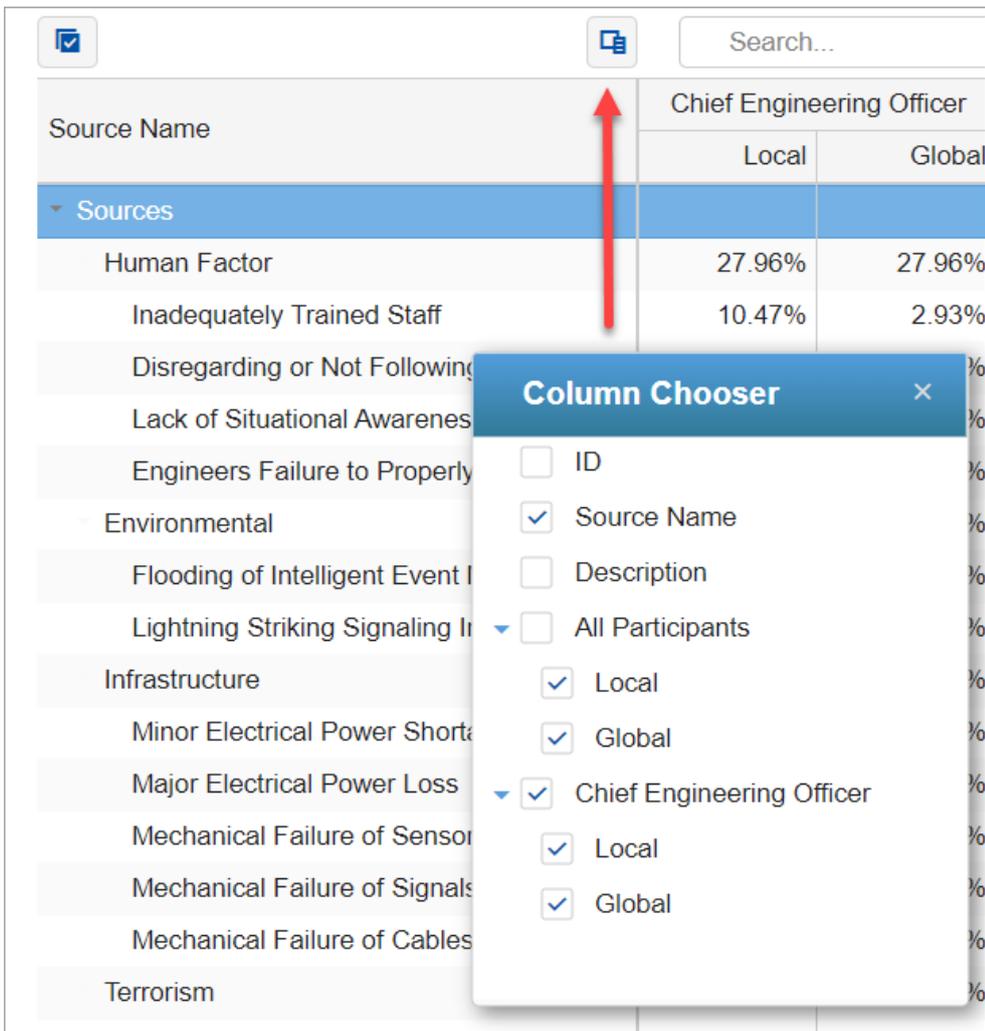
For the main results grid, click the column chooser at the top of the grid:



Simply check/uncheck the column(s) you want to show/hide.

The events attributes can also be displayed on the grid, from above the "Event History" and "Risk Owner" are events attributes.

For the Sources Hierarchy, click also the column choose on its top:



Here you can select:

- ID - Source ID
- Source Name
- Description - source's description or information document
- Local and Global - local or global likelihoods of the sources based on the selected participant/group judgments

## Sort by Column

Clicking the column header can sort the grid in ascending or descending order by that header.

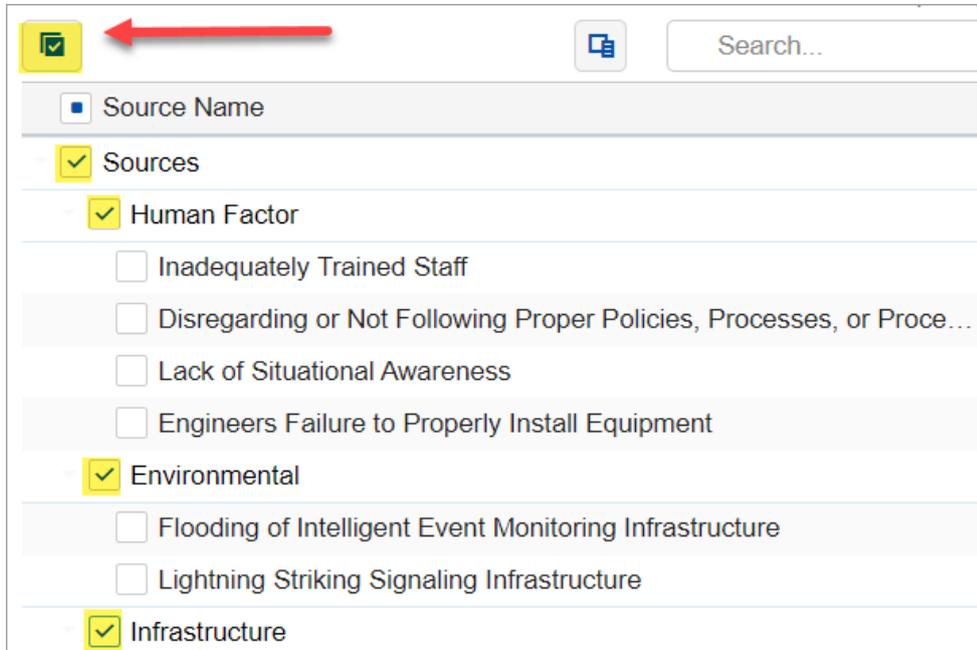
ID	Color	Event Name	Description	All Participants		
				Likelihood	Impact	Risk
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.5%	15.9%	5.6%
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.2%	32.4%	3.6%
[05]	●	Line Closure	No train traffic allowed	27.2%	22.5%	6.1%
[06]	●	Failed Integration with Future Monitoring System Network		15.6%	6.2%	1.0%
[07]	●	Intelligent Event Monitoring Network Shut Down		18.6%	26.9%	5.0%
[08]	●	Major Train Work Accident	Death occurs	17.6%	43.6%	7.7%
[09]	●	Minor Train Work Accident	Injury occurs	14.7%	6.8%	1.0%
[10]	●	Major Train Public Accident	Death occurs	17.7%	49.7%	8.8%
<b>Total Risk:</b>						<b>38.8%</b>

You can reset the sorting by pressing the Ctrl key on your keyboard and clicking again the column header where the sorting is currently active.

## Select Multiple Source Nodes

Instead of showing results only from one WRT Source, you can also select multiple source nodes at once.

To enable multi-select, click the multi-select icon at the top of the Sources Hierarchy. By doing so, you will see checkboxes to the right of the source names where you can select the WRT source nodes you want to see the results.



A new column, WRT Source, will be displayed on the main results grid to indicate the WRT nodes for each event.

ID	Color	Event Name	All Participants			WRT Source
			Likelihood	Impact	Risk	
[01]	●	Late Train Running	35.5%	15.9%	5.6%	Sources
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	11.2%	32.4%	3.6%	Sources
[05]	●	Line Closure	27.2%	22.5%	6.1%	Sources
[06]	●	Failed Integration with Future Monitoring System Network	15.6%	6.2%	1.0%	Sources
[07]	●	Intelligent Event Monitoring Network Shut Down	18.6%	26.9%	5.0%	Sources
[08]	●	Major Train Work Accident	17.6%	43.6%	7.7%	Sources
[09]	●	Minor Train Work Accident	14.7%	6.8%	1.0%	Sources
[10]	●	Major Train Public Accident	17.7%	49.7%	8.8%	Sources
[01]	●	Late Train Running	37.7%	15.9%	6.0%	Human Factor
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	6.3%	32.4%	2.0%	Human Factor
[05]	●	Line Closure	35.4%	22.5%	8.0%	Human Factor
[06]	●	Failed Integration with Future Monitoring System Network	7.6%	6.2%	0.5%	Human Factor
[07]	●	Intelligent Event Monitoring Network Shut Down	22.0%	26.9%	5.9%	Human Factor
[08]	●	Major Train Work Accident	25.8%	43.6%	11.3%	Human Factor
[09]	●	Minor Train Work Accident	21.5%	6.8%	1.5%	Human Factor
[10]	●	Major Train Public Accident	26.1%	49.7%	13.0%	Human Factor
[01]	●	Late Train Running	0.2%	15.9%	0.0%	Environmental
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	0.2%	32.4%	0.1%	Environmental
[05]	●	Line Closure	0.0%	22.5%	0.0%	Environmental

From above, we can see the likelihoods, impacts, and risks of the events WRT the Overall Sources (top-node), Human

Factor, and Environmental.

You can also group the grid by WRT source for better display, this is done by dragging the WRT column header to the top left of the grid:

Search...

Drag a column header here to group by that column

	ID	Color	Event Name	All Participants			WRT Source
				Likelihood	Impact	Risk	
<input checked="" type="checkbox"/> Sources	[01]	●	Late Train Running	<div style="width: 35.5%; background-color: #ffc107;">35.5%</div>	<div style="width: 15.9%; background-color: #17a2b8;">15.9%</div>	<div style="width: 5.6%; background-color: #dc3545;">5.6%</div>	Sources
<input checked="" type="checkbox"/> Human Factor	[02]	●	Degradation of Intelligent Monitoring System Physical Assets	<div style="width: 11.2%; background-color: #ffc107;">11.2%</div>	<div style="width: 32.4%; background-color: #17a2b8;">32.4%</div>	<div style="width: 3.6%; background-color: #dc3545;">3.6%</div>	Sources
<input type="checkbox"/> Inadequately Trained Staff	[05]	●	Line Closure	<div style="width: 27.2%; background-color: #ffc107;">27.2%</div>	<div style="width: 22.5%; background-color: #17a2b8;">22.5%</div>	<div style="width: 6.1%; background-color: #dc3545;">6.1%</div>	Sources
<input type="checkbox"/> Disregarding or Not Following Proper Policies, Proce...	[06]	●	Failed Integration with Future Monitoring System Network	<div style="width: 15.6%; background-color: #ffc107;">15.6%</div>	<div style="width: 6.2%; background-color: #17a2b8;">6.2%</div>	<div style="width: 1.0%; background-color: #dc3545;">1.0%</div>	Sources
<input type="checkbox"/> Lack of Situational Awareness	[07]	●	Intelligent Event Monitoring Network Shut Down	<div style="width: 18.6%; background-color: #ffc107;">18.6%</div>	<div style="width: 26.9%; background-color: #17a2b8;">26.9%</div>	<div style="width: 5.0%; background-color: #dc3545;">5.0%</div>	Sources
<input type="checkbox"/> Engineers Failure to Properly Install Equipment	[08]	●	Major Train Work Accident	<div style="width: 17.6%; background-color: #ffc107;">17.6%</div>	<div style="width: 43.6%; background-color: #17a2b8;">43.6%</div>	<div style="width: 7.7%; background-color: #dc3545;">7.7%</div>	Sources
<input checked="" type="checkbox"/> Environmental	[09]	●	Minor Train Work Accident	<div style="width: 14.7%; background-color: #ffc107;">14.7%</div>	<div style="width: 6.8%; background-color: #17a2b8;">6.8%</div>	<div style="width: 1.0%; background-color: #dc3545;">1.0%</div>	Sources
<input type="checkbox"/> Flooding of Intelligent Event Monitoring Infrastructure	[10]	●	Major Train Public Accident	<div style="width: 17.7%; background-color: #ffc107;">17.7%</div>	<div style="width: 49.7%; background-color: #17a2b8;">49.7%</div>	<div style="width: 8.8%; background-color: #dc3545;">8.8%</div>	Sources
<input type="checkbox"/> Lightning Striking Signaling Infrastructure	[01]	●	Late Train Running	<div style="width: 37.7%; background-color: #ffc107;">37.7%</div>	<div style="width: 15.9%; background-color: #17a2b8;">15.9%</div>	<div style="width: 6.0%; background-color: #dc3545;">6.0%</div>	Human Factor
<input type="checkbox"/> Infrastructure	[02]	●	Degradation of Intelligent Monitoring System Physical Assets	<div style="width: 6.3%; background-color: #ffc107;">6.3%</div>	<div style="width: 32.4%; background-color: #17a2b8;">32.4%</div>	<div style="width: 2.0%; background-color: #dc3545;">2.0%</div>	Human Factor
<input type="checkbox"/> Minor Electrical Power Shortage	[05]	●	Line Closure	<div style="width: 6.3%; background-color: #ffc107;">6.3%</div>	<div style="width: 32.4%; background-color: #17a2b8;">32.4%</div>	<div style="width: 2.0%; background-color: #dc3545;">2.0%</div>	Human Factor
<input type="checkbox"/> Major Electrical Power Loss	[06]	●	Failed Integration with Future Monitoring System Network	<div style="width: 35.4%; background-color: #ffc107;">35.4%</div>	<div style="width: 22.5%; background-color: #17a2b8;">22.5%</div>	<div style="width: 8.0%; background-color: #dc3545;">8.0%</div>	Human Factor
<input type="checkbox"/> Mechanical Failure of Sensors	[07]	●	Intelligent Event Monitoring Network Shut Down	<div style="width: 7.6%; background-color: #ffc107;">7.6%</div>	<div style="width: 6.2%; background-color: #17a2b8;">6.2%</div>	<div style="width: 0.5%; background-color: #dc3545;">0.5%</div>	Human Factor
<input type="checkbox"/> Mechanical Failure of Signals	[08]	●	Major Train Work Accident	<div style="width: 22.0%; background-color: #ffc107;">22.0%</div>	<div style="width: 26.9%; background-color: #17a2b8;">26.9%</div>	<div style="width: 5.9%; background-color: #dc3545;">5.9%</div>	Human Factor
<input type="checkbox"/> Mechanical Failure of Cables	[10]	●	Major Train Public Accident	<div style="width: 22.0%; background-color: #ffc107;">22.0%</div>	<div style="width: 26.9%; background-color: #17a2b8;">26.9%</div>	<div style="width: 5.9%; background-color: #dc3545;">5.9%</div>	Human Factor
<input type="checkbox"/> Terrorism	[01]	●	Late Train Running	<div style="width: 25.8%; background-color: #ffc107;">25.8%</div>	<div style="width: 43.6%; background-color: #17a2b8;">43.6%</div>	<div style="width: 11.3%; background-color: #dc3545;">11.3%</div>	Human Factor
<input type="checkbox"/> Conventional Attack on the Signalling Infrastructure	[01]	●	Degradation of Intelligent Monitoring System	<div style="width: 25.8%; background-color: #ffc107;">25.8%</div>	<div style="width: 43.6%; background-color: #17a2b8;">43.6%</div>	<div style="width: 11.3%; background-color: #dc3545;">11.3%</div>	Human Factor
<input type="checkbox"/> Cyber Attack on the Intelligent Event Monitoring Netw...				<b>Total Risk:</b>			87.1%

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

# Risk of Events To Objectives with Controls

## Overview

This page displays a similar grid as with the **Risk of Events To Objectives** (without controls), but with added columns for results when Controls are in effect.

The Likelihoods, Impacts, and Risks of the events To Objective "**Public Relations**" without and with controls are displayed below:

MANAGE MODELS		IDENTIFY/STRUCTURE		LIKELIHOOD OF EVENTS		IMPACT OF EVENTS		RISKS		CONTROLS		CONTROLLED RISKS	
<b>Likelihood, Impact, and Risk to Objective (With Controls) for Intelligent Event London Underground Monitoring</b> Selected controls: 13 Cost Of Selected Controls: \$98,200 (unfunded: \$51,604,000) Total Cost Of All Controls: \$51,702,200 How Selected: Optimized with budget of \$100,000													
Search... Drag a column header here to group by that column													
Objective Name: <b>Public Relations</b>													
I. ↑	Color	Event Name	All Participants										
			W.O. Controls			With Controls							
			Likelihood	Impact	Risk	Likelihood	Impact	Risk					
1	●	Late Train Running	35.48%	36.14%	12.82%	8.81%	36.14%	3.18%					
3	●	Line Closure	27.22%	55.05%	14.99%	6.44%	55.05%	3.55%					
4	●	Failed Integration with Future Monitoring System Network	15.55%	35.56%	5.53%	10.11%	35.56%	3.59%					
5	●	Intelligent Event Monitoring Network Shut Down	18.55%	16.73%	3.10%	4.05%	16.73%	0.68%					
6	●	Major Train Work Accident	17.64%	25.83%	4.56%	1.41%	6.46%	0.09%					
7	●	Minor Train Work Accident	14.67%	0.00%	0.00%	1.35%	0.00%	0.00%					
8	●	Major Train Public Accident	17.69%	61.87%	10.94%	1.44%	1.44%	0.02%					
Total Risk:			51.94%			11.11%							

The combined results for "**All Participants**" are displayed by default. The W.O. (without ) Controls and With Controls are displayed below the "All Participants" column heading.

I. ↑	Color	Event Name	All Participants					
			W.O. Controls			With Controls		
			Likelihood	Impact	Risk	Likelihood	Impact	Risk
1	●	Late Train Running	35.48%	36.14%	12.82%	8.81%	36.14%	3.18%
3	●	Line Closure	27.22%	55.05%	14.99%	6.44%	55.05%	3.55%
4	●	Failed Integration with Future Monitoring System Network	15.55%	35.56%	5.53%	10.11%	35.56%	3.59%
5	●	Intelligent Event Monitoring Network Shut Down	18.55%	16.73%	3.10%	4.05%	16.73%	0.68%
6	●	Major Train Work Accident	17.64%	25.83%	4.56%	1.41%	6.46%	0.09%
7	●	Minor Train Work Accident	14.67%	0.00%	0.00%	1.35%	0.00%	0.00%
8	●	Major Train Public Accident	17.69%	61.87%	10.94%	1.44%	1.44%	0.02%
Total Risk:			51.94%			11.11%		

An Objective is selected from the Objectives Hierarchy at the left.

Objective Name	↑	Co...	Event Name	All Participants					
				W.O. Controls			With Controls		
				Likelihood	Impact	Risk	Likelihood	Impact	Risk
Public Relations	1	●	Late Train Running	35.48%	36.14%	12.82%	8.81%	36.14%	3.18%
Loss of Company Reputation	3	●	Line Closure	27.22%	55.05%	14.99%	6.44%	55.05%	3.55%
Customer/Business Dissatisfaction w	4	●	Failed Integration with Future Monitoring System Network	15.55%	35.56%	5.53%	10.11%	35.56%	3.59%
Financial	5	●	Intelligent Event Monitoring Network Shut Down	18.55%	16.73%	3.10%	4.05%	16.73%	0.68%
Loss of Customers	6	●	Major Train Work Accident	17.64%	25.83%	4.56%	1.41%	6.46%	0.09%
Financial Loss	7	●	Minor Train Work Accident	14.67%	0.00%	0.00%	1.35%	0.00%	0.00%
Financial Liability Due to Accident	8	●	Major Train Public Accident	17.69%	61.87%	10.94%	1.44%	1.44%	0.02%
Reliability, Availability, Maintainability									
Loss of Maintenance Efficiency									
Disruption/Damage to Service Line Ir									
Repair to Service Line Infrastructure									
Performance									

You can also select the top node "Objectives" which will show the same results as with the Overall Risk Results page.

The Events on the grid may vary depending on the contributions of the events given the selected objective.

## Select Participants and Groups

By default, the results shown are for the "All Participants" group.

By selecting from the  "Participants and Groups" icon, you can display the results for other participants or groups.

### Participants and Groups

Search:

Participant Name	Email Address	Has data?	Group name	Has data?	Select all users with data
<input type="checkbox"/> Brian Quigley	quigleybf@gwu.edu	Yes	<input checked="" type="checkbox"/> All Participants	Yes	<input type="checkbox"/>
<input type="checkbox"/> Chief Engineering Officer	ceo@gwu.edu	Yes	<input type="checkbox"/> C-Level Executives	Yes	<input type="checkbox"/>
<input type="checkbox"/> Chief Executive Officer	che@gwu.edu	Yes	<input type="checkbox"/> Engineering	Yes	<input type="checkbox"/>
<input type="checkbox"/> Chief Risk Officer	cro@gwu.edu	Yes			
<input type="checkbox"/> Denis Risman	denisrisman@gwu.edu	Yes			
<input type="checkbox"/> Devin Nagy	devinnagy@gwu.edu	Yes			
<input type="checkbox"/> Grace	grace@eci.com				
<input type="checkbox"/> IT Supervisor	its@gwu.edu	Yes			
<input type="checkbox"/> James	james@eci.com				
<input type="checkbox"/> John Doe	j.doe@eci.com				
<input type="checkbox"/> Michael Mankowski	mmankowski@gwu.edu	Yes			

Select all | Deselect all

After selecting participants and groups to display, click OK.

Objective Name	I.	↑	Color	Event Name	All Participants						Chief Engineering Officer					
					W.O. Controls			With Controls			W.O. Controls			With Controls		
					Likelihood	Impact	Risk	Likelihood	Impact	Risk	Likelihood	Impact	Risk	Likelihood	Impact	Risk
Public Relations	1	●		Late Train Running	35.48%	36.14%	12.82%	8.81%	36.14%	3.18%	12.40%	41.36%	5.13%	4.19%	41.36%	1.73%
Loss of Company Reputation	3	●		Line Closure	27.22%	55.05%	14.99%	6.44%	55.05%	3.55%	9.14%	51.15%	4.68%	3.16%	51.15%	1.61%
Customer/Business Dissatisfaction w	4	●		Failed Integration with Future Monitoring System Network	15.55%	35.56%	5.53%	10.11%	35.56%	3.59%	11.10%	36.30%	4.03%	8.76%	36.30%	3.18%
Financial	5	●		Intelligent Event Monitoring Network Shut Down	18.55%	16.73%	3.10%	4.05%	16.73%	0.68%	3.93%	18.00%	0.71%	2.82%	18.00%	0.51%
Loss of Customers	6	●		Major Train Work Accident	17.64%	25.83%	4.56%	1.41%	6.46%	0.09%	7.74%	27.80%	2.15%	0.84%	6.95%	0.06%
Financial Loss	7	●		Minor Train Work Accident	14.67%	0.00%	0.00%	1.35%	0.00%	0.00%	1.29%	0.00%	0.00%	0.32%	0.00%	0.00%
Financial Liability Due to Accident	8	●		Major Train Public Accident	17.69%	61.87%	10.94%	1.44%	1.44%	0.02%	8.26%	56.05%	4.63%	1.37%	1.34%	0.02%
Reliability, Availability, Maintainability																
Loss of Maintenance Efficiency																
Disruption/Damage to Service Line Ir																
Repair to Service Line Infrastructure																
Performance																
Total Risk:							51.94%			11.11%			21.32%			7.11%

## Open Bow-tie diagram from Grid

Clicking the Event Name will open a modal that displays the bow-tie diagram for the selected event.

From the Bow-tie diagram, you analyze the **likelihoods** (left) and **impacts** (right) of the selected **event** (center) To **Objectives with controls**. Click "[Bow-tie Diagram From Objectives](#)" for more details.

The screenshot shows the Riskion interface for the "Intelligent Event London Underground Monitoring" project. The main grid displays the following data:

Objective Name	I. ↑	Color	Event Name	All Participants					
				W.O. Controls			With Controls		
				Likelihood	Impact	Risk	Likelihood	Impact	Risk
Public Relations	1	●	Late Train Running	35.48%	36.14%	12.82%	8.81%	36.14%	3.18%
Loss of Company Reputation	3	●	Line Closure	27.22%	55.05%	14.99%	6.44%	55.05%	3.55%
Customer/Business Dissatisfi	4	●	Failed Integration with Future Monitoring System Network	18.55%	35.56%	5.53%	10.11%	35.56%	3.59%
Financial	5	●	Intelligent Event Monitoring Network Shut Down	18.55%	16.73%	3.10%	4.05%	16.73%	0.68%
Loss of Customers	6	●	Major Train Work Accident	17.64%	25.83%	4.56%	1.41%	6.46%	0.09%
Financial Loss	7	●	Minor Train Work Accident	14.67%	0.00%	0.00%	1.35%	0.00%	0.00%
Financial Liability Due to Acci	8	●	Major Train Public Accident	17.69%	61.87%	10.94%	1.44%	1.44%	0.02%
Total Risk:				51.94%			11.11%		

## Export Grid into excel or image format



You can export the grid into a .xlsx file by clicking 

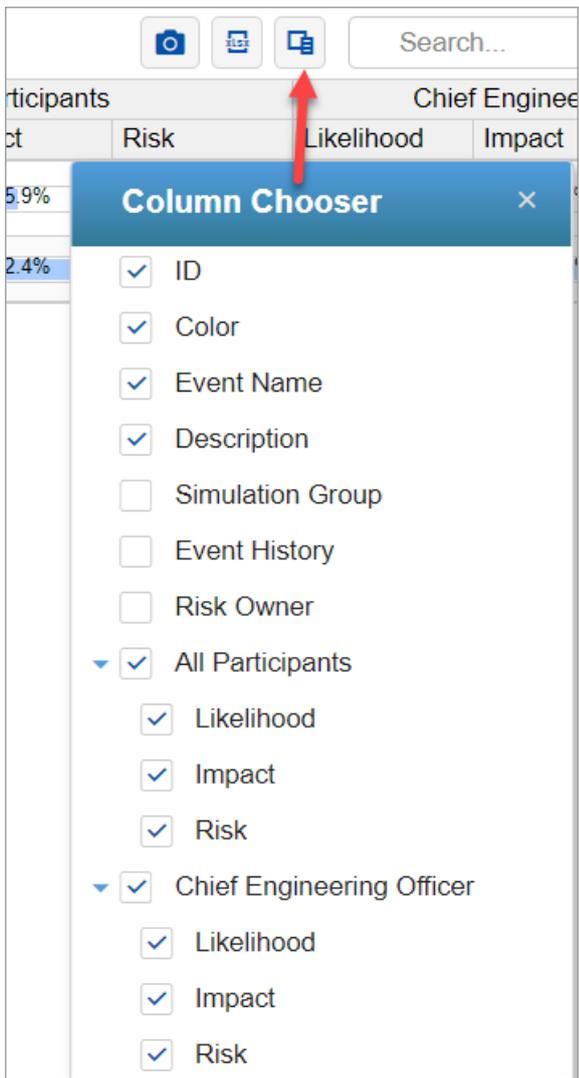
You can also export the results page into an image file (.png) by clicking 

## Show or Hide columns

You can show/hide columns both for:

- the main results grid at the right, and
- the hierarchy tree at the left

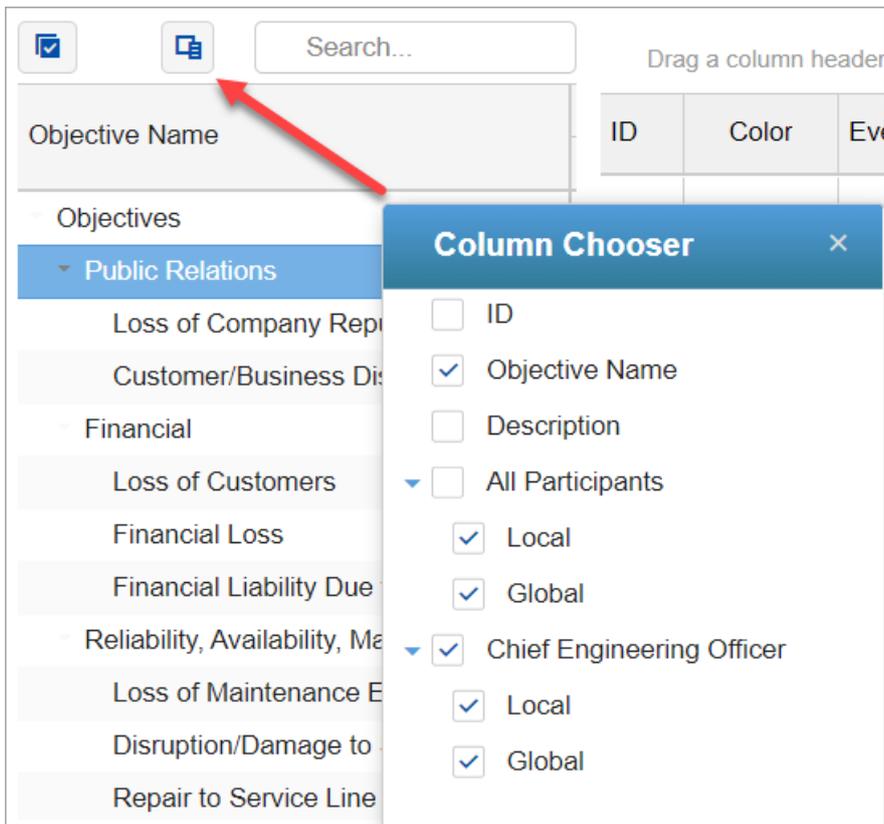
For the main results grid, click the column chooser at the top of the grid:



Simply check/uncheck the column(s) you want to show/hide.

The events attributes can also be displayed on the grid, from above the "Event History" and "Risk Owner" are events attributes.

For the Sources Hierarchy, click also the column choose on its top:



Here you can select:

- ID - Source ID
- Objective Name
- Description - source's description or information document
- Local and Global - local or global likelihoods of the sources based on the selected participant/group judgments

## Sort by Column

Clicking the column header can sort the grid in ascending or descending order by that header.

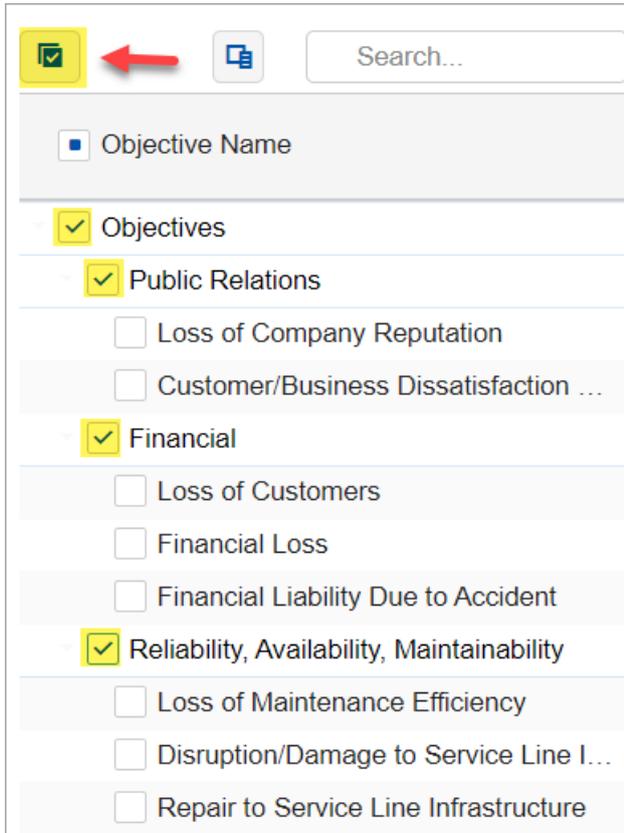
ID	Color	Event Name	Description	All Participants		
				Likelihood	Impact	Risk
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.5%	15.9%	5.6%
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.2%	32.4%	3.6%
[05]	●	Line Closure	No train traffic allowed	27.2%	22.5%	6.1%
[06]	●	Failed Integration with Future Monitoring System Network		15.6%	6.2%	1.0%
[07]	●	Intelligent Event Monitoring Network Shut Down		18.6%	26.9%	5.0%
[08]	●	Major Train Work Accident	Death occurs	17.6%	43.6%	7.7%
[09]	●	Minor Train Work Accident	Injury occurs	14.7%	6.8%	1.0%
[10]	●	Major Train Public Accident	Death occurs	17.7%	49.7%	8.8%
Total Risk:				38.8%		

You can reset the sorting by pressing the Ctrl key on your keyboard and clicking again the column header where the sorting is currently active.

## Select Multiple Source Nodes

Instead of showing results only from one WRT Objective, you can also select multiple source nodes at once.

To enable multi-select, click the multi-select icon at the top of the Objectives Hierarchy. By doing so, you will see checkboxes to the right of the objective names where you can select the WRT objective nodes you want to see the results.



A new column, WRT Objective, will be displayed on the main results grid to indicate the WRT nodes for each event.

ID	Color	Event Name	Description	All Participants			WRT Objective
				Likelihood	Impact	Risk	
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.48%	15.87%	5.63%	Objectives
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.17%	32.43%	3.62%	Objectives
[05]	●	Line Closure	No train traffic allowed	27.22%	22.54%	6.13%	Objectives
[06]	●	Failed Integration with Future Monitoring System Network		15.55%	6.25%	0.97%	Objectives
[07]	●	Intelligent Event Monitoring Network Shut Down		18.55%	26.94%	5.00%	Objectives
[08]	●	Major Train Work Accident	Death occurs	17.64%	43.63%	7.69%	Objectives
[09]	●	Minor Train Work Accident	Injury occurs	14.67%	6.77%	0.99%	Objectives
[10]	●	Major Train Public Accident	Death occurs	17.69%	49.70%	8.79%	Objectives
[01]	●	Late Train Running	Train is late when its time on the track between the two points is different than the time scheduled in the operational plan.	35.48%	25.64%	9.10%	Financial
[02]	●	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	11.17%	5.64%	0.63%	Financial

From above, we can see the likelihoods, impacts, and risks of the events WRT the Overall Sources (top-node), Human Factor, and Environmental.

You can also group the grid by WRT source for better display, this is done by dragging the WRT column header to the top left of the grid:

Objective Name	ID	Color	Event Name	All Participants			WRT Objective
				Likelihood	Impact	Risk	
<input checked="" type="checkbox"/> Objectives	[01]	●	Late Train Running	35.48%	15.87%	5.63%	Objectives
<input checked="" type="checkbox"/> Public Relations	[02]	●	Degradation of Intelligent Monitoring System Physical Assets	11.17%	32.43%	3.62%	Objectives
<input type="checkbox"/> Loss of Company Reputation	[05]	●	Line Closure	27.22%	22.54%	6.13%	Objectives
<input type="checkbox"/> Customer/Business Dissatisfaction ...	[06]	●	Failed Integration with Future Monitoring System Network	15.55%	6.25%	0.97%	Objectives
<input checked="" type="checkbox"/> Financial	[07]	●	Intelligent Event Monitoring Network Shut Down	18.55%	26.94%	5.00%	Objectives
<input type="checkbox"/> Loss of Customers	[08]	●	Major Train Work Accident	17.64%	43.63%	7.69%	Objectives
<input type="checkbox"/> Financial Loss	[09]	●	Minor Train Work Accident	14.67%	6.77%	0.99%	Objectives
<input type="checkbox"/> Financial Liability Due to Accident	[10]	●	Major Train Public Accident	17.69%	49.70%	8.79%	Objectives
<input checked="" type="checkbox"/> Reliability, Availability, Maintainability	[01]	●	Late Train Running	35.48%	36.14%	12.82%	Public Relations
<input type="checkbox"/> Loss of Maintenance Efficiency	[05]	●	Line Closure	27.22%	55.05%	14.99%	Public Relations
<input type="checkbox"/> Disruption/Damage to Service Line I...	[06]	●	Failed Integration with Future Monitoring System Network	15.55%	35.56%	5.53%	Public Relations
<input type="checkbox"/> Repair to Service Line Infrastructure	[07]	●	Intelligent Event Monitoring Network Shut Down	18.55%	16.73%	3.10%	Public Relations
<input type="checkbox"/> Performance	[08]	●	Major Train Work Accident	17.64%	25.83%	4.56%	Public Relations
<input type="checkbox"/> Temporary Line Closure	[09]	●	Minor Train Work Accident	14.67%	0.00%	0.00%	Public Relations
<input type="checkbox"/> Loss of Reliability and Network Effici...	[10]	●	Major Train Public Accident	17.69%	61.87%	10.94%	Public Relations
<input type="checkbox"/> Loss of Wider Monitoring System Pr...	[01]	●	Late Train Running	35.48%	25.64%	9.10%	Financial
<input type="checkbox"/> Loss of Train Service	[02]	●	Degradation of Intelligent Monitoring System Physical Assets	11.17%	5.64%	0.63%	Financial

Show Monetary Values

Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

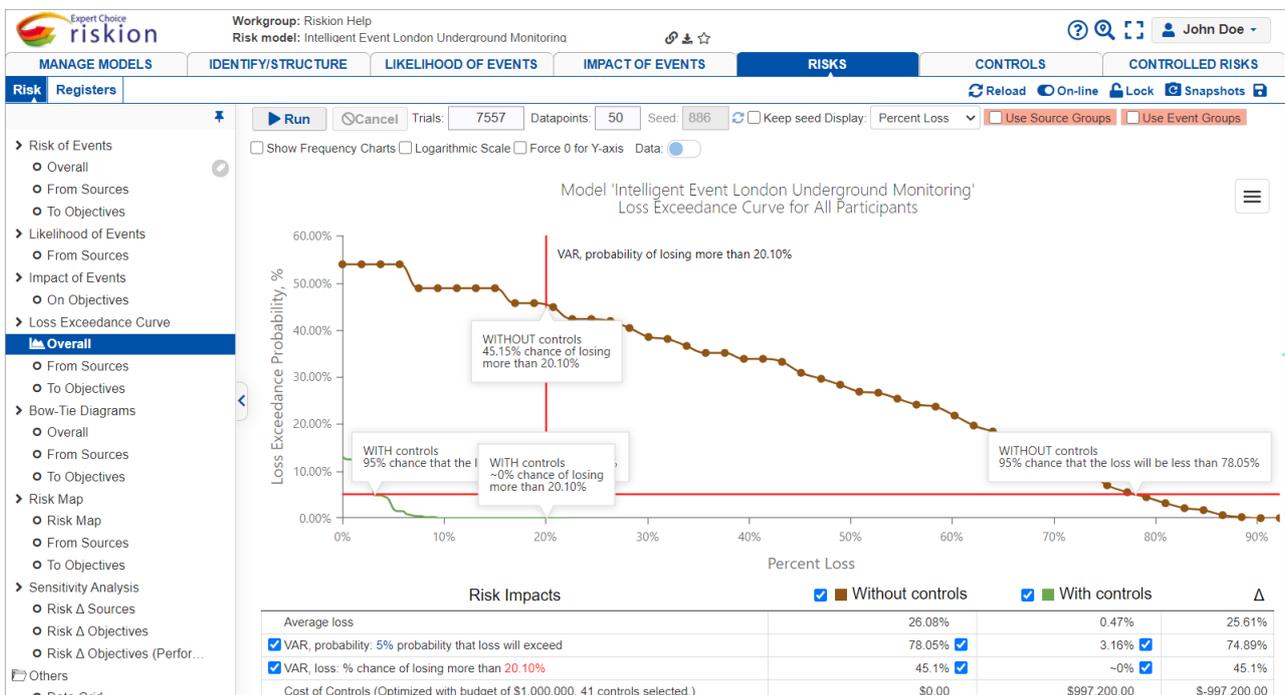
Preferences

# Overall Less Exceedance Curve (LEC) with Controls

## Overview

The LEC represents the annual frequency whereupon a determining economic loss will be exceeded. It is the most important and strongest measurement of risk since it provides basic information for the planning and appropriation of the resources necessary to fulfill particular management objectives. The LEC can be calculated based on the greatest probable event of a year or uniformly for all possible events, based on their recurrence interval. The latter approach is preferred, given that it allows for considering more than one disaster event per year.

We can view the LEC both for "without controls" and "with controls". The LEC for "with controls" reflects the controls that are currently 'selected', either [manually](#) or via an [optimization](#). The brown curve represents the "Without Controls" and the green curve the "With Controls".

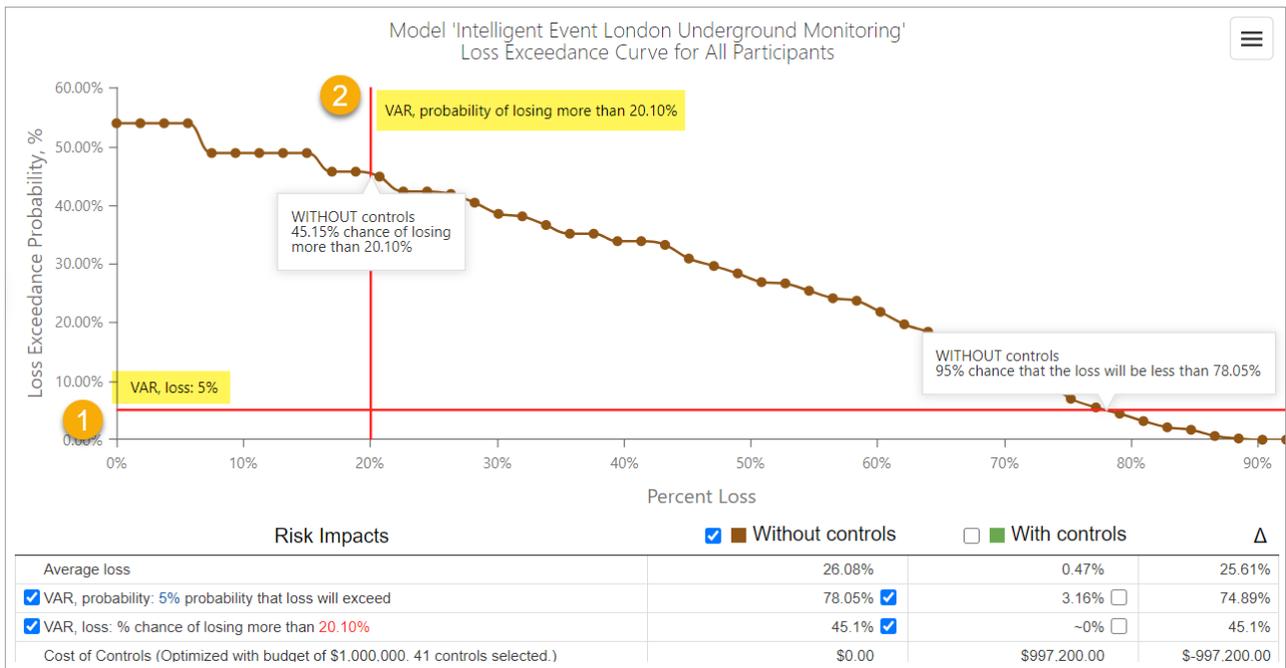


The **x-axis** represents the Percent Loss (or Monetary Loss).

The **y-axis** represents the Loss Exceedance Probability, %.

You can show/hide the with or without controls curve/tooltips by checking/unchecking the options from the bottom grid.

Below we only enabled the without controls options.

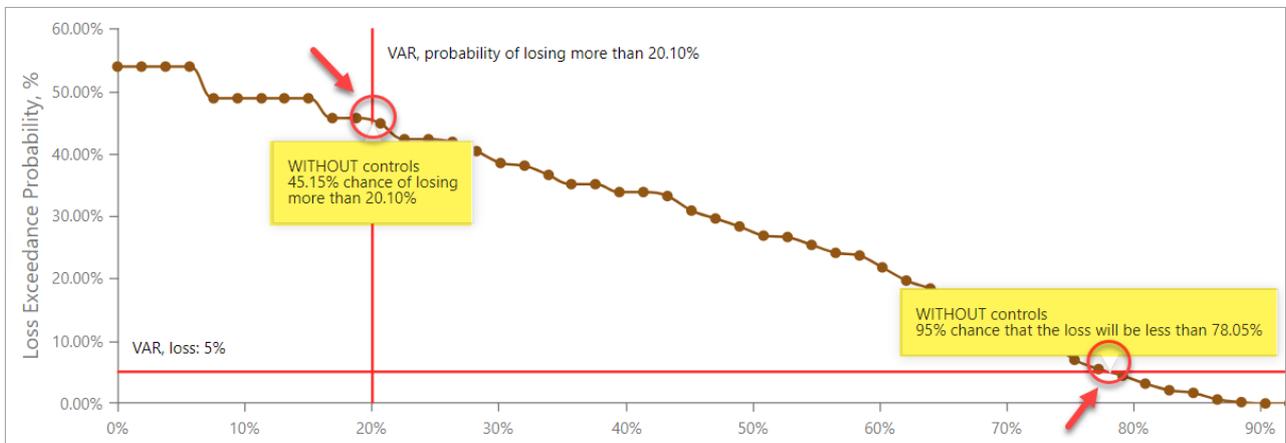


From the grid at the bottom, we can define the VARs represented by the horizontal and vertical red lines in the graph.

1. VAR, probability, n% probability that loss will exceed (horizontal red line)
2. VAR, loss % chance of losing more than n% (vertical red line)

You can edit the % by clicking on it, a prompt where you can enter the value will pop out.

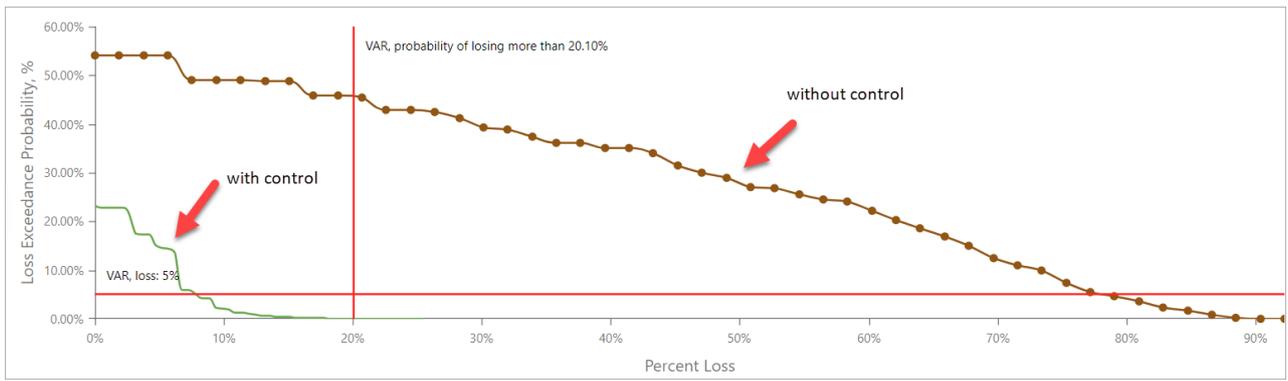
As these lines touch the "Without Controls" (or With Controls) curve, we can see the %probability.



The vertical red line %Loss = 20.1% (vertical red line) touches the curve at 45.15% which means that for "Without controls", there is a 45.15 % chance of losing more than 20.1%.

The horizontal line %Loss Exceedance Probability (horizontal line) = 5% touches the curve at 78.05%. This means that for "Without Controls", there is a 95% chance that the loss will be less than 78.05%.

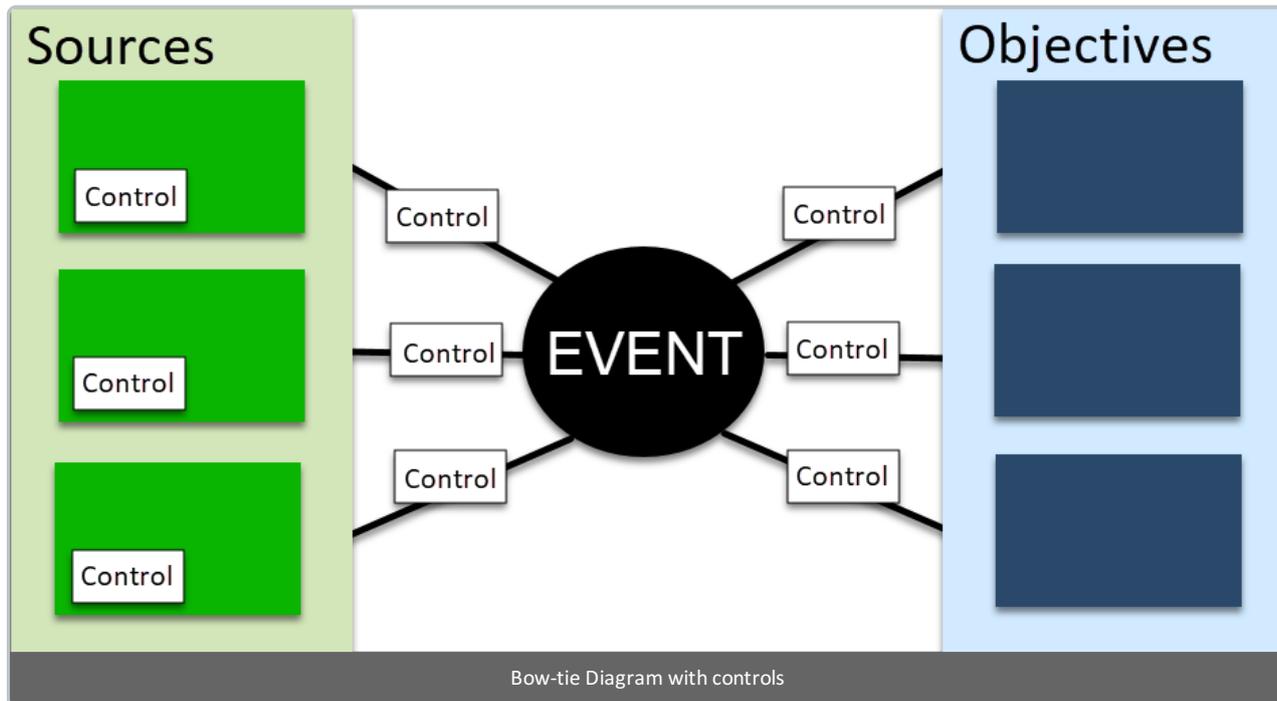
Notice how the curve is flattened/shortened for LEC with controls -- loss is reduced when controls are in effect.



# Overall Bow-Tie Diagram with Controls

## Overview

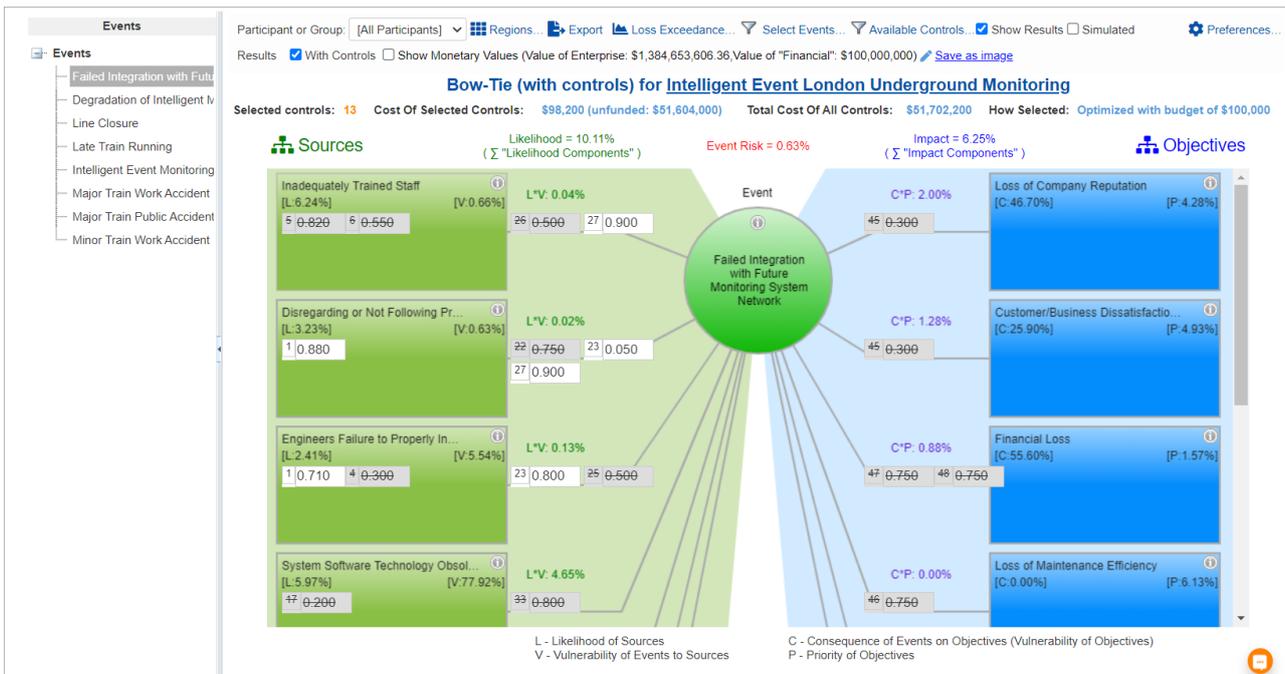
This page displays a similar diagram as with the [Overall Bow-tie Diagram](#) (without controls) -- but on this page, the likelihoods, impacts, and risks are calculated with controls in effect. Controls can also be viewed, selected/deselected (to be in effect), and assigned from the diagram.



Controls are defined to reduce or mitigate the:

- **Likelihood of Sources** (from the bow-tie, these are the controls on the sources boxes at the left)
- **Vulnerabilities of Events from Sources** (from the bow-tie, these are the controls on the lines connecting the event to the sources)
- **Consequences of Events to Objectives** (from the bow-tie, these are the controls on the lines connecting the event to the objectives)

The bow-tie diagram for the Event "**Failed Integration with Failure Monitoring System Network**" from the Overall Source with controls is displayed below.



The selected **Event** is displayed at the center of the diagram (circle). The event **background color** varies based on the event's %risk.

The **Sources** of the selected event are on the left side of the diagram (green boxes).

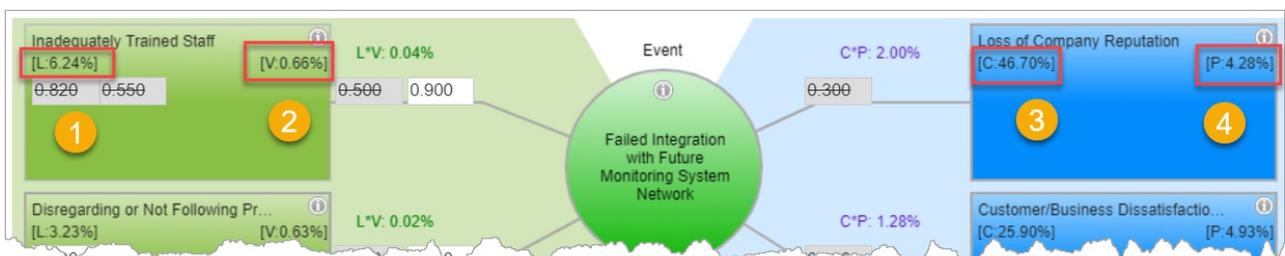
The **Objectives** of the selected Event are on the right (blue boxes).

The small boxes represent the **Controls**. The value inside the control boxes is the effectiveness of the control. Controls that are in effect have a white background color, while those that are not in effect are grey-out. Controls to be in effect are selected manually or by **optimization**.

You can also view and analyze the following information:

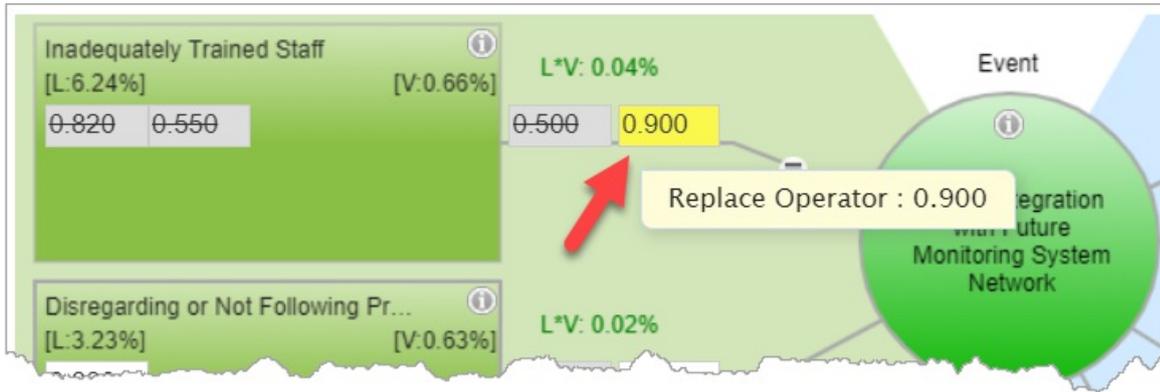
- L - Likelihood of Sources
- V - Vulnerabilities of events to sources
- C - Consequences of Events on Objectives
- P - Priority of Events on Objectives

Focusing on the first source and objective on the diagram:



1. The Likelihood (L) of the Source "Inadequate Trained Staff" is **6.24%** (overall or global likelihood)
2. The Vulnerability (V) of the Event "Failed Integration with Future Monitoring System Network" to the source "Inadequately Trained Staff" is **0.66%**
3. The Consequence (C) of the Event "Failed Integration with Future Monitoring System Network" on the Objective "Loss of Company Reputation" is **46.70%**
4. The Priority (P) of Objective "Loss of Company Reputation" is **4.28%** (overall or global impact)

From the above diagram, we can see that there are 5 potential controls and only 1 is in effect as represented on the box with the value **0.900**.



Hovering on it will show the control name, "Replace Operator" as shown above.

The "Replace Operator" with the effectiveness of 0.9 is a control that mitigates the Vulnerability of the Event "Failed Integration with Future Monitoring System Network" From the source "Inadequately Trained Staff". With this, [V:0.66%] is a mitigated vulnerability.

You can uncheck the "With Controls" checkbox on the toolbar to see the results without controls.

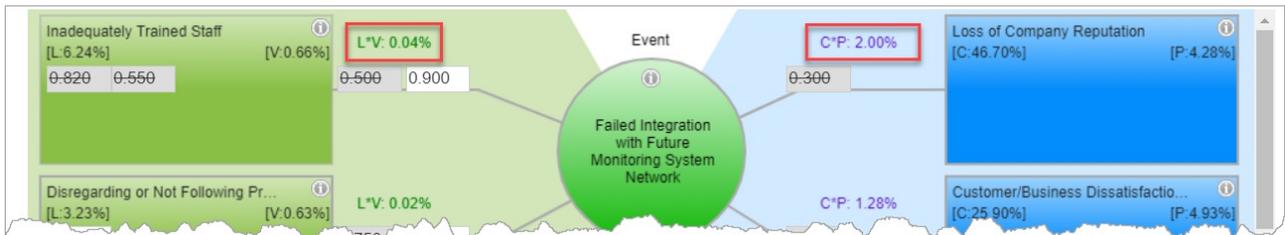
Here we see that the Vulnerability [V] of the event to the source without control is **6.64%**. When the "Replace Operator" control is in effect, the Vulnerability is reduced by **5.976%**.

= Event Vulnerability without control \* Control Effectiveness  
 = 6.64 \* 0.9  
 = **5.976 %**

Finally, the resulting Event Vulnerability with control is 6.64 % - 5.976% = **0.66%**.

The Likelihood of the event to a given source (L\*V), and the Impact of the event (C\*P) on a given objective are shown on the

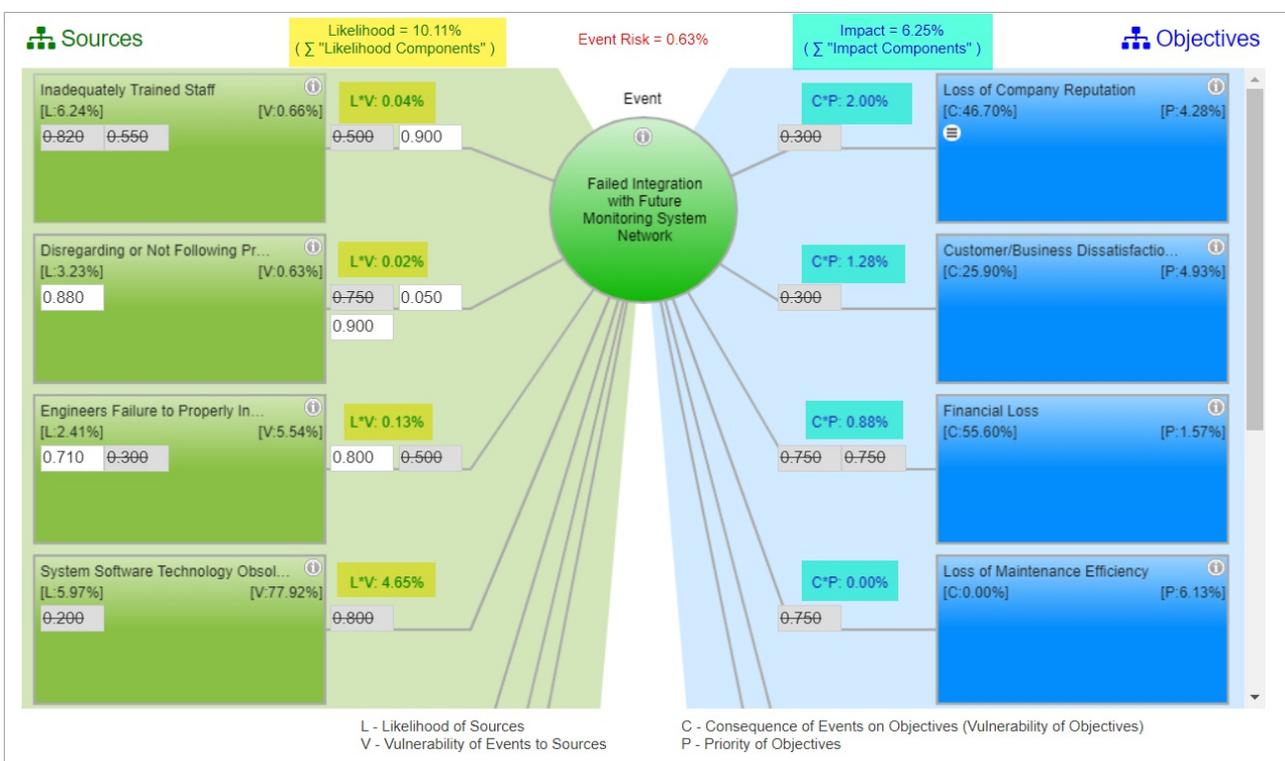
connecting lines to the source/objective boxes:



The Likelihood of the Event "Failed Integration with Future Monitoring System Network" to the source "Inadequately Trained Staff" with control is **0.04%** (*this is 0.41% without control*).

- The Impact of the Event "Failed Integration with Future Monitoring System Network" on the Objective "Loss of Company Reputation" is **2.0%** (*since there is no control is in effect for this event given the objective, the impact remains 2.0%*)

The summation of likelihoods ( $\sum "L*V"$ ) of the event to each source is the Overall Likelihood of the event, and the summation of impacts ( $\sum "C*P"$ ) of the event on each objective is the Overall Impact of the event.



The event "Failed Integration with Future Monitoring System Network" has Overall Likelihood and Impact **10.11%** and **6.25%** respectively when controls are in effect.

The Overall Event Risk is then computed by Likelihoods \* Impacts, 10.11% \* 6.25% = **0.63%**

You can uncheck the  With Controls checkbox to compare results when no controls are in effect and see how the likelihoods, impacts, and risk reduced as controls are in effect.

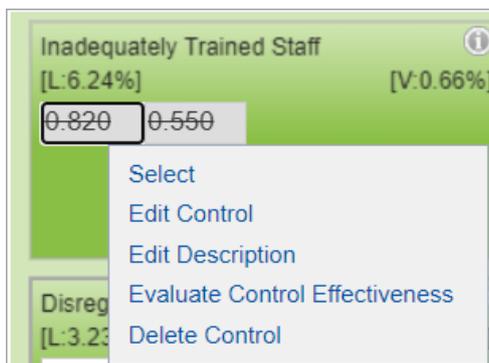
You can select another Event to analyze from the Events list at the left:



## Manage Controls from the Bow-tie Diagram

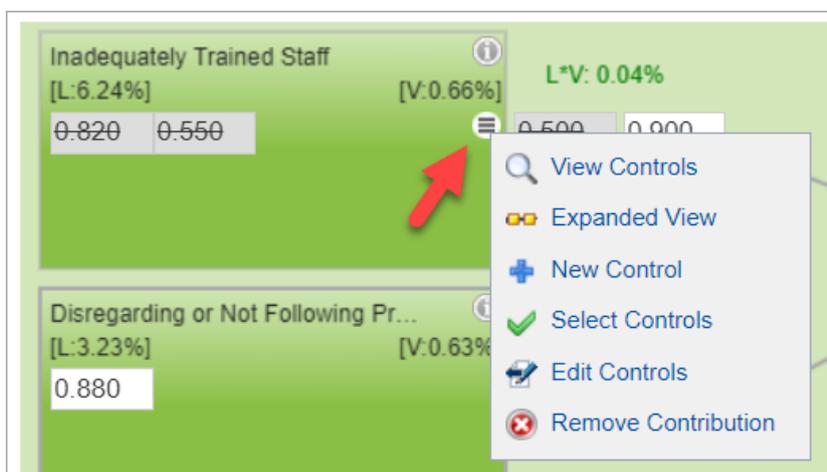
You can select/deselect a control to be in effect by double-clicking a control.

Alternatively, you can right-click on a control box to see the select/deselect options together with other functionality.



- Edit Control - open to update the control name, cost, and categories.
- Edit Description - open a rich text editor to edit the control description
- Evaluation Control Effectiveness - redirect to evaluation step specific to the control selected
- Delete control - delete the control

Hovering on the Source box, and the connecting line from Event to Source and Event to Objective will show a hamburger menu.

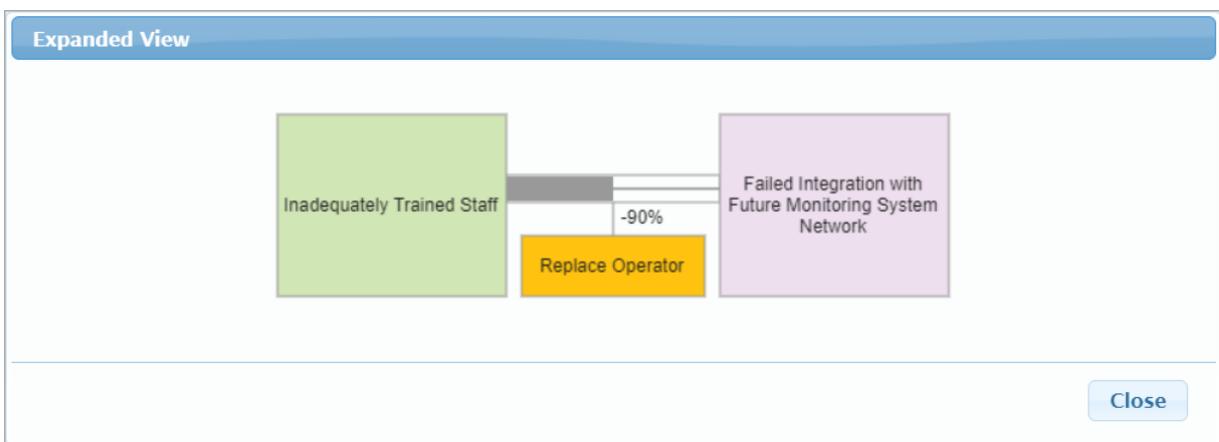


- View Controls - open a modal listing all the potential controls for the specific source, event from a source, or event to an objective. The effectiveness of the control and is active (YES if selected, NO if not) is also displayed.

Controls Applications		
Control	Effectiveness	Is Active
Periodic Proficiency Training	0.820	
Identify Staff requiring additional training	0.550	

[Close](#)

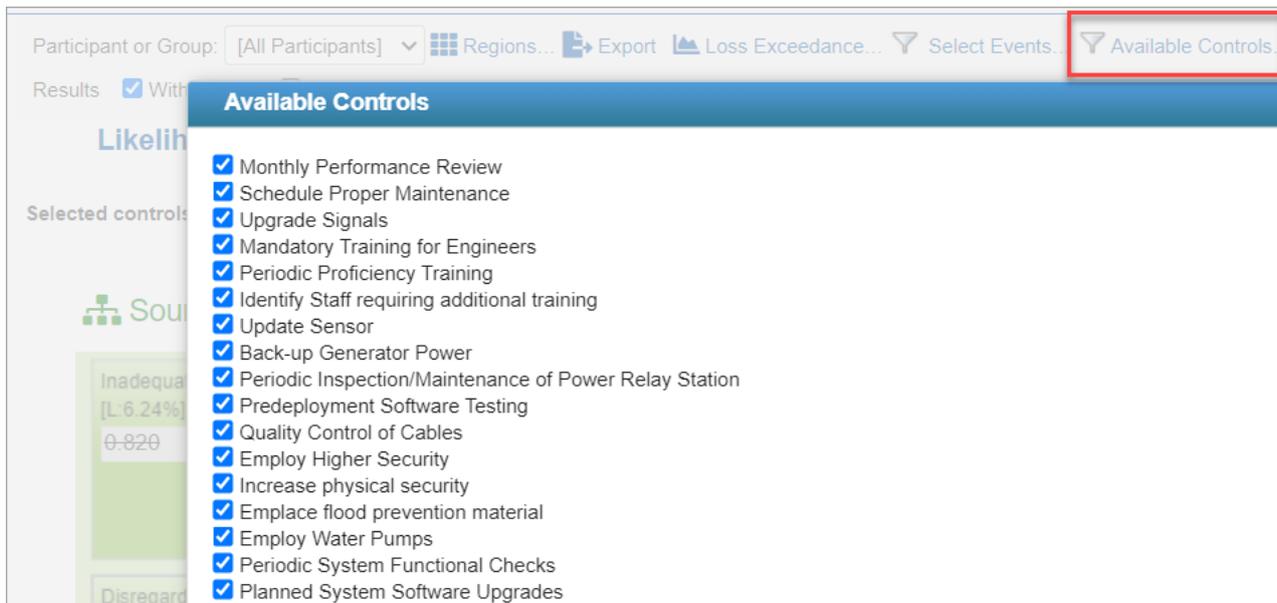
- Expanded View - shows a diagram of the elements (source, event, objective, control)



- New Control - add a new control
- Select Controls - list all the available controls for the specific control type (for sources, events to source, or events to objectives). Here you can select potential control of given elements involved.
- Edit Controls - redirect to the Identify Controls page
- Remove Contribution

## Available Controls

Clicking Available Controls will open a modal listing all the identified potential controls.



Controls that are "checked" means that the control can be in effect or selected (manually or by optimization)

Controls that are "unchecked" mean that the control is **disabled** and can't be in effect or selected.

The "Available controls" option is just similar to the "Disabled" column on the **Identify controls** grid -- disabled controls are unavailable for selection for controls to be in effect.

If control is un-available, the box of that control showing its effectiveness is hidden on the bow-tie diagram

When there are un-available controls, the button will have an exclamation mark 

## Select Participant or Group

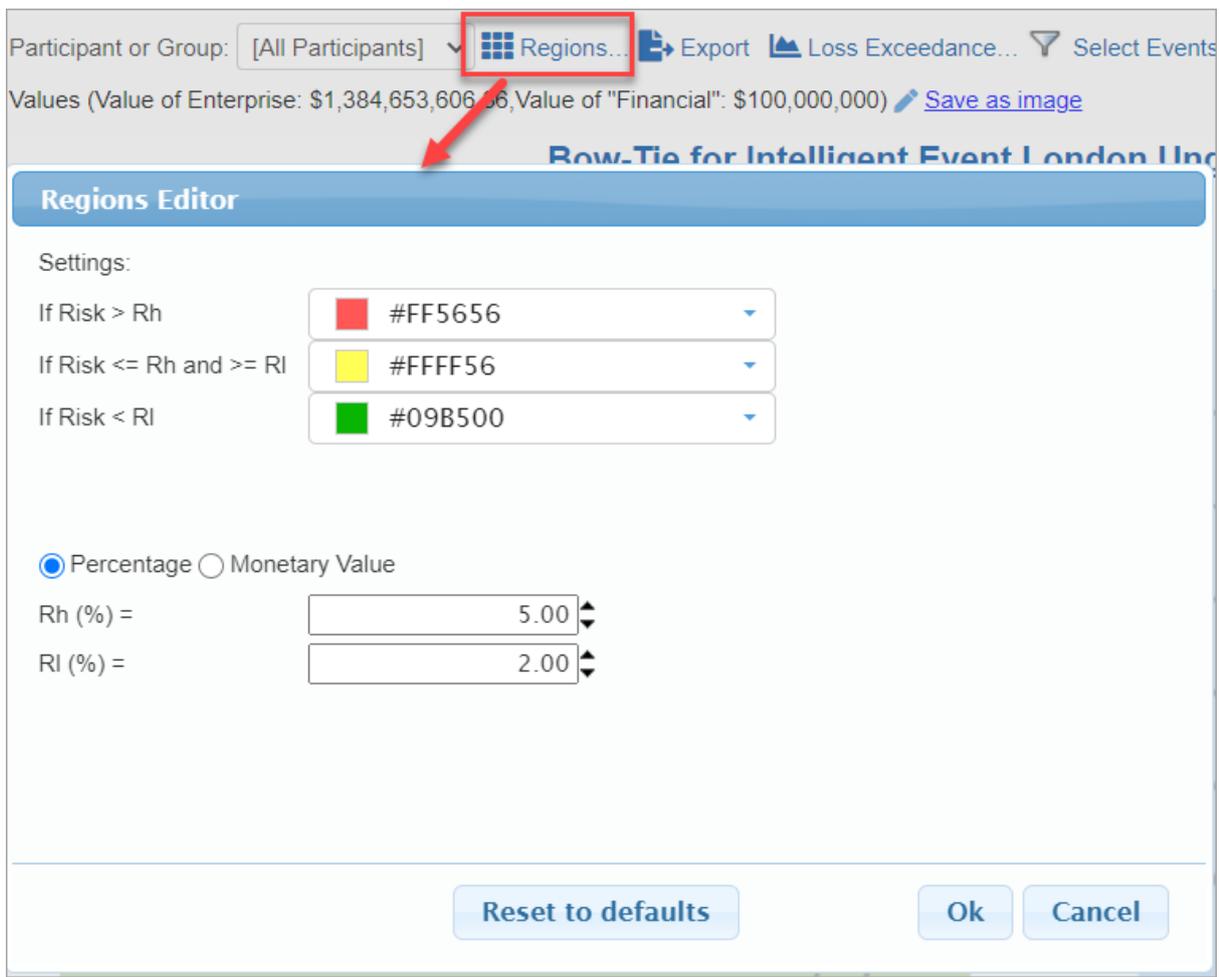
The bow-tie for the "All Participants" group is displayed by default. By selecting from the "Participants and Groups" dropdown, you can display the bow-tie analysis for another participants or group:

Participant or Group:	[All Participants] 
Show Monetary Value	[All Participants]
	[C-Level Executives]
	[Engineering]
-----	
Inadequately Trained [L:6.24%]	Denis Risman
	Brian Quigley
Disregarding or Not [L:26.92%]	Chief Risk Officer
	Chief Engineering Officer
Engineers Failure to [L:8.32%]	IT Supervisor
	Chief Executive Officer
System Software Te [L:5.97%]	Devin Nagy
	Michael Mankowski
System Hardware Te	John Doe

## Define Event Color (Region)

Default colors are already provided for the events on the diagram based on the event's %risk.

You can change this by clicking 



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

## Export Bow-tie to Excel or Image Format

Click  [Export](#) to export the bowtie into a .xlsx file.

Click [Save as image](#) link to download the diagram as an image file (.jpeg)

## Show Monetary Values

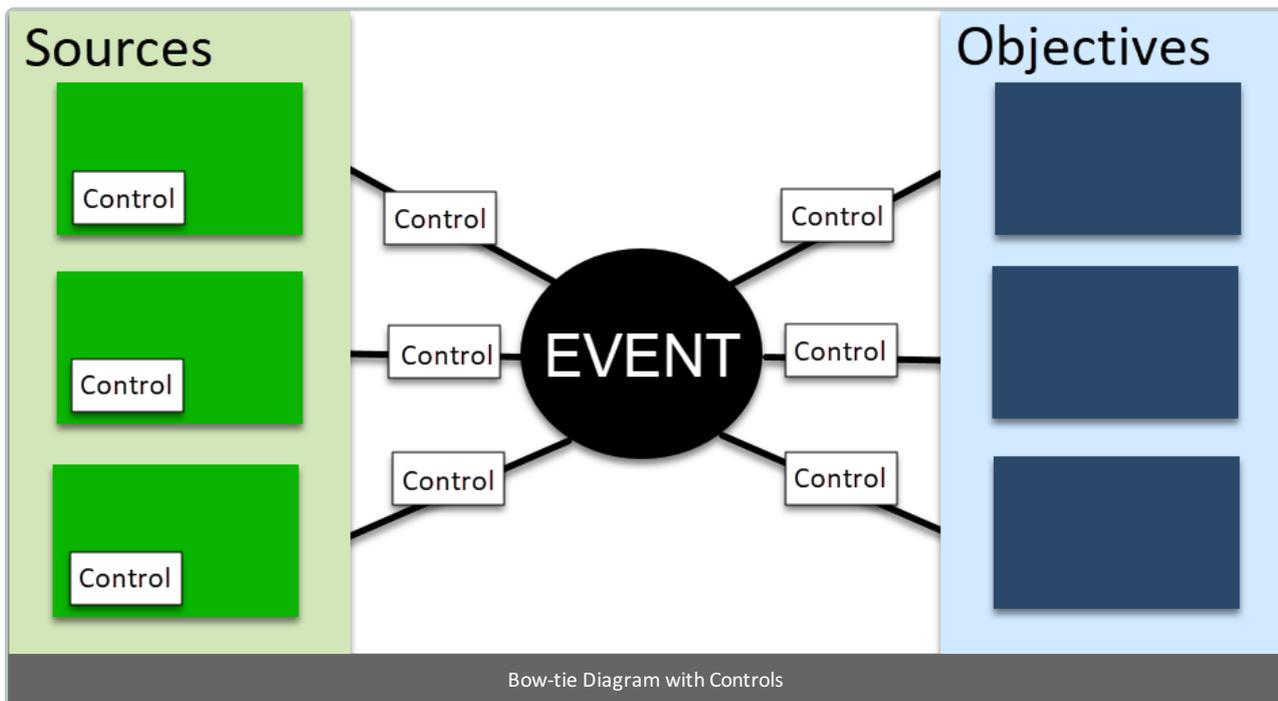
## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

# Bow-Tie Diagram From Threats with Controls

## Overview

This page displays a similar diagram as with the [Bow-tie diagram from specific Threats](#) (without controls) -- but on this page, the likelihoods, impacts, and risks are calculated with controls in effect. Controls can also be viewed, selected/deselected (to be in effect), and assigned from the diagram.

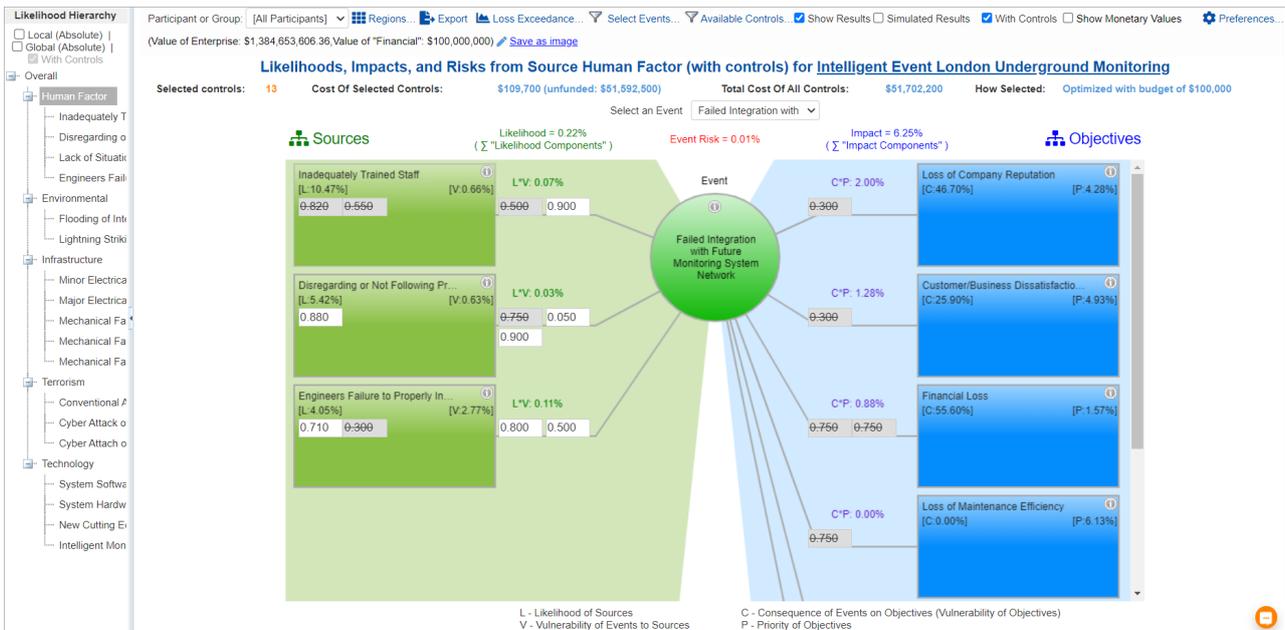


In Riskion, we refer to **threats, causes, hazards, and sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events). In our sample model, we are using the terminology "Source(s)".

Controls are defined to reduce or mitigate the:

- **Likelihood of Sources** (from the bow-tie, these are the controls on the sources boxes at the left)
- **Vulnerabilities of Events from Sources** (from the bow-tie, these are the controls on the lines connecting the event to the sources)
- **Consequences of Events to Objectives** (from the bow-tie, these are the controls on the lines connecting the event to the objectives)

The bow-tie diagram for the Event "**Failed Integration with Failure Monitoring System Network**" from source "**Public Relations**" with controls is displayed below.



The selected **Event** is displayed at the center of the diagram (circle). Its background color varies based on the event's %risk.

The **Sources** to which the selected event is vulnerable are displayed on the left side of the diagram (green boxes).

The **Objectives** of the selected Event are at the right (blue boxes).

The specific Source ("**Human Factor**") from which the event is being analyzed is selected from the **Likelihood Hierarchy** at the left.

You can view and analyze the following information:

- L - Likelihood of Sources
- V - Vulnerabilities of events to sources
- C - Consequences of Events on Objectives
- P - Priority of Events on Objectives

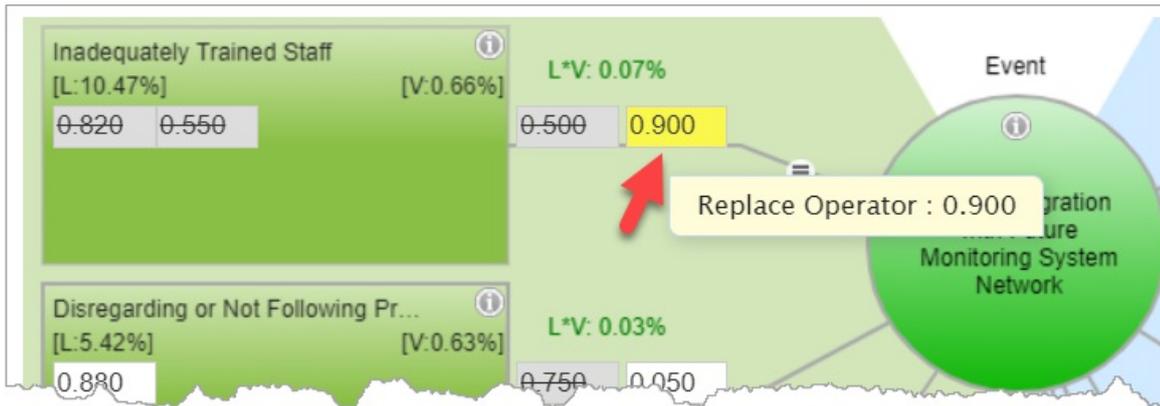
Focusing on the first source and objective on the diagram:



1. The Likelihood (L) of the Source "Inadequate Trained Staff" given the source "Human Factor" is **10.47%**
2. The Vulnerability (V) of the Event "Failed Integration with Future Monitoring System Network" from source "Inadequately Trained Staff" is **0.66%**
3. The Consequence (C) of the Event "Failed Integration with Future Monitoring System Network" on the Objective "Loss of Company Reputation" is **46.70%**
4. The Priority (P) of Objective "Loss of Company Reputation" is **4.28%** (overall or global impact)

From the above diagram, we can see that there are 5 potential controls and only 1 is in effect as represented on the box

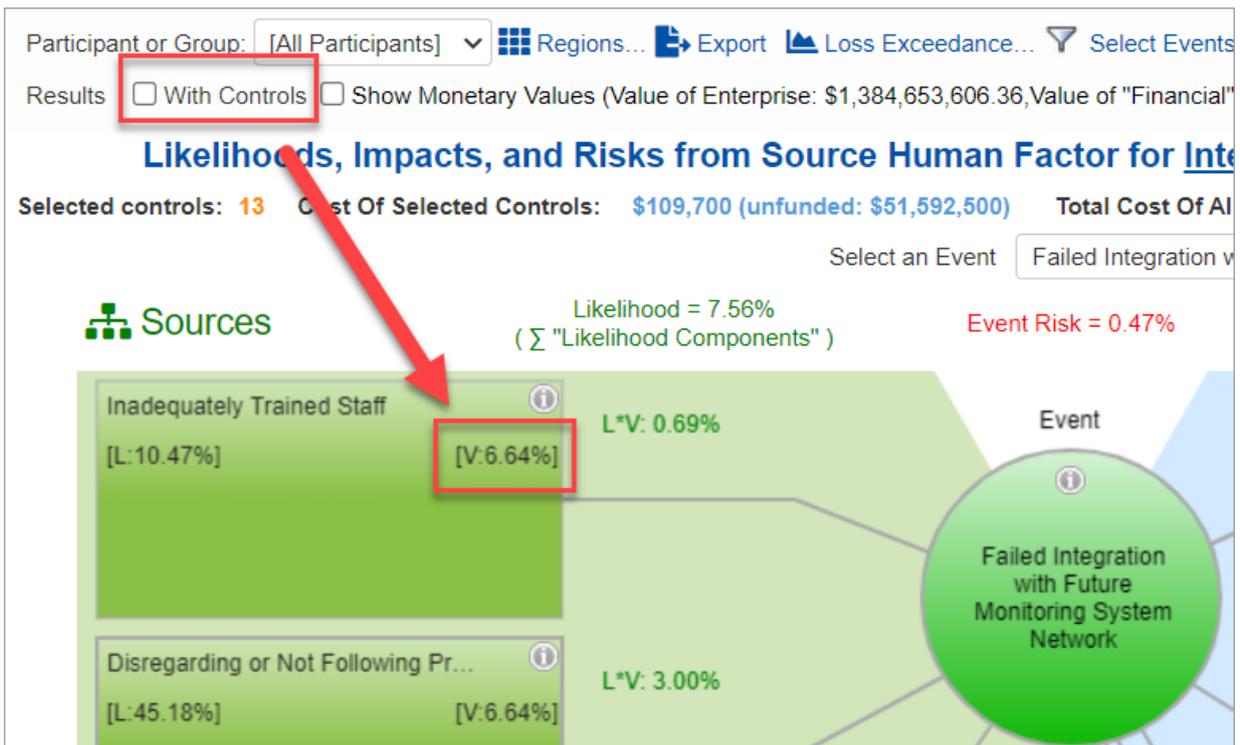
with the value **0.900**.



Hovering on it will show the control name, "Replace Operator" as shown above.

The "**Replace Operator**" with the effectiveness of 0.9 is a control that mitigates the Vulnerability of the Event "Failed Integration with Future Monitoring System Network" From the source "Inadequately Trained Staff". With this, [V:0.66%] is a mitigated vulnerability.

You can uncheck the "With Controls" checkbox on the toolbar to see the results without controls.

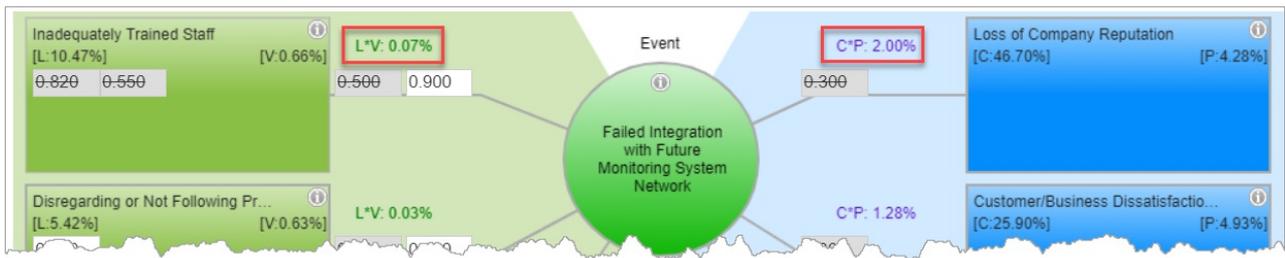


Here we see that the Vulnerability [V] of the event "Failed Integration..." to the source "Inadequately Trained Staff" given "Human Factor" without control is **6.64%**. When the "**Replace Operator**" control is in effect, the Vulnerability is reduced by **5.976%**.

= Event Vulnerability without control \* Control Effectiveness  
= 6.64 \* 0.9  
= **5.976 %**

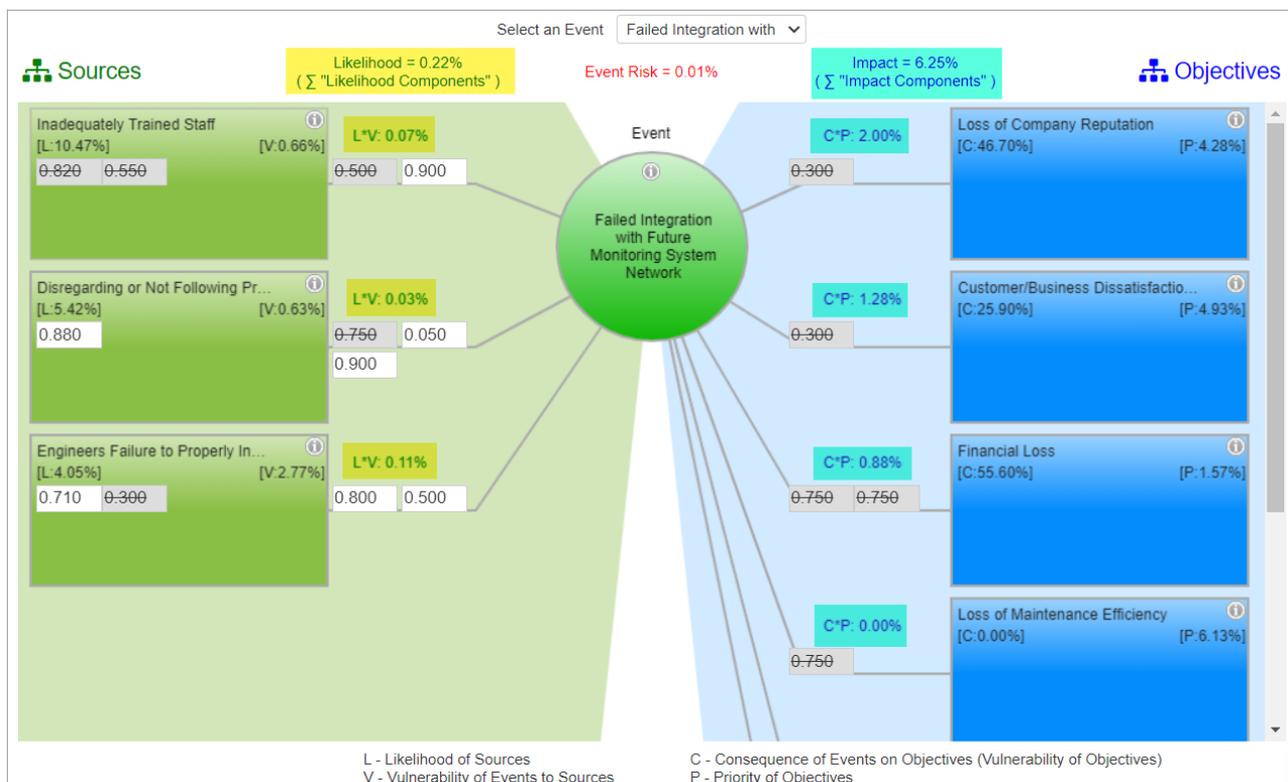
Finally, the resulting Event Vulnerability with control is 6.64 % - 5.976% = **0.66%**.

The Likelihood of the event to a given source (L\*V), and the Impact of the event (C\*P) on a given objective are shown on the connecting lines to the source/objective boxes:



- The Likelihood of the Event "Failed Integration with Future Monitoring System Network" to the source "Inadequately Trained Staff" given "Human Factor" is **0.07%** (*this is 0.69% without control*).
- The Impact of the Event "Failed Integration with Future Monitoring System Network" on the Objective "Loss of Company Reputation" given "Human Factor" is **2.0%** (*since there is no control is in effect for this event given the objective, the impact remains 2.0%*)

The summation of ( $\sum$  "L\*V") event's likelihoods from each event is the Likelihood of the Event, and the summation ( $\sum$  "C\*P") event's impact on each objective is the Impact of the Event -- given the selected source.

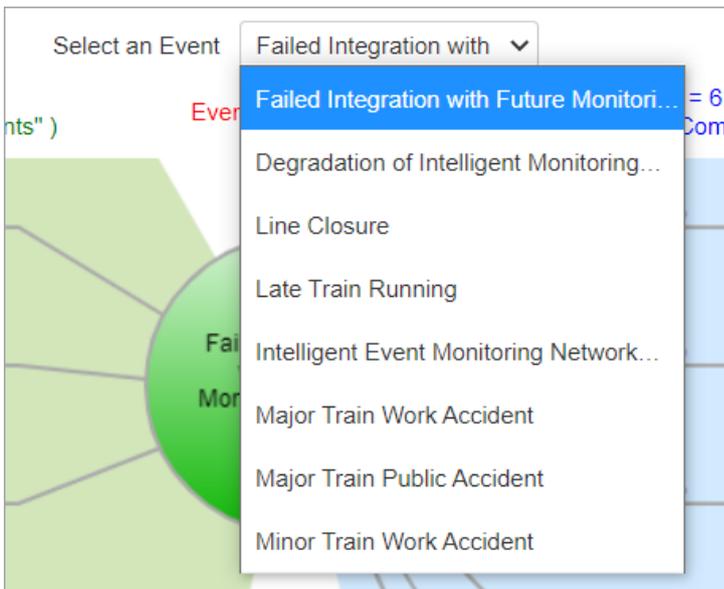


The event "Failed Integration with Future Monitoring System Network" has Likelihood and Impact due to source "Human Factor" **0.22%** and **6.25%** with controls respectively.

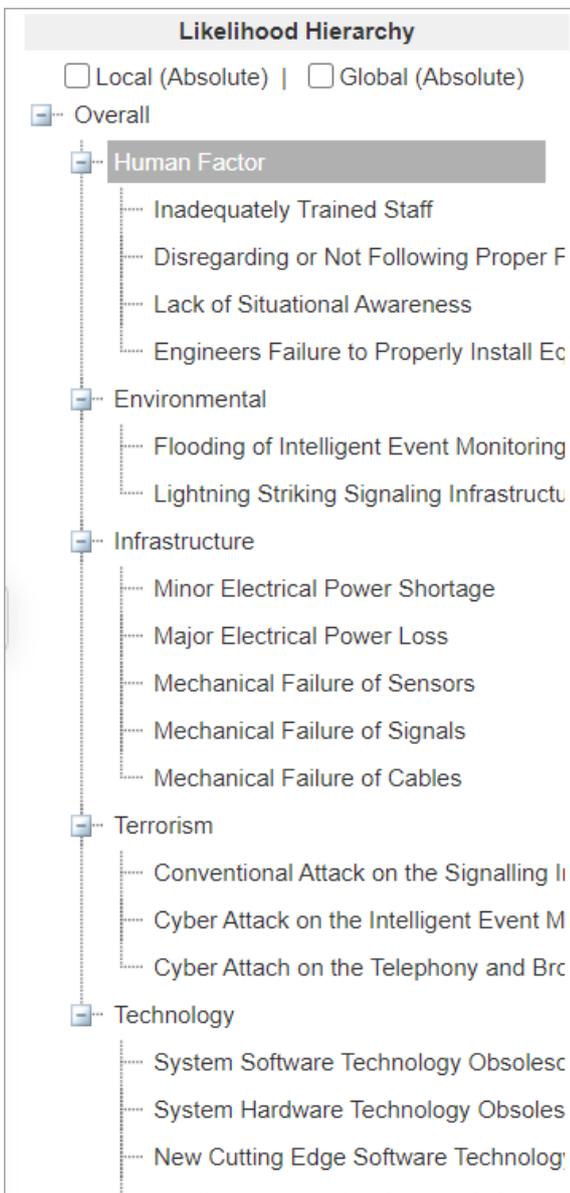
The Event's risk is then computed by Likelihood \* Impact:

$$0.22\% * 6.25\% = 0.01\% \text{ (as shown at the top of the Event)}$$

You can select another Event to analyze from the Events list pulldown at the top:



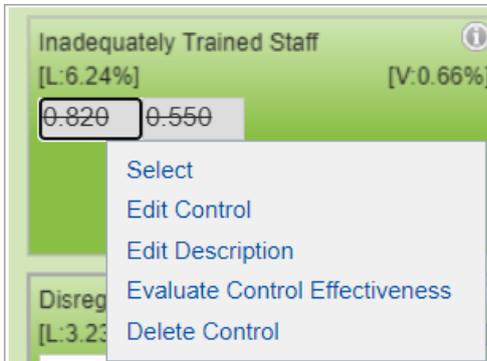
and you can select another source by clicking a node from the Likelihood Hierarchy at the left:



## Manage Controls from the Bow-tie Diagram

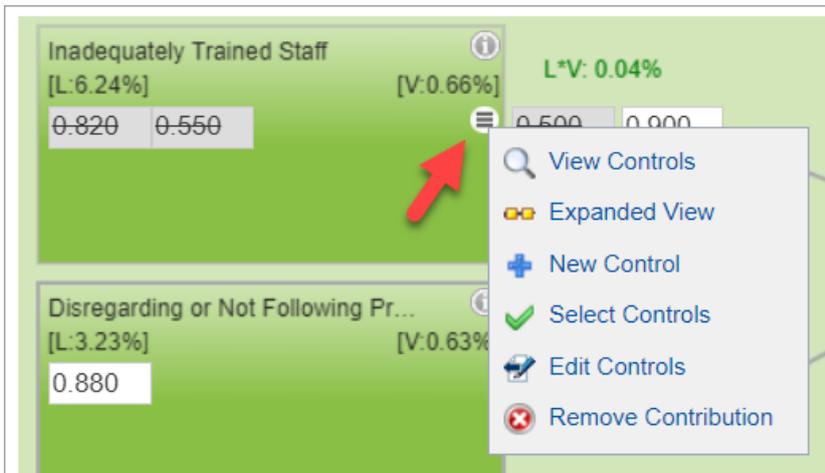
You can select/deselect a control to be in effect by double-clicking a control.

Alternatively, you can right-click on a control box to see the select/deselect options together with other functionality.



- Edit Control - open to update the control name, cost, and categories.
- Edit Description - open a rich text editor to edit the control description
- Evaluation Control Effectiveness - redirect to evaluation step specific to the control selected
- Delete control - delete the control

Hovering on the Source box, and the connecting line from Event to Source and Event to Objective will show a hamburger menu.

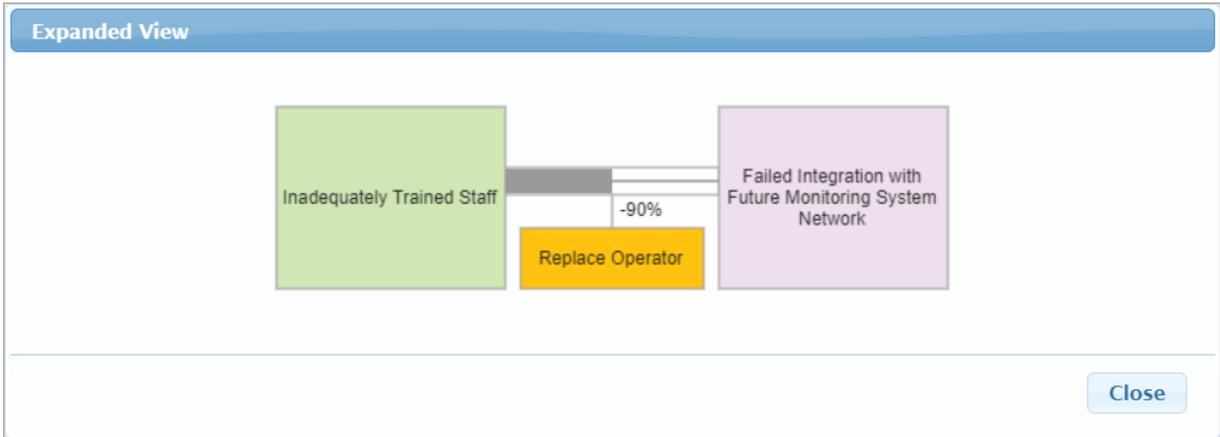


- View Controls - open a modal listing all the potential controls for the specific source, event from a source, or event to an objective. The effectiveness of the control and is active (YES if selected, NO if not) is also displayed.

Controls Applications		
Control	Effectiveness	Is Active
Periodic Proficiency Training	0.820	
Identify Staff requiring additional training	0.550	

[Close](#)

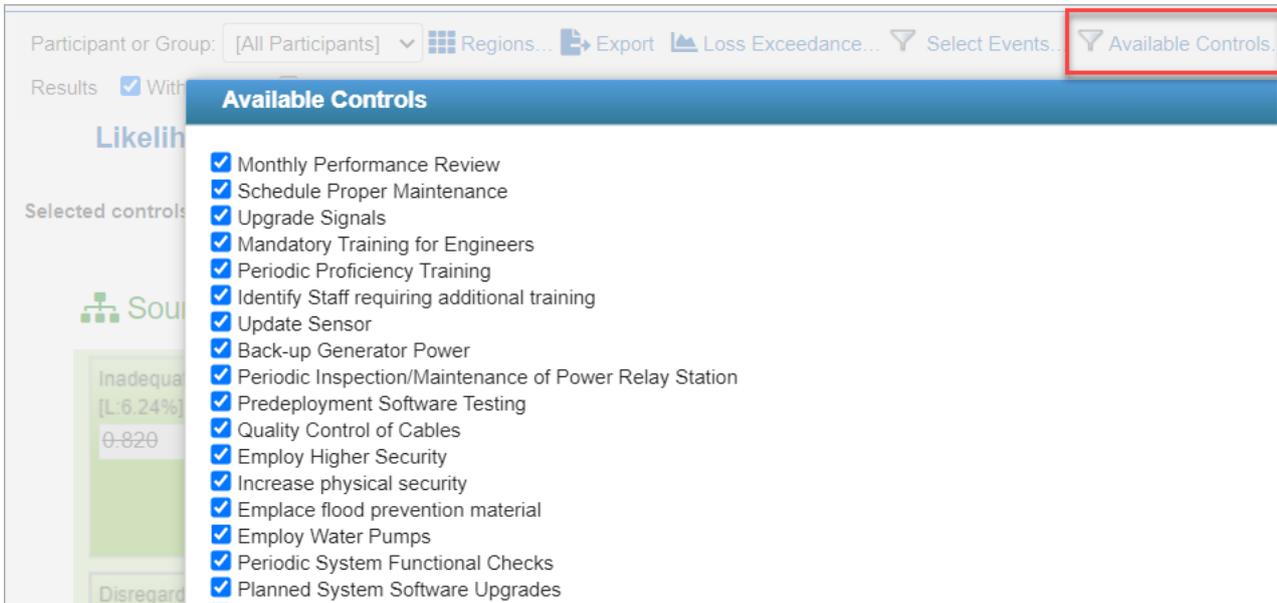
- Expanded View - shows a diagram of the elements (source, event, objective, control)



- New Control - add a new control
- Select Controls - list all the available controls for the specific control type (for sources, events to source, or events to objectives). Here you can select potential control of given elements involved.
- Edit Controls - redirect to the Identify Controls page
- Remove Contribution

## Available Controls

Clicking Available Controls will open a modal listing all the identified potential controls.



Controls that are "checked" means that the control can be in effect or selected (manually or by optimization)

Controls that are "unchecked" mean that the control is **disabled** and can't be in effect or selected.

The "Available controls" option is just similar to the "Disabled" column on the **Identify controls** grid -- disabled controls are unavailable for selection for controls to be in effect.

If control is un-available, the box of that control showing its effectiveness is hidden on the bow-tie diagram

When there are un-available controls, the button will have an exclamation mark Available Controls.

## Select Participant or Group

The bow-tie for the "All Participants" group is displayed by default. By selecting from the "Participants and Groups" dropdown, you can display the bow-tie analysis for another participants or group:

The image shows a software interface with a dropdown menu. The dropdown is titled "Participant or Group:" and is currently set to "[All Participants]". The dropdown menu is open, showing a list of options: "[All Participants]", "[C-Level Executives]", "[Engineering]", and a list of individual names: "Denis Risman", "Brian Quigley", "Chief Risk Officer", "Chief Engineering Officer", "IT Supervisor", "Chief Executive Officer", "Devin Nagy", "Michael Mankowski", and "John Doe".

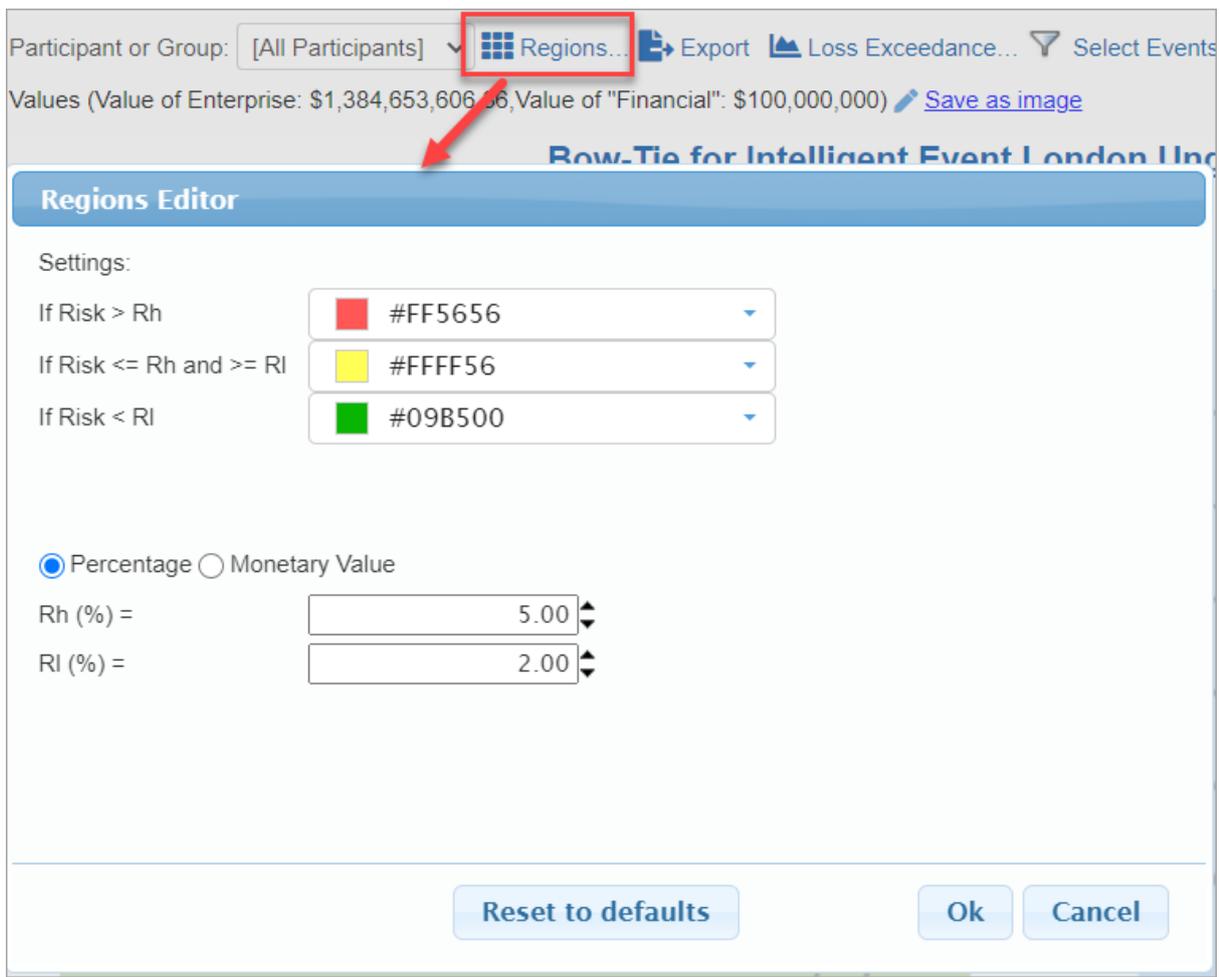
In the background, there is a "Sources" section with a tree icon. It lists several categories with their associated risk percentages:

- Inadequately Trained [L:6.24%]
- Disregarding or Not [L:26.92%]
- Engineers Failure to [L:8.32%]
- System Software Te [L:5.97%]
- System Hardware Te

## Define Event Color (Region)

Default colors are already provided for the events on the diagram based on the event's %risk.

You can change this by clicking [Regions...](#)



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

## Export Bow-tie to Excel or Image Format

Click [Export](#) to export the bowtie into a .xlsx file.

Click [Save as image](#) link to download the diagram as an image file (.jpeg)

## Show Monetary Values

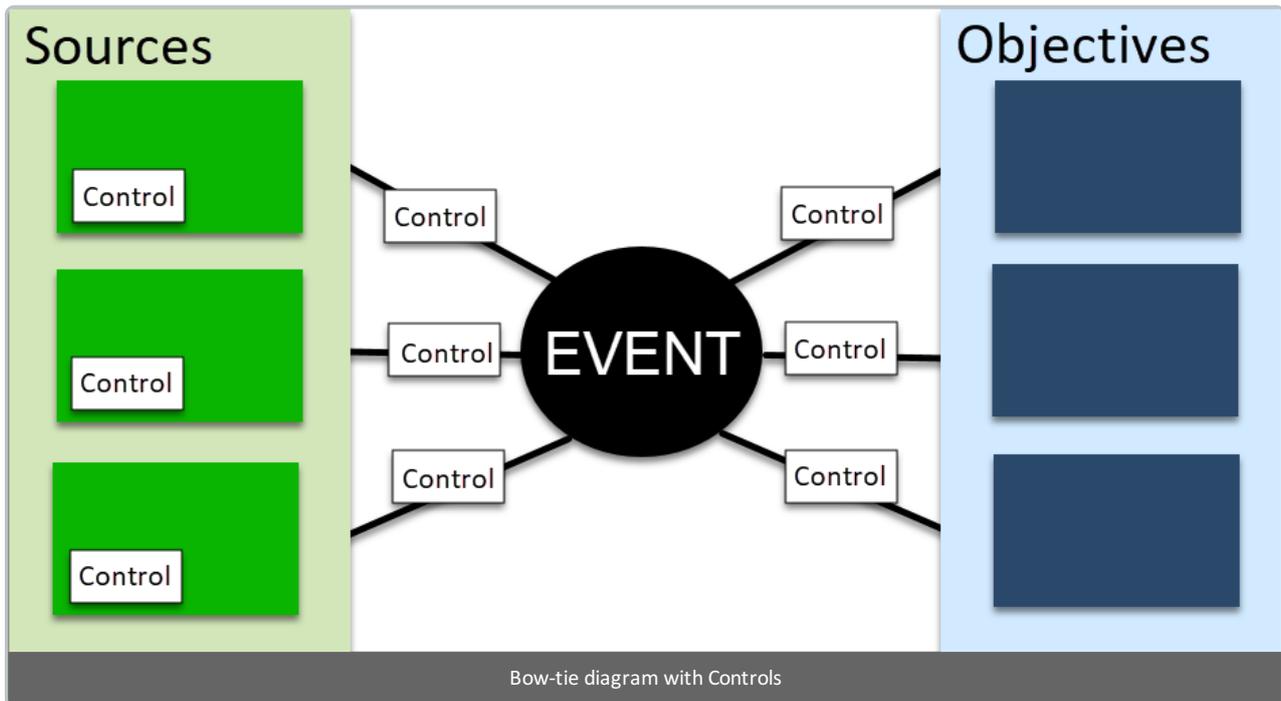
## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

# Bow-Tie Diagram To Objectives with Controls

## Overview

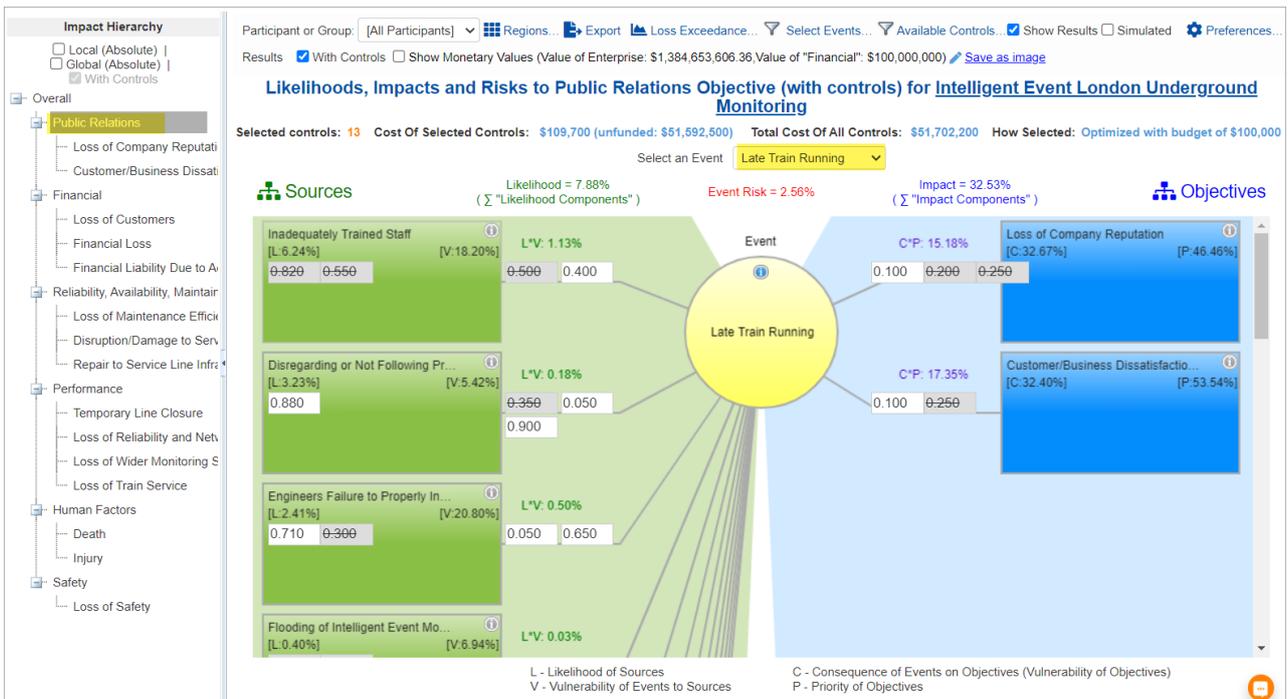
This page displays a similar diagram as with the [Bow-tie diagram To specific Objectives](#) (without controls) -- but on this page, the likelihoods, impacts, and risks are calculated with controls in effect. Controls can also be viewed, selected/deselected (to be in effect), and assigned from the diagram.



Controls are defined to reduce or mitigate the:

- **Likelihood of Sources** (from the bow-tie, these are the controls on the sources boxes at the left)
- **Vulnerabilities of Events from Sources** (from the bow-tie, these are the controls on the lines connecting the event to the sources)
- **Consequences of Events to Objectives** (from the bow-tie, these are the controls on the lines connecting the event to the objectives)

The bow-tie diagram for the analysis of the Event "**Late Train Running**" To the objective "**Public Relations**" is displayed below.



The selected **Event** is displayed at the center of the diagram (circle). Its background color varies based on the event's %risk.

The **Sources** of the selected event are on the left side of the diagram (green boxes).

The **Objectives** of the selected Event are on the right (blue boxes).

The Objective ("**Public Relations**") to which the event is being analyzed is selected from the **Impact Hierarchy** at the left.

You can view and analyze the following information:

- L - Likelihood of Sources
- V - Vulnerabilities of events to sources
- C - Consequences of Events on Objectives
- P - Priority of Events on Objectives

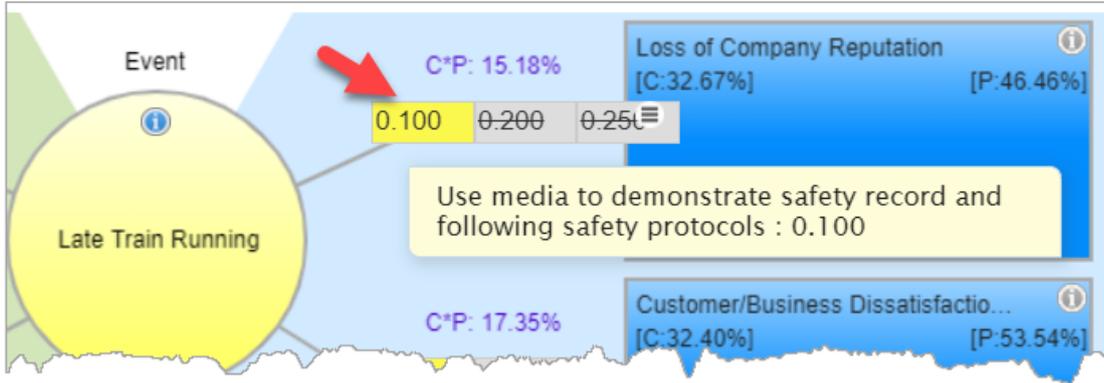
Focusing on the first source and objective on the diagram:



1. The Likelihood (L) of the Source "Inadequate Trained Staff" is is **6.24%**
2. The Vulnerability (V) of the Event "Late Train Running" from the Source "Inadequately Trained Staff" is **18.20%**
3. The Consequence (C) of the Event "Late Train Running" on the Objective "Loss of Company Reputation" is **32.67%**
4. The Priority (P) of Objective "Loss of Company Reputation" wrt the objective "Public Relations" is **46.46%**

From the above diagram, we can see that there are 7 potential controls and there 2 that are in effect as represented on the box with the values **0.400** and **0.100**.

Focusing on the right side, hovering on 0.100 will show the control name, "Replace Operator" as shown above.



The "Use media to demonstrate safety record and following safety protocols" with the effectiveness of 0.1 is a control that mitigates the Consequence of the Event "Late Train Running" on the objective "Loss of Company Reputation" with respect to "Public Relations". With this, V:32.67% is a mitigated consequence.

You can uncheck the "With Controls" checkbox on the toolbar to see the results without controls.

Above we see that the Consequence [C] of the event "Late Train Running" on the objective "Loss of Company Reputation" with respect to "Public Relations" without control is 36.30%. When the "Use media to demonstrate safety record and following safety protocols" control is in effect, the Vulnerability is reduced by 3.63%.

$$\begin{aligned}
 &= \text{Event Consequence without control} * \text{Control Effectiveness} \\
 &= 36.30 * 0.1 \\
 &= \mathbf{3.63 \%}
 \end{aligned}$$

The resulting Event Consequence with control is 36.30% - 3.63% = **32.67%** as shown on the bow-tie with control.

The Likelihood of the event to a given source (L\*V), and the Impact of the event (C\*P) on a given objective are shown on the connecting lines to the source/objective boxes:

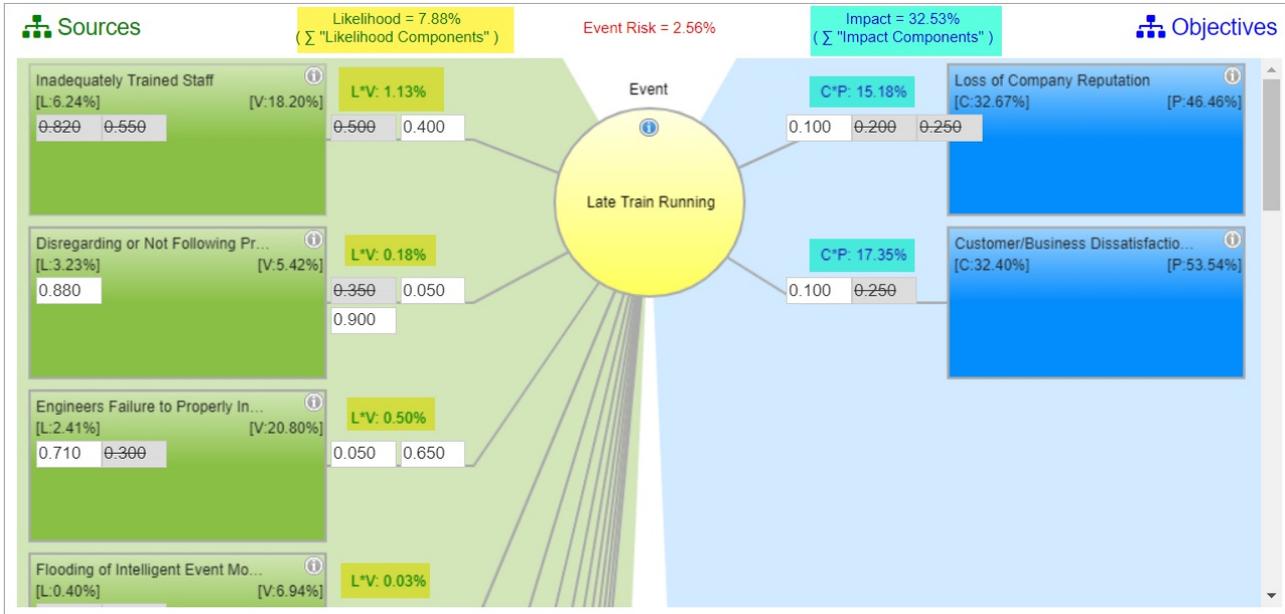


- The Likelihood of the Event "Late Train Running" to the source "Inadequately Trained Staff" wrt "Public Relations"

is **1.13%** (this is 1.89% without control).

- The Impact of the Event "Late Train Running" on the Objective "Loss of Company Reputation" wrt "Public Relations" is **15.18%** (this is 16.87% without control).

The summation of ( $\sum "L*V"$ ) event's likelihoods from each event is the Likelihood of the Event, and the summation ( $\sum "C*P"$ ) event's impact on each objective is the Impact of the Event -- given the selected source.



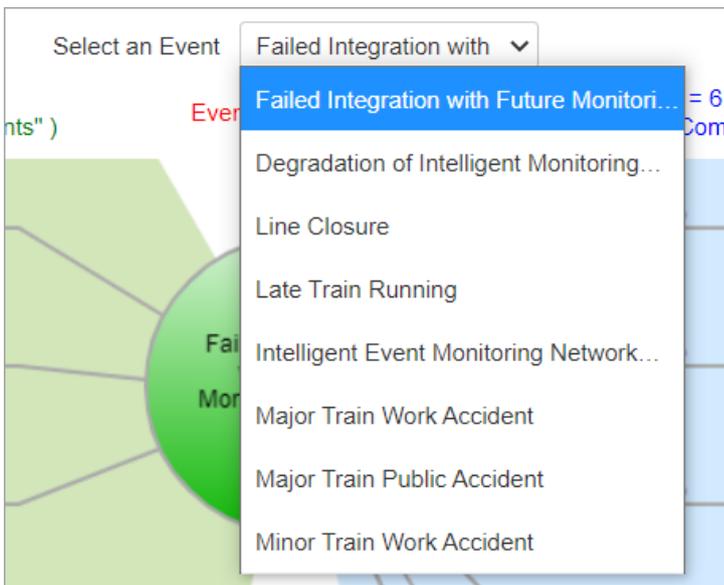
The event "Late Train Running" has Likelihood and Impact wrt to objective "Public Relations" **7.88%** and **32.53%** with controls respectively.

The Event's risk is then computed by Likelihood \* Impact:

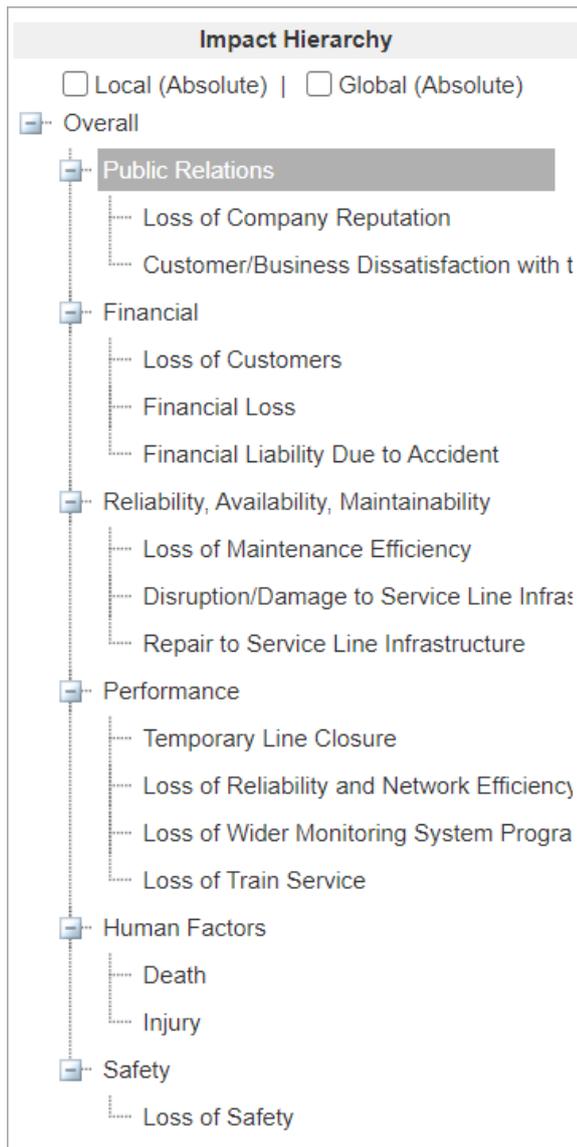
$$7.88\% * 32.53\% = 2.56\% \text{ (as shown at the top of the Event)}$$

You can select another Event to analyze from the Events list pulldown at the top:

You can select another Event to analyze from the Events list pulldown at the top:



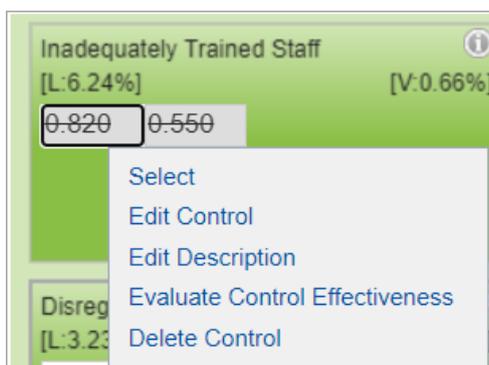
and you can select the wrt objective by clicking a node from the Impact Hierarchy at the left:



## Manage Controls from the Bow-tie Diagram

You can select/deselect a control to be in effect by double-clicking a control.

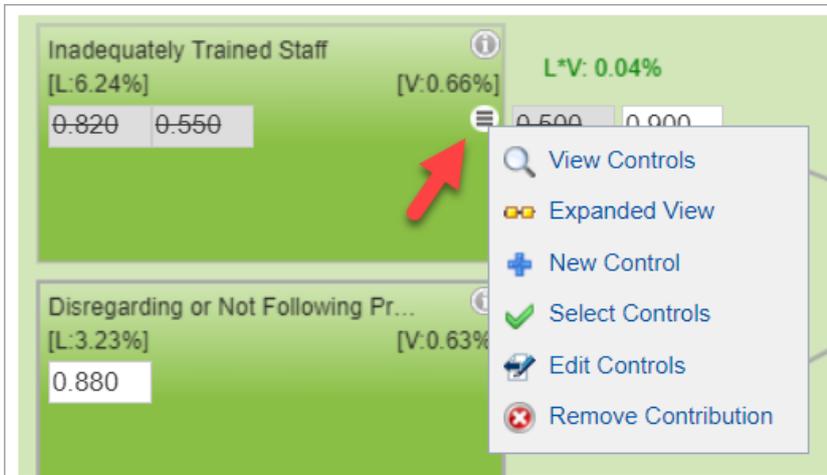
Alternatively, you can right-click on a control box to see the select/deselect options together with other functionality.



- Edit Control - open to update the control name, cost, and categories.
- Edit Description - open a rich text editor to edit the control description

- Evaluation Control Effectiveness - redirect to evaluation step specific to the control selected
- Delete control - delete the control

Hovering on the Source box, and the connecting line from Event to Source and Event to Objective will show a hamburger menu.

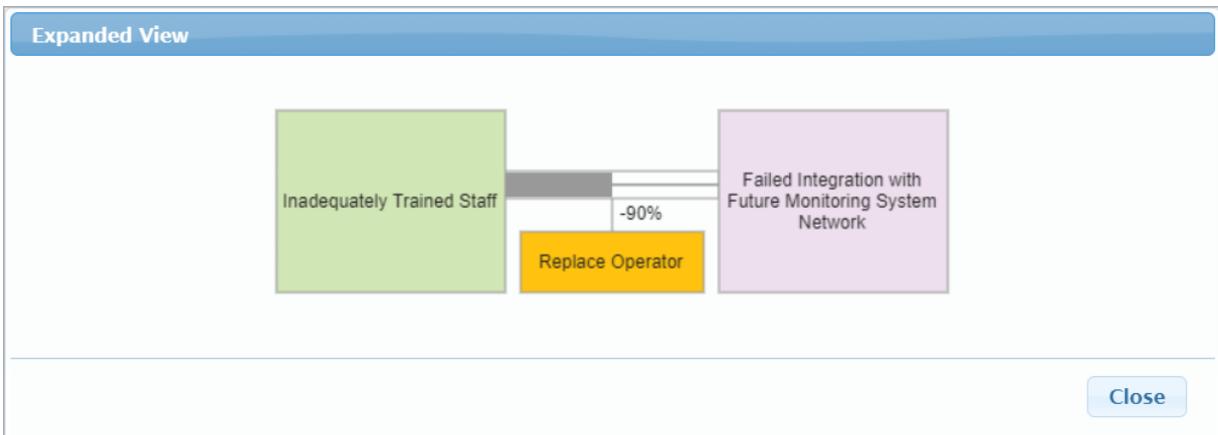


- View Controls - open a modal listing all the potential controls for the specific source, event from a source, or event to an objective. The effectiveness of the control and is active (YES if selected, NO if not) is also displayed.

Controls Applications		
Control	Effectiveness	Is Active
Periodic Proficiency Training	0.820	
Identify Staff requiring additional training	0.550	

[Close](#)

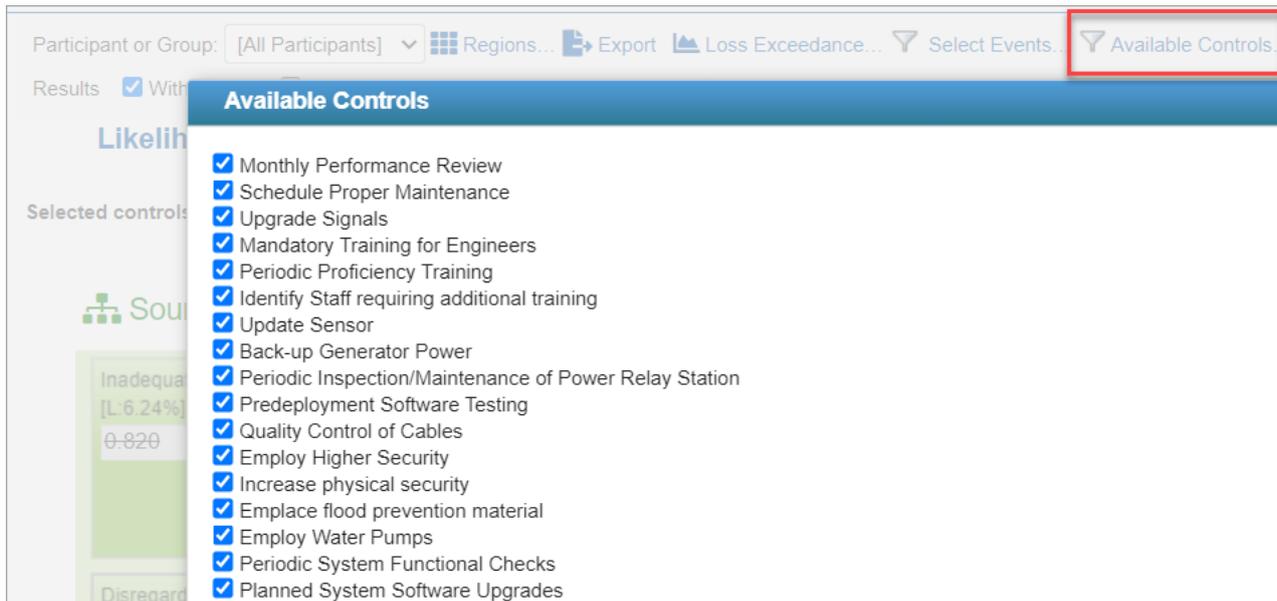
- Expanded View - shows a diagram of the elements (source, event, objective, control)



- New Control - add a new control
- Select Controls - list all the available controls for the specific control type (for sources, events to source, or events to objectives). Here you can select potential control of given elements involved.
- Edit Controls - redirect to the Identify Controls page
- Remove Contribution

## Available Controls

Clicking Available Controls will open a modal listing all the identified potential controls.



Controls that are "checked" means that the control can be in effect or selected (manually or by optimization)

Controls that are "unchecked" mean that the control is **disabled** and can't be in effect or selected.

The "Available controls" option is just similar to the "Disabled" column on the **Identify controls** grid -- disabled controls are unavailable for selection for controls to be in effect.

If control is un-available, the box of that control showing its effectiveness is hidden on the bow-tie diagram

When there are un-available controls, the button will have an exclamation mark 

## Select Participant or Group

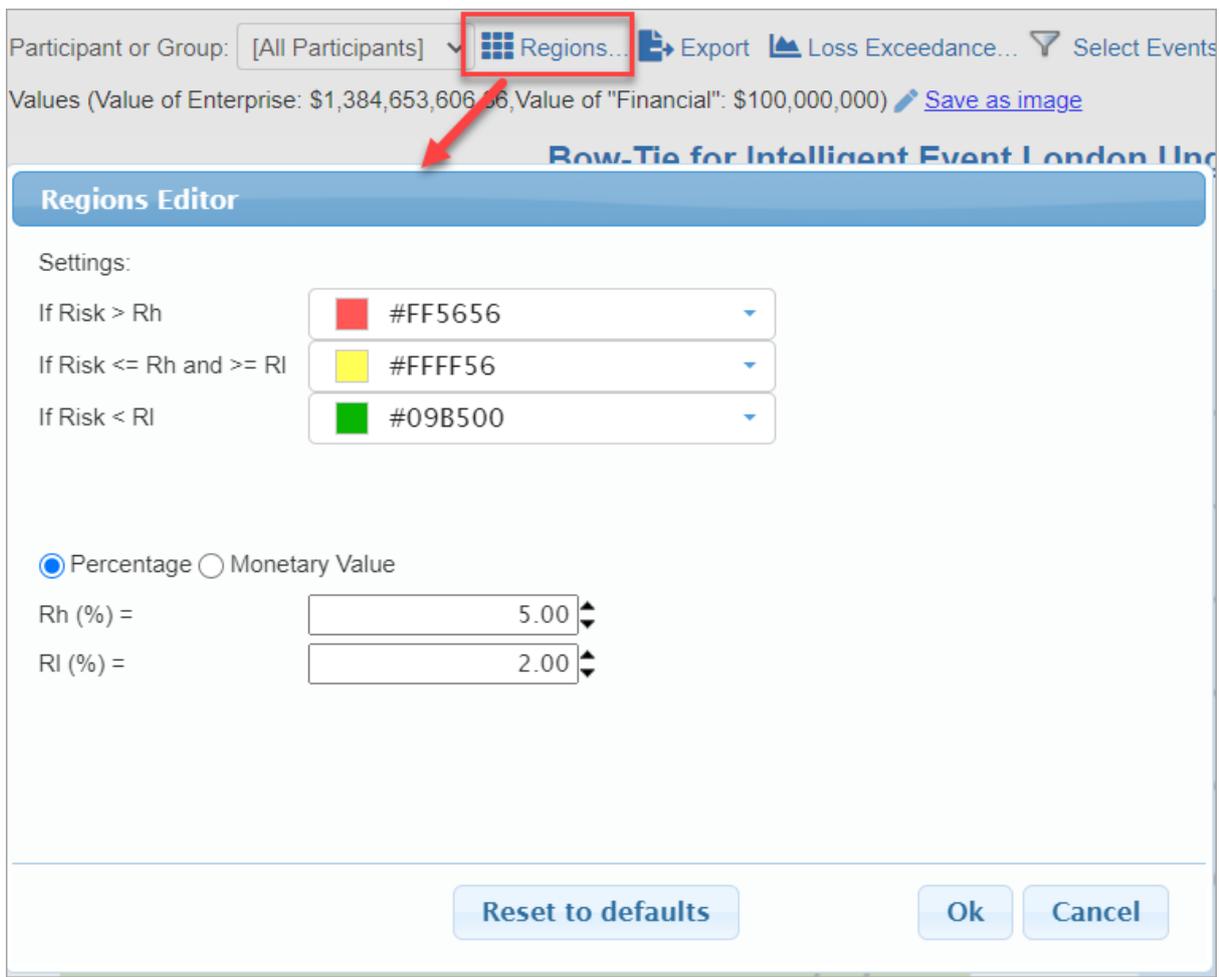
The bow-tie for the "All Participants" group is displayed by default. By selecting from the "Participants and Groups" dropdown, you can display the bow-tie analysis for another participants or group:

Participant or Group:	[All Participants] ▾ 
Show Monetary Value	[All Participants]
	[C-Level Executives]
	[Engineering]
-----	
 Sources	
Inadequately Trained [L:6.24%]	Denis Risman
	Brian Quigley
Disregarding or Not [L:26.92%]	Chief Risk Officer
	Chief Engineering Officer
Engineers Failure to [L:8.32%]	IT Supervisor
	Chief Executive Officer
System Software Te [L:5.97%]	Devin Nagy
	Michael Mankowski
System Hardware Te	John Doe

## Define Event Color (Region)

Default colors are already provided for the events on the diagram based on the event's %risk.

You can change this by clicking 



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

## Export Bow-tie to Excel or Image Format

Click  [Export](#) to export the bowtie into a .xlsx file.

Click [Save as image](#) link to download the diagram as an image file (.jpeg)

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

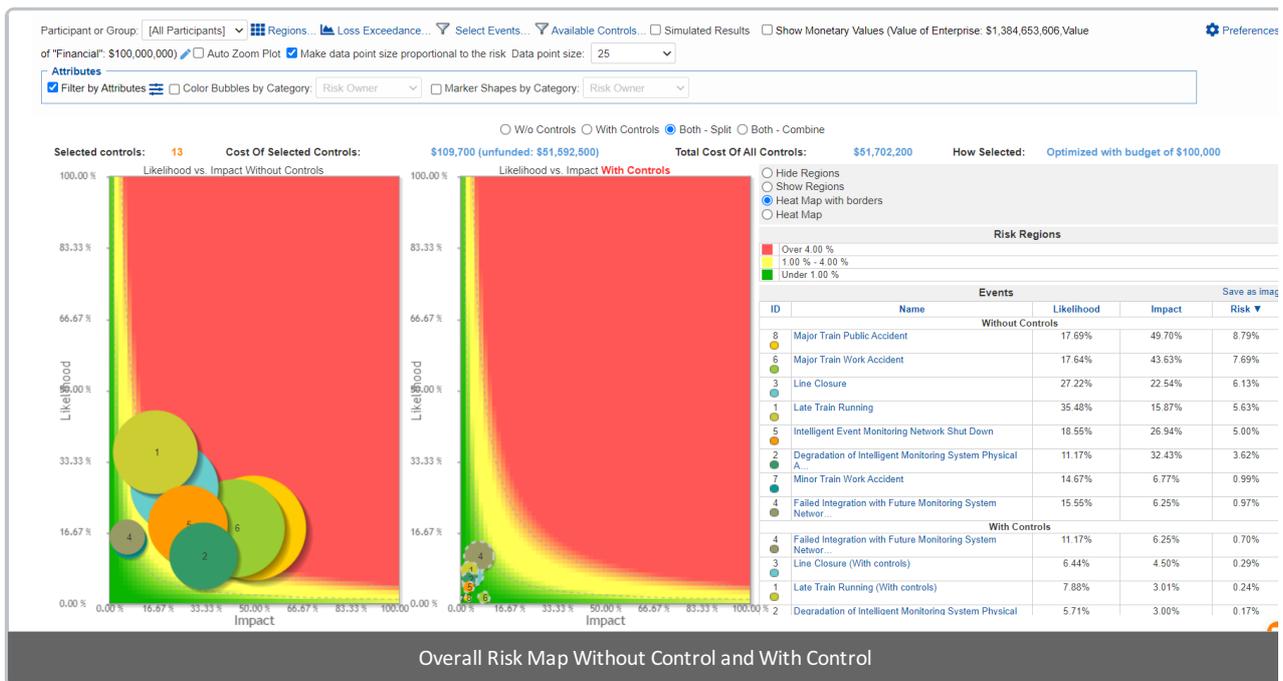
## Preferences



# Overall Risk Map with Controls

## Overview

This page displays the same diagram as with the **Overall Risk Map** (without controls) -- with additional options to show the Risk Map when controls are in effect.



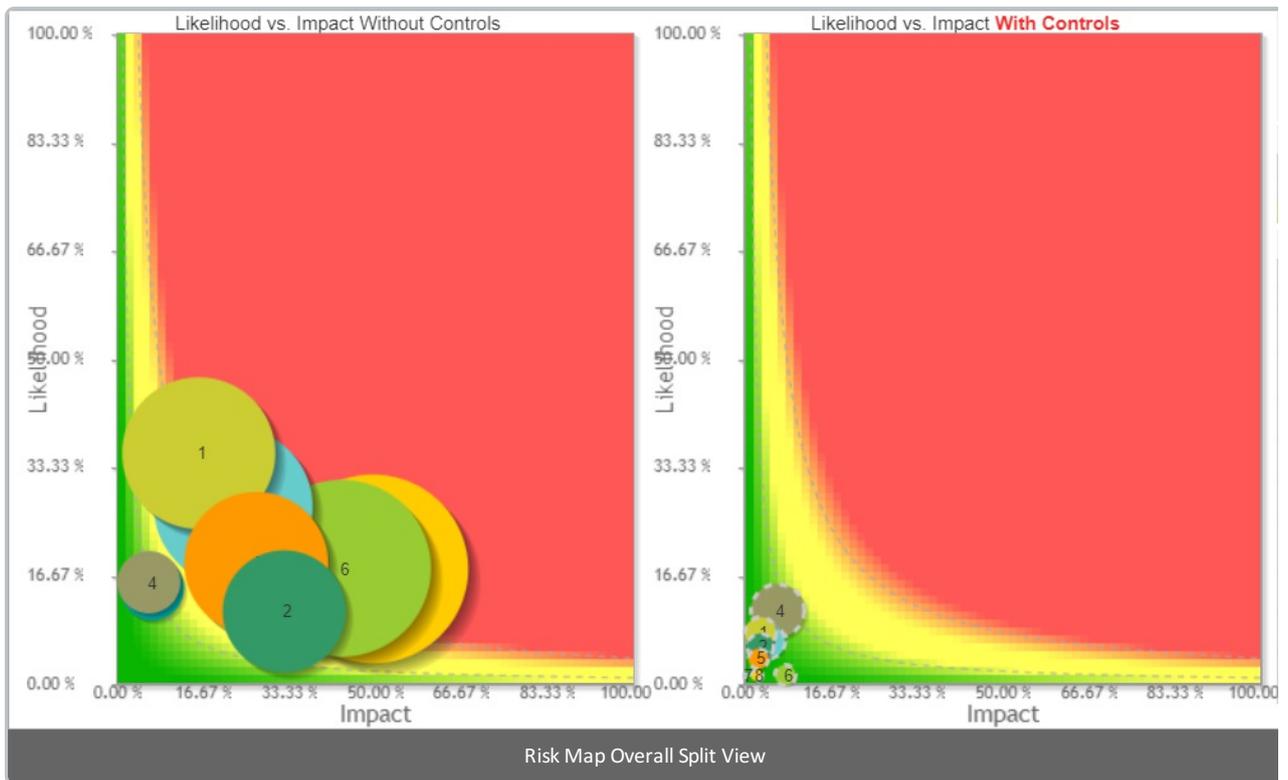
The **X-axis** represents the likelihood of events, and the **Y-axis** represents the impact of events (Note: You can interchange the axes from the Preferences)

The **bubbles** represent the **Events**. By default, the size of the bubble is proportional to the risk of the event. The biggest bubble size represents the largest risk and the smallest bubble size represents the smallest risk. All values in between are sized proportionally in relation to the highest and lowest risk values. You can make all the bubble size the same by

unchecking  **Make data point size proportional to the risk**

Each event has unique bubble color which doesn't have any meaning. You can choose to color the bubbles based on **Event Attributes**.

Riskion provides the default risk map color based on the risk region. Red represents high-risk, green represents low-risk, yellow represents in between. You can modify the **risk region** color.

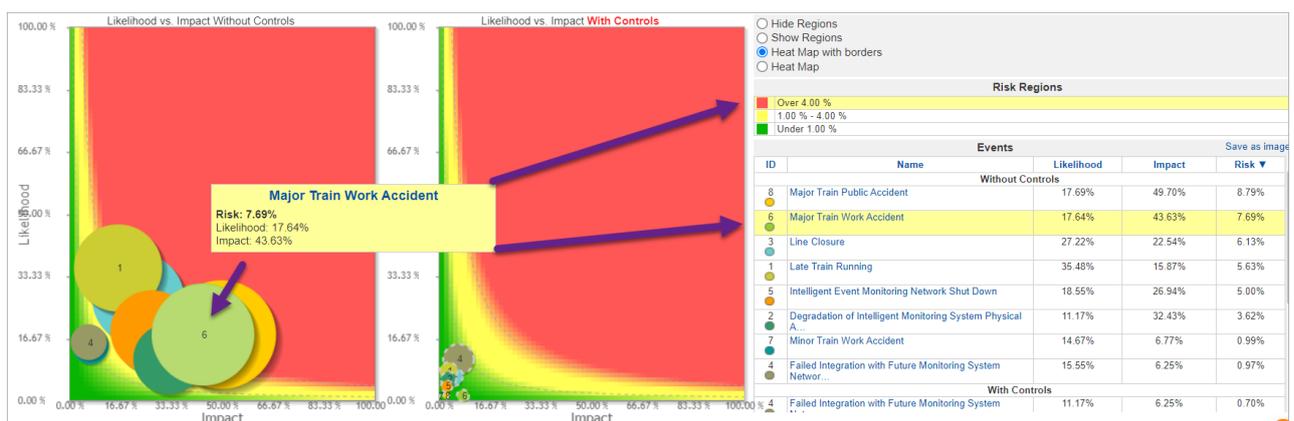


From the above example, we see the Risk map without (left) and with controls (right) on split view. The events bubbles with controls have a dashed outline.

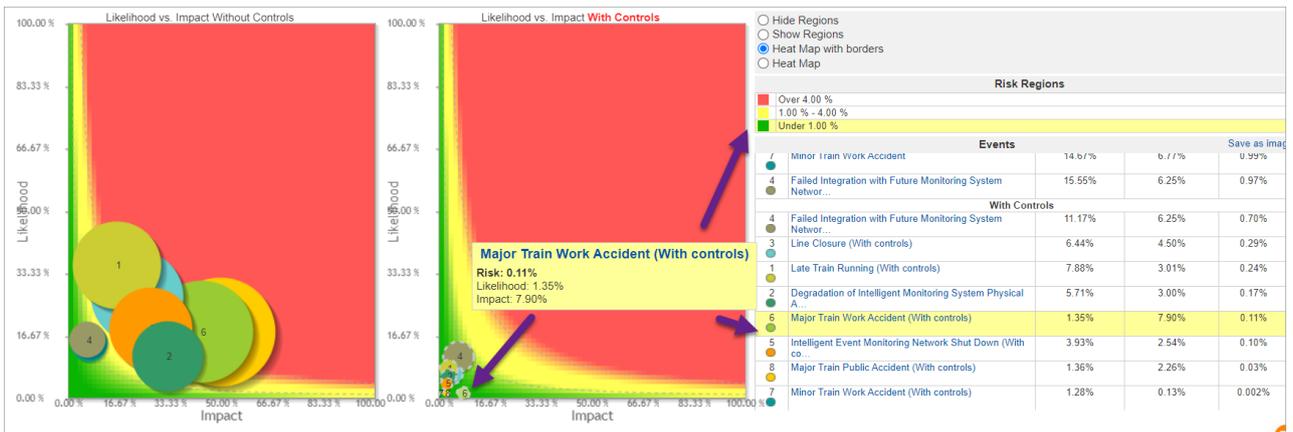
Notice how the size of the event bubbles and the plotting on the x and y-axis changed -- the Likelihoods, Impacts, and Risks are reduced when the controls are in effect.

Hovering over an Event bubble will show the likelihood, impact, and risk of the event on a tooltip -- Additionally, it will highlight the corresponding risk region and the likelihood, impact, and risk of the hovered event on the grid at the right.

For the event "Major Train Work Accident" without control -- its likelihood, impact, and risk are 17.64%, 43.63%, 7.69% respectively -- the bubble is in the red or high-risk region as shown below:



When controls are in effect, the likelihood, impact, and risk of the same event are reduced to 1.36%, 2.26%, 0.03% respectively -- the bubble is now in the green or low-risk region.

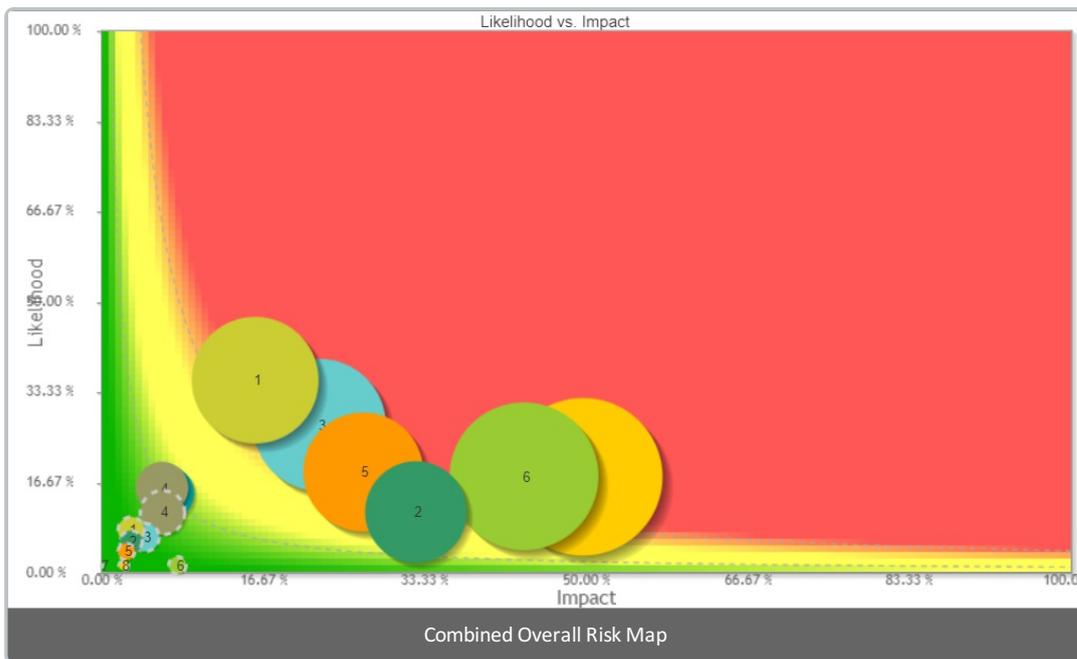


Clicking the Event name on the grid will redirect you to the corresponding Overall Bow-tie Diagram from that event.

Other risk map views are available from the radio button at the top:

W/o Controls
  With Controls
  Both - Split
  Both - Combine

- **Without control** -- same as with the Risk Map Overall
- **With control** -- displays one risk map for events' likelihoods, impacts, and risks reduced by controls in effect
- **Both - split** -- 2 risk maps, one for without controls and another for with controls (as shown from our example above)
- **Both - combined** - one risk map showing the events both for without and with control



The events bubbles with controls have a dashed outline.

## Select Participant and Group

The results for the "All Participants" group are displayed by default as shown above.

By selecting from the participants and groups menu, you can also see the risk map for an individual participant or a group.

Participant or Group: [All Participants] ▾ 

- [All Participants]
- [C-Level Executives]
- [Engineering]

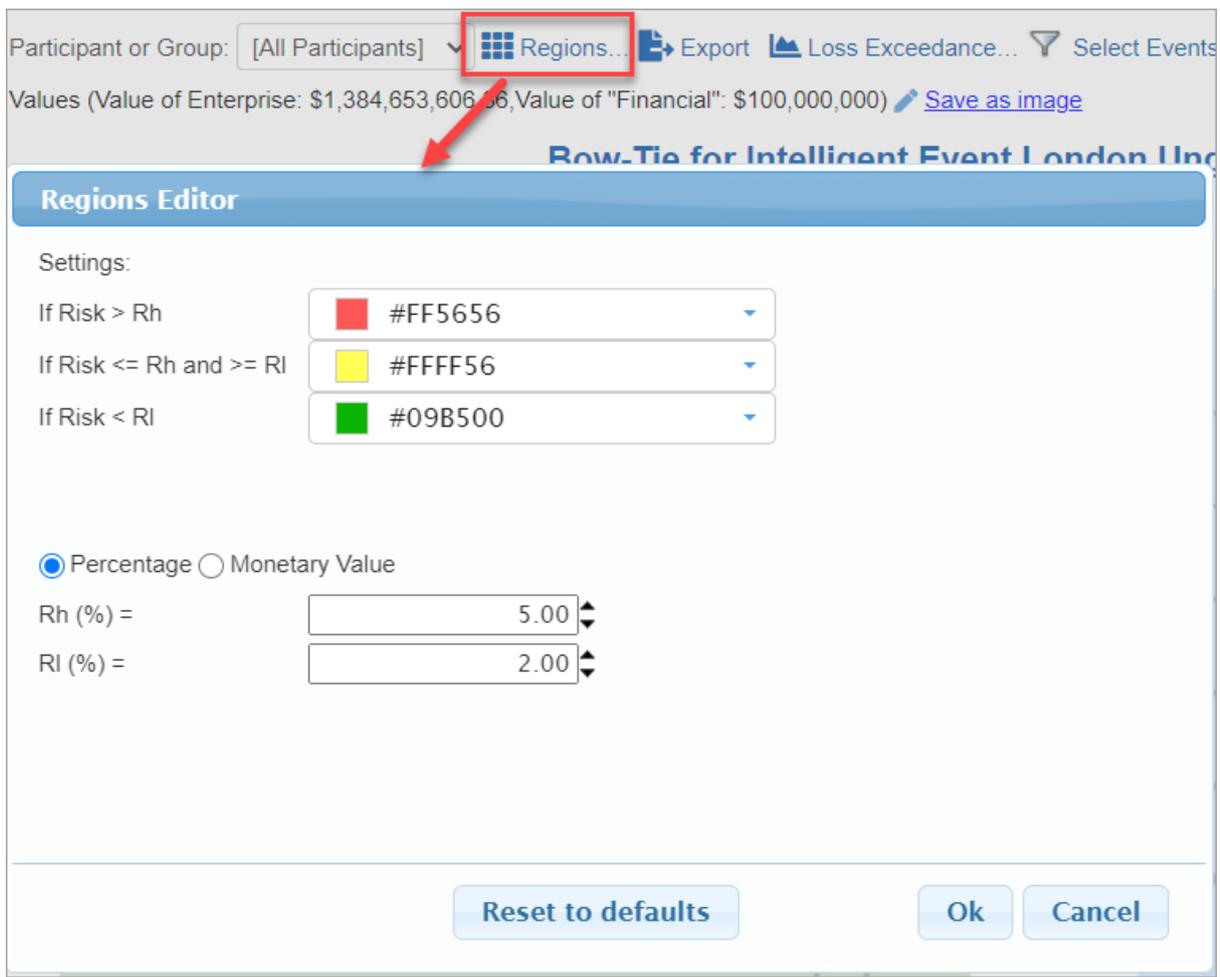
---

- Denis Risman
- Brian Quigley
- Chief Risk Officer
- Chief Engineering Officer
- IT Supervisor
- Chief Executive Officer
- Devin Nagy
- Michael Mankowski
- John Doe
- Project Manager
- Control Expert

## Risk Map Region

Default colors are already provided for the risk map region.

You can change this by clicking 



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

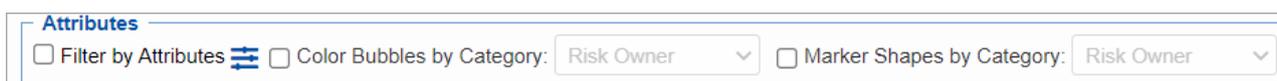
Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

The color specified here is used on the Event's color on the bow-tie diagram.

## Risk Map with Event Attributes

When Event Attributes are defined in the model, additional options are available on the toolbar.



Here you can filter, color, and use shapes other than bubble based on the event attributes.

- **Filter by Attributes** - checking this option will filter the events on the risk map based on the conditions specified. You need to click  to define the conditional statement for the attributes.

Filter by Attributes

Event Attributes

Use: AND ▼ Add Rule Reset

<input checked="" type="checkbox"/>	Event History <span style="float: right; font-size: small;">▼</span>	Equal <span style="float: right; font-size: small;">▼</span>	no history <span style="float: right; font-size: small;">x</span>
<input checked="" type="checkbox"/>	Risk Owner <span style="float: right; font-size: small;">▼</span>	Equal <span style="float: right; font-size: small;">▼</span>	John <span style="float: right; font-size: small;">▼</span> <span style="float: right; font-size: small;">x</span>

Apply
Close

- **Color Bubbles by Category** - checking this allows you to select an event attribute in the dropdown. Selecting a category will have the event of the same attribute to have the same color.
- **Marker Shapes by Category** - similar to Color bubbles by category, but this option will have the events of the same attribute to have the same shape (instead of a bubble).

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

---

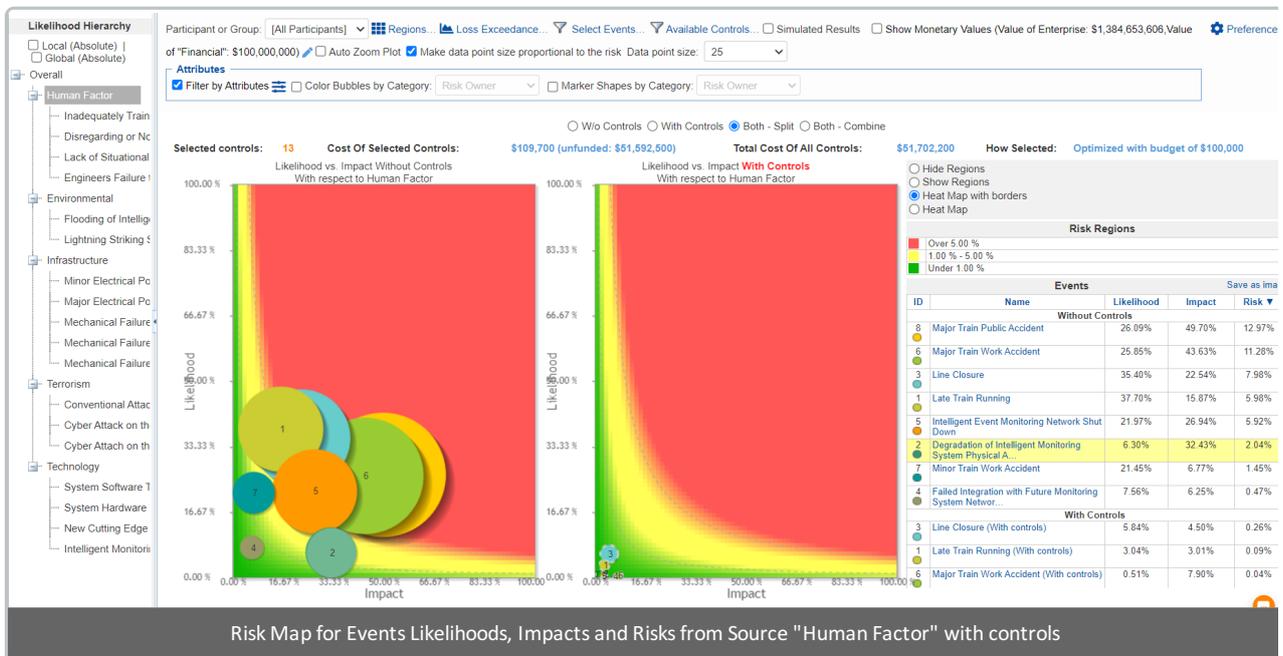
# Risk Map From Sources with Controls

## Overview

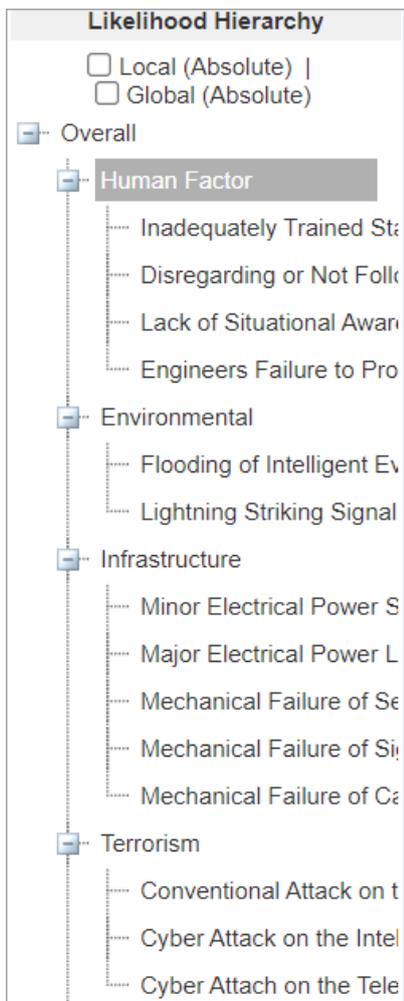
This page displays the same diagram as with the **Risk Map From Sources** (without controls) -- with additional options to show the Risk Map when controls are in effect.

In Riskion, we refer to **threats, causes, hazards, and sources** interchangeably. While they may have slightly different nuances depending on the context in which they are used, they serve the same purpose -- they are all threats/sources of risk (for Risk Events) or sources of opportunity (for Opportunity Events). In our sample model, we are using the terminology "Source(s)".

Here we see the **Risk Map for the Likelihoods, Impacts, and Risks of the events from Source "Human Factor"** with and without controls.



A source is selected from the Sources Hierarchy at the left.



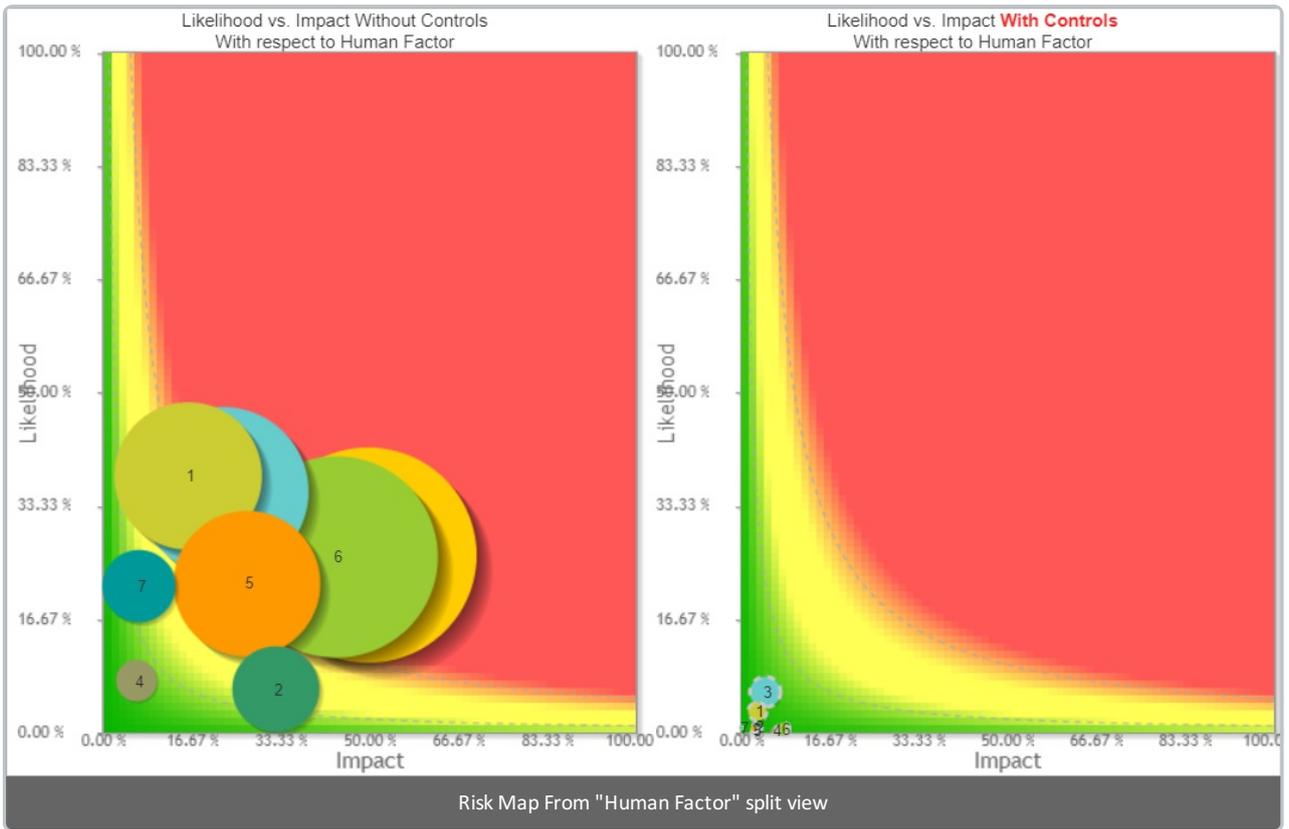
You can also select the top node "Overall" which will show the same results as with the [Overall Risk Map with controls](#) page.

The **X-axis** represents the likelihood of events, and the **Y-axis** represents the impact of events (Note: You can interchange the axes from the Preferences)

The **bubbles** represent the **Events**. By default, the size of the bubble is proportional to the risk of the event. The biggest bubble size represents the largest risk and the smallest bubble size represents the smallest risk. All values in between are sized proportionally in relation to the highest and lowest risk values. You can make all the bubble size the same by unchecking  **Make data point size proportional to the risk**

Each event has unique bubble color which doesn't have any meaning. You can choose to color the bubbles based on [Event Attributes](#).

Riskion provides the default risk map color based on the risk region. Red represents high-risk, green represents low-risk, yellow represents in between. You can modify the [risk region](#) color.

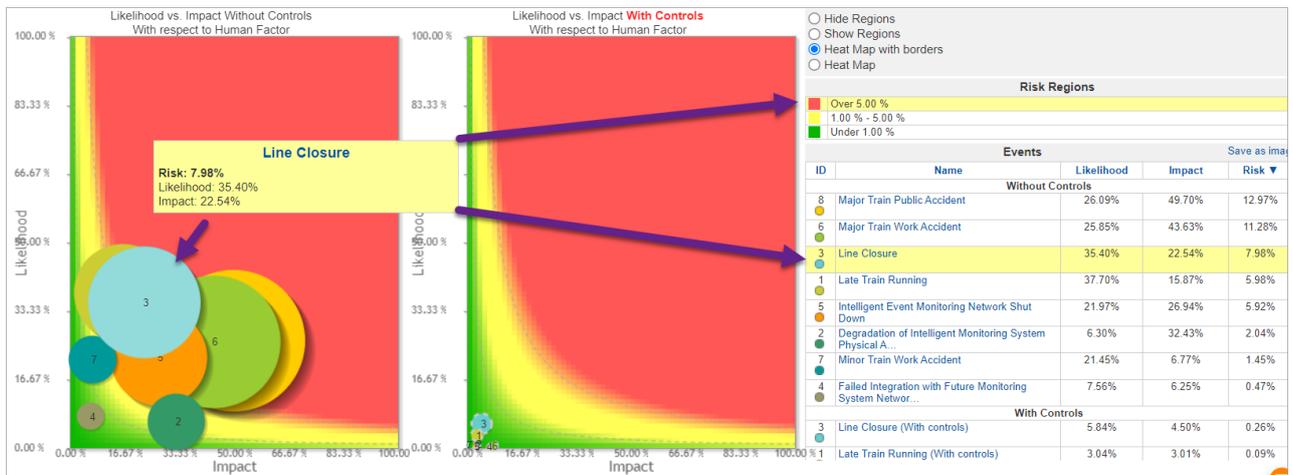


From the above example, we see the Risk map without (left) and with controls (right) on split view. The events bubbles with controls have a dashed outline.

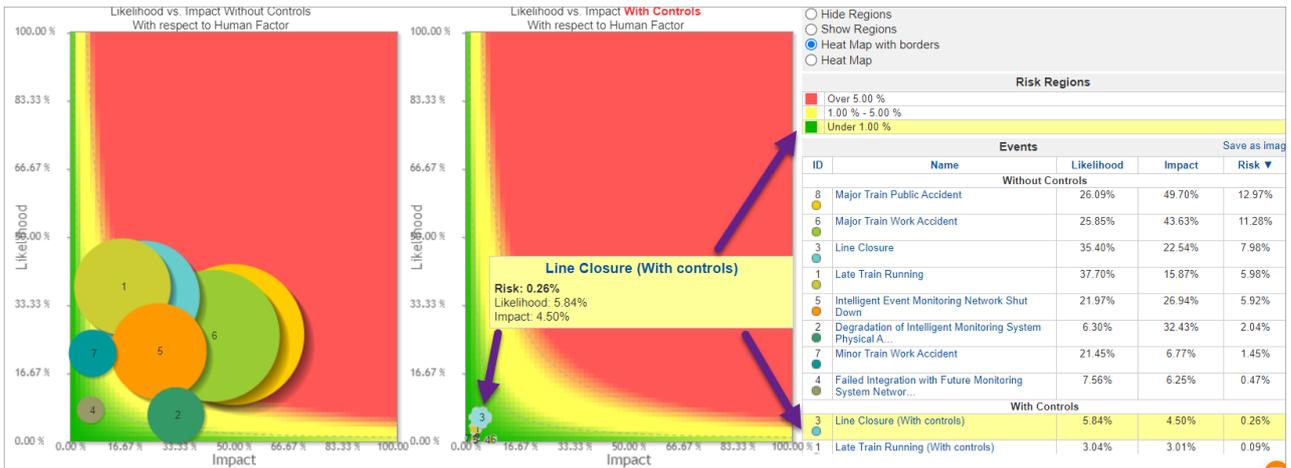
Notice how the size of the event bubbles and the plotting on the x and y-axis changed. The Likelihoods, Impacts, and Risks are reduced when the controls are in effect.

Hovering over an Event bubble will show the likelihood, impact, and risk of the event on a tooltip -- Additionally, it will highlight the corresponding risk region and the likelihood, impact, and risk of the hovered event on the grid at the right.

For the event "Line Closure" without control -- its likelihood, impact, and risk are 35.40% 22.54% 7.98% respectively -- the bubble is in the red or high-risk region as shown below:



When controls are in effect, the likelihood, impact, and risk of the same event are reduced to 5.84% 4.50% 0.26% respectively -- the event bubble is now in the green or low-risk region.

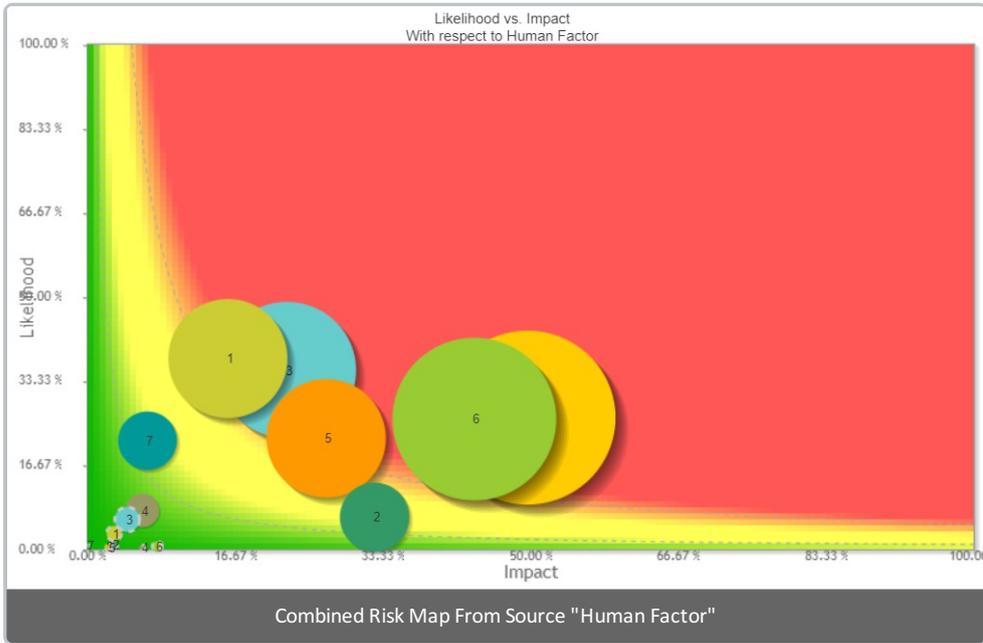


Clicking the Event name on the grid will redirect you to the corresponding **bow-tie diagram** from that event.

Other risk map views are available from the radio button at the top:

W/o Controls
  With Controls
  Both - Split
  Both - Combine

- **Without control** -- same as with the **Risk Map From Sources** (without controls)
- **With control** -- displays one risk map for mitigated events' likelihoods, impacts, and risks (with controls)
- **Both - split** -- 2 risk maps, one for without controls and another for with controls (as shown from our example above)
- **Both - combined** - one risk map showing the events both for without and with controls



The events bubbles with controls have a dashed outline.

## Select Participant and Group

The results for the "All Participants" group are displayed by default as shown above.

By selecting from the participants and groups menu, you can also see the risk map for an individual participant or a group.

Participant or Group: [All Participants] 

- [All Participants]
- [C-Level Executives]
- [Engineering]

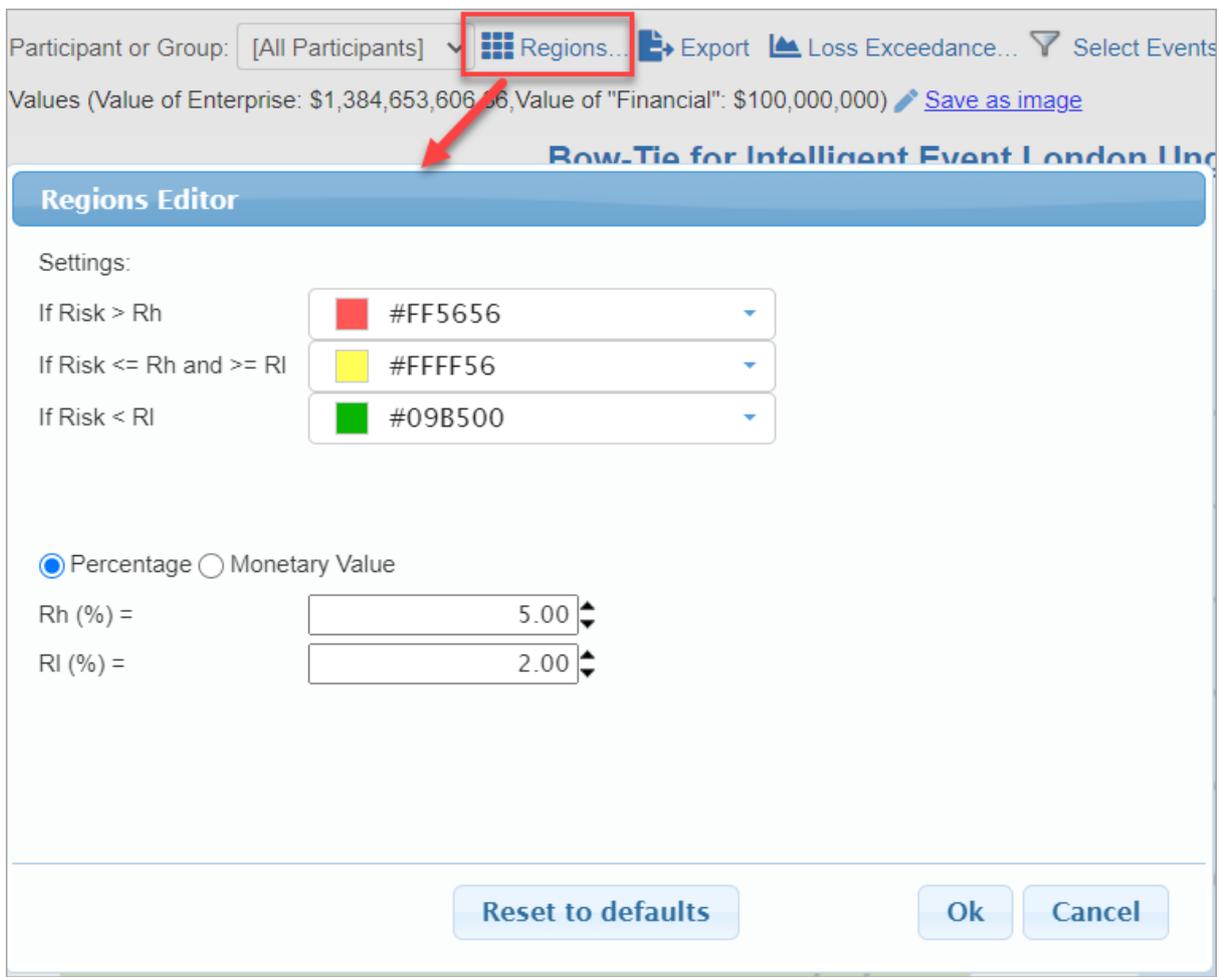
---

- Denis Risman
- Brian Quigley
- Chief Risk Officer
- Chief Engineering Officer
- IT Supervisor
- Chief Executive Officer
- Devin Nagy
- Michael Mankowski
- John Doe
- Project Manager
- Control Expert

## Risk Map Region

Default colors are already provided for the risk map region.

You can change this by clicking 



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

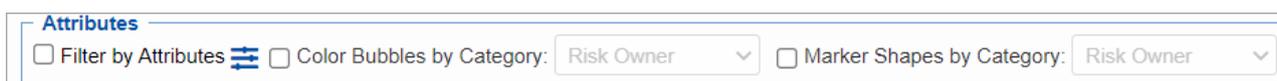
Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

The color specified here is used on the Event's color on the bow-tie diagram.

## Risk Map with Event Attributes

When Event Attributes are defined in the model, additional options are available on the toolbar.



Here you can filter, color, and use shapes other than bubble based on the event attributes.

- **Filter by Attributes** - checking this option will filter the events on the risk map based on the conditions specified. You need to click  to define the conditional statement for the attributes.

Filter by Attributes

Event Attributes

Use: AND ▼ Add Rule Reset

<input checked="" type="checkbox"/>	Event History <span style="float: right; font-size: 0.8em;">▼</span>	Equal <span style="float: right; font-size: 0.8em;">▼</span>	no history <span style="float: right; font-size: 0.8em;">x</span>
<input checked="" type="checkbox"/>	Risk Owner <span style="float: right; font-size: 0.8em;">▼</span>	Equal <span style="float: right; font-size: 0.8em;">▼</span>	John <span style="float: right; font-size: 0.8em;">▼</span> <span style="float: right; font-size: 0.8em;">x</span>

Apply
Close

- **Color Bubbles by Category** - checking this allows you to select an event attribute in the dropdown. Selecting a category will have the event of the same attribute to have the same color.
- **Marker Shapes by Category** - similar to Color bubbles by category, but this option will have the events of the same attribute to have the same shape (instead of a bubble).

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

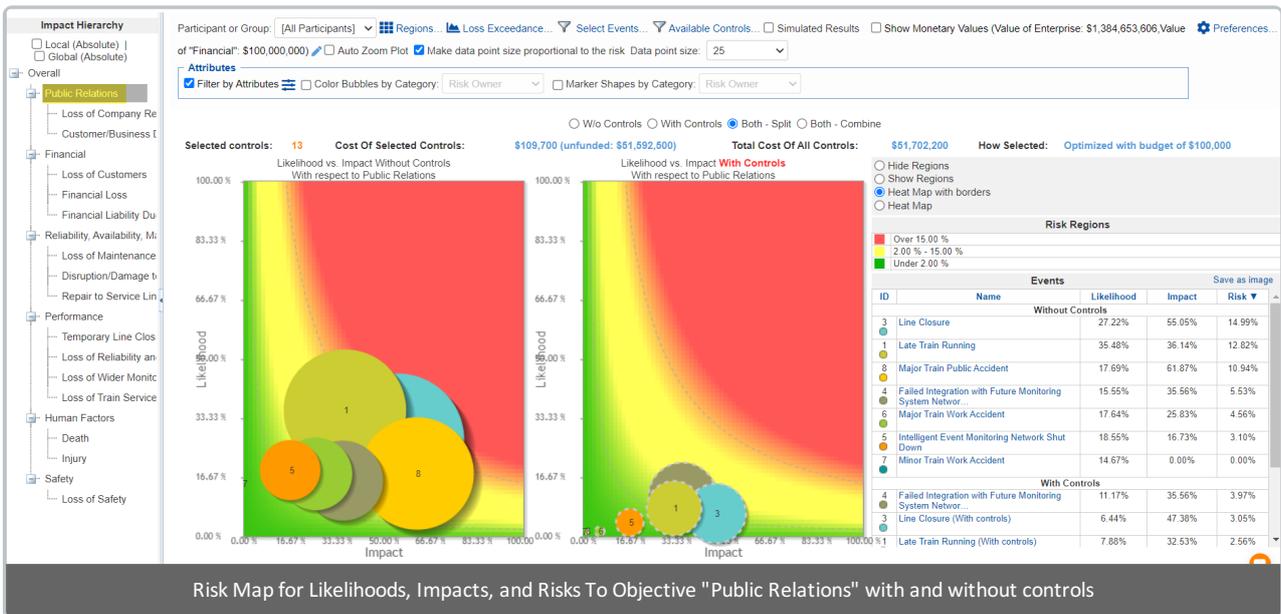
---

# Risk Map To Objectives with Controls

## Overview

This page displays the same diagram as with the **Risk Map To Objectives** (without controls) -- with additional options to show the Risk Map when controls are in effect.

Here we see the **Risk Map for the Likelihoods, Impacts, and Risks of the events To Objective "Public Relations"** without and with controls.



Risk Map for Likelihoods, Impacts, and Risks To Objective "Public Relations" with and without controls

You can also select the top node "Overall" which will show the same results as with the **Overall Risk Map** page.

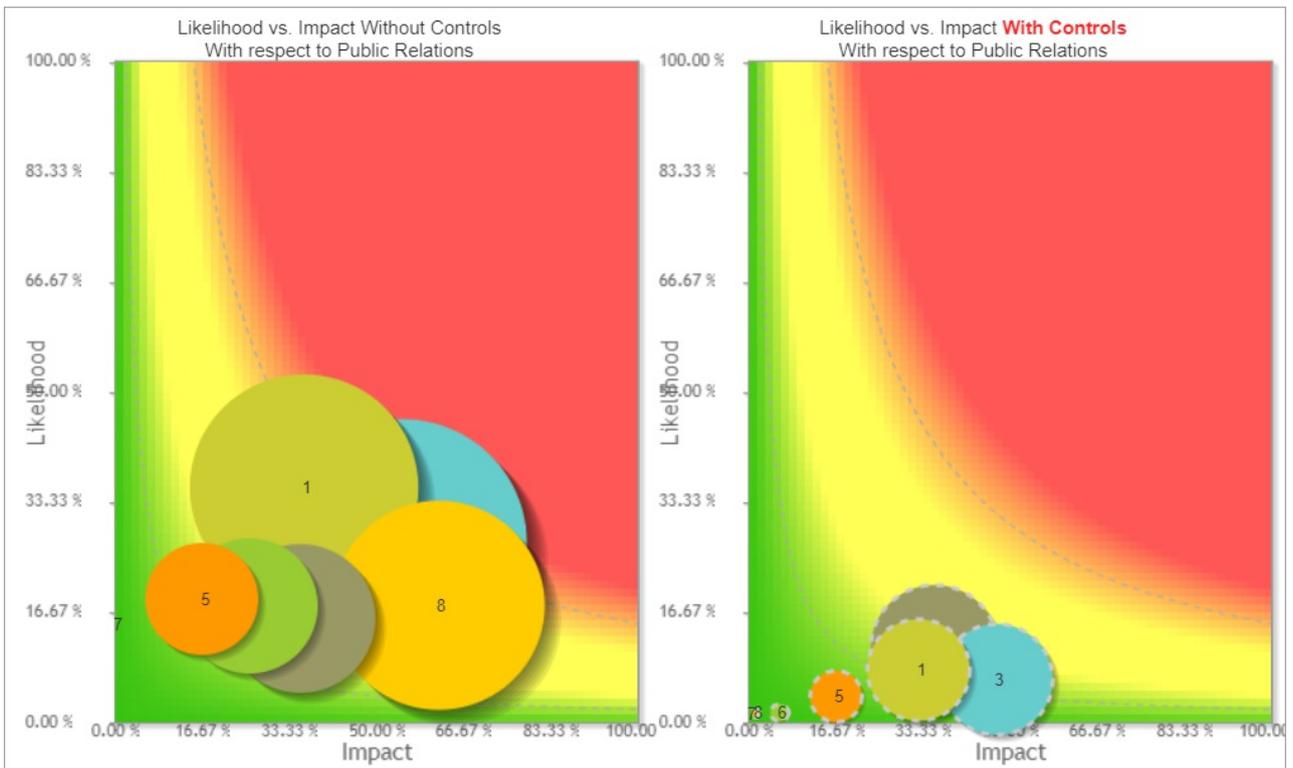
The **X-axis** represents the likelihood of events, and the **Y-axis** represents the impact of events (Note: You can interchange the axes from the Preferences)

The **bubbles** represent the **Events**. By default, the size of the bubble is proportional to the risk of the event. The biggest bubble size represents the largest risk and the smallest bubble size represents the smallest risk. All values in between are sized proportionally in relation to the highest and lowest risk values. You can make all the bubble size the same by

unchecking  **Make data point size proportional to the risk**

Each event has unique bubble color which doesn't have any meaning. You can choose to color the bubbles based on **Event Attributes**.

Riskion provides the default risk map color based on the risk region. Red represents high-risk, green represents low-risk, yellow represents in between. You can modify the **risk region** color.

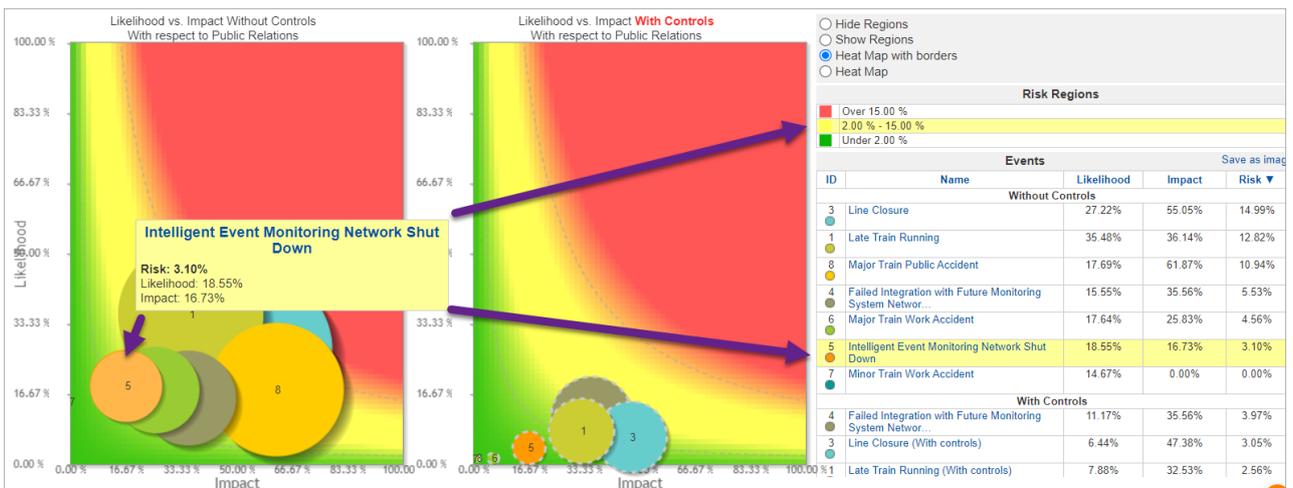


From the above example, we see the Risk map without (left) and with controls (right) on split view. The events bubbles with controls have a dashed outline.

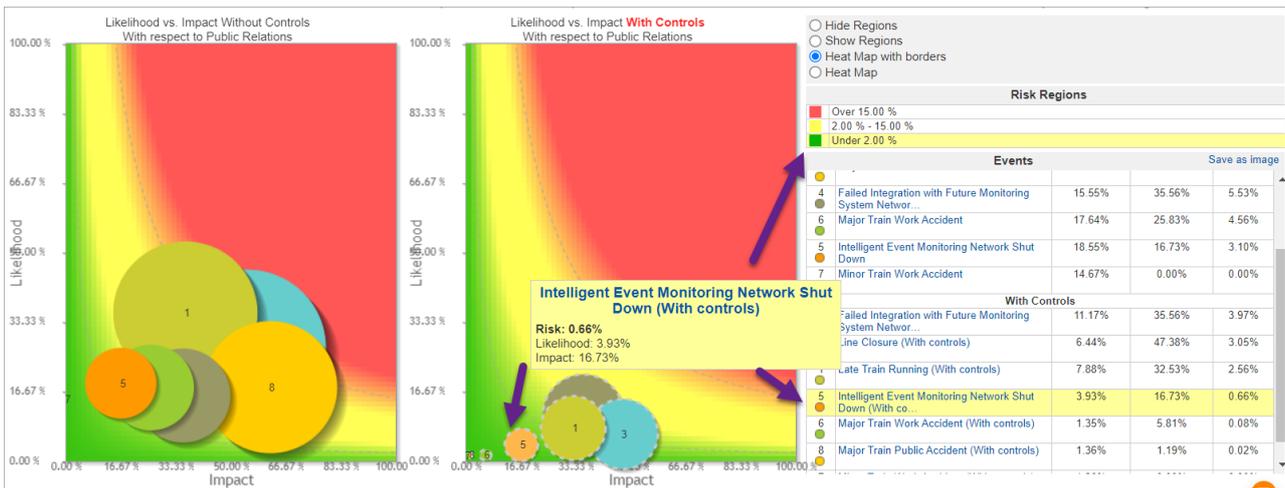
Notice how the size of the event bubbles and the plotting on the x and y-axis changed -- the Likelihoods, Impacts, and Risks are reduced when the controls are in effect.

Hovering over an Event bubble will show the likelihood, impact, and risk of the event on a tooltip -- Additionally, it will highlight the corresponding risk region and the likelihood, impact, and risk of the hovered event on the grid at the right.

For the event "Intelligent Event Monitoring Network Shutdown" without control -- its likelihood, impact, and risk are 18.55% 16.73% 3.10% respectively -- the bubble is in the red or high-risk region as shown below:



When controls are in effect, the likelihood, impact, and risk of the same event are reduced to 5.84% 4.50% 0.26% respectively -- the event bubble is now in the green or low-risk region.

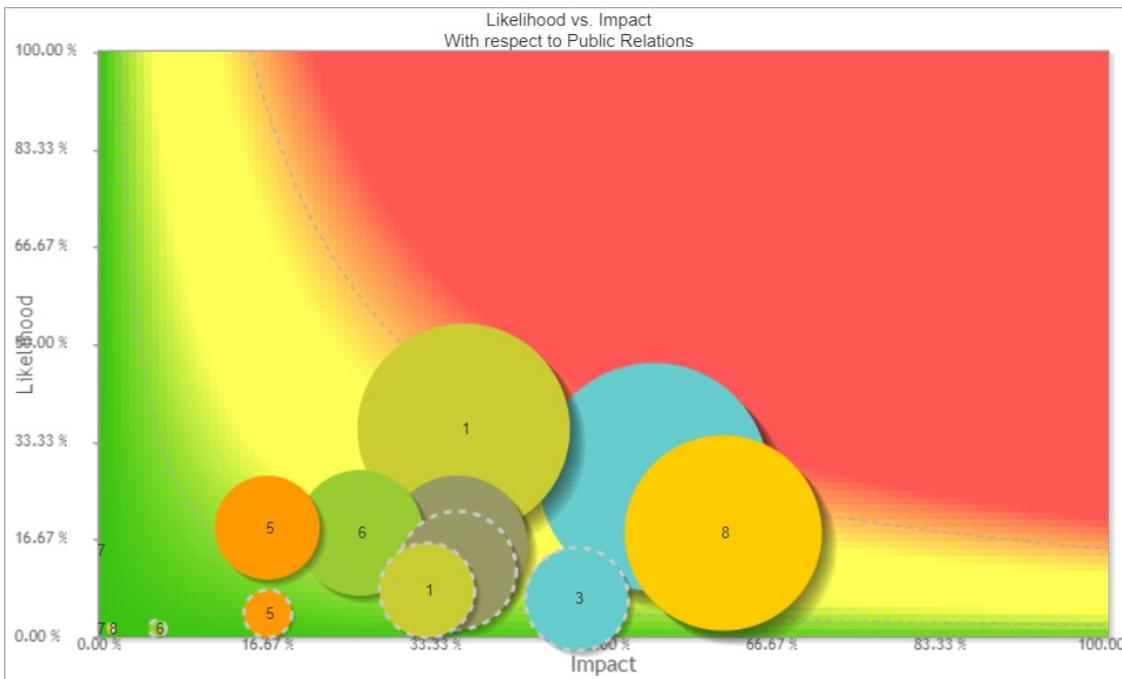


Clicking the Event name on the grid will redirect you to the corresponding **bow-tie diagram** from that event.

Other risk map views are available from the radio button at the top:

W/o Controls
  With Controls
  Both - Split
  Both - Combine

- **Without control** -- same as with the **Risk Map From Sources** (without controls)
- **With control** -- displays one risk map for mitigated events' likelihoods, impacts, and risks (with controls)
- **Both - split** -- 2 risk maps, one for without controls and another for with controls (as shown from our example above)
- **Both - combined** - one risk map showing the events both for without and with controls



The events bubbles with controls have a dashed outline.

## Select Participant and Group

The results for the "All Participants" group are displayed by default as shown above.

By selecting from the participants and groups menu, you can also see the risk map for an individual participant or a group.

Participant or Group: [All Participants] 

- [All Participants]
- [C-Level Executives]
- [Engineering]

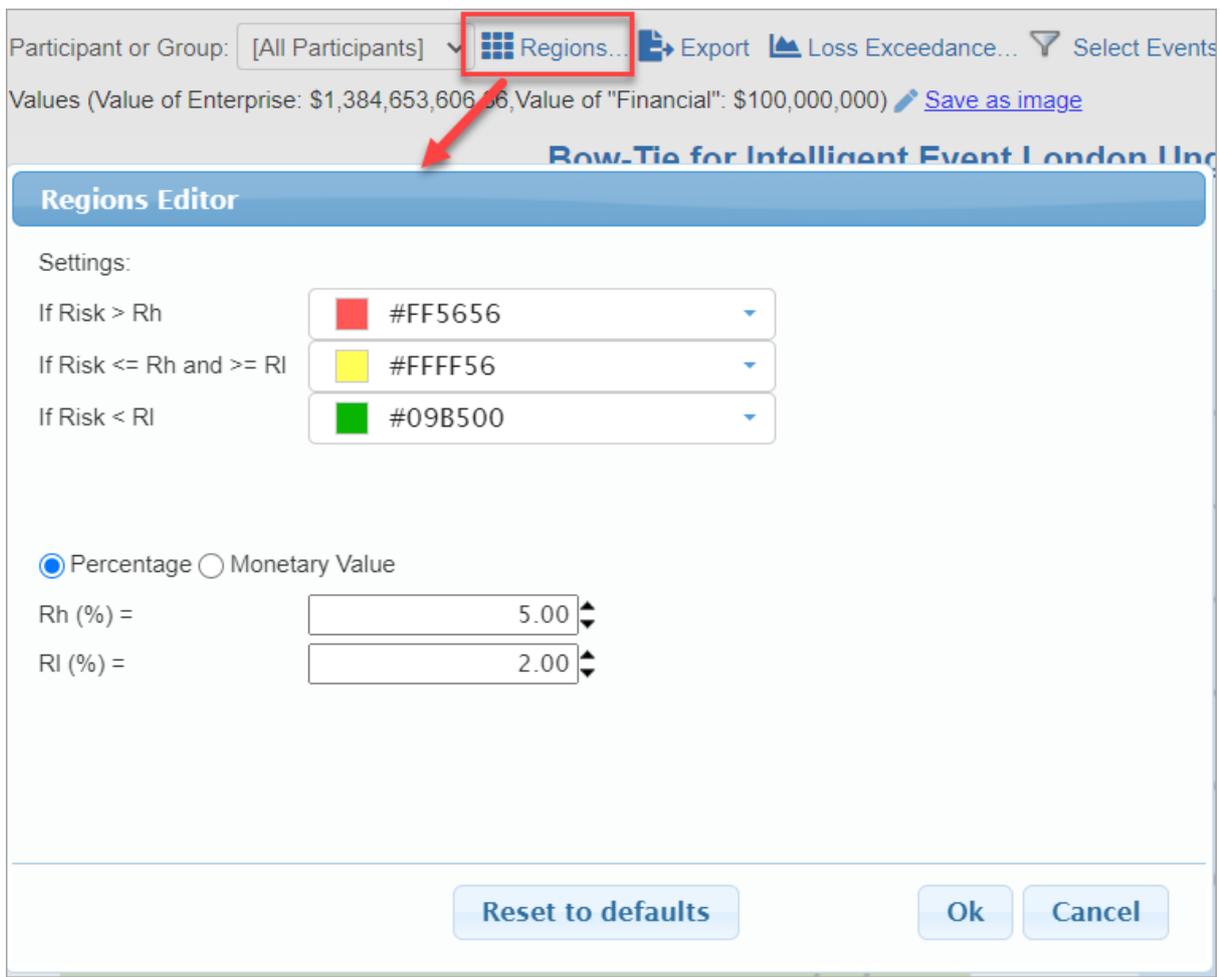
---

- Denis Risman
- Brian Quigley
- Chief Risk Officer
- Chief Engineering Officer
- IT Supervisor
- Chief Executive Officer
- Devin Nagy
- Michael Mankowski
- John Doe
- Project Manager
- Control Expert

## Risk Map Region

Default colors are already provided for the risk map region.

You can change this by clicking 



Here you can specify the limits: Rh (risk high) and RI (risk low) both for percentage or monetary.

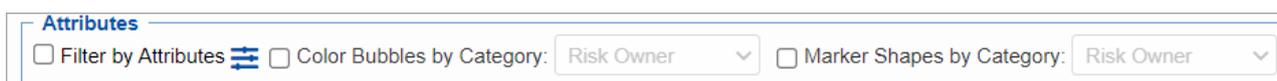
Given the limits, you can specify the 3 regions/colors:

- High Risk
- Mid (in-between) Risk
- Low Risk

The color specified here is used on the Event's color on the bow-tie diagram.

## Risk Map with Event Attributes

When Event Attributes are defined in the model, additional options are available on the toolbar.



Here you can filter, color, and use shapes other than bubble based on the event attributes.

- **Filter by Attributes** - checking this option will filter the events on the risk map based on the conditions specified. You need to click  to define the conditional statement for the attributes.

Filter by Attributes

Event Attributes

Use: AND ▼ Add Rule Reset

<input checked="" type="checkbox"/>	Event History	▼	Equal	▼	no history	x
<input checked="" type="checkbox"/>	Risk Owner	▼	Equal	▼	John	▼ x

Apply
Close

- **Color Bubbles by Category** - checking this allows you to select an event attribute in the dropdown. Selecting a category will have the event of the same attribute to have the same color.
- **Marker Shapes by Category** - similar to Color bubbles by category, but this option will have the events of the same attribute to have the same shape (instead of a bubble).

## Show Monetary Values

## Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

## Preferences

---

# Risk Register

The **Risk Register** page displays the same page as with the [Overall Risk Results \(without control\)](#) or [Overall Risk Results \(with controls\)](#).

---

# Control Register

The **Controls Register** page displays a grid for the summary of all the potential controls.

ID ↑	Control Name	Description	Selected	Control for	Cost	Application count	Application	Effectiveness	Milestone	PMs
1	Monthly Performance Review	Employees meet to review, refresh and recommend best practices to maintain system effectiveness and efficiency		Source	10,000	2	Disregarding or Not Following Proper Policies, Pro... Engineers Failure to Properly Install Equipment	25.00% 10.00%	2018Q3	0.5
2	Schedule Proper Maintenance	Conduct frequent maintenance and functional tests of signals		Source	150,000	4	Mechanical Failure of Signals Mechanical Failure of Sensors Mechanical Failure of Cables Lack of Situational Awareness	50.00% 25.00% 50.00% 75.00%		0
3	Upgrade Signals	Replace less reliable signal components with more reliable ones		Source	20,000	1	Mechanical Failure of Signals	30.00%		0
4	Mandatory Training for Engineers	Conduct monthly mandatory professional engineer proficiency training		Source	60,000	1	Engineers Failure to Properly Install Equipment	30.00%		0

Here we see the following columns:

- **Control name**
- **Description**
- **Selected** (Yes or No) - control is in effect
- **Control for** (Source, Vulnerability, Consequence)
- **Cost** - control cost
- **Application Count** - total number of applications
- **Application** - list the elements the control is applied
  - Source Name (Source)
  - Event name / Source Name (Vulnerability)
  - Event name / Objective Name (Consequence)
- **Effectiveness** - the %effectiveness of the control given the application
- **Control Attributes** - as defined from **Identify Controls** page, in this model we have Milestone and PMs attributes

You can see the details of the control in effect at the top of the grid.

Selected controls: 13	Cost Of Selected Controls: \$98,200 (unfunded: \$51,604,000)	Total Cost Of All Controls: \$51,702,200	How Selected: Optimized with budget of \$100,000
-----------------------	--------------------------------------------------------------	------------------------------------------	--------------------------------------------------

Click  to export the grid into a .xlsx file.

You can also show or hide columns.

Search...

Effectiveness

### Column Chooser

- ID
- Control Name
- Description
- Selected
- Control for
- Cost
- Application count
- Application
- Effectiveness
- Milestone
- PMs

# Acceptance Register

The **Acceptance Register** lists the Sources/Threats, Vulnerabilities, and Impacts that don't have defined controls.

## Risk acceptance

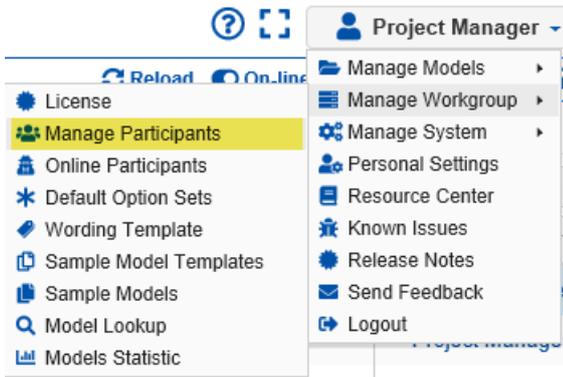
Risk acceptance is not really a mitigation strategy because accepting a risk does not reduce its effectiveness. However, risk acceptance is a legitimate option in risk management. There are various reasons why companies may choose risk acceptance in certain situations. The most common reason is that the cost of other risk management options, such as avoidance or limitation, may outweigh the cost of the risk itself.

ID	Control Type	Application
1	Source	Sources
2	Source	Lightning Striking Signaling Infrastructure
3	Vulnerability	Flooding of Intelligent Event Monitoring Infrastructure / Late Train Running
4	Vulnerability	Flooding of Intelligent Event Monitoring Infrastructure / Degradation of Intelligent Monitoring System Physical Assets
5	Vulnerability	Flooding of Intelligent Event Monitoring Infrastructure / Line Closure
6	Vulnerability	Flooding of Intelligent Event Monitoring Infrastructure / Intelligent Event Monitoring Network Shut Down
7	Vulnerability	Flooding of Intelligent Event Monitoring Infrastructure / Minor Train Work Accident
8	Vulnerability	Lightning Striking Signaling Infrastructure / Late Train Running
9	Vulnerability	Lightning Striking Signaling Infrastructure / Degradation of Intelligent Monitoring System Physical Assets
10	Vulnerability	Lightning Striking Signaling Infrastructure / Line Closure
11	Vulnerability	Lightning Striking Signaling Infrastructure / Intelligent Event Monitoring Network Shut Down
12	Impact	Financial Loss / Degradation of Intelligent Monitoring System Physical Assets
13	Impact	Loss of Wider Monitoring System Program Efficiency / Degradation of Intelligent Monitoring System Physical Assets
14	Impact	Loss of Train Service / Degradation of Intelligent Monitoring System Physical Assets

# Demote existing Project Organizer/Workgroup Manager

You may want to demote your existing Project Organizer or Workgroup Manager to Workgroup Member. To do this:

1. Go to Workgroup Participants page



2. Check the check box to the left of the participant you want to demote
3. Click Set Permission > Workgroup Member

After demoting an existing Project Organizer/Workgroup Manager to Workgroup Member, you lose project manager access to all models in the workgroup. If you plan to restore Project Organizer/Workgroup Manager access at a later date, you can make a list of the affected models before demoting.

# Manage Default Option Sets

Riskion has a large number of options, such as measurement methods for likelihoods, measurement methods for impacts, what to display on evaluation pages, wording for 'threats', objectives' and 'events', etc.

A Project Manager, can, but need not be concerned with these options. Instead, when creating a new model, four **Default Option Sets** are presented to the Project Manager:

The image shows a 'New Model' dialog box with the following fields and options:

- Model name\*:** A text input field.
- Brief Description:** A larger text input field.
- Model Time Frame\*:** A text input field.
- Model Type:** Three radio button options:
  - Risk model**  
A risk model assesses the Risks (expected losses) from uncertain events.
  - Opportunity model**  
An opportunity model assesses the Opportunities (expected benefits) from uncertain events rather than the Risks (expected losses) from uncertain events.
  - Mixed model**  
A mixed model assesses the Opportunities (expected benefits) from uncertain events and the Risks (expected losses) from uncertain events.
- Based on Option Set:** A dropdown menu with a red border, currently showing '1) Risk'. The dropdown list contains:
  - 1) Risk
  - 2) Risk Simple Demo
  - 3) Opportunity model
  - 4) Risk Simple Demo - Pairwise With Given Likelihood
  - 5) MyRiskReward

Default options set may be applicable only depending on the model type.

You can view the existing Default option Sets by clicking on your Account Name at the top right, and then select Manage Workgroup > Default Option Sets.

A Project Manager may desire to change one or more options in a model created from one of the default option sets and subsequently create new models based on the options in the model. This can be done by saving a model as a new Default Option Set in the Workgroup.

# Workgroup Wording Template

The Workgroup Wording Template can be used as the default wording when creating a new model by checking the "Use workgroup wording template" checkbox.

**New Model** [X]

**Model name\*:**  
[Text Input Field]

Brief Description:  
[Text Area]

**Model Time Frame\*:**  
[Text Input Field]

Model Type:

- Risk model**  
A risk model assesses the Risks (expected losses) from uncertain events.
- Opportunity model**  
An opportunity model assesses the Opportunities (expected benefits) from uncertain events rather than the Risks (expected losses) from uncertain events.
- Mixed model**  
A mixed model assesses the Opportunities (expected benefits) from uncertain events and the Risks (expected losses) from uncertain events.

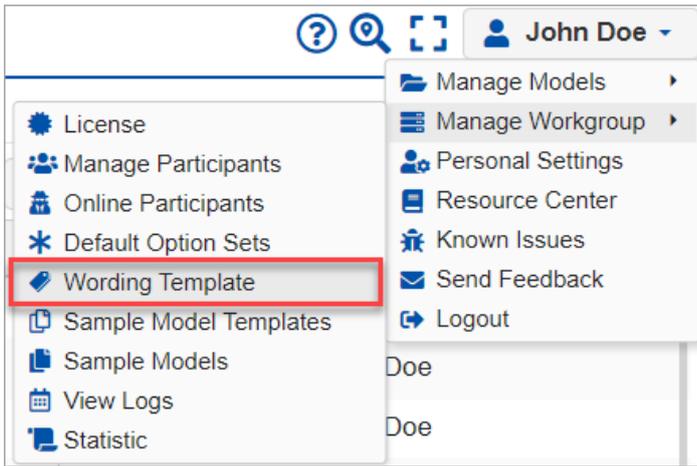
Based on Option Set:  
[Dropdown Menu: 1) Risk]

Use workgroup wording templates

[Create] [Close]

Wording changes for an existing model can be made on the [Model Properties > Model Details](#) page of that model.

To define your Workgroup Wording, click on your User Name > Manage Workgroup > **Wording Template** page:



The plethora of terms and definitions found in such references is a major obstacle for understanding and communicating risk. We have carefully distilled a large number of risk-related terms and definitions to just eight basic terms that we believe are necessary and sufficient to identify, measure, communicate and manage risk. These eight terms include:

Four "risk elements", and Four "risk measures".

We have chosen 'default' terms for each of the eight as shown in the Wording Template in the figure below. This template is used in Riskion so that you can map the default terms to those that are familiar to those in your organization.

### Wording Template for Workgroup "Riskion Help"

There are four basic elements and three basic measures in Riskion® (the elements in the parenthesis are alternative names for the basic wording)

Wording Template	Singular	Plural	Past
<b>Risk Elements</b>			
Events (Risks, Risk Events)	event	events	
Threats (Causes, Sources, Hazards, Capability, Intent, Targeting)	source	sources	
Objectives (Assets)	objective	objectives	
Controls (Treatments)	control	controls	controlled
<b>Risk Measures</b>			
Likelihood (Probability)	likelihood	likelihoods	
Impact	impact	impacts	
Risk	risk	risks	
Opportunities (rewards, possibilities)	opportunity	opportunities	

Tip: You may want to see the ["Riskion Taxonomy"](#) to help you understand more about Riskion Terminologies.

Click on the pencil icon to edit.

For example, you want to use "opportunity(ies)" instead of the default wording "event(s)":

Wording Template	Singular	Plural	Past
<b>Risk Elements</b>			
Events (Risks, Risk Events)	<input type="text" value="opportunity"/>	<input type="text" value="opportunities"/>	

Click  to accept the changes, or click  to cancel.

Click the **Apply** button to save your changes.

Click **Reset** to clear your recent changes.

Click **Reset to System Default** to reset based on the default Riskion wording.

Wording changes for an existing model can be made on the [Model Properties > Model Details](#) page of that model.

---

# Basic and Advanced Mode

**Basic Mode** - A revised, simplified user interface.

**Advanced Mode** - Advanced mode shows advanced option(s) on each screen. This allows advanced users to go deeper into the application. The left navigation is only displayed when this option is ON.



When you switch to Advanced mode, the advanced options on the page, if any, will flicker for few seconds.

An eye icon also appears as shown above where there are Advanced options on the page, and hovering on the icon will flicker those advanced options.

# Using the Rich Text Editor

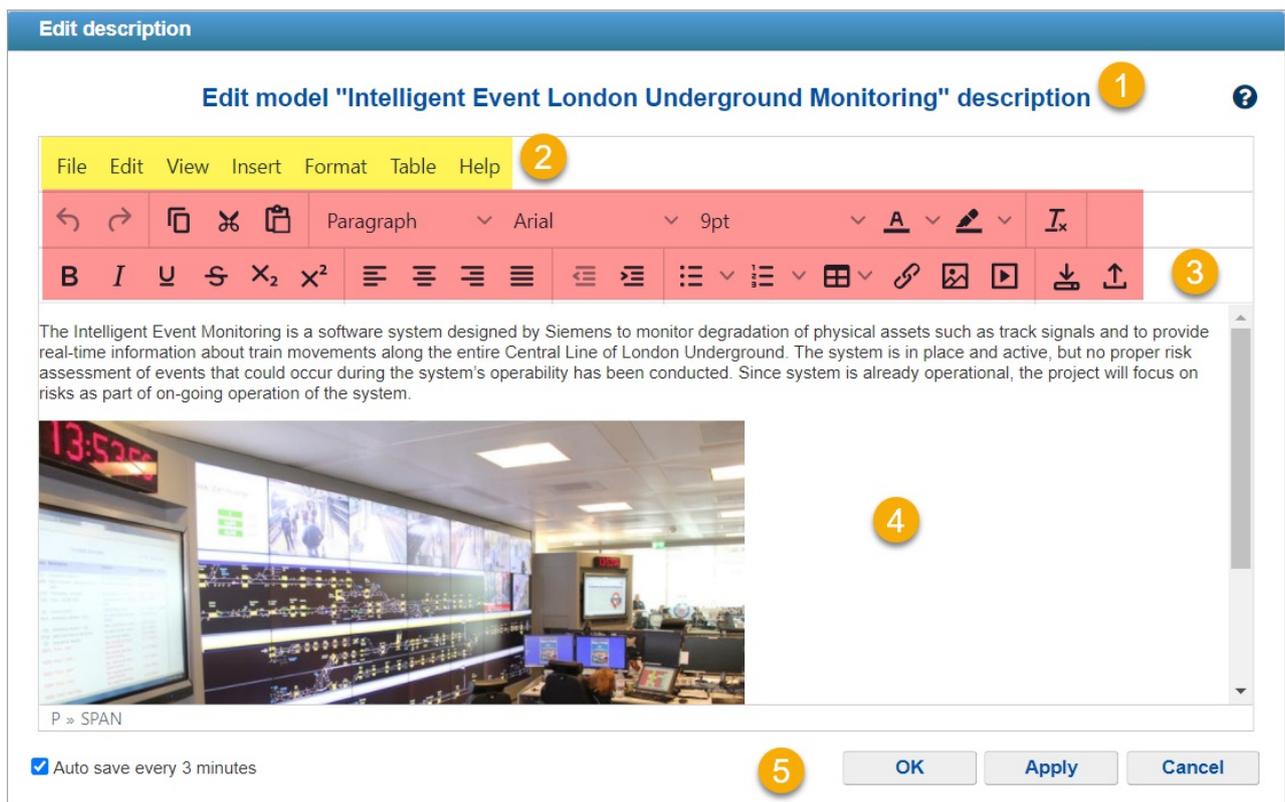
Riskion provides a rich text editor to record and format information documents or descriptions for the Riskion model, threats, objectives, and events, as well as for other information steps for evaluation like in Quick Help, Welcome and Thank You pages, or even Insight Survey questions).

## How to Use the Rich Text Editor

The Rich Text Editor can be opened from the following pages:

- Model Description 
- Threats, Objectives, and Alternatives pages, (using the same Edit description button or  icons)
- Information Documents page
- from Project Manager's evaluation pipe (Information Documents and Quick Help)
- Welcome and Thank you pages 
- Insight Survey questions

A rich text editor is a modal pop-out where the Project Manager can add texts, rich texts, hyperlinks, table/grid, images, and videos.



A sample rich text editor is displayed above which composed of:

1. **Heading** - shows the name of the element being edited (Model name, Alternative/Objective Name, wrt, insight survey, etc)
2. **Main Menu bar** - contains all the options of the editor
3. **Shortcut toolbar** - below the main menu bar are the options that are commonly use for easy access. These options are also available from the main menu bar (except for Download and Upload).
4. **Rich text area** - where the texts, links, images, etc. are entered or inserted

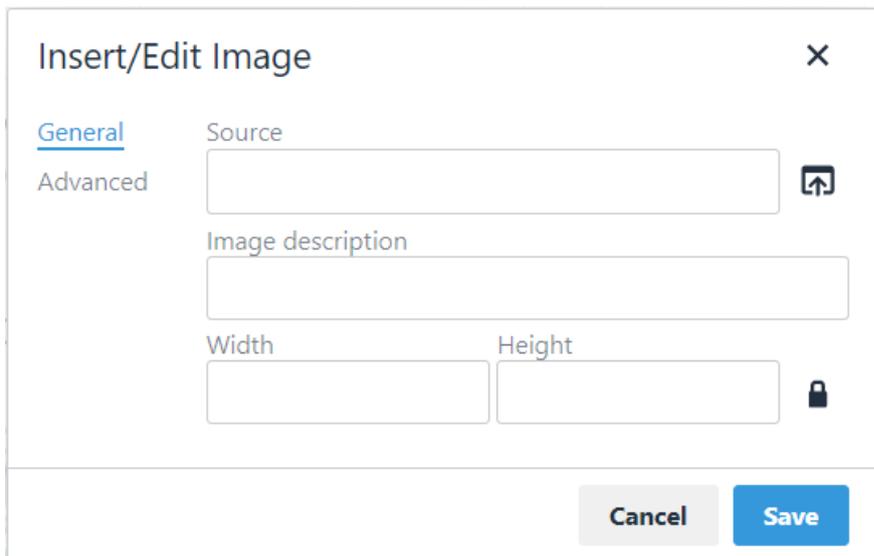
5. **OK, Apply and Cancel** - are the actions to perform on the changes made
  - **OK** - to save and close the editor,
  - **Apply** - to save changes and continue editing, and
  - **Cancel** - to cancel/undo the changes that are not yet saved, and then close the editor (*Note: When the PM already clicked Apply, or the Auto-save is already triggered, Cancel won't undo those changes*)

## How to Insert image

To insert an image on the text editor:

1. Place the cursor in the position where you want to insert the image.
2. Go to **Insert > Image**, or simply click the Insert image icon . The **Insert/Edit Image** pop-out will be displayed

as shown below:



3. Enter the public url of the image on the **Source** field; or **Upload** the image from your machine by clicking the  upload button.
4. Specify the optional image description, width, and height if desired.
5. Click the **Advanced** menu to show more options to format the image.
6. Click Save.

You can also insert an **image by pasting it from the clipboard**:

1. Select the image you want to insert:
  - Right-click and select Copy image, or
  - Using shortcuts:
    - PC: Control + V
    - MAC: Command + V
2. Place the cursor in the position where you want to insert the image.
3. Paste the image to the rich text editor:
  - PC: Control + V
  - MAC: Command + V

**Note:** For Chrome browsers, images copied from other sources (docs, paint, local files, etc.) are not pasting to the editor. For browser images, copying images by "Right-click > Copy image" is working.

You can also move the images inside the editor by drag/drop or copy/paste function.

## How to Edit or Format an image

You can also edit or format the uploaded images. Simply click/select the image from the editor area and you'll see tooltip



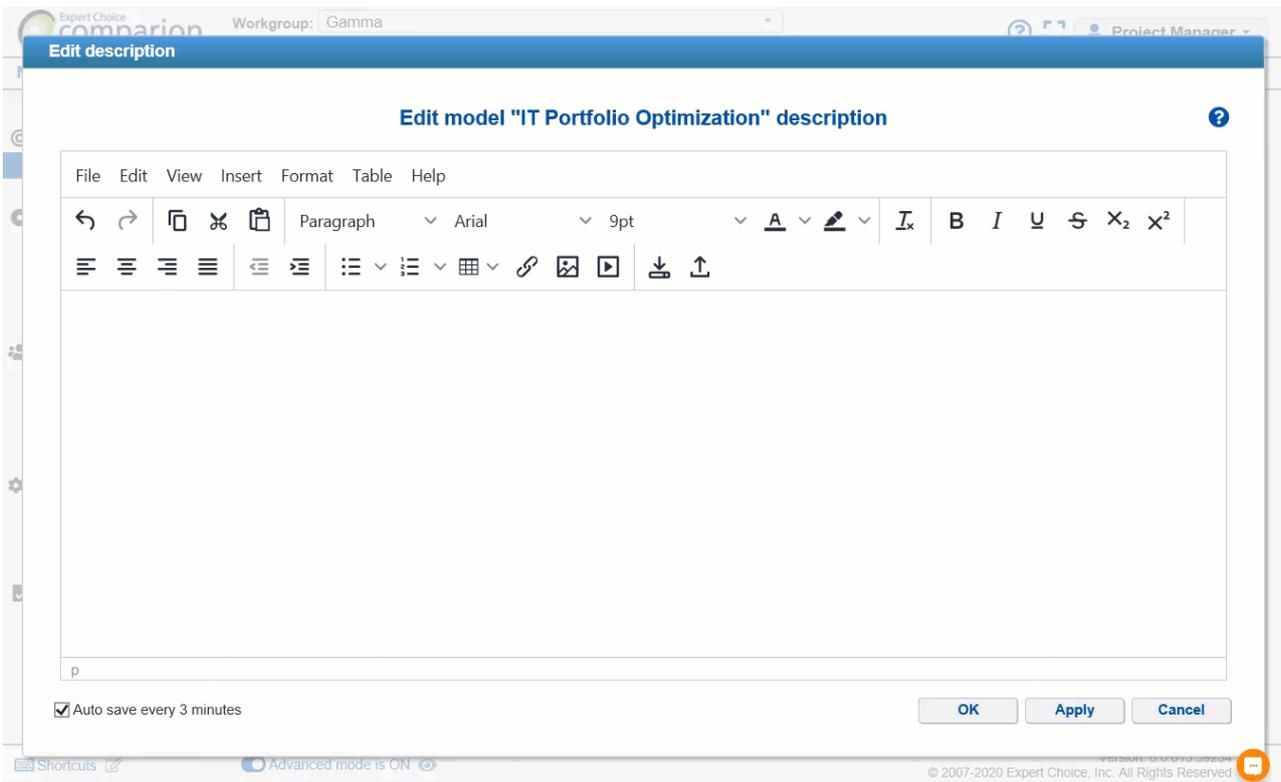
options:

- Rotate counter-clockwise  or clockwise 
- Flip vertically  or horizontally 
- More Edit options  will open a pop-out where you can:
  - Crop
  - Resize
  - Change Orientation (same as the rotate and flip options)
  - Change Color options (brightness, sharpness, contrast, etc.)
- The  (Insert/Edit Image) icon opens the same pop-out explained above where the Project Manager can:
  - Specify the image description, height, and width
  - Advanced options

## How to Insert Video

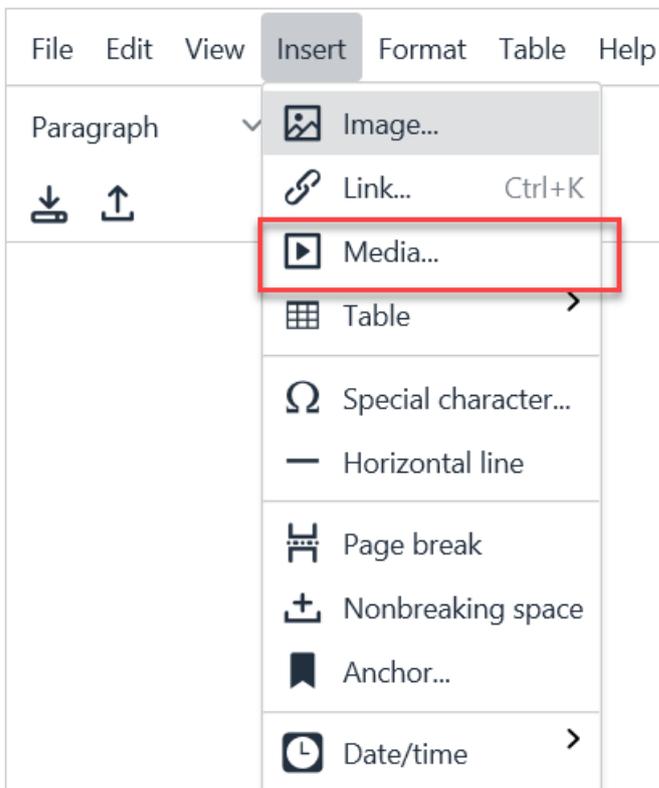
Videos can't be uploaded to Riskion. Your videos should be uploaded to video hosting platforms such as YouTube, Screencast, Vimeo, etc., and then insert or embed them to the rich text editor.

For YouTube videos, you can simply enter or paste the video URL directly to the text area:



For videos from other sources such as Screencast, Vimeo, etc., you need to embed the video:

1. Click **Insert > Media**, or simply click the **Insert Media** icon 



The insert/Edit Media prompt will open as shown below:

Insert/Edit Media

General

Source

Embed

Advanced

Width

Height

Cancel Save

2. Click the **Embed** tab and then enter the video embed code.

Insert/Edit Media

General

Embed

Advanced

Paste your embed code below:

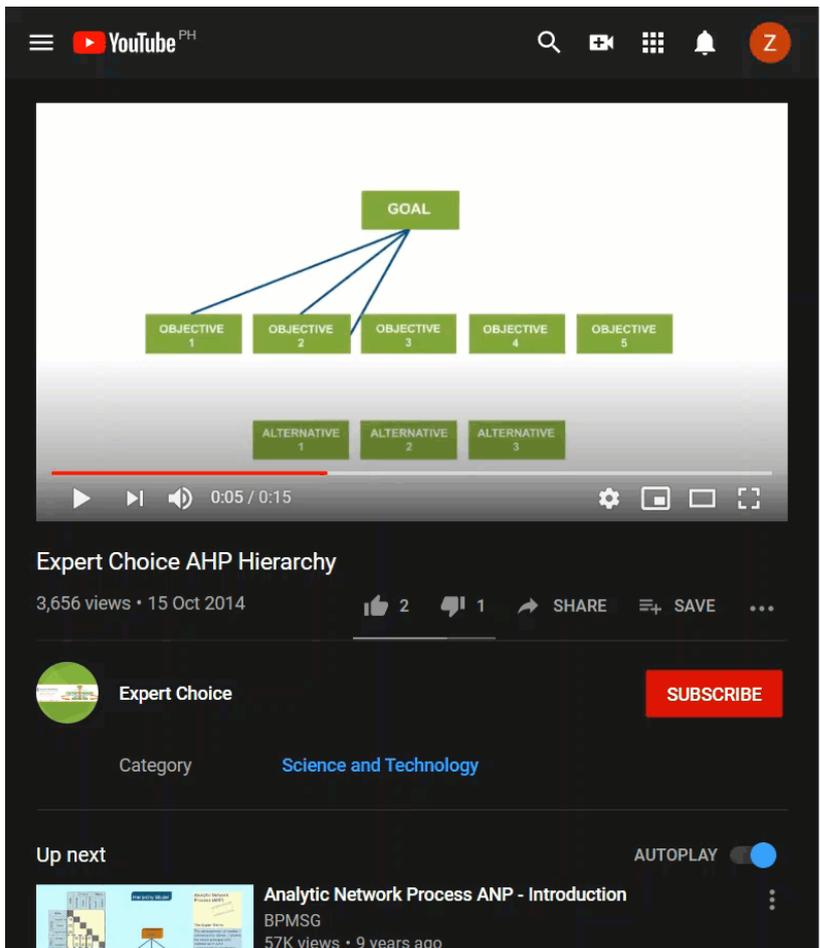
```
<iframe width="560" height="315"
src="https://www.youtube.com/embed/fD4Hv
eHSe5s" frameborder="0"
allow="accelerometer; autoplay; encrypted-
```

Cancel Save

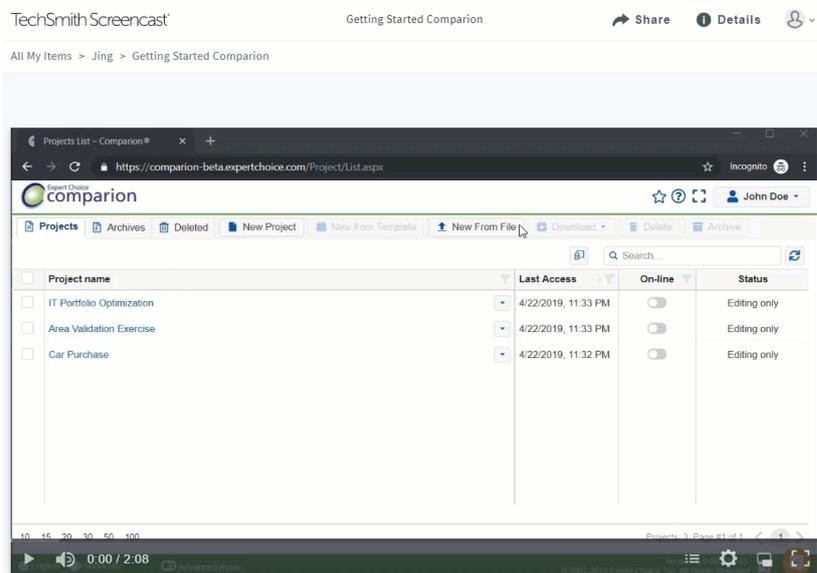
**Where to get the EMBED Code?** Commonly, video hosting providers have a SHARE button with the option to get the embed code (please check your video hosting providers for the embed code instructions).

See instructions below on how to get the embed code for some video hosting platforms:

- **YouTube** - <https://support.google.com/youtube/answer/171780?hl=en>



- Sreencast - <https://feedback.techsmith.com/techsmith/topics/absolute-url-link-to-screencast-com-videos>



- Vimeo - <https://vimeo.zendesk.com/hc/en-us/articles/224969968-Embedding-videos-overview>

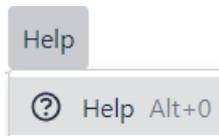
## Download/Upload Information Documents

You can download and/or upload the information documents using the download  and upload  buttons.

The downloaded information document file is in **.mht** format.

## Rich Text Editor Shortcuts

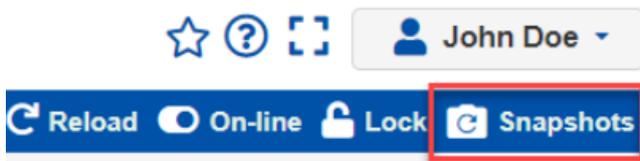
You can use the text editor shortcuts to easily perform certain actions within the editor. You can see the complete list by clicking the Help menu on the editor or Alt+0:



Action	Shortcut
Bold	Ctrl + B
Italic	Ctrl + I
Underline	Ctrl + U
Select all	Ctrl + A
Redo	Ctrl + Y or Ctrl + Shift + Z
Undo	Ctrl + Z
Header 1	Shift + Alt + 1
Header 2	Shift + Alt + 2
Header 3	Shift + Alt + 3
Header 4	Shift + Alt + 4
Header 5	Shift + Alt + 5
Header 6	Shift + Alt + 6
Paragraph	Shift + Alt + 7
Div	Shift + Alt + 8
Address	Shift + Alt + 9
Open help dialog	Alt + 0
Focus to menubar	Alt + F9
Focus to toolbar	Alt + F10
Focus to the element path	Alt + F11
Focus to contextual toolbar	Ctrl + F9
Open popup menu for split buttons	Shift + Enter
Insert a link (if link plugin activated)	Ctrl + K
Save (if save plugin activated)	Ctrl + S
Find (if search-replace plugin activated)	Ctrl + F
Switch to or from fullscreen mode	Ctrl + Shift + F

# Model Snapshots

Model Snapshots allow you to restore your Riskion model to a specific snapshot or restore point.



You can open Snapshots from the upper right menu as shown above which is available on every page when the model is open, or in the [Model's list command](#) when the model is closed.

## View Mode

Model Snapshots can be displayed in Grid or List View.

Click  to toggle between Grid and List view.

### Grid View

The Grid View groups the similar snapshot actions (see 1st column) and shows the corresponding Date/Timestamps on the succeeding columns.

For example below, the "Update pipe setting" action has snapshots with ID #183, #180, #177, and so on different dates/times.

Model snapshots												
Model snapshots (All snapshots)												
🕒 Last restored as #172 (8/7/2019 03:20:31) from #97 (7/29/2019 08:12:57)												
<span>+ Create new</span> <span>Filter...</span> <span>Delete...</span> <span>View mode</span> <span>Refresh</span>												
Action	8/21/2019 05:29:59	8/21/2019 02:35:27	8/20/2019 23:02:28	8/20/2019 22:48:10	8/19/2019 07:25:54	8/18/2019 23:54:45	8/16/2019 06:10:27	8/16/2019 06:08:05	8/7/2019 04:09:20	8/7/2019 03:20:31	8/7/2019 00:09:19	8/7/2019 00:09:19
Edit infodoc	#184											
Update pipe setting		#183		#180		#177		#175				#174
Set role(s)			#182									
Open project					#178		#176		#173		#171	
Restore back to project snapshot										#172 Restored from #97		
Erase judgments												

### List View

Simply shows the snapshots' actions in a list view.

**Model snapshots**

**Model snapshots (All snapshots)**

⌚ Last restored as #172 (8/7/2019 03:20:31) from #97 (7/29/2019 08:12:57)

+ Create new
Filter...
Delete...
View mode
Refresh

<b>A</b>	8/21/2019 05:29:59	<b>Edit infodoc</b> objective 'Goal: Optimize IT Portfolio To Improve...'	#184
<b>A</b>	8/21/2019 02:35:27	<b>Update pipe setting</b> NameObjectives: Objectives; NameAlternatives: Alternatives; JudgementPromt: is more important; JudgementAltsPromt: is more preferable	#183
<b>A</b>	8/20/2019 23:02:28	<b>Set role(s)</b> setrolerange restricted for 9 user(s); setcellrole allowed for 9 user(s)	#182
<b>A</b>	8/20/2019 22:48:10	<b>Update pipe setting</b> NameObjectives: Objectivesx; NameAlternatives: Alternativesx	#180
<b>A</b>	8/19/2019 07:25:54	<b>Open project</b>	#178
<b>A</b>	8/18/2019 23:54:45	<b>Update pipe setting</b> GlobalResultsView: 0	#177

## Automatic Snapshots

**A** - (Auto) snapshots created automatically when modifying the model (i.e. add nodes, change contributions, model options, etc.). Automatic snapshots are created **after** the change in the model.

## Manual Snapshots

**M** - (Manual) created by the user at any time for any reason.

You can manually create a restore point by clicking the + Create new button.

A modal prompt will be displayed where you can add a comment:

**Create manual snapshot**

**Snapshot comment** (optional):

Create
Cancel

Manual snapshots have a **green** font color.

<b>M</b>	9/25/2019 06:25:53	<b>Manual</b> backup 0925	<b>#34</b> backup 0925
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## Filter Snapshots

To filter the grid or list of snapshots, click the Filter... button. You can choose to show all snapshots, only automatic snapshots, or only manual snapshots.

## Edit and Delete Snapshots

Hovering on a snapshot name (List View) or Snapshot ID (Grid View) displays a pencil and delete icons.

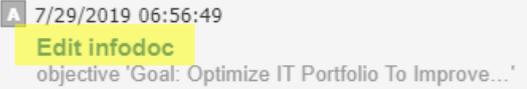


Clicking the pencil icon will show the edit window where you can edit the snapshot comment.

To delete multiple snapshots at the same time, click the  **Delete...** button, and then select the snapshot(s) to delete and then click Delete Selected. You can also empty the list using Delete All.

## Restore Snapshots

To restore your model to a specific snapshot:

1. Click on the Snapshot name in List View  or the snapshot number in Grid view 
2. A confirmation prompt will appear:

**Confirmation**

This will revert the project back to the selected snapshot. You will be able to revert back to what was here before if you would like to do that.

Create snapshot of current state before restoring

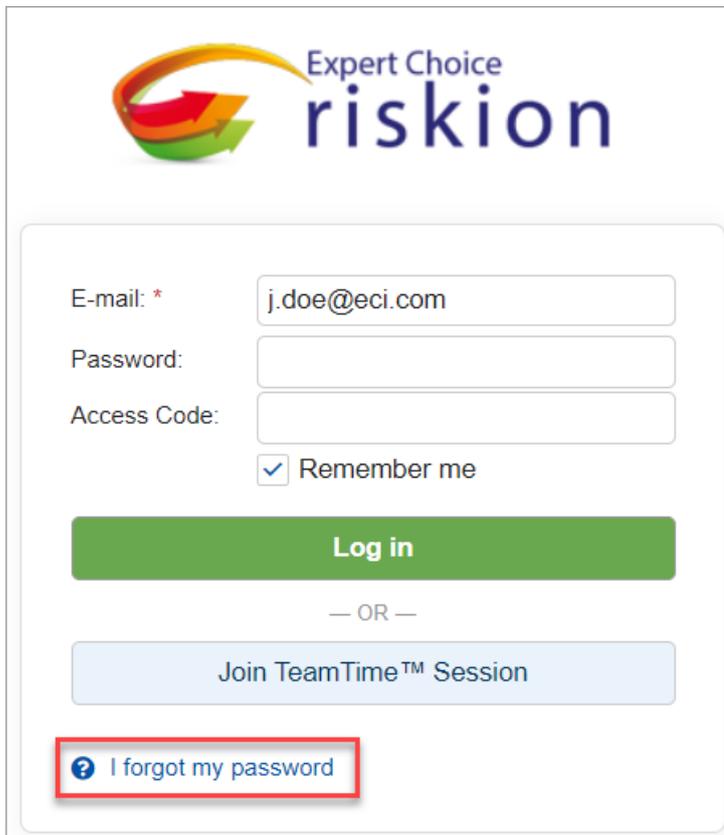
Save with name:

3. If you wish to create a snapshot of the current state before restoring, click the applicable checkbox, enter the snapshot name and then click Proceed.

# Forgot Password (Reset Password)

## Forgot or Reset Password

In case you have forgotten or wanted to reset your password, just click on the "I forgot my password" link on the Riskion



Expert Choice  
riskion

E-mail: \*

Password:

Access Code:

Remember me

Log in

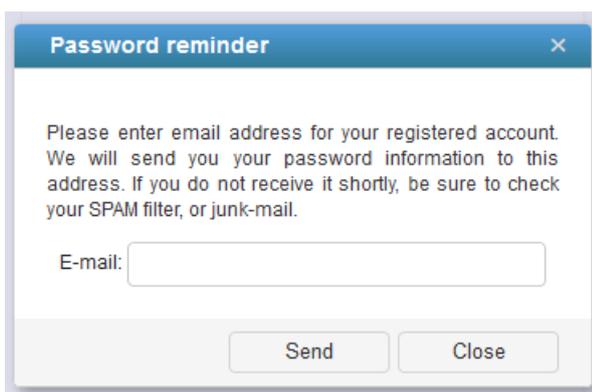
— OR —

Join TeamTime™ Session

[? I forgot my password](#)

login page.

A prompt will be displayed where you need to enter the email address of your Riskion account.



Password reminder

Please enter email address for your registered account.  
We will send you your password information to this address. If you do not receive it shortly, be sure to check your SPAM filter, or junk-mail.

E-mail:

Send Close

Riskion will send you an email with a link (valid for 72 hours) to reset your password.

Simply click the reset link and you will be prompted to create your new password. After doing so, click OK and you will be redirected to the login page where you can type in your email and your new password.

## Project Manager Reset Participant's Password

The Project Manager can also change a participant's password.

1. Go to Workgroup Management / Model's Participants List

2. Search for the Participant that you want to change the password
3. Click the key icon at the right where you can see two options to reset the password:
  - Generate random password
  - Manually set password - by typing in the desired password in the text box provided

Regardless of the option selected, the participant will receive an email with the link to create a new password. The manually set password allows the participant to log in using the temporary password set by the Project Manager, he/she will be asked to create a new password after logging in.

If you just want to change your password, you can go to the [Personal Settings](#) page after logging in and then update your password.

# Basic Troubleshooting Techniques

Having trouble with Riskion? Here are common troubleshooting techniques that often help.

## 1. Try a hard refresh.

Browsers store cached versions of web pages to speed up your experience. However, sometimes this causes you to view an older version of a site or application. If the site looks weird or has glitched, doing a hard refresh often can fix the problem.

1. Windows: Control + F5
2. Apple/Mac: Command + R or Apple + R
3. Linux: F5

## 2. Log out and log back in.

The software equivalent of turning it off and on, this is probably the most common troubleshooting technique there is. It's common because it works a lot of the time. Not successful? Try totally logging out and totally closing your browser. If you happen to leave your browser open for long periods of time, it can become very slow and cause performance issues with many sites and applications.

## 3. Clear your cache and cookies.

Your browser stores a lot of information about your web history in cookies and cache. Over time, this can slow down your browser and, with certain sites or applications, can cause conflicts with newer versions. Sometimes it might be helpful to clear your cache and cookies to improve browser and application performance.

1. Chrome: <https://support.google.com/accounts/answer/32050>
2. Firefox Cache: <https://support.mozilla.org/en-US/kb/how-clear-firefox-cache>
3. Firefox Cookies: <https://support.mozilla.org/en-US/kb/delete-cookies-remove-info-websites-stored>
4. Internet Explorer: <http://windows.microsoft.com/en-us/internet-explorer/manage-delete-browsing-history-internet-explorer>
5. Safari Cookies: <https://support.apple.com/kb/PH19215>
6. Safari Cache: <https://support.apple.com/kb/PH19215>

## 4. Try a different browser.

Some issues may be browser specific or caused by an extension or plugin. Trying a different browser can help you narrow down what is causing a problem.

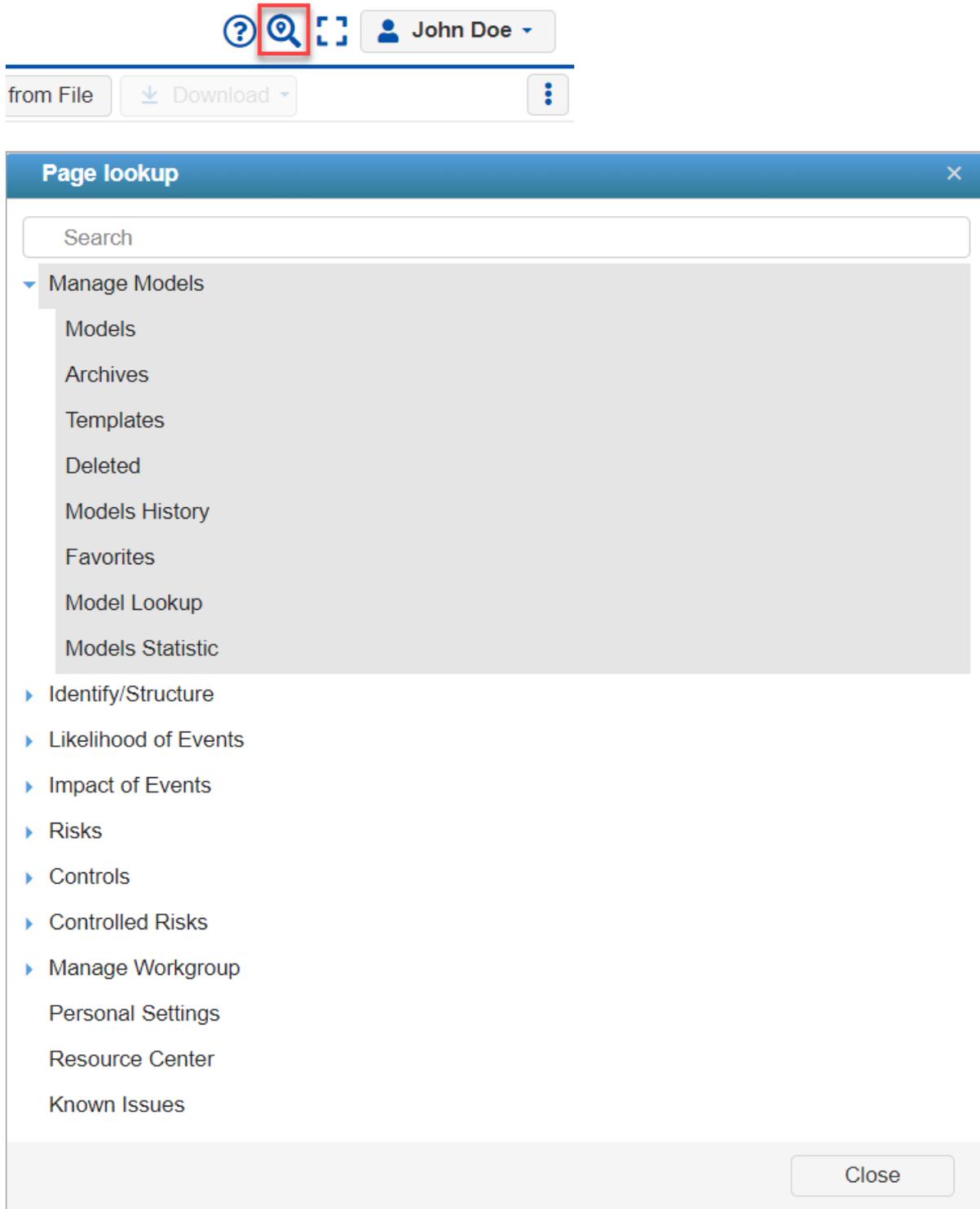
If you are still having trouble, please reach out to support. We're here to help!

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# Page Lookup

The Page Lookup allows you to open a modal that lists all the Riskion pages.

This can be found by clicking the magnifying glass icon at the top right of the page.



You can expand/collapse the menus. You can search for the page name.

Clicking the page name will redirect you to that page.



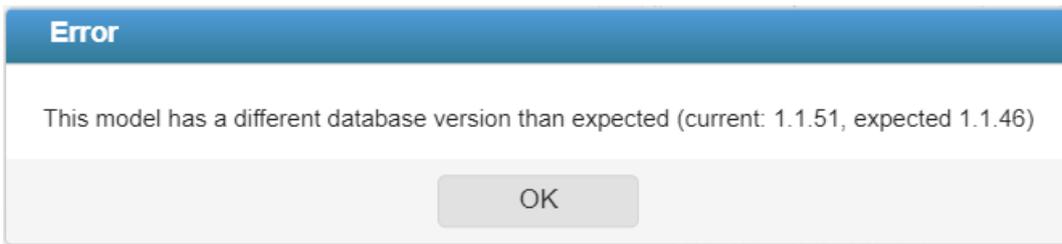
# Downgrade Model (Version Not Supported)

Models with a later database version will not be supported on a site with an earlier database version.

This scenario may occur when a model was created or opened on a Comparison site with a later database version, and you try to access the model on a site with an earlier database version -- either by:

- uploading the model, or
- opening the model when the sites are sharing the same database

Uploading such a model will show an error:



In case unsupported models are already in the model list, they have grey font color. You can hover on the model name to see details.

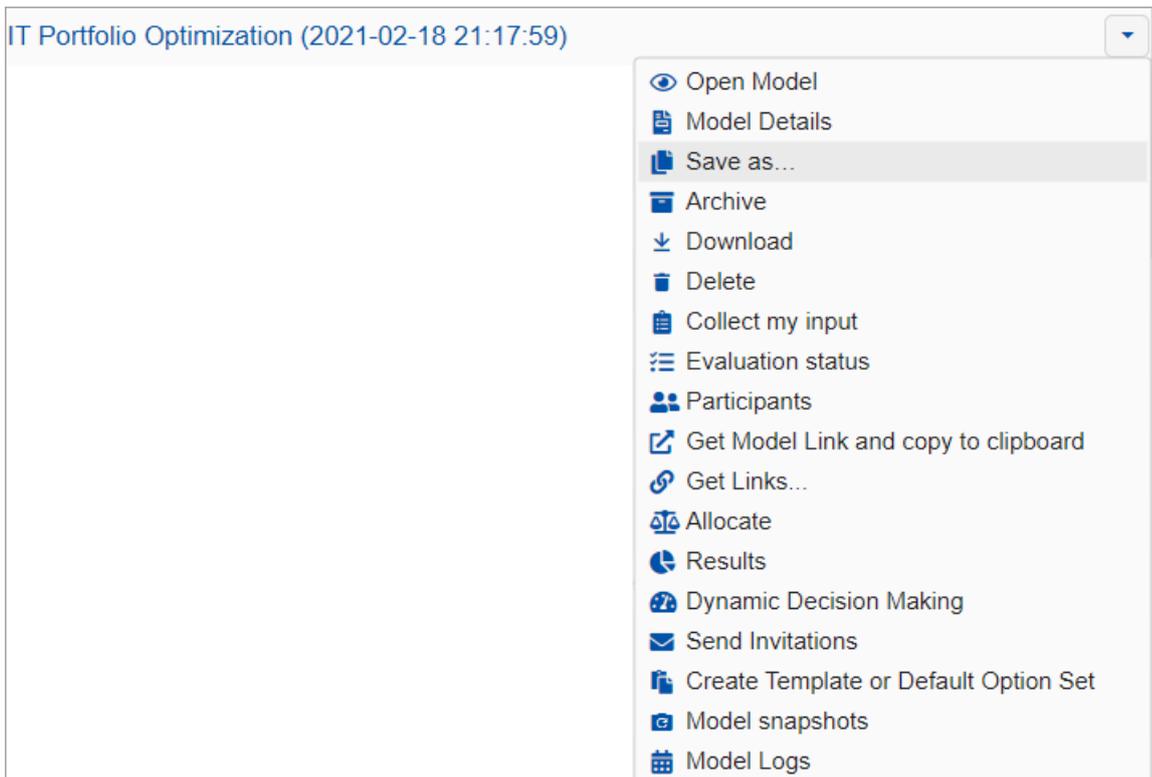
<input type="checkbox"/>	★	Model name
<input type="checkbox"/>	☆	IT Portfolio Optimization
<input type="checkbox"/>	☆	IT Portfolio Optimization (2021-02-18 21:17:59) ←
<input type="checkbox"/>	☆	#21860 Version: 1.1.51 (Not supported, newer than expected version 1.1.46)
<input type="checkbox"/>	☆	T (2021-01-28 11:59:57)

In the examples above, the model version is 1.1.51, however, the site only supports version 1.1.46 (and lower), thus the model is unsupported.

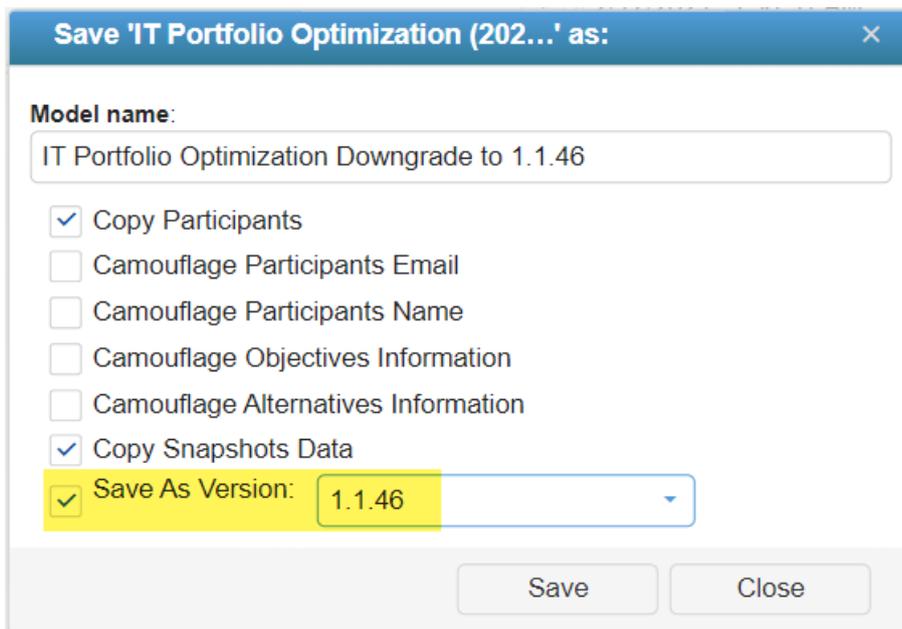
To fix this, you need to create a copy of the model and save it to a lower version (in our example, to 1.1.46). **Downgrading a model should be performed on the site which supports the current model version (1.1.51).**

## To downgrade a model:

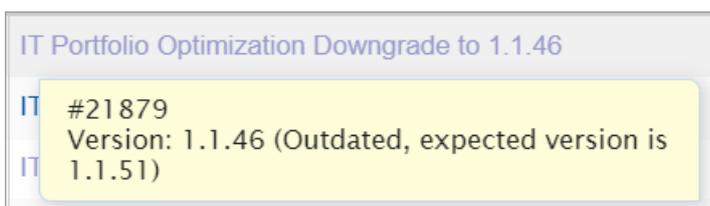
1. Log in to the site where the current model version is supported (please contact us at [support@experchoice.com](mailto:support@experchoice.com) if you need help)
2. In the Models list, right-click the model to downgrade or click the down arrow.



3. Click **Save as...** to open the save as options. Check "Save As Version" and then select the version you want to downgrade the model to, in our example, 1.1.46. You can also rename the model as desire.

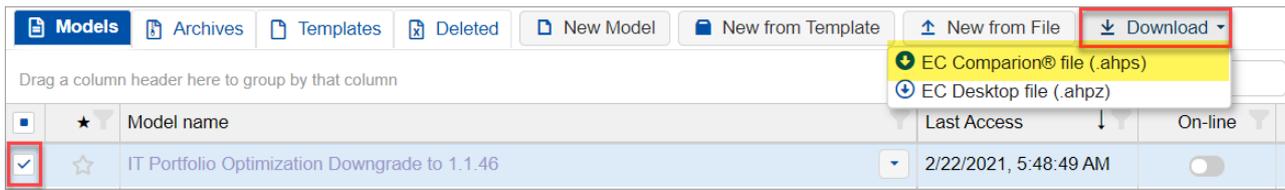


4. Click Save. The downgraded model will be at the top of the models list.



You can hover the model to see details, here the model is downgraded to 1.1.46 (which is now outdated for this site).

5. Select the downgraded model and download it as a .ahps file from the Download button at the top. Make sure not to open the model as this will automatically upgrade the model back to the latest (1.1.51)



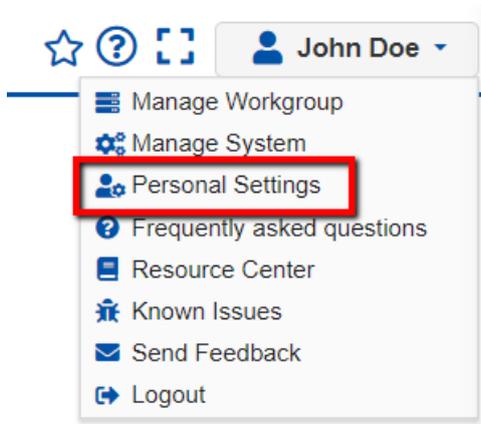
The screenshot shows a software interface with a top navigation bar containing buttons for 'Models', 'Archives', 'Templates', 'Deleted', 'New Model', 'New from Template', 'New from File', and 'Download'. The 'Download' button is highlighted with a red box. Below the navigation bar is a table with columns for 'Model name', 'Last Access', and 'On-line'. The first row of the table is selected, with a checkmark in the first column. A dropdown menu is open from the 'Download' button, showing two options: 'EC Comparison® file (.ahps)' and 'EC Desktop file (.ahpz)'. The 'EC Comparison® file (.ahps)' option is highlighted in yellow.

<input type="checkbox"/>	★	Model name	Last Access	On-line
<input checked="" type="checkbox"/>	☆	IT Portfolio Optimization Downgrade to 1.1.46	2/22/2021, 5:48:49 AM	<input type="checkbox"/>

You can then upload the downloaded model to the site that only supports 1.1.46 and lower, or you can open it directly in case the database is being shared.

# Change name and password

To change your password, click your account name at the upper right and then select Personal Settings:



Enter your new password and your current password, then hit Save Password.

## Personal Settings

**Your name and password** ^

E-mail:

Full name:

New password:

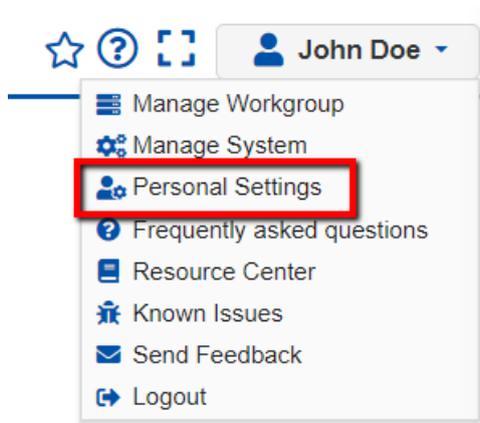
[Show](#) [Generate](#) [Clear](#)

Current password:

If you forgot your password, you or your Project Manager can reset your password. This is explained [here](#).

# Application Preferences

To access the Application Settings, click your account name at the upper right and then select Personal Settings:



## Application Preferences

- Enable autologon on first start
  - Start with last visited page
  - Disable auto-complete for login screen
  - Don't show any overview page more than once for any model
  - Show instructions splash screen after logging into Comparison®.
- Keep projects, marked as deleted (in days):

1. **Enable autologon on the first start** - grants or denies users the autologon on Comparison (if email and password are remembered).
2. **Start with the last visited page** - allows the application to remember your last visited model and page. You will be redirected to this page after login.
3. **Disable autocomplete for the login screen** - also referred to as word completion, **autocomplete** suggests finishing what is being typed by comparing the current text with previously-entered text.
4. **Don't show any overview page more than once for any model**
5. **Show instruction splash screen after logging in**
6. **Keep projects marked as deleted in days [90]**, then they will be permanently deleted.

Link1

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# Can inconsistency ratio be measured for multiple participants or groups?

Every measure of inconsistency is for one participant and one cluster of judgments. Inconsistency **cannot** be summed across multiple participants or clusters.

The inconsistency ratio is useful for finding instances where the participant may not have been focused or patient enough to make consistent judgments. Or perhaps the participant clicked on one side (right or left) when they intended to click on the other side.

Some level of inconsistency is perfectly acceptable. The AHP theory says you should look at inconsistencies over 10% (0.1) but, in practice, you can accept more because inconsistency is a natural human attribute.

An inconsistency measure of 100% (1) or more indicates random judgments.

To deal with high inconsistencies, you can have the following choices:

- 1) ask the participant to review their judgments and make revisions as necessary;
- 2) remove the participant from the model, or take away their roles for the inconsistent cluster;
- 3) create a participant group that excludes participants with high inconsistency and do your analysis on that group.

You may see the [consensus report](#), which calculates the standard deviation across participants.

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# How to fix the formatting issues on the information documents?

Information Documents formatting can be inconsistent for a few reasons, such as when the information was copied from an external source document and pasted to the [rich text editor](#).

We suggest clearing or resetting the formatting using the icon below:



After clearing the formatting, you can then reformat your information document on our [Rich Text Editor](#).

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# How to fix/prevent broken images on the information documents?

Images can be added to the information documents. If the image does not show up, you have what's called a broken image.

A broken image looks like this:

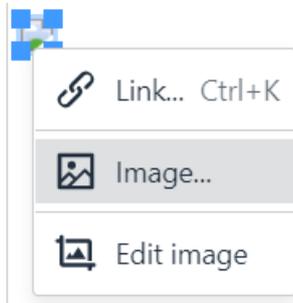
- Chrome and Microsoft Edge: 
- Firefox: 
- Internet Explorer: 

Image can be added to information documents by:

1. Uploading an image from your local machine
2. Adding an image from an absolute image path (public URL)
3. Copying-Pasting an image

## Broken image may occur when:

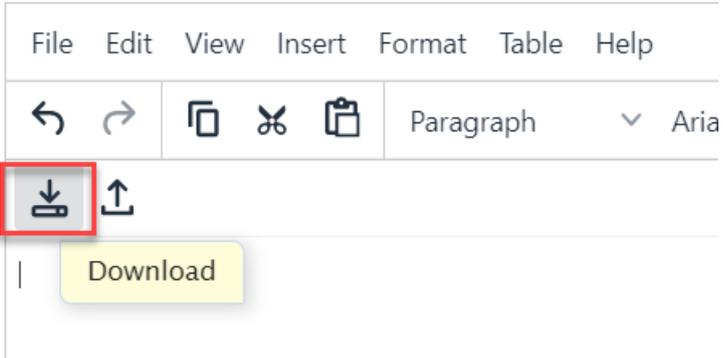
- **The Image no longer exists given the absolute image path** -- images from the internet (public URL) may be broken when the image was deleted or moved.
  - **Fix: Update the Source URL**
    - Open the editor
    - Right-click the broken image icon and then select "Image"



- On the General tab, update the Source URL
- **Copying an image from one information document and then pasting it to another information document.**

Copying an image from one information document to another will cause an incorrect image relative path. The image may temporarily show up but once the site is rebuilt or you upload the model to another site, you will see the broken image icon.

  - **Possible Fixes:**
    - Upload the image file;
    - Copy the image from the original source, not from an information document, and then paste it to the editor;
    - If you want to copy an image from one information document to another, you can also **download** the information document as a **.MHT** file and then **upload** it. This is also helpful if you want to download the entire information document, not just the image.



## How to make sure that my judgments are being saved?

Your judgments are automatically recorded when you move to another step, using the "**Next**," "**Previous**," or "**Next Unassessed**" button.

You can also click the step number you are currently at to save your judgments and to stay on that page.

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## Why I cannot see the options to manage my workgroup/models?

- If you are a Workgroup Manager/Owner, you have permission to create new models and manage **all** existing models and participants in your workgroup.
  - If you cannot see these options, your workgroup permission might be assigned incorrectly; please contact us at: [support@expertchoice.com](mailto:support@expertchoice.com) or thru our live chat.
- If you are a Project Organizer, you can create new models and manage **only** the models you created or you have a Project Manager's permission.
  - If you think your permission is not right, please contact your Workgroup Manager.

Please note that your workgroup license also determines if you can create more models.

