# **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:

MANAGE MODELS	IDEN	NTIFY/STRUCTURE LIKELIHOO		DD OF E	/ENTS	IMPACT OF EVENTS	RISKS CONTRO	DLS	CONTR	ROLLED RISKS
Risk Registers							0	Reload 🔘 Or	-line 🔓 Lock	🖸 Snapshots 🔒
	Ŧ	🚢 🖿 Loss Exc	eedance	T Filter	Events	Simulated Results Timestamp Show Mo	onetary Values 差			💠 Prefer
Risk of Events										
o Overall	0		Lik	elihoo	ds, Impa	acts, and Risks from Source for <u>Inte</u>	<u>lligent Event London Undergr</u>	ound Mon	<u>itoring</u>	
O From Sources		Search		Dra	g a column l	neader here to group by that column	0		Search	
<ul> <li>To Objectives</li> </ul>									All Particin	ants
<ul> <li>Likelihood of Events</li> </ul>		Source Name		ID Color		Event Name	Description	Likelihood	Likelihood Impact Ris	
<ul> <li>From Sources</li> </ul>							Train is late when its time on the			
<ul> <li>Impact of Events</li> </ul>		Sources		[01]		Late Train Punning	track between the two points is	37.7%	15.9%	6.0%
<ul> <li>On Objectives</li> </ul>		<ul> <li>Human Factor</li> </ul>	<ul> <li>Human Factor</li> </ul>	[01]		Lato Hain Raining	different than the time scheduled in		10.070	0.070
Loss Exceedance Curve		Inadequately T	rained Staff			Description of latelline at Manihaira Ocatana	the operational plan.			
📥 Overall		Disconsting	s Net Celleurine	[02]	•	Physical Assets	cables, and sensors.	6.3%	32.4%	2.0%
<ul> <li>From Sources</li> </ul>		Consideration of the second se	I NOLFOIIOWING	[05]	•	Line Closure	No train traffic allowed	35.4%	22.5%	8.0%
<ul> <li>To Objectives</li> </ul>		Lack of Situati	onal Awarenes:	[06]		Failed Integration with Future Monitoring System	n	7.6%	6.2%	0.5%
> Bow-Tie Diagrams		Engineers Fail	ngineers Failure to Properly	[00]		Network		22.00	20.00/	0.010
Overall		Environmental		[07]		Intelligent Event Monitoring Network Shut Down	Dooth occurs	22.0%	20.9%	5,9%
<ul> <li>From Sources</li> </ul>		Flooding of Inte	elligent Event N	[00]		Minor Train Work Accident	Injury occurs	21.5%	6.8%	1.5%
<ul> <li>To Objectives</li> </ul>		Lightning Striki	na Sianolina Ir	[10]		Maior Train Public Accident	Death occurs	26.1%	49.7%	13.0%
<ul> <li>Risk Map</li> </ul>		Lightning Striki	ing olghaling in	. ,						
<ul> <li>Risk Map</li> </ul>		Infrastructure								
<ul> <li>From Sources</li> </ul>		Minor Electrica	I Power Shorta							
<ul> <li>To Objectives</li> </ul>		Major Electrica	I Power Loss							
<ul> <li>Sensitivity Analysis</li> </ul>		Mechanical Fa	ilure of Sensor							
<ul> <li>Risk ∆ Sources</li> </ul>		Mechanical Fa	ilure of Signals			Total R	isk:			48.1%
<ul> <li>Risk ∆ Objectives</li> </ul>		moonamoalita	naro or orginals			lotar is				
		Likeli	hood, Im	pact,	and R	isk of the events from Source	e "Human Factor"			

#### A Source is selected from the Sources Hierarchy at the left.

	ID	Color	Evont Namo	Event Name Description		All Participa	nts
Source Name	ID.	COIOI	Event Name	Description	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	37.7%	15.9%	6.0%
Human Factor				the operational plan.			
Inadequately Trained Staff	[02]	•	Degradation of Intelligent Monitoring System Physical Assets	This is degradation of signals, cables, and sensors.	6.3%	32.4%	2.0%
Disiegurung of Notif onowing	[05]		Line Closure	No train traffic allowed	35.4%	22.5%	8.0%
Lack of Situational Awareness	[06]		Failed Integration with Future Monitoring System Network		7.6%	6.2%	0.5%
	[07]		Intelligent Event Monitoring Network Shut Down		22.0%	26.9%	5.9%
Environmental	[08]	•	Major Train Work Accident	Death occurs	25.8%	43.6%	11.3%
Flooding of Intelligent Event N	[09]	•	Minor Train Work Accident	Injury occurs	21.5%	6.8%	1.5%
Lightning Striking Signaling In	[10]	•	Major Train Public Accident	Death occurs	26.1%	49.7%	13.0%
Infrastructure							
Minor Electrical Power Shorta							
Major Electrical Power Loss							
Mechanical Failure of Sensors							
Mechanical Failure of Signals			Total Risk	:			48.19

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.

rtic	pants and Groups										
arch							•	Group name	¢	Has data? 🍦	Select all users with
$\Rightarrow$	Participant Name 💧 🔺	Email Address	-	Has data?	$\Rightarrow$						data
	Brian Quigley	quigleybf@gwu.edu		Yes				All Participants		Yes	
	Chief Engineering Officer	ceo@gwu.edu		Yes				C-Level		Yes	
	Chief Executive Officer	che@gwu.edu		Yes			0	Executives			
	Chief Risk Officer	cro@gwu.edu		Yes			$\Box$	Engineering		Yes	
	Denis Risman	denisrisman@gwu.edu		Yes							
	Devin Nagy	devinnagy@gwu.edu		Yes							
	Grace	grace@eci.com									
	IT Supervisor	its@gwu.edu		Yes							
	James	james@eci.com									
	John Doe	j.doe@eci.com									
	Michael Mankowski	mmankowski@dwu edu		Ves		-					
			Selec	t all I Deselect	t all						

#### After selecting participants and groups to display, click OK.

Course Name	ID	Color	Event Name	Description		All Participan	ts	Chi	ef Engineering	Officer
Source Marile	10	00101	Event Name	Description	Likelihood	Impact	Risk	Likelihood	Impact	Risk
Sources	1041		Late Tesis Duraina	Train is late when its time on the track between the two points is	27.7%	15.09/	E ON	4.69/	11 49/	0.5%
<ul> <li>Human Factor</li> </ul>	loil	•	Late train Running	different than the time scheduled in the operational plan.		13.576	0.078	4.076	11.478	
Inadequately Trained Staff	(00)	-	Degradation of Intelligent Monitoring	This is degradation of signals,	6.39	22.49/	- 2.08	0.6%	20.0%	0.38
Disregarding or Not Following Proper Po	[02]	•	System Physical Assets	cables, and sensors.	0.376	32.475	2.0%	0.076	32.376	0.276
Lack of Situational Awareness	[05]	۲	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 II	[08]		Major Train Work Accident	Death occurs	25.8%	43.6%	11.3%	<b>19.</b> 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%
	[10]	•	Major Train Public Accident	Death occurs	26.1%	49.7%	13.0%	19.4%	12.8%	2.5%
Intrastructure										
Minor Electrical Power Shortage										
Major Electrical Power Loss			Total Risk:				48.1%	6		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.

MANAGE MODELS IDENTIFY/STRUCTURE		LIKEL	IHOOD OF EVENTS IMP	PACT OF EVENTS	RISKS	C	ONTROL	.s	CONTRO	OLLED RISH
Risk Registers								C Reload	O On-line	C Snaps
Loss Exceedance T Filter Events		Simula	ted Results Timestamp	Show Monetary Values	\$				-	Prefere
Likelihoods,	Imp	acts	and Risks from Source	ce for <u>Intelligent Eve</u>	ent London Undergro	und N	Ionitor	ing		
Search		Drag a	column header here to group by the	hat column	6	-	Sear	ch		
Source Name		0-	E	Description			All Participants			
Sources	1	C0	Event Name	Description		Like	lihood	Impact	Risk	
<ul> <li>Human Factor</li> </ul>	1		Late Train Punning	Train is late when its time	on the track between the two		37 70%	15.87%	59	18%
Inadequately Trained Staff		- T	Late train (unining	operational plan.	time scheduled in the					
Disregarding or Not Following Proper Poli	2		Degradation of Intelligent Monitoring System Physical	This is degradation of sig	nals cables and sensors	-	6.30%	32 43%	20	4%
Lack of Situational Awareness	-	-	Assets	This is degradation of sign	nais, cablos, and sensers.	_				
Engineers Eailure to Properly Install Equi	3	۲	Line Closure	No train traffic allowed			35.40%	22.54%	7.9	8%
Environmental	4	•	Failed Integration with Future Monitoring System				7.56%	6.25%	0.4	7%
Flooding of Intelligent Event Monitoring In	5		Intelligent Event Monitoring	N			21.97%	26.94%	5.9	2%
Lightning Striking Signaling Infrastructure	6	-	Network Shut Down	W Death accura			25.95%	42 62%	11	200/
Infrastructure	7	•	Minor Train Work Accident	Injury occurs			21.45%	6.77%	1.4	45%
Minor Electrical Power Shortage	8	•	Major Train Public Accident	Death occurs			26.09%	49.70%	12.	97%
Major Electrical Power Loss										
Mechanical Failure of Sensors										
Mechanical Failure of Signals										
Mechanical Failure of Cables										
Terrorism										
Conventional Attack on the Signalling Infr										

### Export Grid into excel or image format

	rhere to group by that column	0	G	Searc	:h {
Ę	ent Name				All Participe
			Like	lihood	Impact
1	te Train Running			35.48%	15.87%
	cadation of Intelligent Monitoring System Physical Assets	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		11.17%	32.43%

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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:

		Sear	ch
rticipa	ants 🔶	Chie	ef Enginee
ct	Risk Lik	elihood	Impact
5.9%	Column Choo	ser	×
2.4%	ID		
	Color		
	<ul> <li>Event Name</li> </ul>		
	<ul> <li>Description</li> </ul>		
	Simulation Gr	oup	
	Event History		
	Risk Owner		
	<ul> <li>All Participant</li> </ul>	ts	
	✓ Likelihood		
	<ul> <li>Impact</li> </ul>		
	✓ Risk		
	✓ Chief Enginee	ering Office	er
	✓ Likelihood		
	<ul> <li>Impact</li> </ul>		
	✓ Risk		

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:

		Search.	
Source Name	4	Chief Engine	ering Officer
Source Marine		Local	Global
<ul> <li>Sources</li> </ul>			
Human Factor		27.96%	27.96%
Inadequately Trained Staff		10.47%	2.93%
Disregarding or Not Followin	Colum	n Chooser	× <sup>%</sup>
Lack of Situational Awarenes	Colum	in chooser	%
Engineers Failure to Properly	D ID		%
Environmental	Sou Sou	urce Name	%
Flooding of Intelligent Event I	De	scription	%
Lightning Striking Signaling Ir	- 🗌 All	Participants	%
Infrastructure	🖌 L	ocal	%
Minor Electrical Power Shorta	🗸 G	ilobal	%
Major Electrical Power Loss	🗸 🔽 Chi	ief Engineering Of	fficer <sup>%</sup>
Mechanical Failure of Sensor	L	ocal	%
Mechanical Failure of Signals	G	ilobal	%
Mechanical Failure of Cables			%
Terrorism			%

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	Decorintion		All Participants	S
IU	COIOI	Lvent 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]	0	Line Closure	No train traffic allowed	27.2%	22.5%	6.1%
[06]	٠	Failed Integration with Future Monitoring System Network		<mark>15</mark> .6%	6.2%	1.0%
[07]	•	Intelligent Event Monitoring Network Shut Down		<mark>18.</mark> 6%	26.9%	5.0%
[08]	۲	Major Train Work Accident	Death occurs	17.6%	43.6%	7.7%
[09]	٠	Minor Train Work Accident	Injury occurs	14.7%	6.8%	1.0%
[10]	0	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 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.

Search
Source Name
Sources
Human Factor
Inadequately Trained Staff
Disregarding or Not Following Proper Policies, Processes, or Proce
Lack of Situational Awareness
Engineers Failure to Properly Install Equipment
Environmental
Flooding of Intelligent Event Monitoring Infrastructure
Lightning Striking Signaling Infrastructure
Infrastructure

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	S	
	COIOI	Lvent Name	Likelihood	Impact	Risk	WICH Source
[01]	0	Late Train Running	35.5%	15.9%	<mark>5</mark> .6%	Sources
[02]	•	Degradation of Intelligent Monitoring System Physical Assets	11.2%	32.4%	3.6%	Sources
[05]	•	Line Closure	27.2%	22.5%	<mark>6.</mark> 1%	Sources
[06]	٠	Failed Integration with Future Monitoring System Network	<mark>1</mark> 5.6%	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	<mark>1</mark> 4.7%	6.8%	1.0%	Sources
[10]	0	Major Train Public Accident	17.7%	49.7%	8.8%	Sources
[01]	0	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]	٠	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%	<mark>5</mark> .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]	0	Major Train Public Accident	26.1%	49.7%	13.0%	Human Factor
[01]	0	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:

Source Name	ID	Color	Event Name		All Participa	nts	MDT Source
	ID	Color	Event Name	Likelihood	Impact	pact Risk	
<ul> <li>Sources</li> </ul>	[01]	•	Late Train Running	35.5%	15.9%	5.6%	Sources
Human Factor	[02]	•	Degradation of Intelligent Monitoring System Physical Assets	11.2%	32.4%	3.6%	Sources
Inadequately Trained Staff	[05]	۲	Line Closure	27.2%	22.5%	6.1%	Sources,
Disregarding or Not Following Proper Policies, Proce	[06]	•	Failed Integration with Future Monitoring System Network	1 <mark>5.6%</mark>	6.2%	1.0%	Sources
Lack of Situational Awareness	[07]	•	Intelligent Event Monitoring Network Shut Down	18,6%	26.9%	5.0%	Sources
	[08]	۲	Major Train Work Accident	17.6%	43.6%	7.7%	Sources
<ul> <li>Environmental</li> </ul>	[09]	•	Minor Train Work Accident	14.7%	6.8%	1.0%	Sources
Flooding of Intelligent Event Monitoring Infrastructure	[10]	•	Major Train Public Accident	17.7%	49.7%	8.8%	Sources
Lightning Striking Signaling Infrastructure	[01]	0	Late Train Running	37.7%	15.9%	6.0%	Human
Infrastructure	[02]		Degradation of Intelligent Monitoring System				Factor
Minor Electrical Power Shortage	[05]	0	Line Closure	6.3%	32.4%	2.0%	Human Factor
Major Electrical Power Loss	[06]	•	Failed Integration with Future Monitoring System Network	35.4%	22.5%	8.0%	Human
Mechanical Failure of Sensors	[07]	•	Intelligent Event Monitoring Network Shut Down	7.6%	6.2%	0.5%	Human
Mechanical Failure of Signals	[08]		Major Train Work Accident				Factor
Mechanical Failure of Cables	[09]	•	Minor Train Work Accident	22.0%	26.9%	5.9%	Human
Terrorism	[10]	•	Major Train Public Accident				Human
	[01]	0	Late Train Running	25.8%	43.6%	11.3%	Factor
Conventional Attack on the Signalling Infrastructure	1001		Degradation of Intelligent Monitoring System				11

# Show Monetary Values

Simulated vs Computed Event Likelihoods, Impacts, and Risks (Flaw of Averages)

Preferences