

RiskyProject Professional 7.2

Project Risk Management Software

Getting Started Guide



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Chapter 1: Introduction to RiskyProject

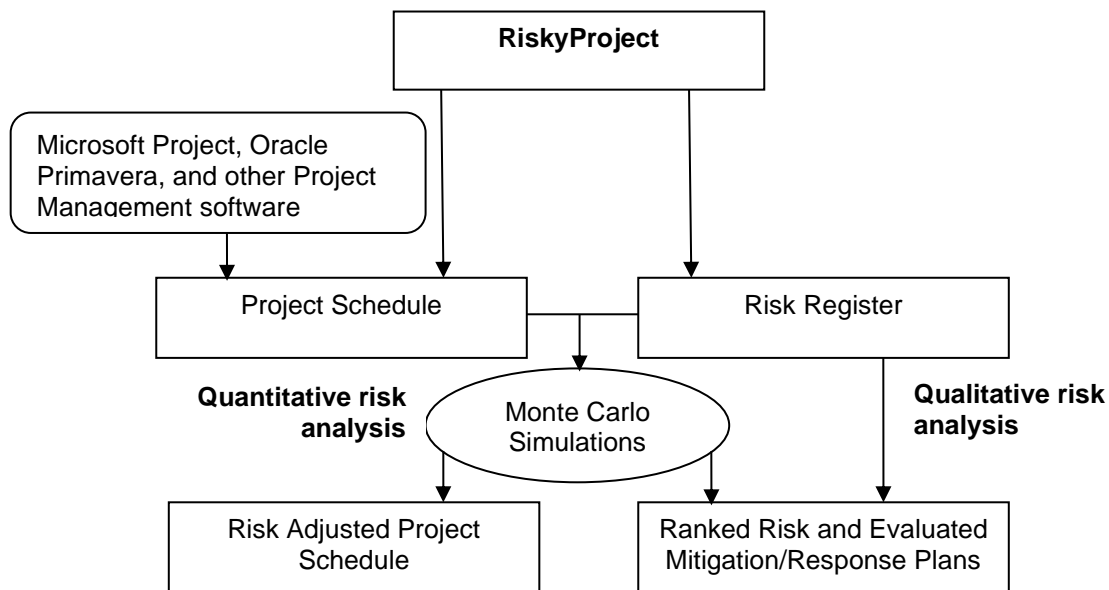
What is RiskyProject?

RiskyProject is advanced project risk management software with integrated risk analysis. Most projects contain many uncertain parameters: task duration, start and finish times, uncertainties in costs and resources, uncertainties in quality, safety, technology, and others. RiskyProject analyzes project schedules with risks and uncertainties, calculates the chance that projects will be completed within a given period of time and budget, ranks risks, and presents the results in formats that are easy to read and understand.

RiskyProject also helps you to perform project risk management:

- identify project risks
- rank risks
- identify mitigation and response plans
- manage risk properties, including descriptions, probabilities and impacts, costs associated with risks, mitigation strategies, and all other information about risks
- facilitate risk reviews, opening and closing risks, conversion of risks to issues and lessons learned
- provide comprehensive risk reporting, save risk history

RiskyProject performs both qualitative and quantitative risk analysis. If both the risk register and project schedule are populated, RiskyProject performs quantitative risk analysis. If there is no project data (cost or schedule), RiskyProject performs qualitative risks analysis.



RiskyProject seamlessly integrates with Microsoft Project or can run as a standalone application. RiskyProject integrates with other project management software such as Oracle Primavera.

RiskyProject employs Event Chain Methodology to analyze project uncertainties defined by multiple risks (events). An example of an event would be a task delay due to the changes in requirements. In many cases, one event can cause another event or multiple events, which can

significantly affect the project schedule. RiskyProject recalculates the project schedule multiple times to compute the distribution of possible outcomes and probabilities of meeting specific objectives.

Qualitative vs. Quantitative Risk Analysis

RiskyProject performs both qualitative and quantitative risk analysis.

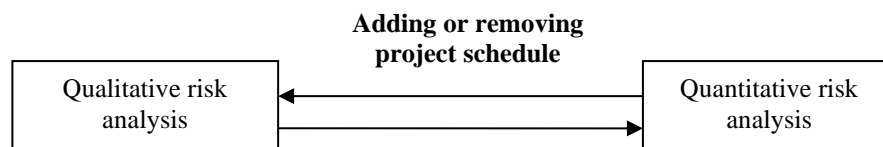
A typical **qualitative risk analysis** workflow is used to:

1. Identify risks and add risks to the risk register.
2. Define risk properties, probabilities, and outcomes.
3. Analyze risks and prioritize risks.
4. Assign mitigation and/or response plans.
5. Update risk properties, probabilities, outcomes as necessary.
6. Review status and properties of the risk and report information about risks.

A typical **quantitative risk analysis** workflow is used to:

1. Create a project schedule.
2. Add risks, uncertainties, and other risk-related information.
3. Run a simulation, perform an analysis and generate a report of the results.
4. Update risks and uncertainties as necessary.
5. During project execution, perform project tracking with risks and uncertainties at key phases or milestones to update forecasts.
6. Report results

If you do not have a schedule for your project, RiskyProject will only perform qualitative risk analysis. However, if you add a schedule by either adding activities or importing a schedule, RiskyProject automatically switches to quantitative analysis. You may switch between qualitative and quantitative analysis by adding or removing a project schedule.



Due to the nature of qualitative and quantitative analysis the results can be different even with the same risks, particularly for schedule-related risks affecting project duration and cost.

Chapter 2: Qualitative Risk Analysis

Risks in RiskyProject

Risk Register

The Risk Register is a set of all the project risks. You can enter risks in either the **Risk Register** view:

The screenshot shows the Risk Register interface with several callouts:

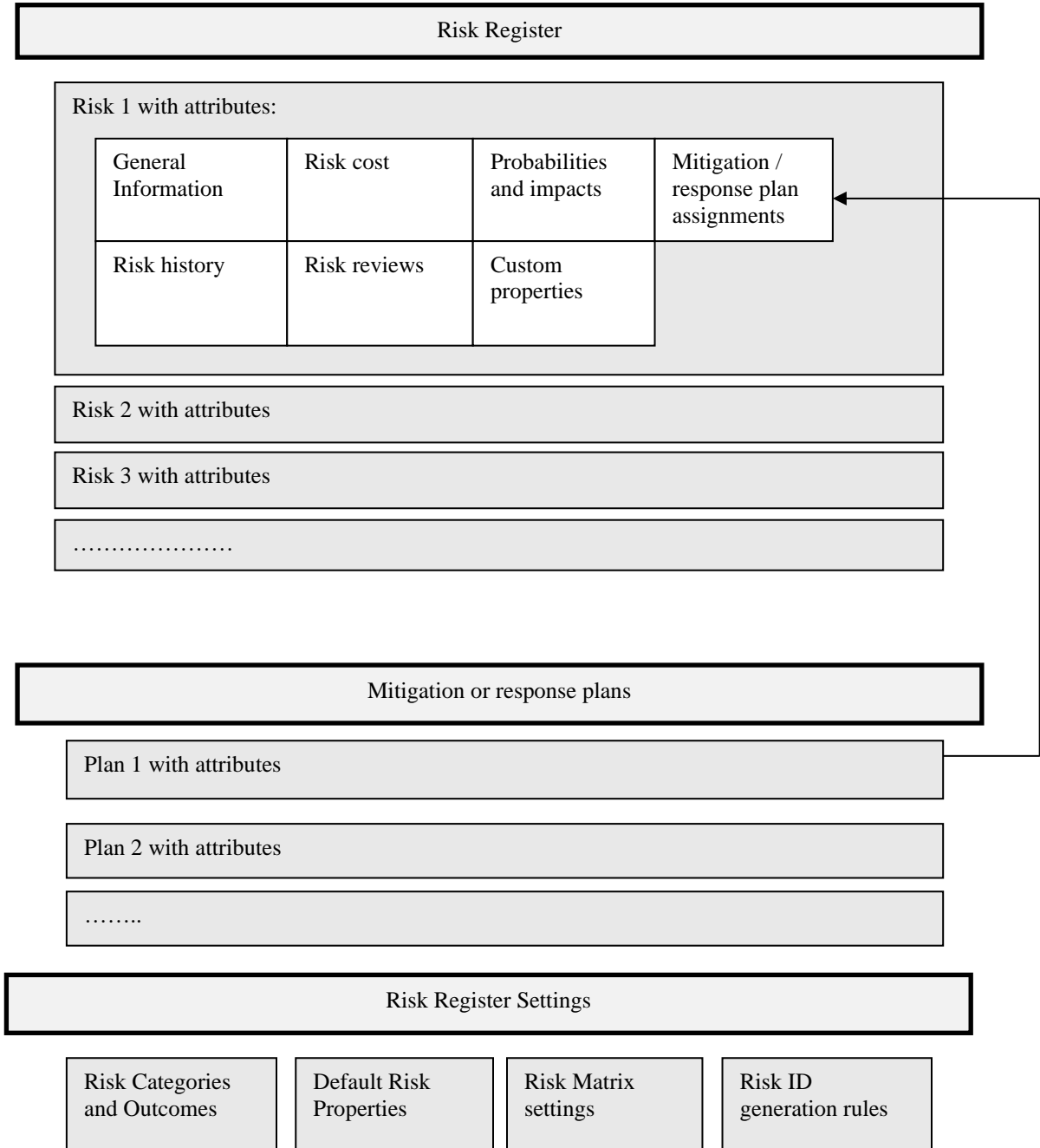
- Click Risk Register to view risk register** (pointing to the top navigation bar)
- Filter risks based on their properties** (pointing to the Filter dropdown)
- View risks hierarchy based on the different parameters, categories, owner, manager, open/closed, etc.** (pointing to the Hierarchy based on dropdown)
- By default, risks are ranked based on their scores. You can rank risks based on content of each column** (pointing to the Sort dropdown)
- Sort risks alphabetically or on risk ID** (pointing to the Sort dropdown)
- Click Risk Register to view risk register** (pointing to the left sidebar)
- You can create multiple tabs (views) for Risk Register** (pointing to the Default and Closed Risks tabs)
- Each tab presents different views of Risk register** (pointing to the Default and Closed Risks tabs)

Risk ID	Risk Name	Open/Closed	Threat/Opportunity	Risk Assigned To	Pro	Imp	Score	Cost (Pre)	Cost (Mit)	Pre-Mitigation Pro	Pre-Mitigation Imp	Pre-Mitigation Score
1	Not enough information about competitors	Open	Threat	Assigned to 4 tasks/resources	5	3	15	\$1,681.39	\$0.00	5	3	15
2	Other risks, related to the project			(global)	2	4	8	\$4,104.41	\$0.00	2	4	8
3	Delay in getting level advice			determine the legal t	5	1	5	\$1,041.37	\$0.00	5	1	5
4	Risks affecting whole company/division			(global)	1	2	2	\$1,921.38	\$0.00	1	2	2
5	Selected name is taken			Establish Name and	2	1	2	\$1,597.80	\$0.00	2	1	2
6	Delay in patent and trademark search	Open	Risk	Assigned to 2 tasks/resources	2	1	2	\$1,633.65	\$0.00	2	1	2
7	Cost information is not available	Open	Risk	Assigned to 2 tasks/resources	3			\$0.00	\$0.00	3		
8	Delay in Financing	Closed	Risk	Task 55: Acquisition of Finan				\$4,499.79	\$0.00			
9	Lack of knowledge of the specific area	Open	Risk	All resources (global)	1			\$0.00	\$0.00	1		
10	Not enough data to analyze demand level	Open	Risk	Assigned to 2 tasks/resources	5			\$0.00	\$0.00	5		
11	Not enough data to plan management of de	Open	Risk	Task 23: How will you manag	2			\$0.00	\$0.00	2		
				employ	1			\$0.00	\$0.00	1		
					1			\$0.00	\$0.00	1		

Use the Risk Register to:

1. View risks with their attributes such as probabilities, impacts, scores, and properties.
2. Create a risk register hierarchy based on:
 - Risk categories
 - Open/Closed risks
 - Risk/Issues/Lessons Learned
 - Risks assigned to managers
 - Risks assigned to owners
 - Threat mitigation or opportunity mitigation strategies
 - Assigned/Unassigned Risks (active or inactive)
 - Hidden and Visible risks (available in RiskyProject Enterprise only, see *RiskyProject Enterprise User Guide*)
3. Rank risks based on risk score.
4. Sort risks alphabetically or using risk IDs.
5. Filter risks based on risk properties: Open, Closed, Risk, Issue, or Lessons Learned.

Data for the Risk Register can be subdivided into three categories: risk registry, risk mitigation/response plans, and settings:



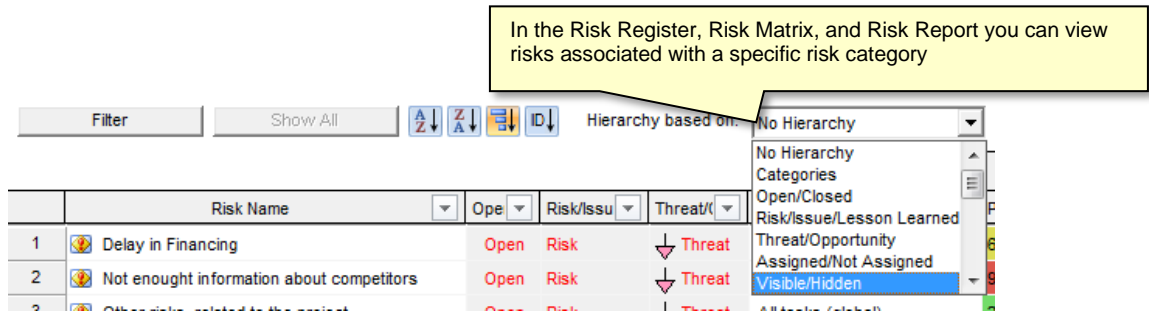
About Risk Categories, Probabilities and Impacts

Risk Categories

Risk Categories are a group of risk outcomes. RiskyProject calculates risk probabilities, impacts and scores for each category. The default risk categories are:

- Duration
- Cost
- Safety
- Environment
- Legal
- Performance
- Technology

RiskyProject calculates the score and rank for all risks in each risk category. You can view risk scores and rankings for each risk category or for all categories.



You can customize the risk categories in the Risk Categories dialog box. For more information about customizing risk categories, read “Managing Risk Categories and Outcomes”.

Risk Outcome Types

A Risk Outcome Type is the result if a risk occurs. While every risk category must have a least one outcome, they can have several. For example, one of the default risk categories is Legal. You may want to further define the outcome types as Litigation Risk, International Legal Risk, etc.

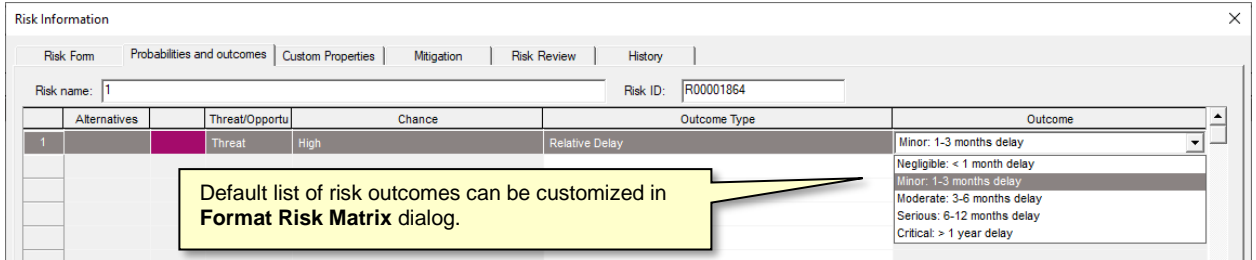
You can customize the set of outcome types using the Risk Categories dialog box.

Risk Probability and Chance

Risk Probability is the calculated chance that an event will occur. You can view risk probability in the **Risk Matrix**, **Risk Register**, and other views and dialog boxes. Risk Chance is the input parameter for risk probability. Risk chance (input parameter) and risk probability (calculated attribute) can be different; particularly when a risk has multiple mutually exclusive alternatives as risk, chance is an input parameter for each alternative. In these cases, Risk probability is calculated based on the risk chance for each mutually exclusive alternative.

Risk Outcome

Risk Outcomes indicate the severity of a risk event for the specific risk category. You need to enter risk outcomes when you define risk chance and outcome type. For example, here are the default risk outcomes for the risk category **Schedule**:



Outcome types can be a label (e.g. Critical > 1 year delay) or a percentage (e.g. 5%), or a combination of both. You can set how you want to enter and view risk outcomes in the **Format Risk Matrix** dialog box. Each label is associated with percentage, which is the midpoint of the interval for each label:

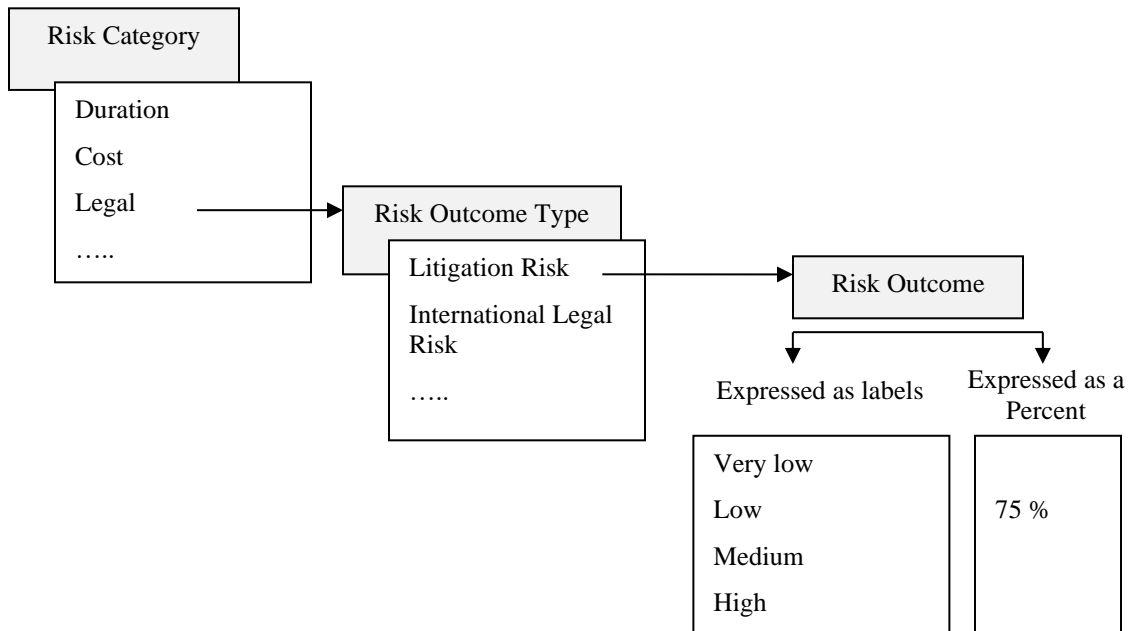
Label	Interval	Midpoint
Negligible: < 1 month delay	From 0% to 20%	10%
Minor: 1-3 month delay	From 20% to 40%	30%
Moderate: 3-6 months delay	From 40% to 60%	50%
Serious: 6-12 months delay	From 60% to 80%	70%
Critical: > 1 year delay	From 80% to 100%	90%

When you define outcome types as a percentage, you can enter it as any number from 0% to 100%. In this scenario, it will be associated with a label based on the interval to which this percentage belongs. For example, 76%, corresponds with the “Serious: 6-12 months delay” outcome type.



In RiskyProject, risk outcome types can be probabilistic. You can define a statistical distribution for outcome types and perform Monte Carlo simulation even it is part of qualitative risk analysis. For more information about probabilistic risk outcome types, read “Uncertainties in Risk Outcomes”.

The diagram below shows the relationship between risk categories, risk outcome types, and risk outcomes.



Threats and Opportunities

Risks can be threats, opportunities or both. Threats and opportunities are defined for risk assignment depending on results of the risk outcome. Negative risk outcomes mean opportunities.

Example 1:

risk: Change Requirements

Outcome: Fixed Delay

Result: 2 days

This is a threat

Example 2:

risk: Change of technology

Outcome: Delay in technology introduction

Result: -10% Low

This is an opportunity: a negative number indicates that this is acceleration rather than a delay of the technology introduction

Example 3:

risk: Chance of supplier

Outcome: fixed cost increase

Result for mutually exclusive alternative 1: \$30,000

Result for mutually exclusive alternative 2: -\$20,000

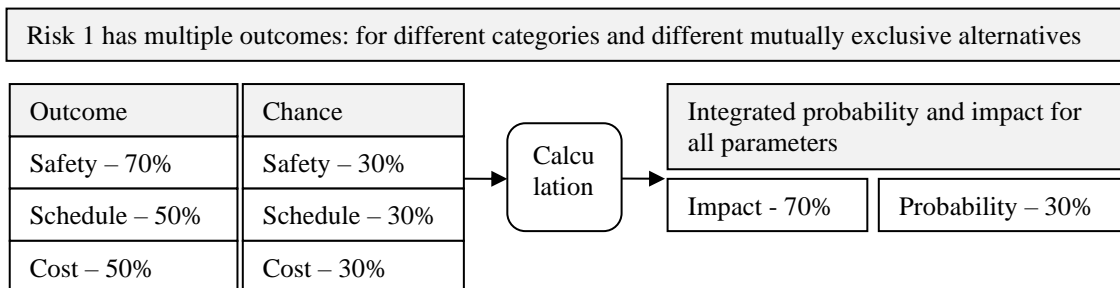
This is both a threat and an opportunity depending upon the supplier.

You can have different sets of labels for threats and opportunities for a risk category. For example, for the risk category Schedule, a threat outcome type can be “Critical > 1 year delay”, for an opportunity it can be “Critical > 1 year acceleration”. If you want to enter opportunities, you need to enter a negative percentage (e.g. -25%) as the outcome type.

Risk Impact

Risk impact is the calculated result of the risk event. Risk outcome (input parameter) and risk impact (calculated attribute) can be different, particularly when a risk has multiple mutually exclusive alternatives, in which case the risk outcome is a parameter of each alternative. Risk impact is calculated based on the risk chance for each alternative.

The diagram below shows the difference between risk chances and outcomes (input parameters) and risk probabilities and impacts (output parameters):



Risk Score

Risk score is a calculated parameter that equals probability multiplied by impact. Risk score is calculated for each risk category as well as all risk categories.

Original, Pre-, and Post-Mitigation Probabilities, Impacts and Scores

RiskyProject calculates three sets of probabilities, impacts and scores for each risk category as well as combined for all categories. You can view these sets in the Risk Register, Mitigation Assignment View, and Mitigation tab of Risk Information Dialog.

1. **Original:** when risk chance and outcome are defined. This information can be entered in the list of risk mitigation plans in Mitigation tab of Risk Information Dialog. Original chance, outcome and scores can be shown in the Risk Register as **read-only**. Risk Register can only save one set of original chance, impact, and score per risk.

The image contains two screenshots with callouts explaining the 'Original' set of data in Risk Register and the Mitigation tab of the Risk Information dialog.

Top Screenshot: Risk Register

The Risk Register shows a table with columns for Original and Current (Pre-Mitigation) Probabilities, Impacts, and Scores. A callout points to the column headers: "Right click on column's header to insert new or modify existing column." Another callout points to the 'Score' column: "Add Column for Original Chance, Impact or Score. They will be Read Only in Risk Register. These columns are hidden by default." A 'Modify Column' dialog is open, showing a list of field types including 'Score: Original'.

	Original			Current (Pre-Mitigation)			Score (I)	Cost (Pre)	Cost (M)	Probabil
reat/C	Probab	Impact	Score	Probal	Impa	Score (I)	Score (I)	Cost (Pre)	Cost (M)	Probabil
Threat	5	5	25	5	5	25		\$0.00	\$0.00	1
Th	4	4	16	4	4	16		\$0.00	\$0.00	1

Bottom Screenshot: Mitigation Tab of Risk Information dialog

The Mitigation tab shows a table with columns for Mitigation Plan, Start, Start Act, Probabili, Impact, and Score. A callout points to the 'Original' row: "You can designate any set of chance, impact and score as Original." Another callout points to the 'Original' row: "Enter risk chance, impacts, and scores for Original set here."

	Mitigation Plan	Start	Start Act	Probabili	Impact	Score
1	Current	01/26/22		5	5	25
2	Original	02/09/22		5	5	25
3	mitigation 1	02/23/22	02/23/22	4	4	16
4	mitigation 2	03/09/22	03/09/22	4	3	12
5	mitigation	03/23/22	03/23/22	3	3	9
6	mitigation	4/06/22		1	2	2
7	mitigation	4/20/22		1	2	2

2. **Current:** reflects most recent changes to probability and impact for each category. If you use qualitative analysis, current chances and impacts are **editable** in Risk Register. You can also edit them in the **Risk Form** or the **Probabilities and Outcomes** tab of the **Risk Information** dialog box. For quantitative analysis (with project schedule) current set of probability,

impact, and scores is calculated based on risk assignment to task or resources. Current set of probability, impact, and score is shown as a first line on Mitigation Tab on Risk Information dialog box.

Risk Information

Risk name: E Risk ID: R00001867

Threat	Mitigation Plan	Start	Start Act	Probabili	Impact: A	Score: A
	1 Current	01/26/22		5	5	25
	2 Original	02/09/22		5	5	25
	3 mitigation 1	02/23/22	02/23/22	4	4	16
	4 mitigation 2	03/09/22	03/09/22	4	3	12
	5 mitigation 4	03/23/22	03/23/22	3	3	9
	6 mitigation 5	04/06/22		1	2	2
	7 mitigation 6	04/20/22		1	2	2

Callouts: "Current any set of probability, impact and score is always shown on first line." and "Read only".

- Post-Mitigation:** Post-mitigation probability, impact and score reflect changes to risks due to mitigation plans. There can be many mitigation plans assigned to one risk. They are editable in the **Assign Mitigation** view and in **Mitigation** tab of the **Risk Information** dialog box. In the **Risk Register** you can show the latest read-only probability, impact and score, which corresponds to the last line in **Mitigation** tab. In the **Assign Mitigation** view, in addition to editing the post-mitigation probabilities, impacts and scores for all categories, you can also edit values for individual categories, such as cost, duration, quality, technology, etc. Probabilities, impacts and scores for individual categories are not used to calculate combined probabilities, impacts and scores, which should be entered independently. Post-mitigation probabilities, impacts and scores are not affected by quantitative analysis. Also in the **Assign Mitigation** you can enter both predicted and actual probabilities, impacts and scores.

Risk Information

Risk name: E Risk ID: R00001867

Threat	Mitigation Plan	Start	Start Act	Probabili	Impact: A	Score: A
	1 Current	01/26/22		5	5	25
	2 Original	02/09/22		5	5	25
	3 mitigation 1	02/23/22	02/23/22	4	4	16
	4 mitigation 2	03/09/22	03/09/22	4	3	12
	5 mitigation 4	03/23/22	03/23/22	3	3	9
	6 mitigation 5	04/06/22		1	2	2
	7 mitigation 6	04/20/22		1	2	2

Callouts: "Insert new mitigation plan and edit sets of probabilities, impacts, and scores here" and "Probability, impact and score for the latest mitigation plan will be shown in Risk Register.".

Risk Properties

Risk Properties are other risk attributes, which include:

- Risk Name, ID, description, statement, objectives, assumption, cause and trigger
- Open/close risk
- Risk life cycle status: Risks, issues, lesson learned
- Risk ownership
- Risk mitigation strategy
- Risk costs

- Risk start and end date
- Other information about risk

Some risk properties are predefined as General Information about risk and Risk Costs. However, you may define any other risk properties.

Risk Mitigation and Response Plans

You can model risk mitigation or response efforts in RiskyProject using the **Mitigation or Response View**. Response plans are activities that are executed when a risk occurs and are used for quantitative risk analysis. Mitigation plans are actions that are performed to minimize risk probability and/or impact and can be visualized using the Risk Mitigation Waterfall diagram

A mitigation or/and response plan must be assigned to a particular risk. Please read “Assigning Risk Response Plans” and “Assigning Mitigation Plans” for more information.

Creating a mitigation or risk response plan

1. Click the **Risks** tab. In the **Risk Views** group, click **Mitigation/ Response Plans**.
2. Enter the mitigation or response plan name. Summary entries will help you to organize information, but they are not considered a mitigation plan.
3. Select either **Mitigation** or **Response** plan
4. For Response plans, enter an **Outcome Type** and **Outcome** of the response. The outcome types are automatically populated based on the list of outcome types.
5. Enter the **Cost** of the mitigation or response plan
6. For Mitigation plans, enter the default reduction of probability and impact if the mitigation plan is assigned to the risk.
For example, a mitigation plan reduces probability on 5% and impact on 10%. If a mitigation plan is assigned to the risk that has 45% probability and 30% impact before mitigation, the risk will have 40% probability and 20% impact after mitigation.
7. Enter the mitigation or response plan description. If you double-click on a mitigation/response plan ID, the **Mitigation or Response Plan Description** dialog box will open.

Risk Attributes

About Risks

Each risk in RiskyProject can have a number of properties. Common properties are predefined and are found in the **Risk Form** or **Custom Properties** tabs of the **Risk Information** dialog box. The Risk Form is fully customizable: you can define a set of mandatory and optional attributes, which need to be entered as part of your risk management process.

Risk properties include:

- **Risk Name:** the risk name for each risk must be unique. Names are case-sensitive.
- **Open/closed risk:** open risks are active risks that may occur. Closed risks are those risks that are no longer active because of risk response or other factors or measures taken. Closed risks may contain important information and should not be deleted from the risk register.
- **Risks, issues, lessons learned:** risks are events that may or may not occur and have a probability between 0 – 100%. Issues are events that have already occurred and require a response. Lessons learned are events that occurred in the past and have a history associated with them. When you add a new record to the risk register, by default it is a risk.
- **Risk statement, objectives, assumption, cause and trigger:** contain textual information about risks.
- **Risk ownership:** includes risk manager and risk owner. You may define other custom fields for risk reviewer, recorder, and other participants in the risk management process.
- **Risk mitigation strategy:** you can enter mitigation strategies for threats and/or opportunities. Status of threats and/or opportunities are automatically calculated when you enter risk probabilities and impacts. If the risk is only a threat, you will only be able to enter strategies for threats and vice versa. For more information about threats and opportunities, read “Risk Probabilities and Impacts”.
- **Risk start and end date (risk sunrise and sunset):** dates between which a particular risk is active.
- **Risk ID:** Risk ID can be automatically generated when you create a new risk. You may sort the Risk Register based on Risk IDs. You can overwrite the automatically generated risk ID. Rules for risk ID generation are defined in **Risk Options**. To view Risk Options, click the **Schedule** tab. In the **Settings** group, click **Options**.

Risk Probabilities and Impacts

There are two ways probabilities and impacts can be defined in RiskyProject:

- You can define chance and outcome for each risk in the Probabilities and Outcomes tab of the Risk Information dialog box.
- You can also define risk chance and outcome directly in the Risk Register grid. However, in this case, risk cannot be assigned to any tasks or resources. If risk is already assigned to at least one task or resource, you will not be able to modify chance and outcome using the grid and the Risk Information dialog box will appear. This method is preferable for qualitative risk analysis and risk management.

Defining risk chances and outcomes in the Risk Information dialog box

You must enter the risk chance, outcome type, and outcome for each risk. You may only define one alternative. Please remember that risk chance and outcome may not be equal to calculated risk probabilities and impacts in the following cases:

- For risks with multiple mutually exclusive alternatives
- If you define uncertainties in risk outcome
- In case of quantitative risk analysis (with project schedule)

To define risk chances and outcomes in the Risk Information dialog:

1. Click the **Risk** tab. In the **Risk Views** group, click **Risk Register**.
2. Double-click on a risk ID to open the **Risk information** dialog box.
3. Click the **Probabilities and Outcome** tab.
4. Enter **Chance** that will be used to calculate probability.
5. Select **Outcome Type** from dropdown list.
6. Select **Outcome** label from dropdown list or enter percent.
7. Threat/Opportunity are calculated automatically if you enter a negative outcome.
8. If required, repeat steps 5 -7 for each mutually exclusive alternative.

Risk Form: Defining Information About Risks

The Risk Form is part of the Risk Information dialog and is used to define risk attributes. You can customize the Risk Form to create any set to risk attributes which can be entered or edited.

Risk Form has two modes:

1. **Editing Mode:** you can drag and drop different controls to Risk Form and assign properties to them. Controls such as edit boxes, drop down list, frames or static text can be selected from the left side of the Risk Form dialog box and dropped on the form. After this you need to select risk attributes associated with the control from the list of available attributes. For a **Static Text** box you enter text to be displayed, there are no risk attributes associated with the frame.
2. **Published Mode:** when you complete design of Risk Form, click “Publish Risk Form Layout” to switch to Published Mode. In Published Mode you can no longer edit Risk Form layout, but you can enter risk attributes data. List of controls will be hidden.

To edit the Risk Form (Editing Mode):

1. Click the **Risk** tab. In the Risk Views group, click **Risk Register**
2. Double-click on risk ID to open the **Risk information** dialog box
3. Go to **Risk Form** tab; default Risk Form will be presented in Published Mode
4. Go to Editing mode by clicking on **Edit Risk Form Layout**
5. Clear controls if required by clicking on **Clear All** button
6. Select control using button on the right side.

7. Click on Risk Form to select the position of the control
8. From the dropdown list above Risk Form select the property associated with selected control
9. Adjust size of the control but dragging its corners
10. Right click outside the control: shortcut menu will come up. You can Delete, Copy, or Paste control, as well as make the property Mandatory. Once in Published Mode, all mandatory fields must be filled to save data.
 - Click **Save as Default** to save newly designed Risk Form for all your new projects
 - Click **Standard Form** to restore standard if required
 - Click **Publish Risk Form Layout** to convert to Published Mode

To use Risk Form (Published Mode):

1. Click the **Risk** tab. In the Risk Views group, click **Risk Register**.
2. Double-click on risk ID to open the **Risk information** dialog box.
3. Enter risk attributes to the **Risk Form**

The screenshot shows the 'Risk Information' dialog box with the following callouts:

- After you inserted the control, select risk attribute from here.** (Points to the 'Cause' dropdown menu)
- Click here to toggle between Published Mode and Editing Mode.** (Points to the 'Publish Risk Form Layout' button)
- Click on button associated with control from here and then click on Risk Form to choose a location of this control.** (Points to the 'Cause' text area)
- Right-click outside the control: a popup menu will appear. You can Delete, Copy, or Paste a field, or make it mandatory.** (Points to a context menu over the 'Cause' text area)
- Click outside the control to select it and modify or resize/move the field.** (Points to the 'Cause' text area)

The dialog box contains the following fields and sections:

- Risk Form** | Probabilities and outcomes | Custom Properties | Mitigation | Risk Review | History
- Risk name: Change of requirements | Risk ID: R00001908 | Publish Risk Form Layout
- Select Risk Property: Cause
- Open/Closed Risks: Open | Risk Lifecycle: Risk
- Risk Statement: Stakeholders may change requirements because of certain changes in the business processes. Software workflow needs to be aligned with business processes. Changes in business processes can lead to delay of the project or increase project cost. Certain tasks can be restarted or repeated. This risk will also affect documentation development and testing.
- Assumptions: It is assumed that change of requirements will have very high probability.
- Risk Ownership: Risk Owner: John Horton | Risk Manager: Clint Young
- Management Strategy: Threat Strategy: Mitigate | Opportunity Strategy: Enhance
- Timeline: Start Date: 11/11/21 07:57 | End Date: 11/11/22 08:00
- Cost before mitigation: Potential Lost: \$4,000.00 | Probability before mitigation: 60.0 % | Expected Loss: \$2,400.00
- Cost after mitigation: Cost of Response Plan: \$0.00 | Cost of Residual Risk: \$390.00 | Probability After Mitigation: 55.0 % | Expected Loss: \$214.50
- Response Plan: | Trigger: QA Inspection
- Right-click context menu: Mandatory Field, Delete, Copy, Paste
- Buttons: Standard Form, Clear All, Save As Default

The Risk form has the following fields:

- **Number** –real numbers, integer numbers, or cost properties
- **Edit Box** –string (text) properties and organizational units
- **Dropdown List** –picklist and Yes/No Properties

- **Dropdown Edit Box** –risk, resources, and response plans
- **Date** –date properties
- **Frame** –frame or line separator; it is used to create visual separation between group of control
- **Static Text** –read only text used for prompts and annotations
- **Probability** –risk probabilities belonging to different categories
- **Impact** –risk impacts belonging to different categories
- **Threat/Opport.** –selection of threats and opportunities

About Cost of Risk Calculations

The Cost Risk calculation calculates the total cost of a risk and takes into account the risk mitigation plans linked to the risk. The Risk cost calculation is performed in the **Risk Form** tab of the **Risk Information** dialog box. The **Cost of Residual Risk** and **Potential Loss** are the only values that you can manually enter in the Risk Form. All other cost parameters are calculated. You can modify Risk Form to show or hide different fields.

Cost before mitigation:		Cost after mitigation:	
Potential Lost:	\$6,922.76	Cost of Mitigation from Waterfall tab:	\$0.00
Probability before mitigation:	65.0 %	Cost of Response Plan:	\$0.00
Expected Loss:	\$4,499.79	Cost of Residual Risk:	\$0.00
		Probability After Mitigation:	65.0 %
		Expected Loss:	\$0.00
Auto calculation of expected loss (from Monte Carlo):		Total cost of risk with mitigation:	
Yes		\$0.00	
		Saving from mitigation/enhancement:	
		\$4,499.79	

Risk cost calculation

Cost Before Mitigation

1. **Potential Loss** (property “*Cost before mitigation*”): the loss in monetary terms if the risk occurs. This value can be entered manually if you select No for “*Auto calculation of expected loss (from Monte Carlo)*” or if you don’t open a schedule.

For example, for the risk “low quality component”, the potential loss is \$50,000. You would incur this cost if a low quality component were supplied.

2. If you don’t open a schedule, the **Probability Before Mitigation** value is based on the risk values entered in the **Probabilities and Outcome** tab of **Risk Information** dialog box. See **Risk Probabilities and Impacts** for more information. If you have a schedule **Probability Before Mitigation** comes from results of Monte Carlo simulations.
3. **Expected Loss** (property “*Pre-Mitigation Expected Loss*”) takes into account risk probability. It is an indicator that helps you to compare the costs of different risks. Expected loss can be calculated manually or automatically depending on selection “*Auto calculation of expected loss (from Monte Carlo)*”.
 - a. Manual calculation of Expected Loss: You can manually calculate the expected loss for individual risks by running two simulations: one with the risk open and the other with the risk closed. The difference in the total project costs is the expected cost of the risk.

Expected loss = Potential Loss * Probability (pre-mitigation)

For example, probability of risk “low quality component” equals 50%. Potential loss equals \$50,000. Expected loss will be \$25,000 = \$50,000 * 50%.

- b. Automatic calculation of Expected Loss is done based on results of Monte Carlo simulations of project schedule:

Expected loss = (Project Cost with Risks – Project Cost Original) * Correlation Coefficient

The correlation coefficient is calculated using project cost and cost increases due to a specific risk occurring. For example, the project cost with risks and uncertainties is \$100,000. Project cost without risks and uncertainties is \$90,000. In addition, the correlation coefficient for the specific risk is 0.8. Expected loss will be (\$100,000 - \$90,000)*0.8 = \$8,000. The automatic calculation cannot be performed at the enterprise level or on summary projects, as they do not include project activities. For automatic calculation of Expected loss of the current project, RiskyProject will calculate Potential Loss for current project = Expected loss / Probability (pre mitigation).

Cost After Mitigation

- 1. **Cost of Response Plan.** Even if a mitigation plan is executed as planned, there will still be a cost associated with a risk, as it is possible to reduce risk, but not to eliminate it (an exception is when you are able to avoid the risk). The response plan may be executed if the risk occurs and will be calculated using the cost entered for the response plan associated with this risk. This cost is entered **Mitigation and Response** view.

For example, if the risk “low quality component” occurs, this component needs to be replaced with a new one, which would cost \$20,000.

- 2. Residual risk may still exist after the risk response and its cost is calculated as the **Cost of Residual Risk.**

For example, the new component installed as a risk response can still be defective. The residual cost of the risk will be \$10,000.

- 3. **Probability After Mitigation** comes from **Mitigation** tab of **Risk Information** dialog box. See “Risk Mitigation and Response Plans” for more information.

For example: Risk Probability after mitigation equals 25% because of the execution of the mitigation plan “additional QA procedure”, probability of risk “Low quality component” is reduced two times.

- 4. **Expected Loss After Mitigation** (property “*Post-mitigation Expected Loss*”) takes in to account the fact that risk may not occur.

Expected Loss After Mitigation = (Cost of Response Plan + Cost of Residual Risk) * Probability After Mitigation

For example, probability of risk “low quality component” after mitigation equals 25%. Expected loss after mitigation will be \$7,500 = (\$20,000 + \$10,000) * 25%.

Other Cost Indicators (Properties)

- 1. **Cost After Mitigation = Expected Loss After Mitigation + Cost of Mitigation**

For example: Total cost after mitigation of risk “low quality component” will be \$17,500
= \$7,500 + \$10,000

2. **Saving from Mitigation/Enhancement** is the difference between costs with and without mitigation. If this number is negative mitigation efforts will not lead to cost saving.

Saving from Mitigation = Expected Loss – Total Risk Cost after Mitigation

For example, total cost after mitigation of risk “low quality component” will be \$17,500. Expected loss \$25,000. Saving from Mitigation is \$7,500. Because this number is positive, it makes sense to perform mitigation efforts.

Assigning Risk Response Plans

Response plans defined in the **Mitigation and Response** view can be assigned to risks. Only one response plan can be assigned to a particular risk.

Assigning Response Plan:

1. Click the **Risks** tab. In the **Risks View** group, click **Risk Register**.
2. Double-click on risk ID to open the **Risk information** dialog box.
3. Click the **Risk Form** tab
4. In the default Risk Form select a response plan from **Response Plan** dropdown list. These response plans are defined in Mitigation/Response view.
5. If you are not using the default Risk Form, you can add the response plan dropdown list using **Dropdown Edit** button in Editing Mode of Risk Form. See *Risk Form* for more information.
6. If you don't see your response plan in the dropdown list, it means that the response plan is not defined in the **Mitigation/Response** view. You still can enter Response plan name in RiskyProject, but it will not be used for risk cost calculation.

Assign Mitigation Plans Using the Mitigation Tab

You can assign mitigation plans defined in the **Mitigation and Response** view to your risks. One risk may have multiple sequential mitigation plans. They can be shown as a Waterfall diagram.

Waterfall diagrams can be used to visualize the timing of mitigation efforts over the course of the project.

Enter probability and impact on each mitigation phase. The score will be calculated automatically.

Mitigation plan can be assigned to a resource. It is defined in the Mitigation/Response view

Mitigation plans can be linked to a task. Double click on task ID to define this task.

Probability and Impact of risk before and after mitigation are shown here.

Mitigation Plan	Start	Start Act	Probab	Impact	Score	Cost (Mitiga	Cost Actual	Assigned to	% Comp	Associated Task
1 Current	01/26/22		5	5	25	\$0.00	\$0.00			
2 Original	02/09/22		5	5	25					
3 mitigation 1	02/23/22	02/21/22	4	4	16	\$0.00	\$0.00		0.0%	
4 mitigation 2	02/23/22	03/07/22	3	3	9	\$0.00	\$0.00		0.0%	
5 mitigation 4	03/14/22		3	3	9	\$0.00	\$0.00		0.0%	
6 mitigation 5										
7 mitigation 6										

Enter the date, when mitigation efforts are expected to start.

Enter the date, when mitigation efforts actually started

Mitigation cost. If mitigation plan is linked to a task, % completed, cost and actual will be taken from task information.

Select a mitigation plan from the drop-down list. You can also enter a mitigation plan here and it will be automatically added to the Mitigation and Response view.

Actual mitigation based on Actual Dates

Planned mitigation

Colors for the waterfall diagrams are defined by the risk tolerance (see Format Risk Matrix).

Viewing and editing waterfall diagrams:

1. Open the **Risk Register** view.
2. Double-click on Risk ID. The **Risk Information** dialog box opens.
3. Click the **Mitigation (Waterfall diagram)** tab.
4. Enable or disable Actual and Planned mitigation lines using check boxes on the left bottom corner.
5. Double click on Mitigation Plan ID; the Mitigation Plan Properties dialog box opens.
6. Enter a mitigation description.
7. Select the task or summary task to assign it the mitigation plan. If mitigation plan is linked to the task, cost, actual cost, and percent completed of the mitigation plan will taken from task.
8. To delete the task assignment, click **Clear task selection**.

Risk Matrix and Risk Trend Chart

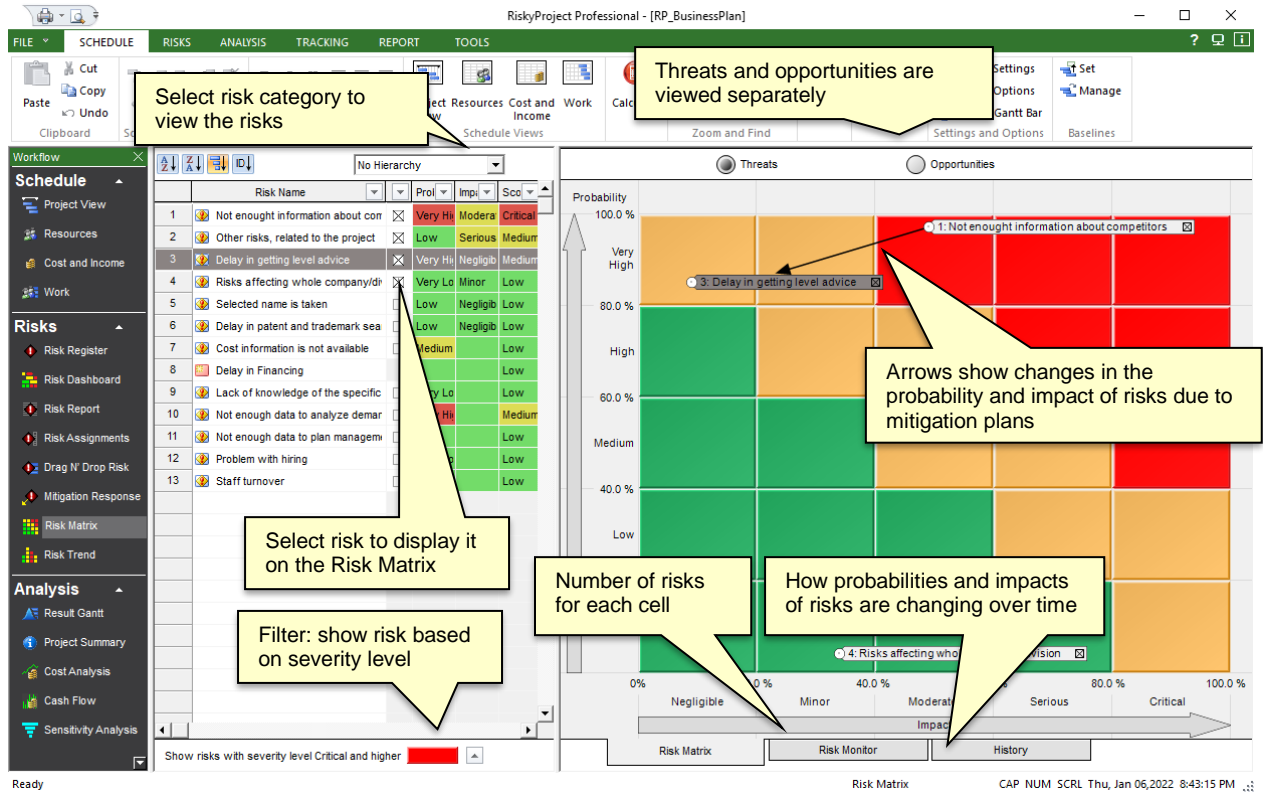
Risk Matrix and Risk Trend views allow you to determine the severity of a risk and analyze how risks are changing over time:

- The **Risk Matrix** is a tool that allows you to determine the severity of a risk. The Risk Matrix view shows this using the risk probability (y-axis) vs. calculated risk impact (x-axis) of the project risks. The Risk Matrix view is divided into two sections: a table with a list of risks with their actual calculated values for probability, impact, and score. When you select these risks, they are shown visually on a matrix, which provides a visual comparison of this data put as well as putting each risk into the context of your organization's risk tolerance. Changes in probability and impact due to mitigation plans added to a risk's mitigation waterfall chart will automatically be displayed in the Risk Matrix.
- The **Risk History** shows how the probability and impact of an individual risk has changed over time.
- The **Risk Monitor** shows the number of risks per cell in the risk matrix.
- The **Risk Trend** shows how project risk change over time. The Risk Trend can be presented as bar chart or in table format (**Total Risks**).

Viewing the Risk Matrix

1. Click the **Risks** tab. In the **Risk Views** group, click **Risk Matrix**.
2. Select type of chart you want to view at the bottom of risk matrix.
3. Select the **Threats** or **Opportunities** option at the top of the matrix. You cannot view Threats and Opportunities at the same time
4. Risk scores can be shown on the Risk Matrix based on overall score (No Hierarchy) or a selected risk category which are shown in the **Hierarchy based on** dropdown list. Lists of all risks associated with the selection are shown in the table. Select **No Hierarchy** to view the overall risk score (sum of all risk categories) for selected risks.
5. Select the check boxes beside the risk names to view the risks on the Risk Matrix. To hide a risk, clear the check box. By default, risks with zero impact cannot be selected. Use the filter at the bottom of the list ("Hide a risk if Score is < " or "Show risks with severity level...") to show/hide risks below the entered threshold. Severity level is defined in **Risk Trend Chart Settings** dialog. Essentially in the color of risk matrix.

To format the Risk Matrix, right-click on the **matrix** and choose **Format Risk Matrix**. For more information about formatting the Risk Matrix, read, "Format the Risk Matrix and Risk Trend Chart".

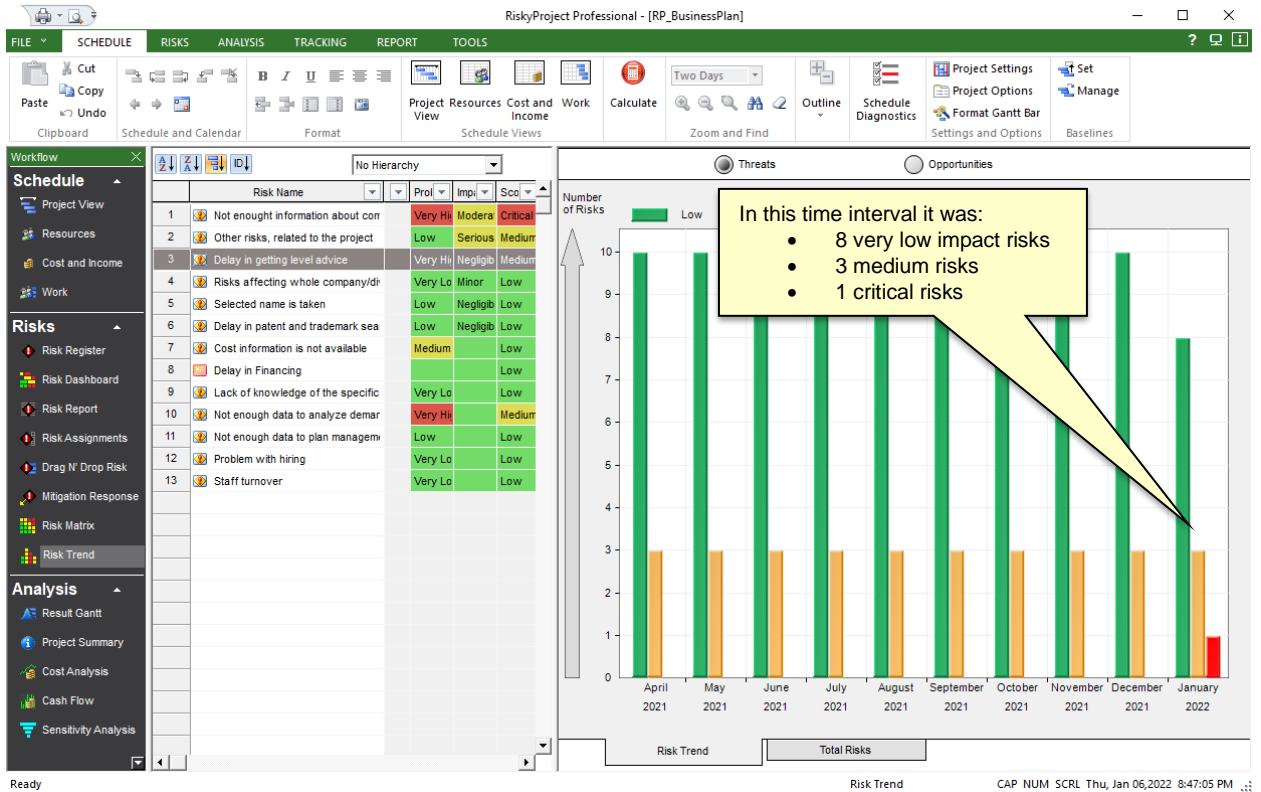


Viewing the Risk Trend Chart

Risk Trend shows how many risks belonging to different severity levels (colors) existed in a certain time period. To view Risk Trend Chart:

1. Click the **Risks** tab. In the **Risk Views** group, click **Risk Trend**.
2. Select a chart type from the tabs at the bottom of the chart..
3. Select the **Threats** or **Opportunities** option at the top of the chart. You cannot view Threats and Opportunities at the same time
4. Select a No Hierarchy or a specific risk category from the **Hierarchy based on** dropdown list. Lists of all risks associated with the selection are shown in the table. **No Hierarchy** shows the calculated overall risk score (sum of all risk categories) for selected risks.

To format the Risk Trend chart, right-click on the chart and choose **Format Trend Chart**. For more information about formatting the Risk Trend Chart, read, “Format the Risk Matrix and Risk Trend Chart”.



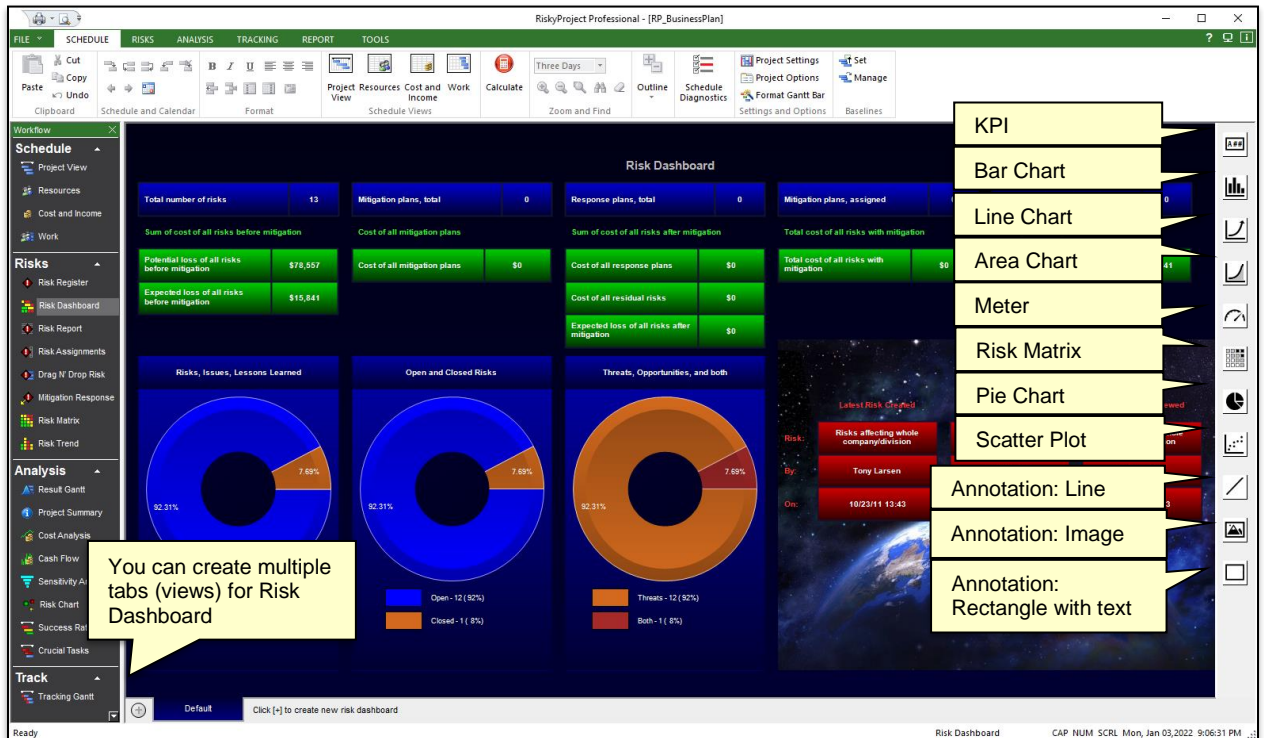
Copy the risk matrix and risk trend chart to the clipboard or save as a JPEG file

1. Right-click on the **Risk Matrix** or **Risk Trend**
2. Choose **Copy to Clipboard** or **Copy Chart to File (JPEG, PNG, GIF...)**.
3. If you chose to create a file, you will be prompted to select file format and save it to a directory.

Risk Dashboard

The fully customizable Risk Dashboard allows you to present hundreds of different KPIs and charts related to your risks. You can create any number of dashboards with different information, which are shown as different tabs within Risk Dashboard View. You can select from 7 types of charts: line, area, pie, scatter, bar (including frequency histogram), different types of meters, and risk matrixes. You can place them in different areas on the dashboard, adjust their size, colors, and other properties. You can also annotate your dashboard with text, lines, and images.

When you modify your risk data, the charts and KPIs ARE automatically updated. This date includes risk properties, mitigation and response plans, and project schedules. Annotation is not updated when we update risk data.



To add a chart, KPI, or annotation to the Risk Dashboard:

1. Select the type of chart or KPI from the toolbar on the right side.
2. Click on the dashboard and drag the line or rectangle to select the position of the chart, KPI, or Properties annotation.
3. Right click on chart, KPI, or annotation.
4. Select **Properties** from shortcut menu; **Properties** dialog opens.
5. Enter properties of the chart, KPI, or annotation; it includes type of chart or what type of data this chart, KPI or annotation will represent as well as graphic properties.
6. Click **Close** to close the Properties dialog box.

To modify a chart, KPI, or annotation

1. Click on the chart, KPI, or annotation; chart, KPI, or annotation you want to modify.

2. Move or expand the area to adjust size or position of the chart, KPI, or annotation
3. Right click on chart, KPI, or annotation and click **Properties** from shortcut menu; **Properties** dialog opens.
4. Modify properties of the chart, KPI, or annotation; it includes type of chart or what type of data this chart, KPI or annotation will represent as well as graphic properties.
5. Click **Close** to close the Properties dialog box.
6. To enter text or update font and alignment, right click on KPI and Annotation rectangle and select **Edit or Format Text** within a shortcut menu .

To export dashboard

1. Right click in any place of dashboard, and from the shortcut menu click **Copy Dashboard to Clipboard** or **Copy Dashboard to File**.
2. In you export dashboard to file, you can select file format: JPEG, PNG, GIF, BMP, or TIFF

Chapter 3: Managing Project Schedules

RiskyProject for Microsoft Project as a Standalone Application

RiskyProject as a Standalone Application

You can launch RiskyProject directly from the Windows Program menu. When you open RiskyProject, the main Project view appears in which you can enter schedule and risk, perform the analysis, track project performance and report the results.

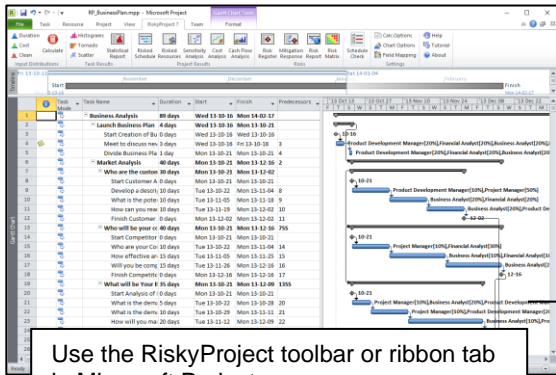
RiskyProject for Microsoft Project

RiskyProject seamlessly integrates with all versions of Microsoft Project from 2010 and later. When you install RiskyProject, it checks if Microsoft Project is installed on the computer. If Microsoft Project 2010 or later is installed RiskyProject installs ribbon tab and Add-In to Microsoft Project.

Here is how the integration works:

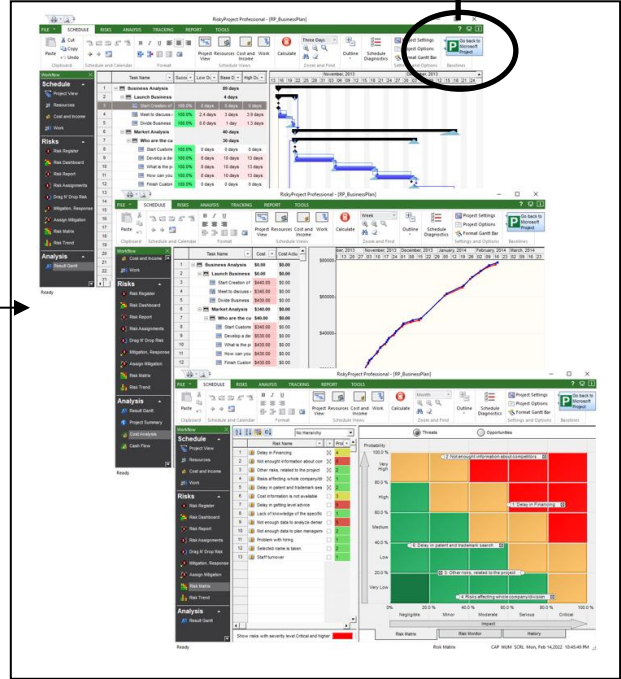
1. The first time you open Microsoft Project after installing RiskyProject for Project, check to see that the RiskyProject ribbon tab is visible. You can enable/disable ribbon tab by clicking on **Options** in the **File** menu. Project Options dialog will open where you can select **Customize Ribbon**. You can also check the installed RiskyProject add-in by selecting **Add-Ins**.
2. Create a schedule in Microsoft Project.
3. Define uncertainties, perform calculation, and analyze results:
 - Define statistical distributions for cost and duration for selected tasks inside Microsoft Project; all statistical distributions are saved in a RiskyProject file.
 - Add risk-related information in the RiskyProject views if necessary: risk events, probabilistic and conditional branching, probabilistic calendars, etc.
 - Perform Monte Carlo simulations
 - View results of analysis and reports in Microsoft Project
4. At any moment, you can go back to Microsoft Project and make changes to your schedule. All changes will be reflected in RiskyProject. However, if you make changes to the deterministic project schedule in RiskyProject, these changes may be overwritten by the Microsoft Project schedule.

Click the **Go Back to Microsoft Project** button in RiskyProject to view original schedule and resources



- Use the RiskyProject toolbar or ribbon tab in Microsoft Project:
1. Define statistical distributions for selected task or group of tasks
 2. Run Monte Carlo Simulations
 3. View results of selected task or group of tasks
 4. Open the selected risk view or report RiskyProject.

Microsoft Project



RiskyProject Add-In

Using Microsoft Project Add-In

Using the RiskyProject Add-In, you can quickly add Low and High estimates for Cost and Schedule directly to your Microsoft Project file, run the simulation, and view the results of the analysis.

Define distributions

Run Monte Carlo

View results for selected tasks

View results and generate reports

Diagnostics of project schedule, created in Microsoft Project

Settings

Setting up the Add-In options

You can set up your Monte Carlo calculation, chart, and field mapping options using the Add-In.

- Calculation options include the maximum number of iterations and convergence monitoring and more. To read more about calculation options, read **Error! Reference source not found.**
- Field mappings allow you to modify the default fields where the distributions for duration and cost are saved. To read more about the mapping, read **Error! Reference source not found.**

Adding Low, Most Likely, and High Duration or Cost in Microsoft Project

1. Select one or more activities.
2. Click the **RiskyProject 7** tab. On the **Input Distributions** group, click **Duration** or **Cost**. The **Statistical Distribution** dialog box opens.
3. Enter in the Low and High estimates using coefficients or fixed values (single activity).
4. Select a distribution and modify any parameters required by the distribution. The “Most likely” estimate is available for Triangular and BetaPert.
5. Click **OK**.

The screenshot displays the Microsoft Project interface with the **Statistical Distribution** dialog box open. The dialog box shows the following details:

- Low Duration = Base Duration * 0.8**
- High Duration = Base Duration * 1.3**
- Distribution:** Beta
- Alpha:** 3.97
- Beta:** 3.00
- Probability Density Graph:** A bell-shaped curve centered at 1.000 on the x-axis (Duration Coefficient), with a peak at 4.500 on the y-axis.

Callout boxes provide additional context:

- View results and generate reports:** Points to the **Run Monte Carlo** button in the **Project Results** group.
- Click to open dialog box to add distributions for duration or cost:** Points to the **Duration** button in the **Input Distributions** group.
- For multiple tasks enter coefficients for Low and High estimates and select a distribution:** Points to the task list in the Gantt chart, which includes tasks like "John[30%], Jason, Tammy[10%]", "David, John[10%]", "Jason, Tammy, John[30%]", "Jason, John", and "David".

To clean edits made to distributions:

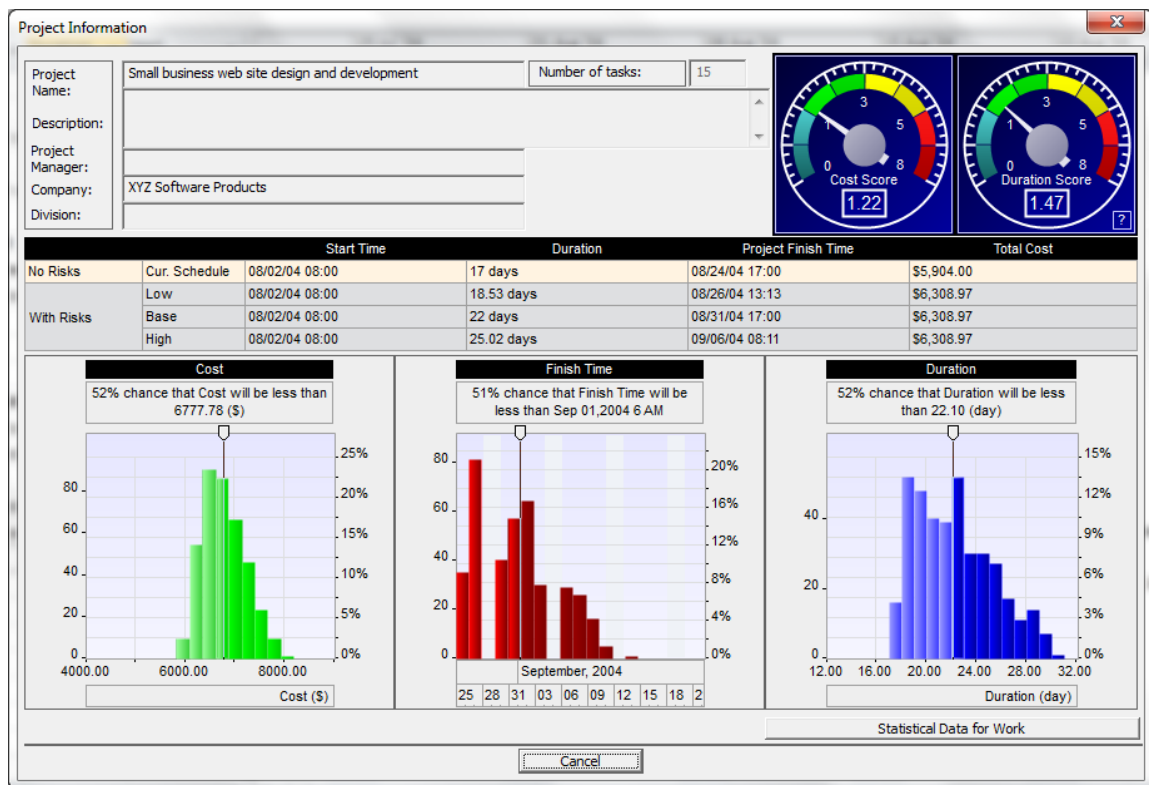
1. Select the task or tasks in which you want to remove the distributions.
2. Click the **RiskyProject 7** tab.
3. On the **Input Distributions** group, click **Clean**.

Run a Monte Carlo simulation using the Microsoft Project Add-In

Once you have defined the low, most likely, and high estimates and distributions to your activities, you can run a simulation.

To run a Monte Carlo simulation:

1. Click the **RiskyProject 7** tab.
2. On the **Input Distributions** group, click **Calculate**. A progress bar will open and indicating the number of iterations that have been completed.
3. When the simulations are completed the **Project Information** report opens, which contains a project summary of the results of the simulation.



View the results of the simulation for a task

You can quickly view either histograms or tornado charts for a task. Only one task can be selected.

To view a histogram or tornado chart for a single task:

1. Click the **RiskyProject 7** tab. On the **Task Results** group, click **Histograms** or **Tornado**. The Task Simulation Results report opens. To read more about these reports, see
2. Viewing Task Simulation Results.
3. Double-click on any of the reports to open a detailed view of the results.

Create a statistics report

You can automatically generate a report that includes a histogram, cumulative probability, and sensitivity analysis for one or multiple activities using the Statistics Report. To read more about the Statistics Report, see **Error! Reference source not found.**


To create report:

1. Run a simulation.
2. On the **Task Results** group, click **Statistics Reports**. The **Statistics Report** view opens.
3. Select the activities that you want to include in the report.
4. From the **File** menu, click **Print** to open the **Print Options** dialog box.

Creating Projects

Creating a new project

The original view for a new document is defined in the **Options, View** tab. The default view can be the last view in the previous RiskyProject session.

1. Click **File**  and then **New**. The new project file opens.
2. To save the project click the **Save** button and type in a project name.




In addition to project files created in RiskyProject, you can also open files that have been saved as a Microsoft Project XML and Oracle Primavera XER format. Microsoft Project XML is the industry standard for project management software and is supported by Microsoft Project, Oracle Primavera, and many other project management software applications.

Importing existing project schedules

You can import existing project schedules from Microsoft Project, Primavera and other project management tools using a variety of file formats.

Importing Microsoft Project files

You can import MS Project files using XML formats.

1. Click **File**  and then **Open**. The **Open File** dialog box opens.
2. Select the format that the project file is in from the **Files of type** drop-down list.
3. Select the MS Project file format that you just saved.
4. Click **OK**.

Project Tasks

When you first start RiskyProject, the Project view opens. Start the scheduling process by adding tasks. Each task should have a name and a base duration. You can enter this information directly onto the datasheet or using the Task Information dialog box.

Opening the Task Information dialog box

The **Task information** dialog box can be used to enter task parameters (duration, start, finish times, assign resources to tasks, assign risks, etc.). You can open the task information dialog using one of the following ways:

- Double-click on Task ID
- Right-click on task ID and Select Task Information
- Select Task and Click on **Project > Task Information**

Entering task name and duration

When you create a task, the first step is to enter a name and a base duration.

1. Click on the **Task Name** field in the **Project** view.
2. Provide a name for the task.
3. Enter a base duration in the **Base Duration** field. You can enter elapsed duration. Elapsed task duration is calculated using a 24-month calendar. To define elapsed duration, enter ‘e’ before units, for example, “10 edays”.

Defining summary tasks and subtasks

Summary tasks represent groups of tasks (subtasks) that can be logically grouped together under a larger task. In large projects with many tasks, this is a useful method of organizing your tasks.

1. Create a task directly above the tasks that you want to group under it. This will become the **Summary Task**.
2. Select the tasks that you want to be the subtasks of the summary task you created in step 1.
3. Click the **Indent** button located on the **Format** toolbar to indent the tasks. The indented tasks are automatically recognized as subtasks of the summary task. If you want to move at task out from under the summary task, select the task and click the **Outdent** buttons. After you click on an **Indent** or **Outdent** button, RiskyProject automatically recalculates the project.

The screenshot displays the RiskyProject software interface. The top menu bar includes FILE, SCHEDULE, RISKS, ANALYSIS, TRACKING, REPORT, and TOOLS. The SCHEDULE toolbar contains buttons for Cut, Copy, Paste, and Indent. The ANALYSIS toolbar contains buttons for Bold, Italic, Underline, and other text formatting options. The TRACKING toolbar contains buttons for Project View, Resources, Cost and Income, and Schedule Views. The main workspace shows a task list with columns for Task Name, Low D, and duration. The task list includes: 1 Business Analysis, 2 Launch Business Plan, 3 Start Creation of Busin, 4 Meet to discuss new b, and 5 Divide Business Plan V. Three yellow callout boxes provide instructions: 'Use this buttons to change the level of the tasks' points to the Indent button; 'Expand or collapse summary tasks' points to the task list; and 'Select tasks that you want to be subtasks' points to the task list.

Task ID	Task Name	Low D	Duration
1	Business Analysis		
2	Launch Business Plan		
3	Start Creation of Busin		0 days
4	Meet to discuss new b		3 days
5	Divide Business Plan V		1 day

Outline Selected Level

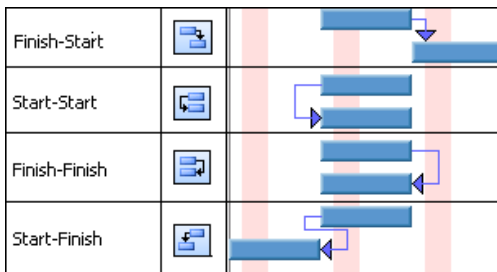
You may view summary tasks associated with a particular level of the hierarchy using the Outline button (Schedule tab).

Task Links

All projects require that the WBS tasks be performed in a certain order. These relationships are defined in RiskyProject using the four linking buttons located on the standard toolbar.



The four types of task dependencies are shown in the following figure:



If you want a next task to be a predecessor of a previous task, for example task 5 to be a predecessor of task 3, you will have to use Predecessors tab in Task Information dialog box. You can also use the Predecessors tab if you want to define lags time greater than zero.

Remember the following rules:

1. You cannot link summary task to one of its subtasks	
2. The predecessors of a summary task must have a finish-start or start-start dependency.	
3. You cannot create circular relationships.	

The connecting line between successors and predecessors will be red if there is a scheduling conflict:



Predecessors and Lags

You define information about predecessors and lags in the **Predecessor** tab of **Task Information** dialog box.

You can use the **Standard** toolbar button to link tasks; however, this method of creating task dependencies has limitations:

- You cannot link a task (from example Task #5) to a previous task (for example Task #3).
- You cannot input lag, which is time delay between predecessor and successor. RiskyProject allows you to setup probabilistic lag with statistical distribution defined by low, base, high number.



Sometimes it is convenient to use predecessor tab instead of link toolbar buttons when task has multiple predecessor or if there is a big difference in task Ids between current task and predecessor. For example, it is not convenient to link task number 5 to task number 74 using toolbar buttons.

You can use Predecessor column within Project view to define or modify predecessors. Text: "1, 2+2 days" would mean than current task has two predecessors (Task 1 and Task 2 with lag 2 days).

Adding a predecessor to a task

1. Select the task to which you want to add a predecessor.
2. Open the **Task Information** dialog box.
3. Click the **Predecessor** tab.
4. On the first row of the grid, click in the **Task Name** cell. A drop-down list appears containing a list of all available tasks or type
5. Select the predecessor from the drop-down list. By default, the predecessor type is **Finish-Start (FS)**.
6. If required, enter a **lag** time. Use the **Lag low** and **Lag high** cells to enter a range of time. Lag can be positive or negative
7. If you are entering a base, high and low lag, you can change the default distribution using the drop-down list in the distribution cell.
 - If the low and high lags are different, the default distribution is triangular.
 - If low, base, and high lag are the same the distribution is undefined.
8. If required, edit the **Seed** number. **Seed** is the starting parameter used for the random number generation that is used to calculate lag. If you have two predecessors, and they have strong positive correlations between their lags, you can make their seeds the same. For example, a low lag for one predecessor will coincide with a low lag for another predecessor.
9. Click **OK**.

Constraints

Constraints are limitations that you set on tasks. For example, you can specify that a task must start on a particular date or finish no later than a particular date. In RiskyProject, you can assign one of seven constraints to a task:

- As soon as possible (default)
- Start no earlier than
- Must start on
- Must finish on
- Start no later than
- Finish no earlier than
- Finish no later than

Summary tasks have only “As soon as possible” and “Start no earlier than”.

Use the **General** tab of **Task Information** dialog box to add or modify constraints. If you set a constraint to Start no Earlier Than, an additional edit box opens in which you set the date for this constraint.

If you assign a constraint other than **As Soon As Possible**, the background color for low, base, and high Start Times or low, base and high Finish Times changes to orange to indicate that the constraint is other than **As Soon As Possible**.

The screenshot shows a table with columns: Task Name, Base Dur, Start, and Finish. The first row is for 'Development' with a duration of '5 days', a start time of '12/21/16 08:00', and a finish time of '12/27/16 17:00'. The start and finish cells are shaded orange. Two callout boxes are present: one pointing to a red dot in the 'Start' cell with the text 'A red dot indicates that the constraint is not set to As Soon As Possible, Must start on and Must finish on', and another pointing to the orange shading with the text 'Shading constrained time (rather than As Soon As Possible)'.

	Task Name	Base Dur	Start	Finish
1	Development	5 days	12/21/16 08:00	12/27/16 17:00

Use constraints to ensure that the task starts or finishes on the specific dates. Use caution when you link tasks with a constrained start or finish time with predecessors because of the potential for scheduling conflicts. In this situation, to avoid scheduling conflicts, set the constraint to **As Soon As Possible**.

Constraints affect both probabilistic and deterministic calculations. If you change the Low or High Start times, the constraint is set to Must Start On, similar to when you change the Base Start time.

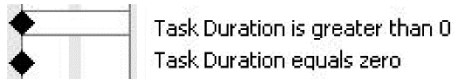
Adding constraints

Before you add a constraint, you should define the task name and duration.

1. Double- click the task to which you want to add a constraint.
2. Click the **General** tab.
3. From the **Constraints** drop-down list, select a constraint that you want to add to the task.

Milestones

You can flag a task as a milestone. If you turn on a milestone, the task bar within a Gantt chart is displayed as:



Any task with zero duration is automatically displayed as a milestone in the Gantt chart; however, any task can be marked as a milestone. The milestone flag is for display only and does not affect the project calculations.

If a task has no duration entered, it is automatically displayed as a milestone, and you do not have to complete the following steps. If you want to flag a task that has duration, complete the following steps.

Creating a milestone

1. Select the task that you want to flag as a milestone.
2. Open the **Task Information** dialog box.
3. Click the **Advanced** tab.
4. Select the **This task is a milestone** check box.
5. Click **OK**.

Managing Resources and Work

Resources are the people and equipment that are assigned or the material that is used to complete a task.

Adding resources

1. Click the **Schedule** tab. In the **Schedule Views** group, click **Resources**.
2. Click on a row.
3. Provide a **Name** (mandatory), **Initials** (optional), and **Rate** (mandatory).
 - You can group resources to define teams using the indent and outdent buttons.
 - Initials and notes are for information only and do not affect the calculations.
 - Rates affect the cost the task to which the resource is assigned. Rates for work resources can be per year, month, week, day, hour and minute. Rates for material resources are per unit (e.g., 10 tons).
4. Select the resource type: **Material**, **Cost** or **Work**.
 - Material label indicates type of material resources (e.g., tons)
5. Maximum units are used to calculate Overallocation of work resources. It is not used for the material or cost resources.

Assigning resources to tasks

1. On the **Schedule** tab, in the **Schedule Views** group, click **Project View**.
2. Select the task to which you want to assign the resource.
3. Click in the **Resource** field associated with the task.
4. Select a resource from the drop-down list. If you type in a new resource name, it will be added to the list of resources in the resource view. When you add a new resource in this manner, it will be assigned at 100% effort for work resource.
5. Enter **Cost** for cost resources

Assigning a calendar to a resource

1. By default, RiskyProject assigns the Standard calendar to resources.
2. On the **Resource** view, double-click on a resource ID.
3. Select a resource calendar from the **Base Calendar** drop-down list.
4. Click the **Working Time** button (**Schedule** tab) to modify the resource calendar.

Defining work

You can enter tasks as work rather than duration. The Work view shows the total work of all resources assigned to a task.

1. On the **Schedule** tab, in the **Schedule Views** group, click **Work**.
2. Select the **Task type: fixed units, fixed duration, or fixed work**. The same information can be defined using **Advanced** tab of Task Information dialog box

3. Check the **Effort driven** flag if the task is effort driven (default value). Effort driven task can be defined in the **Advanced** tab of Task Information dialog box.
 4. Enter low, base, and high work for the selected task. Units for work are defined in the **Tools** > **Options** > **Duration** tab. Duration and units for the task will be calculated based on task type.
-



- For probabilistic calculations, work is always correlated with duration. *Seed* and distribution of the duration are used for work as well. Therefore, *seed* and distribution for work are not entered.
- You may view work assigned to the particular resource in the **Resources** tab of Task Information dialog box.

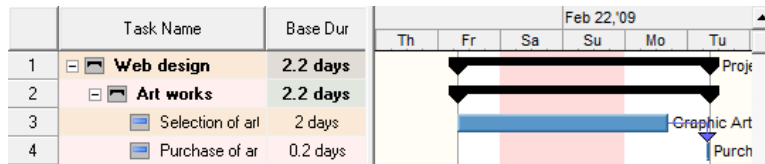
Managing Costs

Cost, Income, and Profit Calculations in RiskyProject

You can define cost and income associated for tasks with risks and uncertainties. You can use income to perform an analysis of the full life cycle of a project. Profit is calculated as the difference between income and cost. This will affect the way that RiskyProject presents data in the Cost and Cash Flow views. If the project has income, all cost and cash flow, data is now shown as Profit where costs are a negative value. In these cases, it is possible that a project will have negative profit.

The example below illustrates how fixed, and variable (resource) costs are calculated with respect to tasks and subtasks:

	Task Name	Cost Low	Cost	Cost Hi...	Accrual	Res.Cost	Tot.Cost	Income A...
1	Web design	\$0.00	\$0.00	\$0.00	Start	\$1004.8	\$1604.8	\$0.00
2	Art works	\$0.00	\$0.00	\$0.00	Start	\$864.00	\$1464.0	\$0.00
3	Selection of art	\$200.00	\$200.00	\$200.00	Start	\$800.00	\$1000.00	\$0.00
4	Purchase of art	\$400.00	\$400.00	\$400.00	Start	\$64.00	\$464.00	\$0.00



The project schedule includes the summary task “Web Site Design”, the summary task “Art Works”, and subtasks “Selection of artwork” (2 days duration) and “Purchase of art work” (0.2 days duration). “Selection of artwork...” has base fixed cost \$200 and is assigned to the Graphic Artist with rate \$50.00/hour. “Purchase of artwork” has a base fixed cost of \$400 and is performed by Purchaser with a rate of \$40.00/hour. The work is supervised by project manager with rate \$80.00/hour, but only 10% his time is assigned to this project. It is assumed that a day has eight (8) working hours.

	Resource name	Chart	Type	Initials	Rate	Max.Units	Base Cale...
1	Graphic Artist	<input type="checkbox"/>	Work	G	50.00/hr	100.00%	Standard
2	Purchaser	<input type="checkbox"/>	Work	P	40.00/hr	100.00%	Standard
3	Project Manager	<input type="checkbox"/>	Work	P	80.00/hr	100.00%	Standard

The Fixed cost for the summary task is calculated as the sum cost of all subtasks, which do not have subtasks under them. Resource costs for summary tasks are calculated as cost of all resources assigned to summary task plus resource cost of all subtasks.

A. Calculation of base fixed cost for summary task “Web Site Design”:

- Base fixed cost for “Selection of artwork...” (Task 3) = \$200.00
- Base fixed cost for “Purchase of artwork” (Task 4) = \$400.00

Total = \$600.00

B. Calculation of variable (resource) cost for summary task “Web Site Design”:

Resource cost for project manager = 17.6 hours * \$80/hr / 10 = \$140.80

Resource cost for Selection of artwork (Task 3) 16 hours * \$50/hr = \$800.00

Resource cost for Purchase of artwork (Task 4) = 1.6 hours * 40/hr = \$64.00

Total = \$1004.80

Income is calculated similarly to cost calculation. Income cannot be assigned to the resources.

Variable and Fixed Costs and Income

There are two types of costs in RiskyProject:

- **Fixed costs**, which are associated with tasks; and,
- **Variable costs**, which are associated with resources.

Costs associated with resources are calculated based on rate, units assigned, and work of the particular resource.

Income is always fixed. You define it in the same manner as fixed costs. Both fixed cost and income can be accrued at the beginning of the task, at end of the task or be prorated.

You define and verify costs and income in the **Cost and Income** tab (Schedule tab if the workflow bar) and report results within **Profit Report** view (Report tab).

Adding fixed costs and income to tasks

The Cost and Income view also shows the calculated results for fixed costs and resource costs.

1. On the **Schedule** tab, click the **Cost and Income** view.
1. Select the task in which you want to include fixed cost or income.
2. Enter base fixed cost in the **Cost** field. You can enter in Low and High estimated costs.
3. Select an accrual method in the **Accrual** column. Accrual methods indicate how cost or income is accrued in the task. Default accrual method if defaulted in **Tools > Options**, cost tab separately for cost and income. Accrual methods available are:
 - Start
 - Finish
 - Prorated
4. Enter Income in the same manner as above.

Chapter 4: Quantitative Risk Analysis

Assigning Risks to Tasks and Resources

Risk Assignments

Risks must be assigned to calculate their impact. If a risk is not assigned to any tasks or resources it will remain in the risk register, but probability, impact, and score will not be shown.

RiskyProject has two types of risks assignments:

- **Global Risk Assignments** – Global risk assignments are those risk assignments that have a chance of affecting the project as a whole and are not limited to specific tasks or resources. For example, political or weather risks would be assigned as global.
- **Local Assignments** – Local risk assignments are those risks that have a chance of affecting only specific tasks or resources. A local risk assignment can affect more than one task or resource. For example, risks affecting the delivery of specific equipment for a certain phase of a project would be assigned local.

You can edit or view risk assignments in the following dialog boxes and views:

View	dialog box/Tab	Local or Global	Assigned to tasks or resources
Drag’N’Drop Risk View		Local risks	Both task and resources
Risk Assignment View		Risks can be re-assigned to different tasks or resources or become global	Both task and resources
Risk Register	Risk information dialog (double-click on Risk ID), Assignment tab	Both local and global risk	Both task and resources
Any view with task information (Project View, Result Gantt, etc.)	Task information dialog (double-click on Task ID), Risk tab	Local risks	Task
Resource View	Resource information dialog (double-click on Resource ID), Risk tab	Local risks	Resources

Converting your project from Qualitative to Quantitative Risk Analysis

If you have risks in the Risk Register, but no schedule, you can perform a qualitative risk analysis of your project. If you add even one task to the project, all your risks will convert to global risks, and will therefore be assigned to all tasks.

In quantitative risk analysis risk categories are separated into two groups:

- **Schedule related risk categories:** “Schedule and Scope” which is related to category “Duration” in qualitative analysis and “Cost and Income” which is related to category “Cost” in qualitative analysis.
- **Non-schedule categories** (Safety, Quality, Technology, etc.)

In qualitative risk analysis the “Duration” category has only one outcome type “Relative delay”; however, in quantitative analysis, the corresponding category “Schedule and Scope” has many outcome types (fixed delay, relative delay, etc.). Similarly, in qualitative analysis the “Cost” category has only one outcome type, “Relative cost increase”; whereas the “Cost and Income” category in quantitative analysis has many outcome types (fixed cost increase, relative cost increase, etc.).

If you add a schedule (i.e. activities or tasks) to your project, the following occurs:

- Risks with the outcome type “Relative Delay” will convert to a global risk with the same outcome type.
- Risks with the outcome type “Relative Cost Increase” will convert to a global risk with the same outcome type”.

At this point, you may need to reassign these risks to particular tasks or resources and modify the outcome types. For example, a risk which had a Relative Cost Increase may need to be modeled as a Fixed Cost Increase.

- The Probabilities and impacts of schedule related risks in quantitative analysis are calculated differently than in qualitative analysis.
- Schedule related risk impacts are calculated as a correlation between the duration or cost impact for each risk and project duration or cost.
- As a result, probabilities and impacts of schedule risk for quantitative and qualitative analysis will be different.

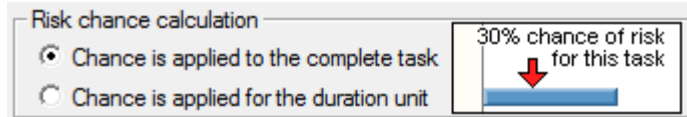
For more information about calculation of probabilities and impacts of risks for quantitative analysis read, “**How are risk probabilities, impacts, and scores calculated?**” in the Frequently Asked Questions.

- The risk register has an additional column for quantitative risk analysis: risk assignment. To view pre- and post-mitigation probabilities and impacts for quantitative risk analysis, you must calculate your project.
- When you have a project with a schedule, the Risk Assignment view is enabled. The Risk Assignment icon will be disabled in the workflow bar for qualitative analysis (no schedule).
- When you remove a schedule but do not remove risks, you will be performing qualitative risk analysis.

Risk Attributes for Quantitative Risk Analysis

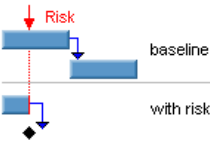
Each risk has the following information related to quantitative analysis.

- Risks can be assigned to Tasks or Resources
- Risks are defined by the **chance of occurrence** (from 0% to 100%). The chance can be defined per task (by default) or per duration unit. For example, if there is a 30% chance that task can be restarted per day. If task duration is 2 days, the chance of the risk occurring per task is 60%. This chance calculation option is defined for **all tasks and resources** for the project in the **Risk** tab of the **Options** dialog box:



- Each risk has a different **outcome type**. Outcome types can be schedule and cost related and non-schedule related, which you can customize using the Risk Outcome dialog box. Standard schedule-related risk outcomes are shown in the table.

Outcome Type	Description	
No Impact	This is for information only and has no impact on project schedule	
Relative Delay Fixed Delay	Durations will be expanded in the period, defined in the Result field regardless of, when the risk occurs. If the Result is negative, the task duration will be reduced. If task duration is elapsed, the delay will also be represented in elapsed units (edays, ehour, etc.)	
Relative Cost Increase Fixed Cost Increase	Task related fixed costs are increased by the amount, defined in the field Result regardless of when the risk occurs. If the Result is negative, costs are reduced. These risks do not affect cost per use.	
Relative Income Increase Fixed Income Increase	Works in a similar manner to fixed cost increase and relative cost increase but applied to the income.	
Restart Task	Tasks are restarted from the moment the risk occurs. As a result, the task duration is increased.	
End Task	Tasks are successfully completed when the risk occurs. As a result, the task duration is reduced.	
Cancel Task	Tasks are canceled when the risk occurs. As a result, the task duration is reduced, and the task is marked as canceled.	

Cancel Task + all successors	Tasks and all its successors are canceled when the risk occurs. As a result, the task duration is reduced, and the task and all its successors are marked as canceled.	
Rate Increase	This risk can only be used on resources. If this risk occurs, the rate will be increase or reduce. For example, if the rate is \$20/hour and risk outcome is 50%, the rate will be \$30/hour if the risk occurs. This outcome affects project cost.	
Execute Response Plan	Result field for this risk contains a dropdown list with mitigation plans. They come from Risk Mitigation or Response view. If task has multiple local and global risks, which require execution of the particular mitigation or response plan, this plan will be executed only once.	

- The **Outcome** is related to the outcomes “**Fixed cost increase**”, “**Relative cost increase**”, “**Fixed delay**”, “**Relative delay**”, and “**Rate Increase**”. It defines how much the duration or cost will be increased or reduced.
- RiskyProject calculates the **Risk Impact** for duration and cost using sensitivity analysis and displays this in the Risk Register, Risk Assignment views and Risk Tabs for Tasks and Resources. Colors are used to indicate the level of correlation between the risk and project duration and cost.
- Red indicates a strong correlation
- Yellow a medium correlation
- Green a weak or no correlation

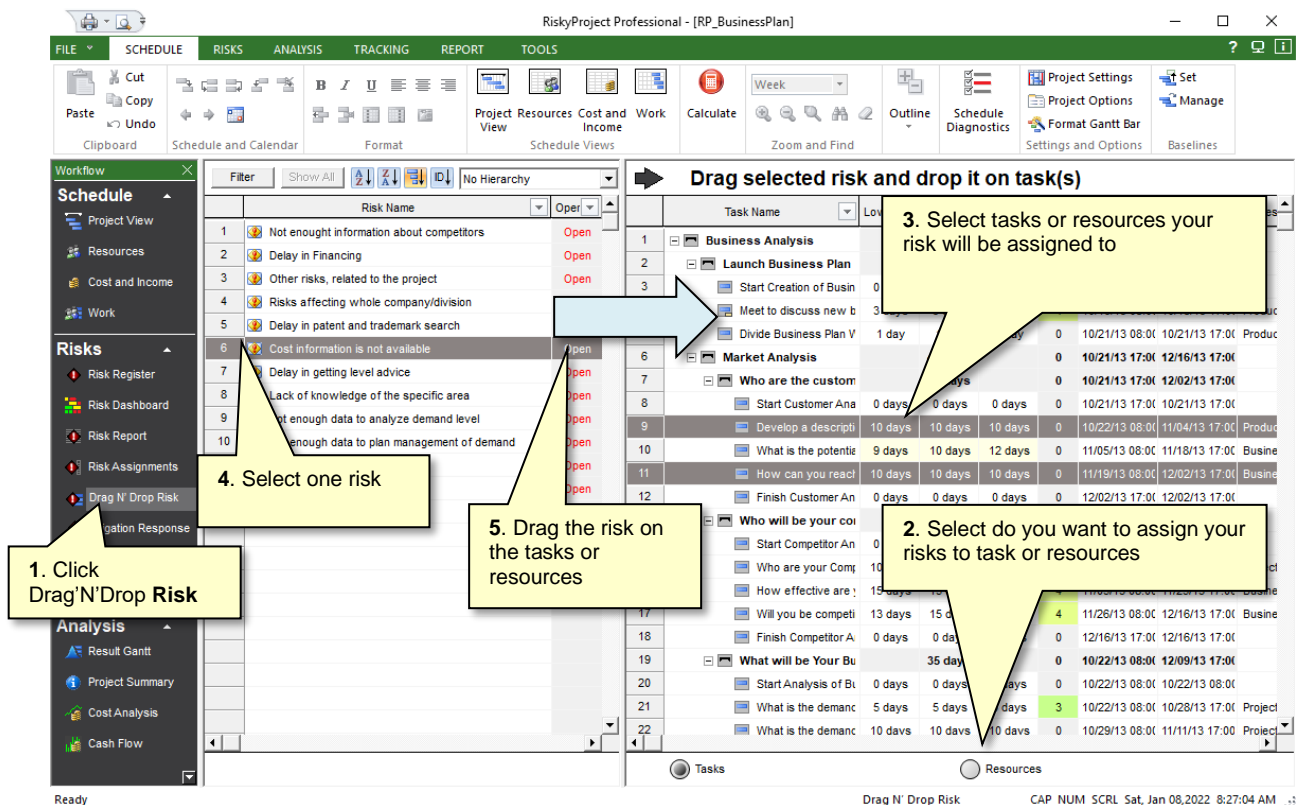
Colors for threats are the opposite. Particular colors for the risk impact value depend on the risk tolerance defined in Format Risk Matrix dialog box.

Assigning local and global risks

Once you have added your risks you can start assigning your local risks to tasks and resources. You cannot assign the same local risk to both a task and a resource. RiskyProject offers a number of ways to assign risks to task and resources.

Method 1: Assigning risks using the Drag’N’Drop Risk view

This is the preferred method for assigning risks to complex projects as it allows you to quickly assign risks to multiple tasks or resources.



1. On the **Risks** tab, click the **Drag'N'Drop Risk** view.
2. You must indicate whether you are assigning the risk to **Tasks** or **Resources** using the options below the list of tasks or resources. Select **Task** or **Resources** and the right pane will list change based on your selection. By default, the view is set to **Tasks**.
3. Select tasks or resources your risk will be assigned to.
4. Select one risk.
5. Drag risk onto the tasks or resources.
6. The **Assign risk to task or resource** dialog box opens. It shows a list of the task or resources that the risk will be assigned to and allows you to define risk chance, outcome type, outcome, and moment of risk
7. Select whether you want to add or update a risk for the specific task or resource or if you do not want to make any changes to risk assigned to the specific task
8. Enter the risk chance, outcome type, outcome and moment of risk. These parameters will be the same for all selected tasks.
9. Click **OK**. The risk assignment to the selected tasks or resources is updated.

Managing Uncertainties

If you have accurate historical statistical data that is analogous to a particular element in your project, we recommend that you use this data to model uncertainty in your project as opposed to risk events. Be aware of double-counting risk and uncertainty as most of the uncertainty in a project is due to the probability of risk events occurring.

To define uncertainties:

1. Define a 3-point estimate for any of task parameters: fixed cost, income, duration, and start time. 3-point estimates for work will be calculated automatically based on uncertainty in duration. You may also define 3-point estimates for the lag.
2. You can define a **Most Likely** duration or fixed cost. By default, Most Likely duration or fixed cost equals Base duration and Fixed Cost. However, you can define separate Most Likely values. This can be used if you believe that the Base values from original project schedule is not realistic, but you want to maintain the original Base values. Most Likely values are used only with Triangular and BetaPert distributions.
3. After you define 3-point estimates, a statistical distribution will be assigned. You may change the default statistical distribution for the duration, cost, income, and start time parameters in the **gf Distributions** tab of **Task Information** dialog box.

Adding 3-point estimates for task duration and start times using Task Information Dialog

1. On the **Project** view, double-click on the task ID.
2. Click the **General** tab.
3. Define a **Base**, **Low**, and **High** dates for **Duration** and/or **Start Time**.
4. Define a **Base**, **Low**, and **High** values for **Duration**. By default, when you enter a value for duration, the default values for Low and High are calculated based on the defaults set in the Duration Options.
5. Click **OK** to save the estimates.

Adding 3-point estimates for task duration using the Project View

1. On the **Project** view, select the task to which you want to add cost and income estimates
2. Enter cost data for **Duration Low**, **Duration Base**, and **Duration High**. By default, when you enter a value for Duration Base, the default values for Low and High are calculated based on the Duration defaults set in the Duration Tab of Project Options dialog.
3. You may define a **Most Likely Duration**. The Duration Most Likely column is hidden by default, so you will need to insert the to your datasheet. To insert column right click on column header, choose “Insert Column Before...” or “Insert Column After...”, and select **Duration Most likely**.

Adding 3-point estimates for task cost and income

1. On the **Cost and Income** view, select the task to which you want to add cost and income estimates

2. Enter cost data for **Cost Low**, **Cost**, and **Cost High**. By default, when you enter a value for Cost, the default values for Low and High are calculated based on the Cost defaults set in the Cost Tab of Project Options dialog.
3. You may define a **Most Likely Duration**. The Duration Most Likely column is hidden by default, so you will need to insert the to your datasheet. To insert column right click on column header, choose “Insert Column Before...” or “Insert Column After...”, and select **Duration Most likely**.
4. Enter income data for **Inc. Low**, **Income**, and **Inc. High**.

Adding 3-point estimates for lags

1. On the **Project** view, double-click on the task ID.
2. Click the **Predecessor** tab.
3. Enter Low, Base, and High Lag. Default statistical distribution will be generated automatically. There are only two distributions for lag: Uniform Triangular.
4. Click **OK** to save the estimates.

Distributions for 3-point estimates for duration, cost, income, and start time

You define distributions for 3-point estimates in duration, start time, income and cost in the **Distributions** tab of **Task Information** dialog box. Distribution for work is the same as distribution for duration. Distributions do not affect the deterministic calculation of current schedule. You cannot define distributions for summary tasks.

The Distributions tab allows you to assign distributions and define the meaning of low and high values for normal and lognormal distributions. The actual values for low, base (most likely), and high duration, cost, and start time are defined when you enter task parameters in data sheets. Low and high duration and start time can be entered in **General** tab of **Task Information** dialog box of in data sheets. Seeds, which are associated with the distributions, are defined in data sheets.

Defining task distributions

1. Select the task in which you want to define distributions.
 2. Open the **Task Information** dialog box.
 3. Click the **Distributions** tab.
 4. Select the **Cost**, **Duration** or **Start Time** tab.
 5. Select the distribution from the **Distribution** list. If you select **Undefined**, the base value will be used for all iterations.
 6. Define the distribution parameters. The Probability Density chart is automatically updated. You can adjust distribution parameters using the sliders.
 7. If you use a custom or discrete distribution, a grid opens. The grid will allow you to define points (or intervals for discrete distributions) and associated with each point (interval)
 8. If you select **Normal** or **Lognormal**, you must select the **Low** and **High** probability range (P1 and P99, P5 and P95 or P10 and P90). These are “cut-off” parameters; meaning that duration, cost, or start time cannot go beyond these values.
-

Calculations

RiskyProject has two types of calculations:

- **Deterministic calculation of current schedule** - The default calculation is automatically performed when you modify a project schedule. As this calculation occurs automatically, you do not need to press the Calculation button. This calculation uses the Base input parameters (duration, start time, lag) without calculating the effect of risk or uncertainty.
- **Probabilistic (Monte Carlo simulations)** - Use this to calculate the project schedule and costs with uncertainties and risks.
- Automatic Monte Carlo simulations for small tasks are enabled by default.

Enabling or disabling automatic Monte Carlo simulations for small projects

1. Click the **Schedule** tab. In the **Settings and Options**, click **Options**. The Options dialog box opens.
2. Click the **Calculations** tab.
3. From the **Default Calculation for Small Projects** option box, select one of the two options:
 - Current Schedule Calculation only
 - Probabilistic Calculation (Monte Carlo simulation)
4. Click **OK**. RiskyProject automatically determines which project is small based on your computer's performance and the size of the project.

Running probabilistic calculations

Click the **Calculate** button. You may cancel the probabilistic calculation at any time; however, if the number of simulations performed is less than 20, no probabilistic results will be calculated.

Defining the number of simulations

You can define the total number of simulations run during each probabilistic calculation.

1. Click the **Schedule** tab. In the **Settings and Options** group, click **Options**.
2. Click the **Calculations** tab.
3. Type in the number of simulations in the **Maximum number of simulations** box. The number of simulations that have actually been run could be less if the simulations converge.

Analyzing Results

Project Summary

The Project Summary view shows the main information about your project: total cost or income (if income is defined), finish time, duration, and success rate for both deterministic and probabilistic calculations.

Main Project information. You can also enter or modify this information in the **Project Settings** dialog box

This table shows the project parameters for:

- Current schedule (no risks) and
- Probabilistic calculations (with risks).

The cells related to probabilistic results will be blank if probabilistic calculations have not been run.

Use meter to see risk score for project cost and duration

Right-click on a chart to view menu items that provide analysis and output options.

Move the slider to view the chance that cost, duration or finish time will be less than a certain value.

If your project has any income, this will be the project profit.

Interactive frequency charts represent the risk profile of the project. Double-click on a chart to open the Detail view of the chart.

	Project Start Time	Project Duration	Project Finish Time	Total Project Cost	Profit
No Risks	Cur. Schedu	10/16/13 08:00	89 days	02/17/14 17:00	\$75,952
	Low	10/16/13 08:00	96.84 days	02/27/14 15:45	\$80,370
With Risks	Base	10/16/13 08:00	113 days	03/21/14 17:00	\$86,218
	High	10/16/13 08:00	134.36 days	04/22/14 10:55	\$98,982

Project Success Rate: 100.0% Percent Done: 0% Number of samples: 360

Cost
53% chance that Cost will be less than 86,087 (\$)

Finish Time
44% chance that Finish Time will be less than Mar 22, 2014

Duration
43% chance that Duration will be less than 112.72 (day)

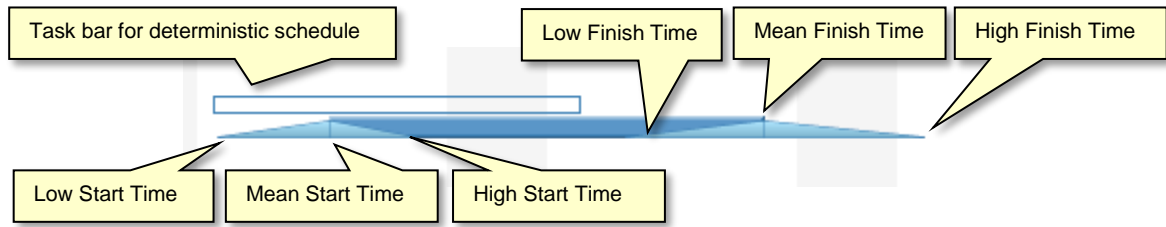
The Project Summary is divided into four sections:

- Main project information – the main project information includes the project name, manager, etc.
- Main project parameters with and without risks – this table is located in the center of the project summary and shows the project start time, duration, finish time, cost, income, and profit for the current schedule (no risks) and the low, base, and high calculated results.
- Main project parameter frequency/cumulative probability charts – interactive charts that show the distribution of the results.

- Meters: provide project risk scores for cost and duration. You can adjust the scale and calculation formula for project meters by clicking on the question mark (?) on the left bottom corner of the duration meter. You can also define a formula for project risk score.

Results Gantt Chart

RiskyProject displays the start and finish ranges of each task in the Result Gantt view. The calculated project and baseline schedules are shown in the same Gantt chart. You can use the task bar for current schedule to compare deterministic and probabilistic schedules.



You can display Result Gantt associated only with low (optimistic) and high (pessimistic) results.

Showing or Hiding Low/High Results

1. Right-click on the chart and a shortcut menu opens.
2. From the shortcut menu, choose one of the following viewing options:
 - Show Low/High Results
 - Show Low Results
 - Show High Results
 - Show Current Schedule.

Task Simulation Results

RiskyProject allows you to quickly view the cost (profit, if income in any task is defined), duration, start time and finish times uncertainties associated with each task.



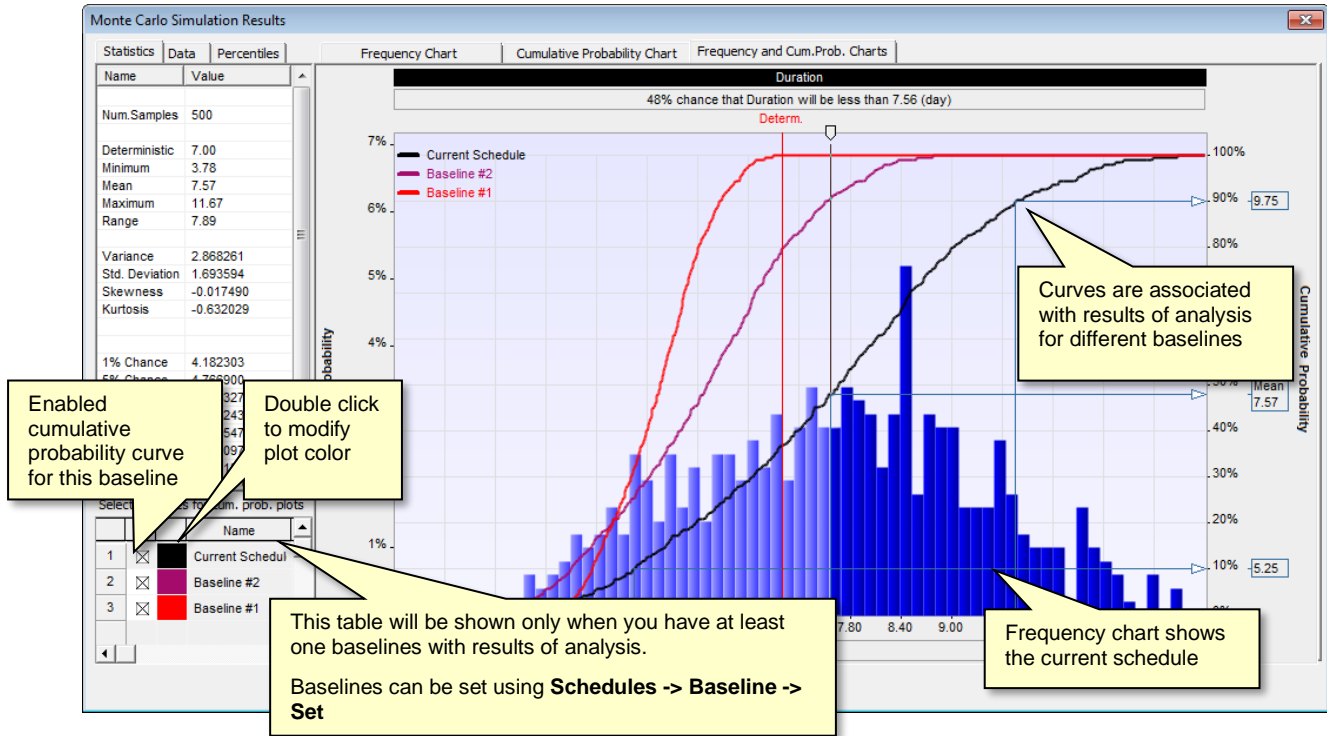
After you have completed a probabilistic calculation, you can see the probability that the particular task will start and finish on particular dates and will have a duration and a cost less than a certain value. The six charts available are for:

- Cost (Profit
- Duration
- Start Time
- Finish Time
- Variable cost
- Work

Viewing Task Simulation Results

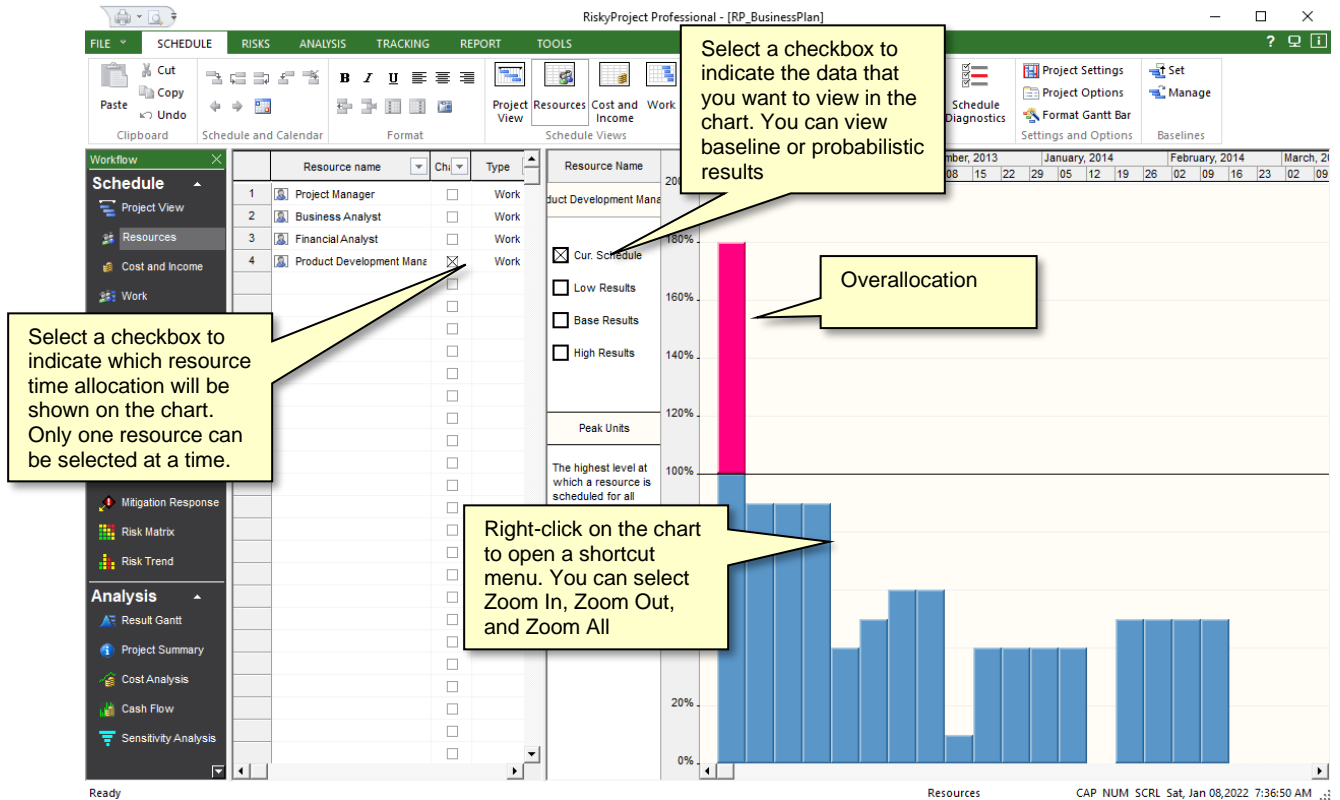
1. Right-click on a task **ID** in any view. A shortcut menu opens.
2. Choose **Task Simulation Results** from the shortcut menu. The **Monte Carlo Simulation Results** dialog box opens.
3. Drag the slider across the charts to view the chance of a certain result.
4. Double-click on a chart to open up a detailed view of the chart.
 - Click the tabs on the top of the charts to toggle between **Frequency, Cumulative Probability** views, and their combination.
 - Click the **Statistics, Data, or Percentiles** to view more detailed views of the result data.

- If you created at least one baseline with results of analysis, you will see a detailed chart with multiple cumulative probability plots. A list of baselines is shown in the left bottom corner of the dialog box. You can enable and disable plots, as well as change colors for the plots. By using multiple cumulative probability plots, you can compare uncertainties in different project scenarios for particular task or for whole project.



Resource Allocation

The Resource chart shows the time allocation for a selected resource.



For the resource chart to open, two conditions must be met:

- You must select the **Chart** check box for a resource in the resource sheet.
- The selected resource must be assigned to a task.

You can select four different types of resource charts:

- **Peak units:** The highest level at which a resource is scheduled for all assigned tasks during a given period.
- **Work:** The total number of hours a resource is scheduled for all assigned tasks during a given period.
- **Overallocation:** A resource is over allocated when it has more work assigned than can be done in the resource's available time. Overallocation is number of hours a resource is scheduled for all assigned tasks over resource's available time. Overallocation can be shown only for work (not material and cost) resources.
- **Percent allocation:** The percentage of a resource's capacity taken up by all of its assigned tasks during a given period. Percent allocation is only available for work (not material and cost) resources.

Analyzing Cost and Profit

Use the **Cost Analysis** view to analyze cost and profit on each stage of the project. The Cost Analysis view has up to five cost diagrams:

Cost diagram	Description	Color	When it is shown
Current schedule (budgeted) cost or profit	Cost diagram with current project schedule (no risks)	Red	Always when cost or profit for any task is defined
Result cost (Low)	Cost diagram with risk and uncertainties (calculation results, low estimate)	Blue – dashed line	Shown after calculation if uncertainties are defined and Low Result Cost Chart is selected from shortcut menu (right click on the chart)
Result cost (Base)	Cost diagram with risk and uncertainties (calculation results, base estimate)	Blue	Shown after calculation if uncertainties are defined and Base Result Cost Chart is selected from shortcut menu (right click on the chart)
Result cost (High)	Cost diagram with risk and uncertainties (calculation results, high estimate)	Blue dashed line	Shown after calculation if uncertainties are defined and High Result Cost Chart is selected from shortcut menu (right click on the chart)
Actual cost	Cost diagram represents actual cost	Green	Shown after calculation if uncertainties are defined and actual cost is available (either entered directly or percent done for at least one task is defined)

You may use the slider to determine:

- Cost Variance (actual vs. budgeted cost)
- Cost with Risks and uncertainties vs. Current schedule (budgeted) cost.

