Risk Analysis Overview

This document provides a basic introduction to the risk analysis process. The risk analysis process is divided into the following five steps:

1. **Plan Project**
   - The first step is to plan your project. It is important to note that the project must be a complete critical path network to achieve meaningful risk analysis results. Characteristics of a good critical path network model are:
     - There are no constraint dates
     - Lowest level tasks have both predecessors and successors
     - Over 80 percent of the relationships are finish to start
   - In the Risk+ tutorial, we use the DEMO.MPP project file, which has the characteristics of a good critical path network model. Since the scheduling process itself is well covered in the Project manual we won’t repeat it here.
   - The second step is to identify the key or high risk tasks for which statistical data will be collected. Risk+ calls these Reporting Tasks. Collecting data on every task is possible; however, it adds little value and consumes valuable system resources. In this step you should also identify the Preview Task to be displayed during simulation processing.

2. **Identify Reporting Tasks**
   - The second step is to identify the key or high risk tasks for which statistical data will be collected. Risk+ calls these Reporting Tasks. Collecting data on every task is possible; however, it adds little value and consumes valuable system resources. In this step you should also identify the Preview Task to be displayed during simulation processing.

3. **Enter Risk Parameters**
   - The third step requires the entry of risk parameters for each non-summary task. For each non-summary task enter a low, high and a most likely estimate for duration and/or cost. Next, assign a probability distribution curve to the cost and duration ranges. The probability distribution curve guides Risk+ in the selection of sample costs and durations within the specified range. See the section titled “Selecting a Probability Distribution Curve” in the Risk+ manual for more information on selecting a curve type. Update options such as “Quick Setup” and “Global Edit” can dramatically reduce the effort required to update the risk parameters.

4. **Run Simulation**
   - The fourth step is to run the simulation. The simulation will analyze the input parameters and generate outputs based on the probability distribution curves.

5. **Analyze Outputs**
   - The fifth step is to analyze the outputs. The outputs will provide a range of possible project completion dates and costs, along with their probabilities.

Risk+ provides a number of predefined reports and views to assist in analyzing these outputs. In addition, you can use Project’s reporting facilities to generate custom reports to suit your particular needs.
The fourth step is to run the risk analysis. Enter the number of iterations to run for the simulation, and select the options related to the collection of schedule and cost data. For each iteration of the simulation, the Monte Carlo engine will select a random duration and cost for each task (based upon its range of inputs and its probability distribution curve), and recalculate the entire schedule network. Results from each iteration are stored for later analysis.

The fifth and final step is to analyze the simulation results. Depending on the options selected, Risk + will generate one or more of the following outputs:

- Earliest, expected and latest completion date for each reporting task
- Graphical and tabular displays of the completion date distribution for each reporting task
- The standard deviation and confidence interval for the completion date distribution for each reporting task
- The criticality index (percentage of time on the critical path) for each task
- The duration mean and standard deviation for each task
- Minimum, expected and maximum cost for the total project
- Graphical and tabular displays of cost distribution for the total project
- The standard deviation and confidence interval for cost at the total project level

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