

## Chapter 11

# PROJECT RISK MANAGEMENT

### (Chapter Summary)

Risk is an uncertainty that can have a negative or positive effect on meeting project objectives. Projects, by virtue of their unique nature, involve risk. Many organizations do a poor job of project risk management, if they do any at all. Successful organizations realize the value of good project risk management.

Risk management is an investment; that is, there are costs associated with identifying risks, analyzing those risks, and establishing plans to address those risks. Those costs must be included in cost, schedule, and resource planning.

Risk utility or risk tolerance is the amount of satisfaction or pleasure received from a potential payoff. Risk seekers enjoy high risks, risk-averse people do not like to take risks, and risk-neutral people seek to balance risks and potential payoff.

Project risk management is a process in which the project team continually assesses what may negatively or positively impact the project, determines the probability of such events occurring, and determines the impact should such events occur. It also involves analyzing and determining alternate strategies to deal with risks. The six main processes involved in risk management are planning risk management, identifying risks, and performing qualitative risk analysis, performing quantitative risk analysis, planning risk responses, and monitoring and controlling risks.

Planning risk management is the process of deciding how to approach and plan for risk management activities for a particular project. A risk management plan is a key output of the risk management planning process, and a risk register is a key output of the other risk management processes. Contingency plans are predefined actions that a project team will take if an identified risk event occurs. Fallback plans are developed for risks that have a high impact on meeting project objectives, and are implemented if attempts to reduce the risk are not effective. Contingency reserves or contingency allowances are provisions held by the project sponsor or organization to reduce the risk of cost or schedule overruns to an acceptable level.

Information technology projects often involve several risks: lack of user involvement, lack of executive management support, unclear requirements, poor planning, and so on. Lists developed by the Standish Group and other organizations can help you identify potential risks on information technology projects. A risk breakdown structure is a useful tool that can help project managers consider potential risks in different categories. Lists of common risk conditions in project management knowledge areas can also be helpful in identifying risks, as can information-gathering techniques such as brainstorming, the Delphi technique, interviewing, and SWOT analysis. A risk register is a document that contains results of various risk management processes, often displayed in a table or spreadsheet format. It is a tool for documenting potential risk events and related information. Risk events refer to specific, uncertain events that may occur to the detriment or enhancement of the project.

Risks can be assessed qualitatively and quantitatively. Tools for qualitative risk analysis include a probability/impact matrix and the Top Ten Risk Item Tracking technique. Tools for quantitative risk analysis include decision trees and Monte Carlo simulation. Expected monetary value (EMV) uses decision trees to evaluate potential projects based on their expected value. Simulations are a more sophisticated method for creating estimates to help you determine the likelihood of meeting specific project schedule or cost goals. Sensitivity analysis is used to show the effects of changing one or more variables on an outcome.

The four basic responses to risk are avoidance, acceptance, transference, and mitigation. Risk avoidance involves eliminating a specific threat or risk. Risk acceptance means accepting the consequences of a risk, should it occur. Risk transference is shifting the consequence of a risk and responsibility for its management to a third party. Risk mitigation is reducing the impact of a risk event by reducing the probability of its occurrence. The four basic response strategies for positive risks are risk exploitation, risk sharing, risk enhancement and risk acceptance.

Monitoring and controlling risks involves executing the risk management processes and the risk management plan to respond to risks. Outputs of this process include risk register updates, organizational process assets updates, change requests, and updates to the project management plan and other project documents.

Several types of software can assist in project risk management. Monte Carlo based simulation software is a particularly useful tool for helping get a better idea of project risks and top sources of risk or risk drivers.

## **Quick Quiz**

1. \_\_\_\_\_ is an uncertainty that can have a negative or positive effect on meeting project objectives.
  - a. Risk utility
  - b. Risk tolerance
  - c. Risk management
  - d. Risk
  
2. A person who is risk-\_\_\_\_\_ receives greater satisfaction when more payoff is at stake and is willing to pay a penalty to take risks.
  - a. averse
  - b. seeking
  - c. neutral
  - d. aware
  
3. Which risk management process involves prioritizing risks based on their probability and impact of occurrence?
  - a. planning risk management
  - b. identifying risks
  - c. performing qualitative risk analysis
  - d. performing quantitative risk analysis
  
4. Your project involves using a new release of a common software application, but if that release is not available, your team has \_\_\_\_\_ plans to use the current release.
  - a. contingency
  - b. fallback
  - c. reserve
  - d. mitigation
  
5. Which risk identification tool involves deriving a consensus among a panel of experts by using anonymous input regarding future events?
  - a. risk breakdown structure
  - b. brainstorming
  - c. interviewing
  - d. Delphi technique
  
6. A risk \_\_\_\_\_ is a document that contains results of various risk management processes, often displayed in a table or spreadsheet format.
  - a. management plan
  - b. register
  - c. breakdown structure
  - d. probability/impact matrix
  
7. \_\_\_\_\_ are indicators or symptoms of actual risk events, such as a cost overrun on early activities being a symptom of poor cost estimates.
  - a. Probabilities
  - b. Impacts
  - c. Watch list items
  - d. Triggers
  
8. Suppose there is a 30 percent chance that you will lose \$10,000 and a 70 percent chance that you will earn \$100,000 on a particular project. What is the project's estimated monetary value?
  - a. \$30,000
  - b. \$70,000
  - c. \$67,000
  - d. \$67,000

9. \_\_\_\_\_ is a quantitative risk analysis tool that uses a model of a system to analyze the expected behavior or performance of the system.

- a. Simulation
- b. Sensitivity analysis
- c. Monte Carlo analysis
- d. EMV

10. Your project team has decided not to use an upcoming release of software because it might cause your schedule to slip. Which negative risk response strategy are you using?

- a. avoidance
- b. acceptance
- c. transference
- d. mitigation

## **Key Terms**

**Brainstorming** — a technique by which a group attempts to generate ideas or find a solution for a specific problem by amassing ideas spontaneously and without judgment

**Contingency allowances** — provisions held by the project sponsor or organization to reduce the risk of cost or schedule overruns to an acceptable level; also called *contingency reserves*

**Contingency plans** — predefined actions that the project team will take if an identified risk event occurs

**Contingency reserves** — provisions held by the project sponsor or organization to reduce the risk of cost or schedule overruns to an acceptable level; also called *contingency allowances*

**Decision tree** — a diagramming analysis technique used to help select the best course of action in situations in which future outcomes are uncertain

**Delphi technique** — an approach used to derive a consensus among a panel of experts, to make predictions about future developments

**Expected monetary value (EMV)** — the product of the risk event probability and the risk event's monetary value

**Fallback plans** — plans developed for risks that have a high impact on meeting project objectives, to be implemented if attempts to reduce the risk are not effective

**Flowcharts** — diagrams that show how various elements of a system relate to each other

**Influence diagram** — diagram that represents decision problems by displaying essential elements, including decisions, uncertainties, and objectives, and how they influence each other

**Interviewing** — a fact-finding technique that is normally done face-to-face, but can also occur through phone calls, e-mail, or instant messaging

**Known risks** — risks that the project team have identified and analyzed and can be managed proactively

**Monte Carlo analysis** — a risk quantification technique that simulates a model's outcome many times, to provide a statistical distribution of the calculated results

**Probability/impact matrix or chart** — a matrix or chart that lists the relative probability of a risk occurring on one side of a matrix or axis on a chart and the relative impact of the risk occurring on the other

**Residual risks** — risks that remain after all of the response strategies have been implemented

**Risk** — an uncertainty that can have a negative or positive effect on meeting project objectives

**Risk acceptance** — accepting the consequences should a risk occur

**Risk-averse** — having a low tolerance for risk

**Risk avoidance** — eliminating a specific threat or risk, usually by eliminating its causes

**Risk breakdown structure** — a hierarchy of potential risk categories for a project

**Risk enhancement** — changing the size of an opportunity by identifying and maximizing key drivers of the positive risk

**Risk events** — specific uncertain events that may occur to the detriment or enhancement of the project

**Risk exploitation** — doing whatever you can to make sure the positive risk happens

**Risk factors** — numbers that represent overall risk of specific events, given their probability of occurring and the consequence to the project if they do occur

**Risk management plan** — a plan that documents the procedures for managing risk throughout a project

**Risk mitigation** — reducing the impact of a risk event by reducing the probability of its occurrence

**Risk-neutral** — a balance between risk and payoff

**Risk owner** — the person who will take responsibility for a risk and its associated response strategies and tasks

**Risk register** — a document that contains results of various risk management processes, often displayed in a table or spreadsheet format

**Risk-seeking** — having a high tolerance for risk

**Risk sharing** — allocating ownership of the risk to another party

**Risk tolerance** — the amount of satisfaction or pleasure received from a potential payoff; also called *risk utility*

**Risk transference** — shifting the consequence of a risk and responsibility for its management to a third party

**Risk utility** — the amount of satisfaction or pleasure received from a potential payoff; also called *risk tolerance*

**Runaway projects** — projects that have significant cost or schedule overruns

**Secondary risks** — risks that are a direct result of implementing a risk response

**Sensitivity analysis** — a technique used to show the effects of changing one or more variables on an outcome

**Top Ten Risk Item Tracking** — a qualitative risk analysis tool for identifying risks and maintaining an awareness of risks throughout the life of a project

**Triggers** — indications for actual risk events

**Unknown risks** — risks that have not been identified and analyzed so they cannot be managed proactively

**Watch list** — a list of risks that are low priority, but are still identified as potential risks

**Workarounds**—unplanned responses to risk events when there are no contingency plans in place