Risk Management

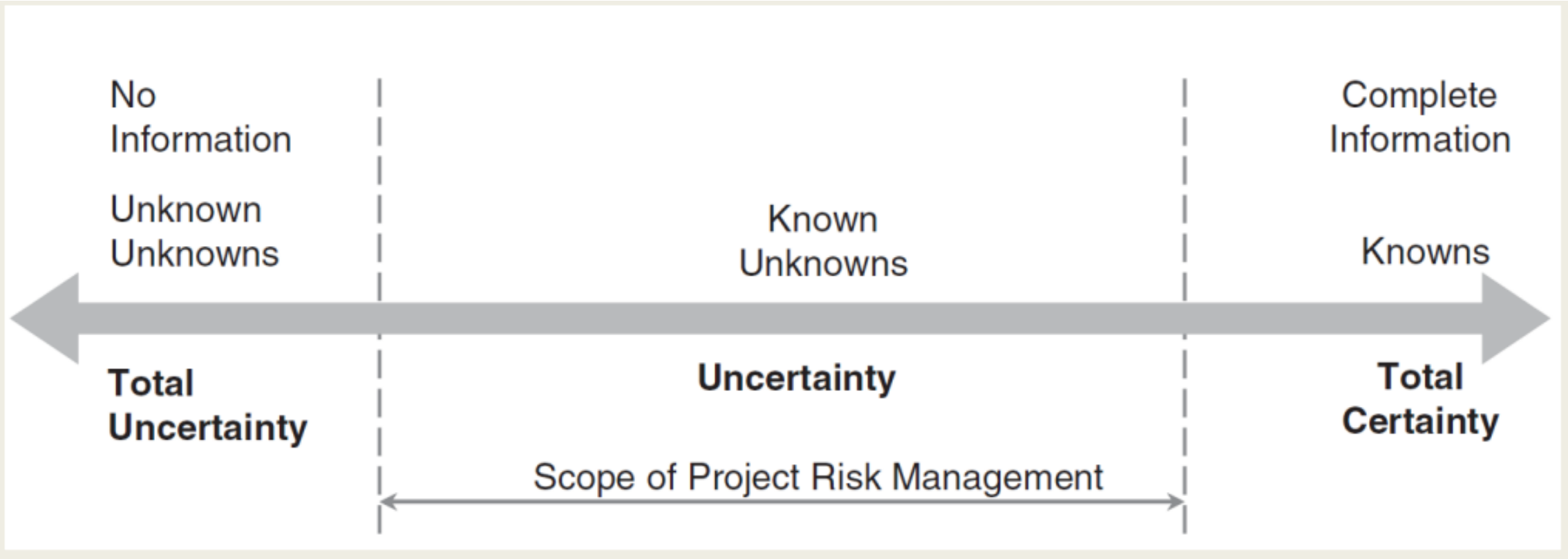
Content

- Risk related definitions
- Techniques for Obtaining Information for Risk Analyses
- Risk management plan
- Tools for managing risk

Basic Risk-Related Definitions

- Project risk
  The cumulative effect of the chances of uncertain occurrences adversely affecting project objectives
- Risk event
  The description of what might happen to the detriment of the project.
- Risk probability
  The likelihood that a risk will occur.
- Risk impact
  Severity of its effect on the project objective.
- Risk event status
  A measure of importance (ranking) of a risk event.
- Contingency reserve (or risk reserve)
  The amount of money or time normally included into the project cost or schedule baseline to reduce the risk of overruns of project objectives to a level acceptable to the organization.

The Project Risk Management Continuum



Techniques for Obtaining Information for Risk Analyses

- Analysis of plans and related documents
- Comparisons with similar systems
- Data from engineering or other models
- Experience and interviewing
- Modeling and simulation
- Relevant lessons-learned studies
- Results from tests and prototype development
- Sensitivity analysis of alternatives and inputs
- Specialist and expert judgments

Risk Management Plan

- A document developed in the beginning of the project that provides a framework for dealing with risk throughout the project's life
- To identify, assess, manage, and monitor project risk events.
- Information included:
  - Risk management methodology (Approaches, tools, and data sources that may be used to handle risks)
  - Roles and responsibilities (Who does what in risk management on the project, from project team members to members of the company's risk management teams)
  - Budgeting and timing (The budget for risk management for the project, and the frequency of the risk management processes)
  - Reporting and monitoring (Define how risk will be reported and communicated to the project stakeholders, how risk events and triggers will be monitored throughout the project cycle, and how the information will be preserved for purposes of lessons learned.)
- Help project managers deal with project uncertainties when they arise or before they impact their project

Developing a Risk Management Plan

1. Risk identification
2. Risk categorization
3. Assessment
4. Response planning
5. Monitoring

1. Risk Identification

- The process for identifying all the potential risks that may influence the success of the project
- Is an iterative process that occurs throughout the project cycle
- Typical methods of identifying risk:
  - expert interviews
  - reviewing historical information from similar projects
  - conducting a risk brainstorming meeting,
  - using more formal techniques such as the Delphi method
- Things to be considered when identifying risks:
  - Risks vary across the project life cycle (relatively high early in the project and low in later stages).
  - risk events rarely strike independently. Rather, they tend to interact with other risk events.
  - Planners should conduct risk identification in a systematic way
- Identifying different categories of risk as well as a number of common risks that plague many projects.

The Delphi Technique

- Useful in situations where outcomes or trends are uncertain
- Involves soliciting the opinions of a group of experts related to the future situation
- Identify specific knowledge gaps relating to the future situation under scrutiny
- These knowledge gaps will guide the selection of the right panel of experts

Informal method:

1. The panel is gathered together to discuss and debate focusing on the knowledge gap areas
2. Gather and summarize the group opinions and ideas
3. Perform a second or third round of discussion until convergence of opinion begins to occur

Formal method:

1. Give questionnaires to each panel expert in two or more rounds.
2. After each round, collect and summarize expert opinions and then send out to each panelist to consider in his or her next response.
3. Continue the process until a convergence or solution arises

Note: Complete consensus is highly unlikely and not very useful. Judgment of the facilitator must be applied to gauge when convergence has occurred.

2. Risk Categorization

- Basis of categorization:
  - According to the risks' effect on the project - scope, quality, schedule, and cost
  - Primary source into external (but unpredictable), external predictable (but uncertain), internal nontechnical, technical, and legal or more broadly technology risk, market risk, business risk, and human risk
- The firm and its projects need a consistent risk categorization schema, suiting its business and culture
  - Should offer a framework for a systematic identification and treatment of risks

3. Risk Assessment

Qualitative Assessment of Risks

- Using a non-numeric probability scale (e.g. a five-level scale, where 1 = very unlikely, 2 = low likelihood, 3 = likely, 4 = highly likely, and 5 = near certain)
  - Suitable when we don't have much experience or data to reliably assess quantitative probabilities
- Assess the impact of each risk, again on a discrete scale (e.g. A scale such as 1 = very low impact, 2 = low impact, 3 = medium impact, 4 = high impact, and 5 = very high impact.
- Small projects typically rely more on the qualitative assessment

Example:

Scale	1 Nearly Certain	2 Highly Likely	3 Likely	4 Low Likelihood	5 Very Unlikely
Probability description	81–100% Probable occurrence	61–80% Probable occurrence	41–60% Probable occurrence	21–40% Probable occurrence	1–20% Probable occurrence

Scale	1 Very low	2 Low	3 Medium	4 High	5 Very high
Risk impact on schedule	Slight schedule delay	Overall project delay <5%	Overall project delay 5–14%	Overall project delay 15–25%	Overall project delay >25%

Quantitative Assessment of Risks

- Numerically analyzing the probability of each risk, its consequences on project objectives, and the extent of overall project risk
- Expected outcome is calculated

Example:

If there is a 40% chance of making $100,000 and a 60% chance of losing $150,000, find the expected monetary outcome.

Steps:

1. Quantify the probability of occurrence for each of the identified risks

   an estimate based on solid historical information from similar experiences in past projects or considerate opinion of experts

2. Determine the risk impact

   Risk Event Status = Risk Probability × Impact

   = 90%×60days

   = 54days

3. Determine risk response

   The project ream must determine how to address the risks that have the greatest potential for impacting the project.

4. Response Planning

Response Strategies

(i) Avoidance - Changing the project plan or condition to eliminate the selected risk event

e.g. Risk: Not having an available expert to perform a quality business process analysis

Response: hiring such an expert

(ii) Transference - Shifting consequences of a risk event to a third party

e.g. Risk: Slow quality testing from their internal capabilities

Response: hiring a professional firm to do the testing

(iii) Mitigation - lower the probability or impact (or both)

e.g. Risk: The potential decision delays caused by the busy schedules of the executive sponsor

Response: Reducing the number of major milestone decision points

(iv) Acceptance of risk - Not changing the project plan or being unable to articulate a feasible response action to deal with a risk

e.g. The establishment of contingency allowances

5. Risk Monitoring

- Major elements:
  1. Systematically track the status of risks previously identified
  2. Identify, document, and assess any new risks that emerge
  3. Effectively manage the risk reserve
  4. Capture lessons
- Assign risk owners to the highest-level risks.
- The risk owner should continuously monitor the status of the respective risk and periodically report that status to the project manager and team.

Benefits of Risk Management

- Offers an opportunity to identify effective ways of reducing risks in a proactive manner
- Provides a systematic response to risks
- Build confidence among all stakeholders that their interests are properly guarded against risk
- Allows the project manager to maintain better control of the project and the project decisions
- Provides a great opportunity to capture key learnings for future projects

Issues and Risks

- An issue is an event that has already happened
- Its time horizon includes the past and the present

  e.g. A loss of a team member

  The risk: What could happen to the detriment of the project
- A risk is about future events

Tools for Managing Risks

1. Risk identification checklist
2. Risk register
3. Risk assessment matrix

1. Risk Identification Checklist

- will be unique for every organization because of its own business environment, policies and practices, constraints, and information about future events
- better to maintain a consistency in identifying risks through developing a standard set of risk categories
- needs to be implemented in the earliest stages of a project
- is a guide for all project participants who try to predict possible risk events
- should be distributed to all members of the project team and key stakeholders
- should be periodically updated to reflect common risk events encountered across projects of an organization
- thus, serves as a risk knowledge database for the organization

Sample Risk Identification Checklist

Project Management Risks	
☑ Schedule activities are overly optimistic	☑ Timeline assumes the use of specific resources who may not be available
☑ Effort is greater than estimated	☑ Target end date has moved up with no adjustment to scope, time, or cost
☑ Requirements have not been baselined and continue to change	☑ Budget is not based on structured estimates
☑ Functional requirements lack user involvement and input	☑ Risk response plans have not been developed
☑ Lack of performance measures and/or performance reporting process	☑ Project scope, vision, and objectives are not clearly defined
☑ Project does not have senior management or customer buy-in	☑ Other similar projects have been delayed or canceled
☑ Person-hours (hours per month) are not reasonable for the work estimated	☑ All dependencies between functional groups have not been identified
Resource Risks	
☑ Hiring is taking longer than expected	☑ The personnel most qualified to work the project are not available
☑ There is tension between the project team and the client	☑ Unexpected training is needed to build required skill

2. Risk Register

- A record of identified risks relating to a project
- Serves as the central repository for all open and closed risk events
- Includes
  - a description of each risk event
  - a risk event identifier (identification numbers of risks associated with a Level in the WBS element)
  - risk assessment outcome
  - a description of the planned response
  - summary of actions taken and current status
  - risk events are prioritized the register based on the risk assessment score or qualitative analysis
- Information presentation formats of risk register
  - a database,
  - a paragraph-style document
  - a spreadsheet
- Fosters risk-related communication with project stakeholders.
- An effective tool for developing budget and risk reserve, and driving the reserve into the project plan

Example Project Risk Register

Risk	Risk Description		Dates			Analysis			Response &	Owner	Status
Ref	If	Then	Opened	Trigger	Closed	Likelihood	Impact	Severity	Action		
1	User experience designers are not released from their current project in two weeks…	The project kickoff will be delayed two weeks	3/12/17	3/28/17	3/22/17	5	2	10 (HIGH)	Avoid: Request release of resources at next portfolio approval meeting	Ranger	Closed: Portfolio decision body approved the hiring of three additional people
2	Insufficient digital data storage capacity is available for weekend customer transac-tions…	The system will experience unscheduled down time of up to 60 hours	2/28/17	4/22/17		3	4	12 (HIGH)	Mitigate: Enable system transaction limits over each weekend until additional storage is available	Jordan	Active: Transaction limit feature in development. Request for quotes for additional storage have been released
3	Primary stakeholders do not agree on proposed product price…	Features will need to be removed from the design	1/29/17	5/1/17		2	2	4 (LOW)	Accept:	Harkin	Inactive: Risk deemed as low risk. Will continue to monitor on a monthly basis

3. Risk Assessment Matrix

- Prioritizes risks based on their impact on a project
- Qualitatively assess each risk's probability on a nonnumeric scale
  - Nearly Certain (NC),
  - Highly Likely (HL),
  - Likely (L),
  - Low Likelihood (LL), and
  - Very Unlikely (VU)
- Finally the risk severity scale will be defined

  Severity = [probability + (N × impact)] where, N = 2 means the impact is twice as important as probability in establishing risk severity

Example Risk Assessment Matrix

PROBABILITY (P) ↓	Severity = P + (2 x I)				
NC = 5	7	9	11	13	15
HL = 4	6	8	10	12	14
L = 3	5	7	9	11	13
LL = 2	4	6	8	10	12
VU = 1	3	5	7	9	11
	VL = 1	L = 2	M = 3	H = 4	VH = 5
	IMPACT (I) →				

High Severity
Medium Severity
Low Severity


Thank
you