



RISK MANAGEMENT




Objectives

- What is risk?
- Why should risk be managed?
- How do we identify risk?
- How do we manage risk?




What is Risk?

- Definition:
“An uncertain event or condition that, if it occurs, has a positive or negative effect on a project’s objectives.”
--PMBOK (2000 edition)




What do we mean by “Uncertainty”?

- We begin a project by estimating:
 - How long will each activity take?
 - How much will each activity cost?
 - Can we meet our scope?
- Our estimates turn into a plan:
 - This is how we think we will do things
 - This is how long we think it will take
 - This is how much we think it will cost
 - This is how we deliver our scope



But a Plan is not Reality

- Things happen to affect our plans:
 - Prices go up and increase costs
 - People get sick and delay milestones
 - People have arguments over acceptable quality
- These are all uncertainties that we don’t know at the start of the project
- We have to plan for them though if we are to be successful



Positive Risks?

- It’s hard to think of something positive as a risk:
 - We think of risks as things to avoid
 - We don’t really plan for positive events:
 - Winning a new car
 - Getting off work early
 - If they happen great! But are they risks?

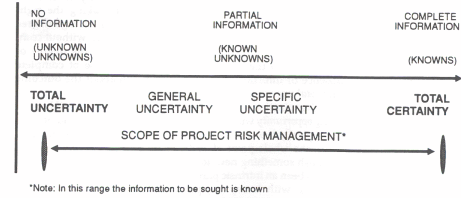
- Positive events are like Risks because they need to be managed too:
 - If a task finishes early, the critical path can change
 - There could be extra costs because other tasks/resources might need to be rebooked or reallocated

Opportunities and Risks

- To make this idea of Risk easier to understand:
 - If an uncertainty is in our favour, we call it an **opportunity**
 - If an uncertainty is against us, we call it a **negative risk**
- Usually, we're more concerned with managing a risk than with creating opportunities

Types of Risks

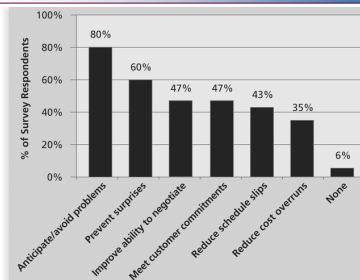
- Three types of risks:
 - Risks that are completely unknown to us
 - Who knew that there was an archeological site where we were going to build the new building?
 - Risks that are partially known
 - If we are going to build there, we need an environmental impact assessment
 - Risks that are completely known
 - There is a 95% chance that a hard drive will fail after 10,000 hours of use



What Went Wrong?

- KPMG, a large consulting firm, published a study in 1995 that found that 55 percent of **runaway** projects—projects that have significant cost or schedule overruns—did *no risk management* at all; 38 percent did some (but half did not use their risk findings after the project was underway); and 7 percent did not know whether they did risk management or not

Why Manage Risks



Kulik, Peter and Catherine Weber, "Software Risk Management Practices – 2001," KLCI Research Group (August 2001).

Project Risk Management Processes

- **Risk management planning:** deciding how to approach and plan the risk management activities for the project
- **Risk identification:** determining which risks are likely to affect a project and documenting the characteristics of each
- **Qualitative risk analysis:** prioritizing risks based on their probability and impact of occurrence

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Project Risk Management Processes (continued)

- **Quantitative risk analysis:** numerically estimating the effects of risks on project objectives
- **Risk response planning:** taking steps to enhance opportunities and reduce threats to meeting project objectives
- **Risk monitoring and control:** monitoring identified and residual risks, identifying new risks, carrying out risk response plans, and evaluating the effectiveness of risk strategies throughout the life of the project

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Risk Monitoring and Control

- Involves executing the risk management process to respond to risk events
- **Workarounds** are unplanned responses to risk events that must be done when there are no contingency plans
- Main outputs of risk monitoring and control are:
 - Requested changes
 - Recommended corrective and preventive actions
 - Updates to the risk log, project management plan, and organizational process assets

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Topics Addressed in a Risk Management Plan

- How will we monitor Risk?
 - Weekly team meetings
 - Project Manager assesses
 - Calculated by Financial Cost (Accounting)
- Who monitors Risk?
 - Project Manager
 - Accountant
 - Project Team
 - Sponsor
- How do we identify/classify Risks?
- How do we assess Risks?

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Risk Identification

- **Risk identification** is the process of understanding what potential events might hurt or enhance a particular project
- Risk identification tools and techniques include:
 - Brainstorming
 - The Delphi Technique
 - Interviewing
 - SWOT analysis

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Brainstorming

- **Brainstorming** is 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
- An experienced facilitator should run the brainstorming session
- Be careful not to overuse or misuse brainstorming
 - Psychology literature shows that individuals produce a greater number of ideas working alone than they do through brainstorming in small, face-to-face groups
 - Group effects often inhibit idea generation

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Delphi Technique

- The **Delphi Technique** is used to derive a consensus among a panel of experts who make predictions about future developments
- Provides independent and anonymous input regarding future events
- Uses repeated rounds of questioning and written responses and avoids the biasing effects possible in oral methods, such as brainstorming

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Interviewing

- **Interviewing** is a fact-finding technique for collecting information in face-to-face, phone, e-mail, or instant-messaging discussions
- Interviewing people with similar project experience is an important tool for identifying potential risks

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SWOT Analysis

- SWOT analysis (strengths, weaknesses, opportunities, and threats) can also be used during risk identification
- Helps identify the broad negative and positive risks that apply to a project

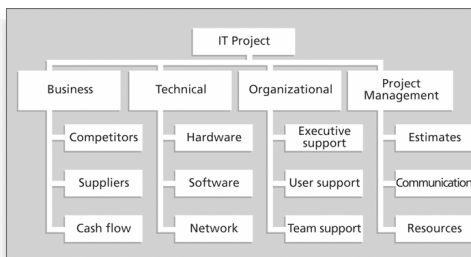
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Risk Breakdown Structure

- A **risk breakdown structure** is a hierarchy of potential risk categories for a project
- Similar to a work breakdown structure but used to identify and categorize risks

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Sample Risk Breakdown Structure



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Negative Risk Conditions For Each Knowledge Area

KNOWLEDGE AREA	RISK CONDITIONS
<i>Integration</i>	Inadequate planning; poor resource allocation; poor integration management; lack of post-project review
<i>Scope</i>	Poor definition of scope or work packages; incomplete definition
<i>Time</i>	Errors in estimating time or resource availability; errors in determining the critical path; poor allocation and management of float; early release of competitive products
<i>Cost</i>	Estimating errors; inadequate productivity, cost, change, or contingency
<i>Quality</i>	Poor attitude toward quality; substandard design/materials/workmanship; inadequate quality assurance program
<i>Human Resources</i>	Poor conflict management; poor project organization and definition of responsibilities; absence of leadership
<i>Communications</i>	Carelessness in planning or communicating; lack of consultation with key stakeholders
<i>Risk</i>	Ignoring risk; unclear analysis of risk; poor insurance management
<i>Procurement</i>	Unenforceable conditions or contract clauses; adversarial relations

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Risk Response Planning

- After identifying and quantifying risks, you must decide how to respond to them
- Four main response strategies for negative risks:
 - Risk avoidance
 - Risk acceptance
 - Risk transference
 - Risk mitigation

Managing Risk

- A risk can be assessed by evaluating its **probability** and its **severity**:
 - **Probability**—the likelihood that a risk will occur. 90% is very likely; 10% is very unlikely.
 - **Severity**—the seriousness of the problems caused to the project if the risk *does* occur.

Risk Severity

- We can define severity by:
 - **Cost**—How much will it cost us to overcome the risk if it occurs?
 - **Impact**—A judgment of the potential impact. We can arbitrarily assign a numeric value to a risk based on its perceived impact

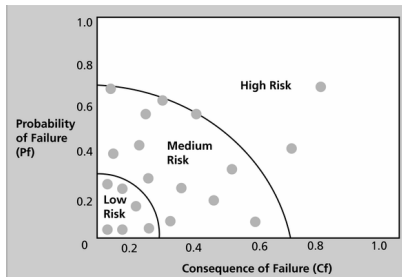
Severity	Value	Description
Very High	0.8	Should this risk happen, the project will not be successful, or only at a much higher cost or with significant delays
High	0.4	Should this risk happen, the project will be delayed or will cost more
Medium	0.2	Should this risk occur, there is a strong probability that the project will cost more, be delayed or have its scope reduced
Low	0.1	Should this risk occur, there will be a need to alter the project schedule or plan to account for the event, but the overall outcome of the project should not be in jeopardy.
Very Low	0.05	Should such a risk occur, slight changes to the project plan or reallocation of resources or slack will be sufficient to accommodate the risk.

- Each risk is identified and assigned two ratings. The risk **impact** is the product of these two ratings.

Risk Logs

RISK LOG						Next Number: 1
Project Name: Office relocation						
#	Risk Name	Manager/Ref	Severity	Prob.	Impact	Mitigation Strategy
1	Delay in shipment	Jones	Medium	50%	.10	Use air freight
2	Holidays for staff	Smith	High	90%	.36	Delay project schedule; pay overtime
3	Absenteeism		Low	90%	.09	Use contingency
4	Construction Delays	Brown	High	30%	.12	Secure temporary offices
			Medium		0	
			Medium		0	
			Medium		0	

Chart Showing High-, Medium-, and Low-Risk Technologies



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Top Ten Risk Item Tracking

- **Top Ten Risk Item Tracking** is a qualitative risk analysis tool that helps to identify risks and maintain an awareness of risks throughout the life of a project
- Establish a periodic review of the top ten project risk items
- List the current ranking, previous ranking, number of times the risk appears on the list over a period of time, and a summary of progress made in resolving the risk item

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Example of Top Ten Risk Item Tracking

RISK EVENT	MONTHLY RANKING			RISK RESOLUTION PROGRESS
	RANK THIS MONTH	RANK LAST MONTH	NUMBER OF MONTHS IN TOP TEN	
Inadequate planning	1	2	4	Working on revising the entire project management plan
Poor definition	2	3	3	Holding meetings with project customer and sponsor to clarify scope
Absence of leadership	3	1	2	After previous project manager quit, assigned a new one to lead the project
Poor cost estimates	4	4	3	Revising cost estimates
Poor time estimates	5	5	3	Revising schedule estimates

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How Do We Manage Risk?

- We can order risks by their impact
- We then spend our energy focusing on those risks with the greatest impact
- We regularly assess each risk to see if its impact has changed

Contingency and Fallback Plans, Contingency Reserves

- **Contingency plans** are predefined actions that the 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 put into effect if attempts to reduce the risk are not effective
- **Contingency reserves** or **allowances** are provisions held by the project sponsor or organization to reduce the risk of cost or schedule overruns to an acceptable level

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