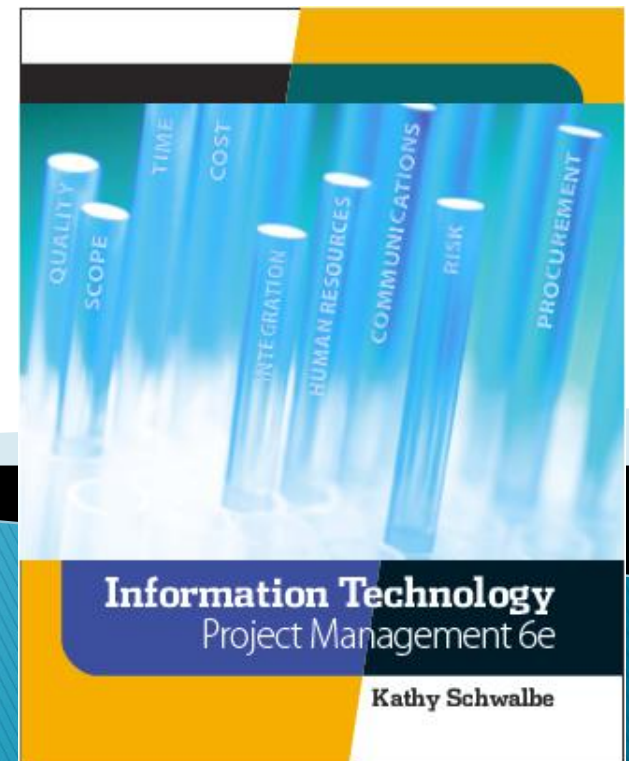# Chapter 11: Project Risk Management

Information Technology Project Management, Sixth Edition

Note: See the text itself for full citations.

Information Technology
Project Management 6e

Kathy Schwalbe

Announcements

- ~~10/27 - Chapter 7, then team breakouts~~
- ~~11/3 - Chapter 8, then team breakouts~~
- ~~11/10 - Chapter 9, then team breakouts~~
- ~~11/17 - Chapter 10~~ & 11
- 11/24 - No Class Happy Thanksgiving
- 12/1 - Chapter 12
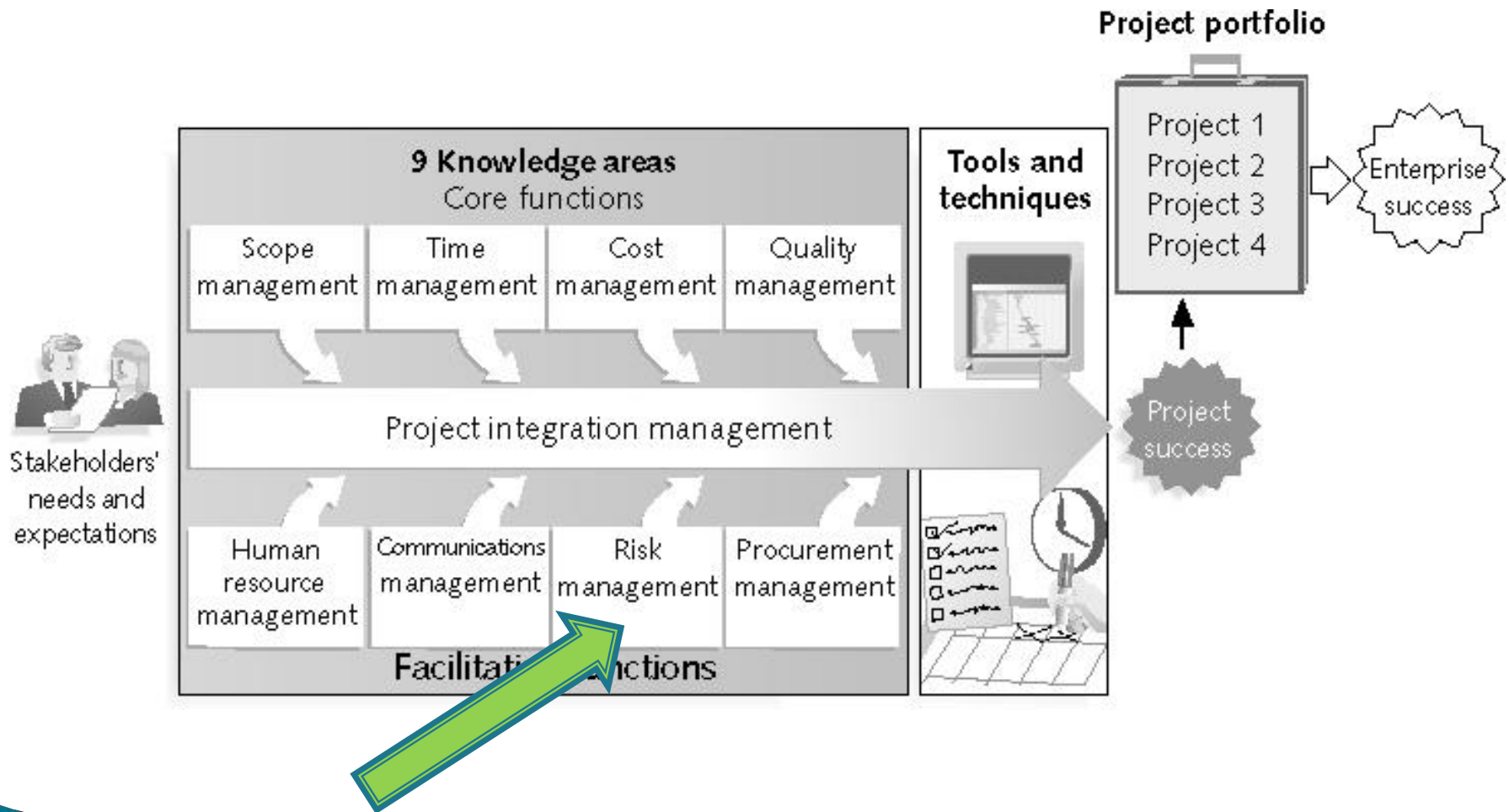- 12/8 - Final Demo presented; Final reports due
- 12/15 - Final Exam

Learning Objectives

▸ Understand what risk is and the importance of good project risk management

▸ Discuss the elements involved in risk management planning and the contents of a risk management plan

▸ List common sources of risks in information technology projects

Learning Objectives (continued)

▸ Describe the process of identifying risks and be able to create a risk register

▸ Discuss the qualitative risk analysis process and explain how to calculate risk factors, create probability/impact matrixes, and apply the Top Ten Risk Item Tracking technique to rank risks

REVIEW: Project Management Framework – 9 Knowledge Areas

REVIEW:(continued)

Knowledge Area	Project Management Process Groups				
	Initiating	Planning	Executing	Monitoring and Controlling	Closing
Project Communications Management	Identify stake-holders	Plan communications	Distribute information, Manage stakeholders expectations	Report performance	
Project Risk Management		Plan risk management, Identify risks, Perform qualitative risk analysis, Perform quantitative risk analysis, Plan risk responses		Monitor and control risks	
Project Procurement Management		Plan procurements	Conduct procurements	Administer procurements	Close procurements

Project Risk Management Processes

- **Planning risk management**
- **Identifying risks**
- **Performing qualitative risk analysis**
- **Performing quantitative risk analysis**
- **Planning risk responses**
- **Monitoring and controlling risks**

Figure 11-3. Project Risk Management Summary

Planning
Process: **Plan risk management**
Output: Risk management plan
Process: **Identify risks**
Output: Risk register
Process: **Perform qualitative risk analysis**
Output: Risk register updates
Process: **Perform quantitative risk analysis**
Output: Risk register updates
Process: **Plan risk responses**
Outputs: Risk register updates, risk-related contract decisions,
project management plan updates, project document updates

Monitoring and Controlling
Process: **Monitor and control risks**
Outputs: Risk register updates, organizational process assets updates,
change requests, project management plan updates,
project document updates

Project Start   **Project Finish**

The Importance of Project Risk Management

- Project risk management is the art and science of:

  - ◦ Identifying

  - ◦ Analyzing

  - ◦ and Responding to risk throughout the life of a project

  - ◦ *Risk management is often overlooked in projects*, but it can help improve project success by helping select good projects, vendors, resources, fine tunning project scope, and developing realistic estimates

Table 11-1. Project Management Maturity by Industry Group and Knowledge Area*

KEY: 1 = LOWEST MATURITY RATING   5 = HIGHEST MATURITY RATING

Knowledge Area	Engineering/ Construction	Telecommunications	Information Systems	Hi-Tech Manufacturing
Scope	3.52	3.45	3.25	3.37
Time	3.55	3.41	3.03	3.50
Cost	3.74	3.22	3.20	3.97
Quality	2.91	3.22	2.88	3.26
Human Resources	3.18	3.20	2.93	3.18
Communications	3.53	3.53	3.21	3.48
Risk	**2.93**	**2.87**	**2.75**	**2.76**
Procurement	3.33	3.01	2.91	3.33

What does this show? Well that risk often gets overlooked in projects!

Negative Risk

- A dictionary definition of risk is "the possibility of loss or injury"

- Negative risk involves understanding potential problems that might occur in the project and how they might impede project success

- Negative risk management is like a form of insurance; it is an investment

Risk Can Be Positive

- Positive risks are risks that result in good things happening; sometimes called opportunities

- A general definition of project **risk** is an uncertainty that can have a negative or positive effect on meeting project objectives

- The goal of project risk management is to
  - *minimize potential negative* risks

  - while *maximizing potential positive risks*

Risk Utility

- **Risk utility** or **risk tolerance** is the amount of satisfaction or pleasure received from a potential payoff

    ◦ Tolerance decreases for people who are risk-averse (they don't like risk – no risk – no reward)

    ◦ Those who are risk-seeking have a higher tolerance for risk, and their satisfaction increases when more payoff is at stake (higher the risk, the higher the payout - usually)

    ◦ The risk-neutral approach achieves a balance between risk and payoff – more calculated risks.

Project Risk Management Processes

▸ **Planning risk management**: deciding how to approach and plan the risk management activities for the project

▸ **Identifying risks**: determining which risks are likely to affect a project and documenting the characteristics of each

▸ **Performing qualitative risk analysis**: prioritizing risks based on their probability and impact of occurrence

Project Risk Management Processes (continued)

- **Performing quantitative risk analysis**: numerically estimating the effects of risks on project objectives

- **Planning risk responses**: taking steps to enhance opportunities and reduce threats to meeting project objectives

- **Monitoring and controlling risks**: monitoring identified and residual risks, identifying new risks, carrying out risk response plans

Risk Management Planning

▸ The main output of risk management planning is a **risk management plan**, a plan that documents the procedures for managing risk throughout a project

▸ The project team should review project documents and understand the organization's and the sponsor's approaches to risk, *what is the orgs risk appetite – averse, neutral, high*

▸ The level of detail will vary with project needs

Table 11-2. Topics Addressed in a Risk Management Plan

▸ Methodology

▸ Roles and responsibilities

▸ Budget and schedule

▸ Risk categories

▸ Risk probability and impact

▸ Risk documentation

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
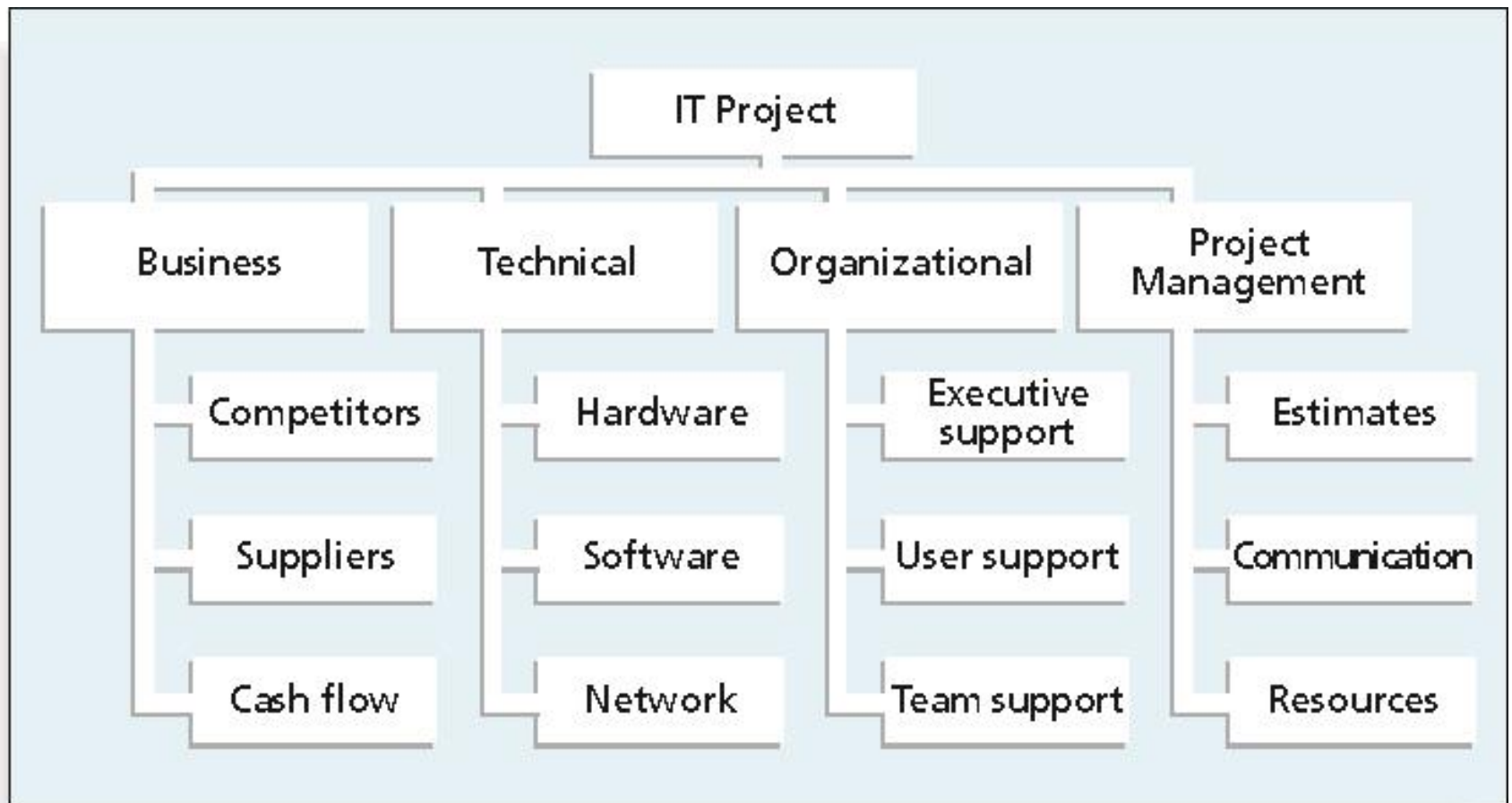
Broad Categories of Risk

▸ Market risk

▸ Financial risk

▸ Technology risk

▸ People risk

▸ Structure/process risk

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

Figure 11-4. Sample Risk Breakdown Structure

Table 11-4. Potential Negative Risk Conditions Associated with Each Knowledge Area

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

Identifying Risks

▸ Identifying risks is the process of understanding what potential events might hurt or enhance a particular project

▸ Risk identification tools and techniques include:

  ◦ Brainstorming

  ◦ Interviewing

  ◦ SWOT analysis

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

Risk Register

- The main output of the risk identification process is a list of identified risks and other information needed to begin creating a risk register
- A **risk register** is:
  - A document that contains the results of various risk management processes and that is often displayed in a table or spreadsheet format
  - 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

Table 11-5. Sample Risk Register

No.	Rank	Risk	Description	Category	Root Cause	Triggers	Potential Responses	Risk Owner	Probability	Impact	Status
R44	1										
R21	2										
R7	3										

Performing Qualitative Risk Analysis

▸ Assess the likelihood and impact of identified risks to determine their magnitude and priority

▸ Risk qualification tools and techniques include:
  ◦ Probability/impact matrixes
 ◦ The Top Ten Risk Item Tracking
  ◦ Expert judgment

Probability/Impact Matrix

- A **probability/impact matrix** or **chart** 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
- List the risks and then label each one as high, medium, or low in terms of its probability of occurrence and its impact if it did occur
- Can also calculate **risk factors**
  - Numbers that represent the overall risk of specific events based on their probability of occurring and the consequences to the project if they do occur

Figure 11-5. Sample Probability/Impact Matrix

Figure 11-6. Chart Showing High-, Medium-, and Low-Risk Technologies
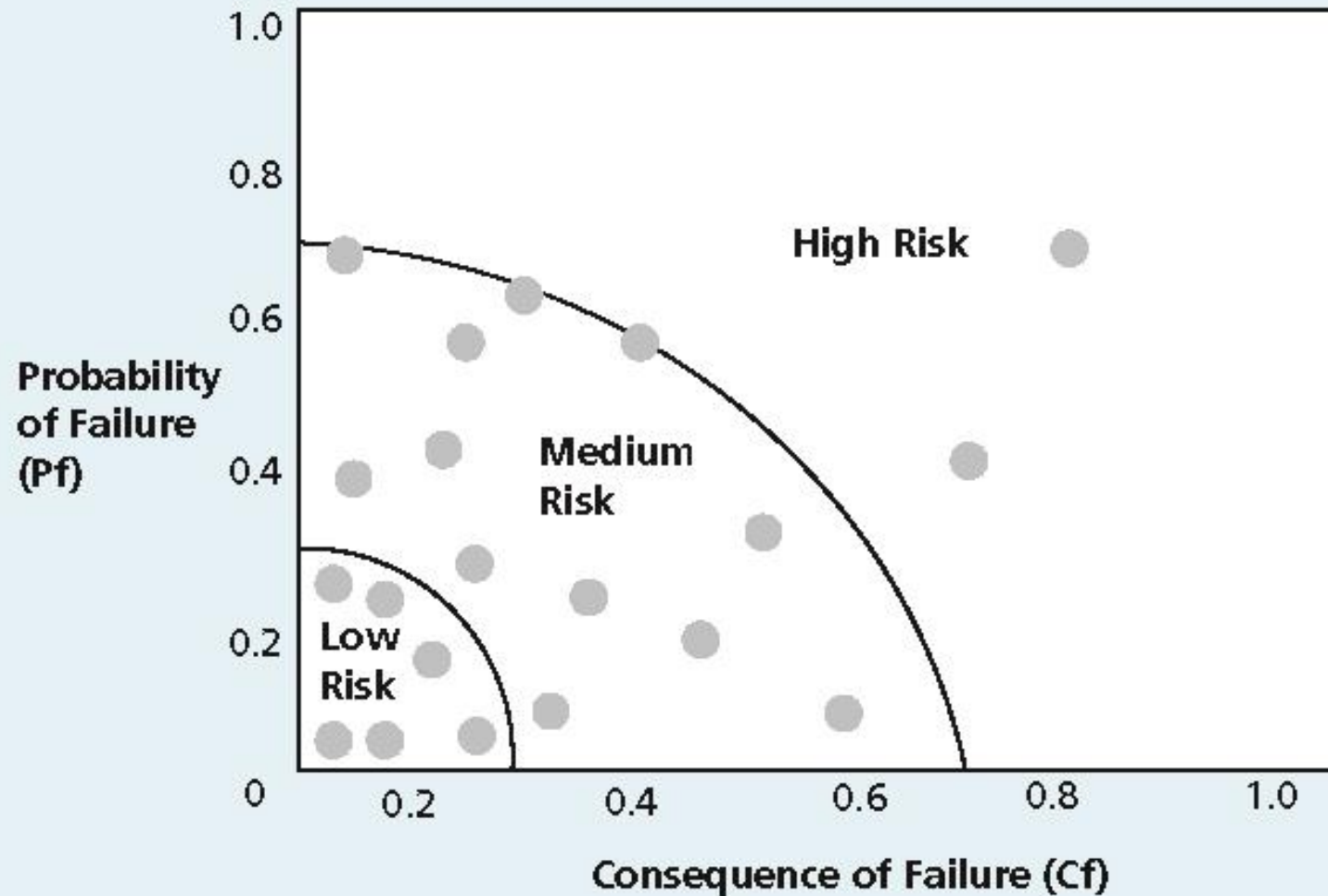
Watch List

- A **watch list** is a list of risks that are low priority but are still identified as potential risks
- Qualitative analysis can also identify risks that should be evaluated on a quantitative basis

Performing Quantitative Risk Analysis

- Often follows qualitative risk analysis, but both can be done together
- Large, complex projects involving leading edge technologies often require extensive quantitative risk analysis
- Main techniques include:
  - Decision tree analysis
  - Simulation
  - Sensitivity analysis

Residual and Secondary Risks

- It's also important to identify residual and secondary risks
- **Residual risks** are risks that remain after all of the response strategies have been implemented
- **Secondary risks** are a direct result of implementing a risk response

Monitoring and Controlling Risks

- 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

Chapter Summary

▸ Project risk management is the art and science of identifying, analyzing, and responding to risk throughout the life of a project and in the best interests of meeting project objectives

▸ Main processes include:
  ◦ Plan risk management
  ◦ Identify risks
  ◦ Perform qualitative risk analysis
  ◦ Perform quantitative risk analysis
  ◦ Plan risk responses
  ◦ Monitor and control risks