

Chapter 2:

The Project Management and

Information Technology Context

Information Technology Project
Management, Seventh Edition



Information Technology
PROJECT MANAGEMENT | 7e

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Note: See the text itself for full citations.

Learning Objectives

- ▶ Describe the systems view of project management and how it applies to information technology (IT) projects
- ▶ Understand organizations, including the four frames, organizational structures, and organizational culture
- ▶ Explain why stakeholder management and top management commitment are critical for a project's success

Learning Objectives

- ▶ Understand the concept of a project phase and the project life cycle, and distinguish between project development and product development
- ▶ Discuss the unique attributes and diverse nature of IT projects
- ▶ Describe recent trends affecting IT project management, including globalization, outsourcing, virtual teams, and agile project management

Projects Cannot Be Run In Isolation

- ▶ Projects must operate in a broad organizational environment
- ▶ Project managers need to use **systems thinking**:
 - taking a holistic view of carrying out projects within the context of the organization
- ▶ Senior managers must make sure projects continue to support current business needs

A Systems View of Project Management

- ▶ A **systems approach** emerged in the 1950s to describe a more analytical approach to management and problem solving
- ▶ Three parts include:
 - **Systems philosophy**: an overall model for thinking about things as systems
 - **Systems analysis**: problem-solving approach
 - **Systems management**: address business, technological, and organizational issues before making changes to systems

Figure 2-1. Three Sphere Model for Systems Management

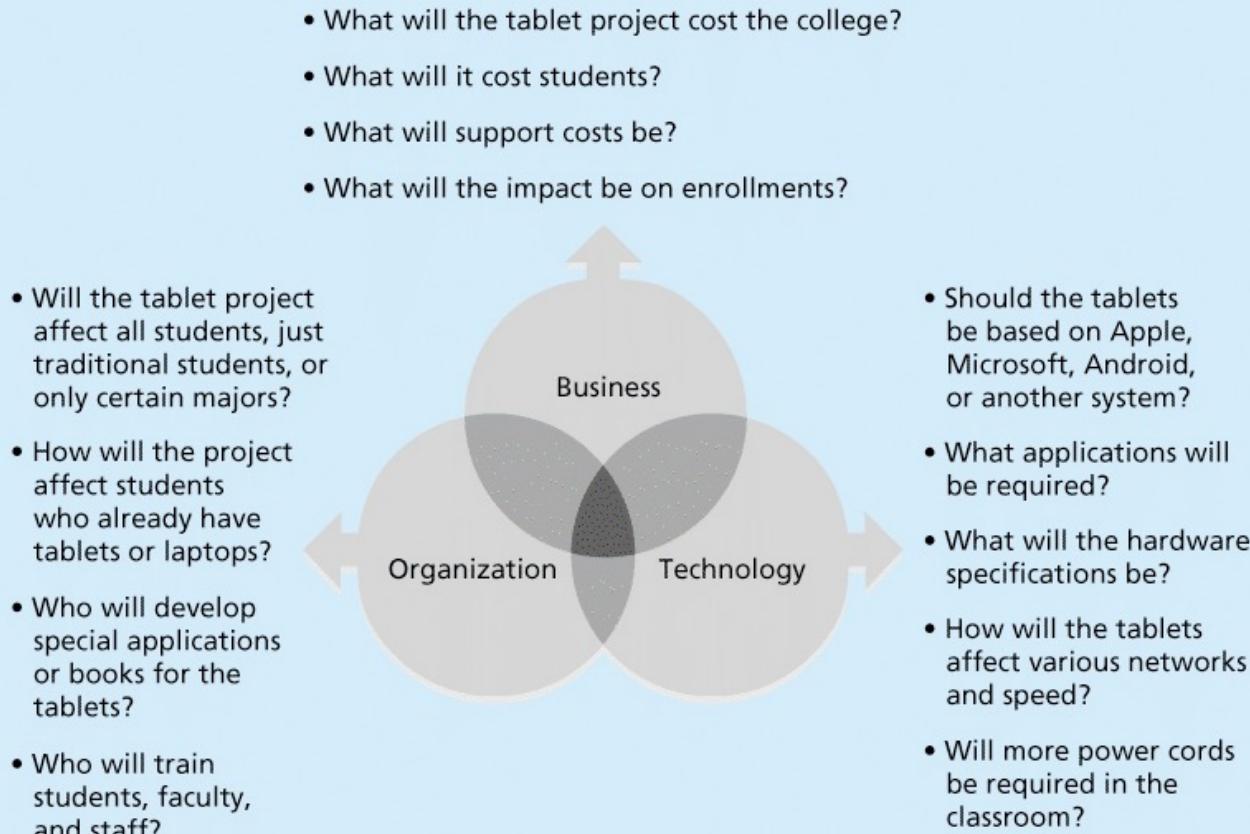


Figure 2-1. Three Sphere Model for Systems Management

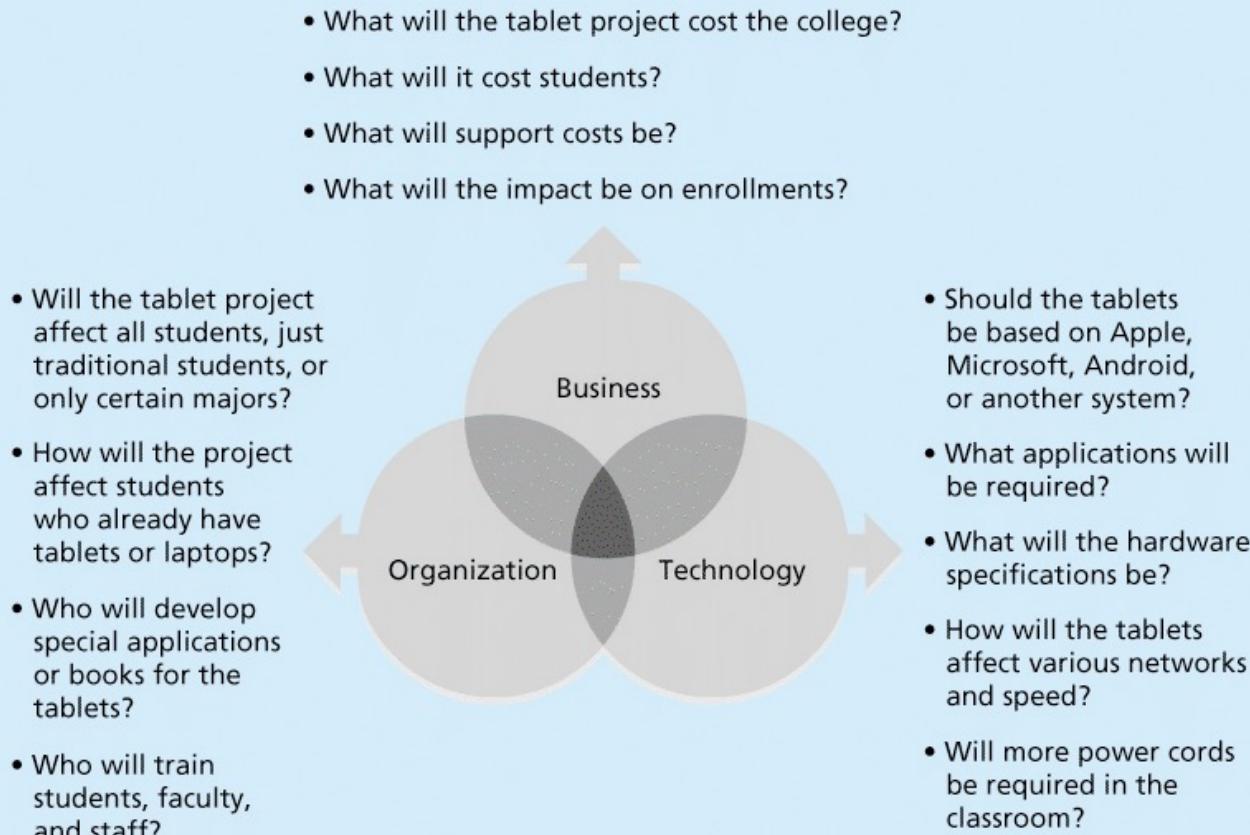


Figure 2-2. Perspectives on Organizations

Structural frame: Roles and responsibilities, coordination, and control. Organizational charts help describe this frame.	Human resources frame: Providing harmony between needs of the organization and needs of people.
Political frame: Coalitions composed of varied individuals and interest groups. Conflict and power are key issues.	Symbolic frame: Symbols and meanings related to events. Culture, language, traditions, and image are all parts of this frame.

What Went Wrong?

- In a paper titled “A Study in Project Failure,” two researchers examined the success and failure of 214 IT projects over an eight-year period in several European countries.
- The researchers found that only one in eight (12.5 percent) were considered successful in terms of meeting scope, time, and cost goals.
- The authors said that the culture within many organizations is often to blame
- Among other things, people often do not discuss important leadership, stakeholder, and risk management issues

Organizational Structures

- ▶ 3 basic organization structures
 - **Functional:** functional managers report to the CEO
 - **Project:** program managers report to the CEO
 - **Matrix:** middle ground between functional and project structures; personnel often report to two or more bosses; structure can be weak, balanced, or strong matrix

Figure 2-3. Functional, Project, and Matrix Organizational Structures

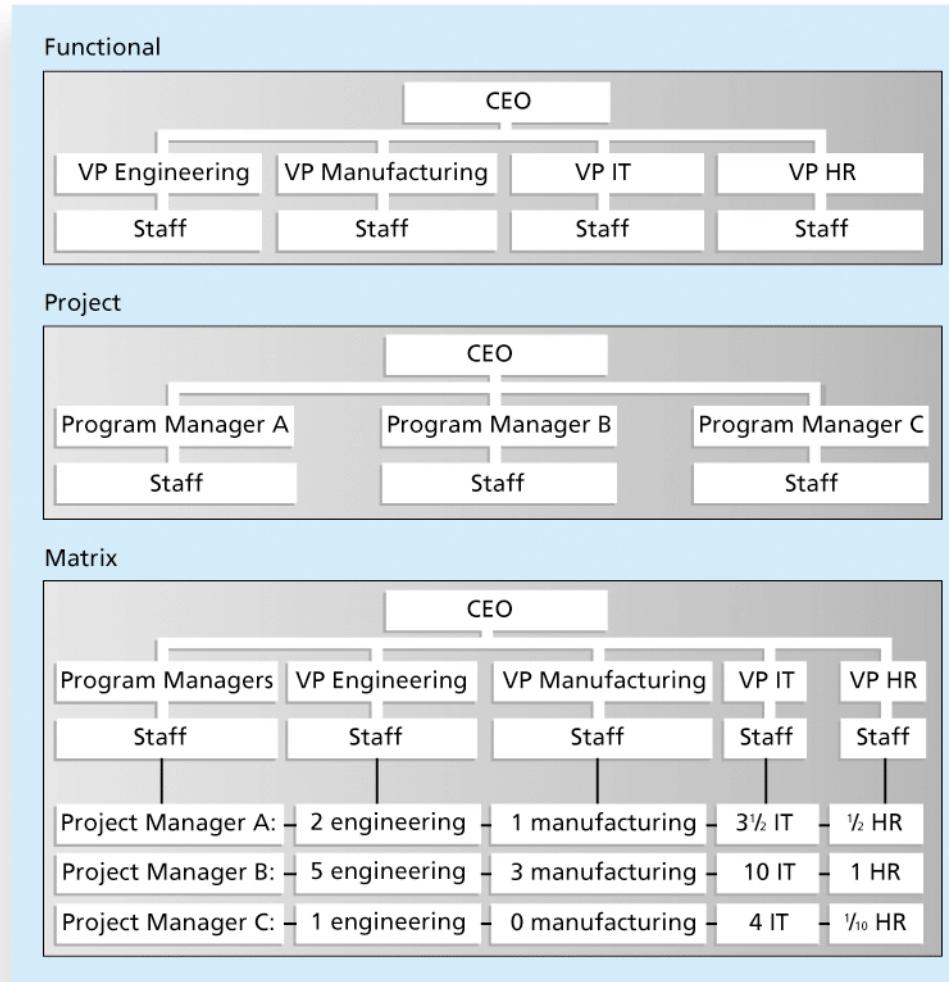


Table 2-1. Organizational Structure Influences on Projects

Project Characteristics	Organizational Structure Type			Project	
	Functional	Weak Matrix	Balanced Matrix	Strong Matrix	
Project manager's authority	Little or none	Limited	Low to moderate	Moderate to high	High to almost total
Percent of organization's personnel assigned full-time to project work	Virtually none	0–25%	15–60%	50–95%	85–100%
Who controls the project budget	Functional manager	Functional manager	Mixed	Project manager	Project manager
Project manager's role	Part-time	Part-time	Full-time	Full-time	Full-time
Common title for project manager's role	Project coordinator/ project leader	Project coordinator/ project leader	Project manager/ project officer	Project manager/ program manager	Project manager/ program manager
Project management administrative staff	Part-time	Part-time	Part-time	Full-time	Full-time

Organizational Culture

- ▶ **Organizational culture** is a set of shared assumptions, values, and behaviors that characterize the functioning of an organization
- ▶ Many experts believe the underlying causes of many companies' problems are not the structure or staff, but the culture

Ten Characteristics of Organizational Culture

- ▶ Member identity*
- ▶ Group emphasis*
- ▶ People focus
- ▶ Unit integration*
- ▶ Control
- ▶ Risk tolerance*
- ▶ Reward criteria*
- ▶ Conflict tolerance*
- ▶ Means-ends orientation
- ▶ Open-systems focus*

*Project work is most successful in an organizational culture where these items are strong/high and other items are balanced.

Stakeholder Management

- ▶ Project managers must take time to identify, understand, and manage relationships with all project stakeholders
- ▶ Using the four frames of organizations can help meet stakeholder needs and expectations
- ▶ Senior executives/top management are very important stakeholders
- ▶ See Chapter 13, Project Stakeholder Management, for more information

Media Snapshot

- ▶ The media have often reported on mismanaged IT projects. A classic example and popular case study is the baggage handling system at Denver International Airport (DIA).
- ▶ The system was supposed to reduce flight delays, shorten waiting times at luggage carousels, and save money, but instead it caused huge problems.
- ▶ One important reason for this famous project disaster was the failure to recognize the project's complexity.

The Importance of Top Management Commitment

- ▶ People in top management positions are key stakeholders in projects
- ▶ A very important factor in helping project managers successfully lead projects is the level of commitment and support they receive from top management
- ▶ Without top management commitment, many projects will fail.
- ▶ Some projects have a senior manager called a **champion** who acts as a key proponent for a project.

How Top Management Can Help Project Managers

- ▶ Providing adequate resources
- ▶ Approving unique project needs in a timely manner
- ▶ Getting cooperation from other parts of the organization
- ▶ Mentoring and coaching on leadership issues



基线跟踪

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基线	发布日期	审批流程/发布人	管理阶段	交付物	资源预算	费用预算	采购预算	收益预算
BL8	2020-11-28	ATM系统界面优化项目管...	V8	V8	V8	V7	V7	V8
BL7	2020-03-26	ATM系统界面优化项目管...	V7	V7	V7	V7	V7	V7
BL6	2020-03-18	ATM系统界面优化项目管...	V6	V6	V6	V6	V6	V6
BL5	2020-03-18	ATM系统界面优化项目管...	V5	V5	V5	V5	V5	V5
BL4	2020-02-27	ATM系统界面优化项目管...	V4	V4	V4	V4	V4	V4
BL3	2020-02-27	ATM系统界面优化项目管...	V3	V3	V3	V3	V3	V3
BL2	2019-09-06	ATM系统界面优化项目管...	V2	V2	V2	V2	V2	V2
BL1	2019-09-06	ATM系统界面优化项目管...	V1	V1	V1	V1	V1	V1

Best Practice

- ▶ **IT governance** addresses the authority and control for key IT activities in organizations, including IT infrastructure, IT use, and project management
- ▶ A lack of IT governance can be dangerous, as evidenced by three well-publicized IT project failures in Australia (Sydney Water's customer relationship management system, the Royal Melbourne Institute of Technology's academic management system, and One.Tel's billing system)

IT治理

- ▶ (1) 麻省理工学院CISR中心(Center of Information System Research)的Weill和Ross教授认为：“IT治理是在IT应用过程中，为鼓励期望行为而明确决策权归属和责任担当的框架。”
- ▶ (2) 全球IT治理研究中心(ITG)认为：“IT治理是董事会和执行层的责任，通过领导、组织和过程来保证IT实现和推动企业战略目标。价值、风险与控制是IT治理的核心。”

- ▶ (3)荷兰Jan Van Bon主编的《IT服务管理：基于IT的全球最佳实践》有这样的提法：IT治理“用于描述企业或政府是否采用有效的机制(就是为鼓励IT应用的期望行为而明确决策权归属和责任承担的框架)，使得IT的应用能够完成组织赋予它的使命，同时平衡信息技术与过程的风险，确保实现组织的战略目标。
- ▶ (4)德勤咨询公司提出：IT治理是一个含义，广泛的概念，其主要任务是：保持IT与业务目标一致，推动业务发展，促使收益最大化，合理利用IT资源，IT相关风险的适当管理。

- ▶ (5)涂伟、张金隆认为，IT治理是公司治理的一部分，是以股东(投资者)为中心的企业利益相关者，为了让IT产生最大收益，并为解决IT决策中的信息不对称问题而设计的与IT有关的决策、激励和约束机制。

Need for Organizational Commitment to Information Technology (IT)

- ▶ If the organization has a negative attitude toward IT, it will be difficult for an IT project to succeed
- ▶ Having a Chief Information Officer (CIO) at a high level in the organization helps IT projects
- ▶ Assigning non-IT people to IT projects also encourage more commitment

Need for Organizational Standards

- ▶ Standards and guidelines help project managers be more effective
- ▶ Senior management can encourage
 - the use of standard forms and software for project management
 - the development and use of guidelines for writing project plans or providing status information
 - the creation of a project management office or center of excellence

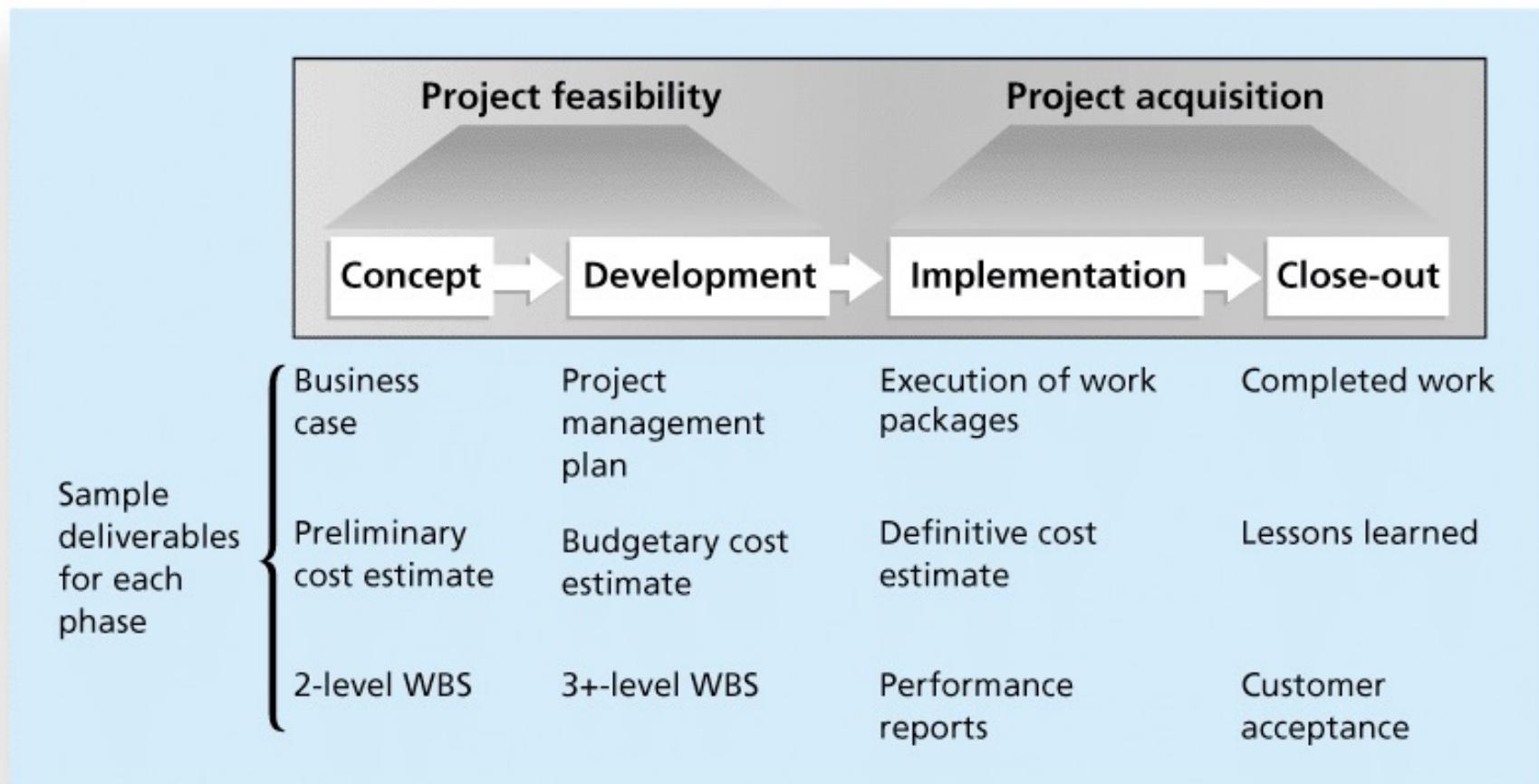
Project Phases and the Project Life Cycle

- ▶ A **project life cycle** is a collection of project phases that defines
 - what work will be performed in each phase
 - what deliverables will be produced and when
 - who is involved in each phase, and
 - how management will control and approve work produced in each phase
- ▶ A **deliverable** is a product or service produced or provided as part of a project

More on Project Phases

- ▶ In early phases of a project life cycle
 - resource needs are usually lowest
 - the level of uncertainty (risk) is highest
 - project stakeholders have the greatest opportunity to influence the project
- ▶ In middle phases of a project life cycle
 - the certainty of completing a project improves
 - more resources are needed
- ▶ The final phase of a project life cycle focuses on
 - ensuring that project requirements were met
 - the sponsor approves completion of the project

Figure 2-4. Phases of the Traditional Project Life Cycle



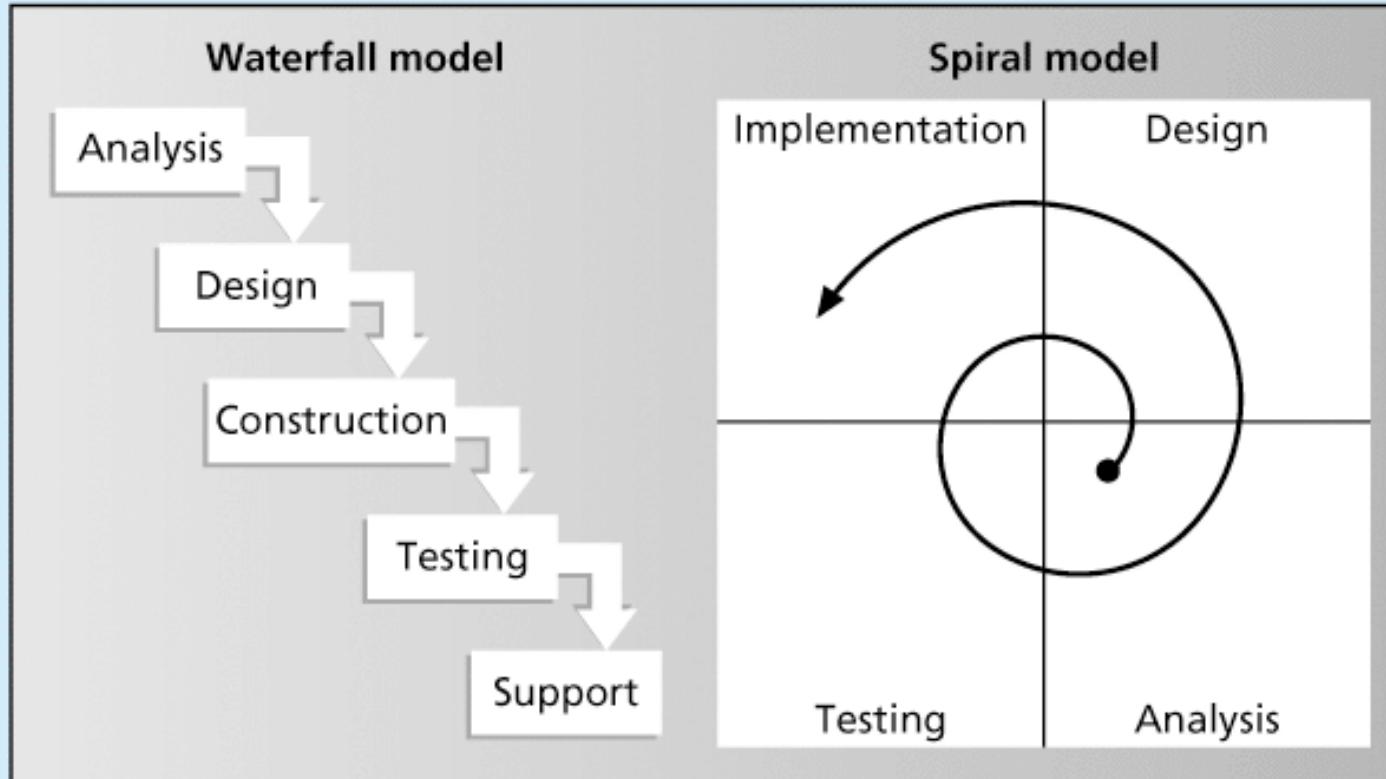
Product Life Cycles

- ▶ Products also have life cycles
- ▶ The **Systems Development Life Cycle (SDLC)** is a framework for describing the phases involved in developing and maintaining information systems
- ▶ Systems development projects can follow
 - **Predictive life cycle:** the scope of the project can be clearly articulated and the schedule and cost can be predicted
 - **Adaptive Software Development (ASD) life cycle:** requirements cannot be clearly expressed, projects are mission driven and component based, using time-based cycles to meet target dates

Predictive Life Cycle Models

- ▶ Waterfall model: has well-defined, linear stages of systems development and support
- ▶ Spiral model: shows that software is developed using an iterative or spiral approach rather than a linear approach
- ▶ Incremental build model: provides for progressive development of operational software
- ▶ Prototyping model: used for developing prototypes to clarify user requirements
- ▶ Rapid Application Development (RAD) model: used to produce systems quickly without sacrificing quality

Figure 2-5. Waterfall and Spiral Life Cycle Models



Agile Software Development

- ▶ Agile software development has become popular to describe new approaches that focus on close collaboration between programming teams and business experts
- ▶ See the last section of this chapter and Chapter 3 for more information on agile

The Importance of Project Phases and Management Reviews

- ▶ A project should successfully pass through each of the project phases in order to continue on to the next
- ▶ Management reviews, also called **phase exits** or **kill points**, should occur after each phase to evaluate the project's progress, likely success, and continued compatibility with organizational goals

What Went Right?

"The real improvement that I saw was in our ability to—in the words of Thomas Edison—know when to stop beating a dead horse....Edison's key to success was that he failed fairly often; but as he said, he could recognize a dead horse before it started to smell...In information technology we ride dead horses—failing projects—a long time before we give up. But what we are seeing now is that we are able to get off them; able to reduce cost overrun and time overrun. That's where the major impact came on the success rate."*

Many organizations, like Huntington Bancshares, Inc., use an **executive steering committee** to help keep projects on track.

*Cabanis, Jeannette, "A Major Impact": The Standish Group's Jim Johnson On Project Management and IT Project Success," PM Network, PMI, Sep.1998, p. 7

The Context of IT Projects

- ▶ IT projects can be very diverse in terms of size, complexity, products produced, application area, and resource requirements
- ▶ IT project team members often have diverse backgrounds and skill sets
- ▶ IT projects use diverse technologies that change rapidly. Even within one technology area, people must be highly specialized

Recent Trends Affecting IT Project Management

- ▶ Globalization
- ▶ Outsourcing: **Outsourcing** is when an organization acquires goods and/or sources from an outside source. **Offshoring** is sometimes used to describe outsourcing from another country
- ▶ Virtual teams: A **virtual team** is a group of individuals who work across time and space using communication technologies
- ▶ Agile project management

Important Issues and Suggestions Related to Globalization

▶ Issues

- Communications
- Trust
- Common work practices
- Tools

▶ Suggestions

- Employ greater project discipline
- Think global but act local
- Keep project momentum going
- Use newer tools and technology

Outsourcing

- ▶ Organizations remain competitive by using outsourcing to their advantage, such as finding ways to reduce costs
- ▶ Their next challenge is to make strategic IT investments with outsourcing by improving their enterprise architecture to ensure that IT infrastructure and business processes are integrated and standardized (See Suggested Readings)
- ▶ Project managers should become more familiar with negotiating contracts and other outsourcing issues

Global Issues

- ▶ Outsourcing also has disadvantages. For example, Apple benefits from manufacturing products in China, but it had big problems there after its iPhone 4S launch in January 2012 caused fighting between migrant workers who were hired by scalpers to stand in line to buy the phones.
- ▶ When Apple said it would not open its store in Beijing, riots resulted and people attacked security guards. The Beijing Apple Store has had problems before. In May 2011, four people were injured when a crowd waiting to buy the iPad 2 turned ugly.

Virtual Teams Advantages

- ▶ Increasing competitiveness and responsiveness by having a team of workers available 24/7
- ▶ Lowering costs because many virtual workers do not require office space or support beyond their home offices.
- ▶ Providing more expertise and flexibility by having team members from across the globe working any time of day or night
- ▶ Increasing the work/life balance for team members by eliminating fixed office hours and the need to travel to work.

Virtual Team Disadvantages

- ▶ Isolating team members
- ▶ Increasing the potential for communications problems
- ▶ Reducing the ability for team members to network and transfer information informally
- ▶ Increasing the dependence on technology to accomplish work
- ▶ See text for a list of factors that help virtual teams succeed, including team processes, trust/relationships, leadership style, and team member selection

Agile Project Management

- ▶ Agile means being able to move quickly and easily, but some people feel that project management, as they have seen it used, does not allow people to work quickly or easily.
- ▶ Early software development projects often used a waterfall approach, as defined earlier in this chapter. As technology and businesses became more complex, the approach was often difficult to use because requirements were unknown or continuously changing.
- ▶ Agile today means using a method based on iterative and incremental development, in which requirements and solutions evolve through collaboration.

Agile Makes Sense for Some Projects, But Not All

- ▶ Many seasoned experts in project management warn people not to fall for the hype associated with Agile.
- ▶ For example, J. Leroy Ward, Executive Vice President at ESI International, said that “Agile will be seen for what it is ... and isn’t....Project management organizations embracing Agile software and product development approaches will continue to grow while being faced with the challenge of demonstrating ROI through Agile adoption.”*

*J. Leroy Ward, “The Top Ten Project Management Trends for 2011,” projecttimes.com (January 24, 2011).

Manifesto for Agile Software Development

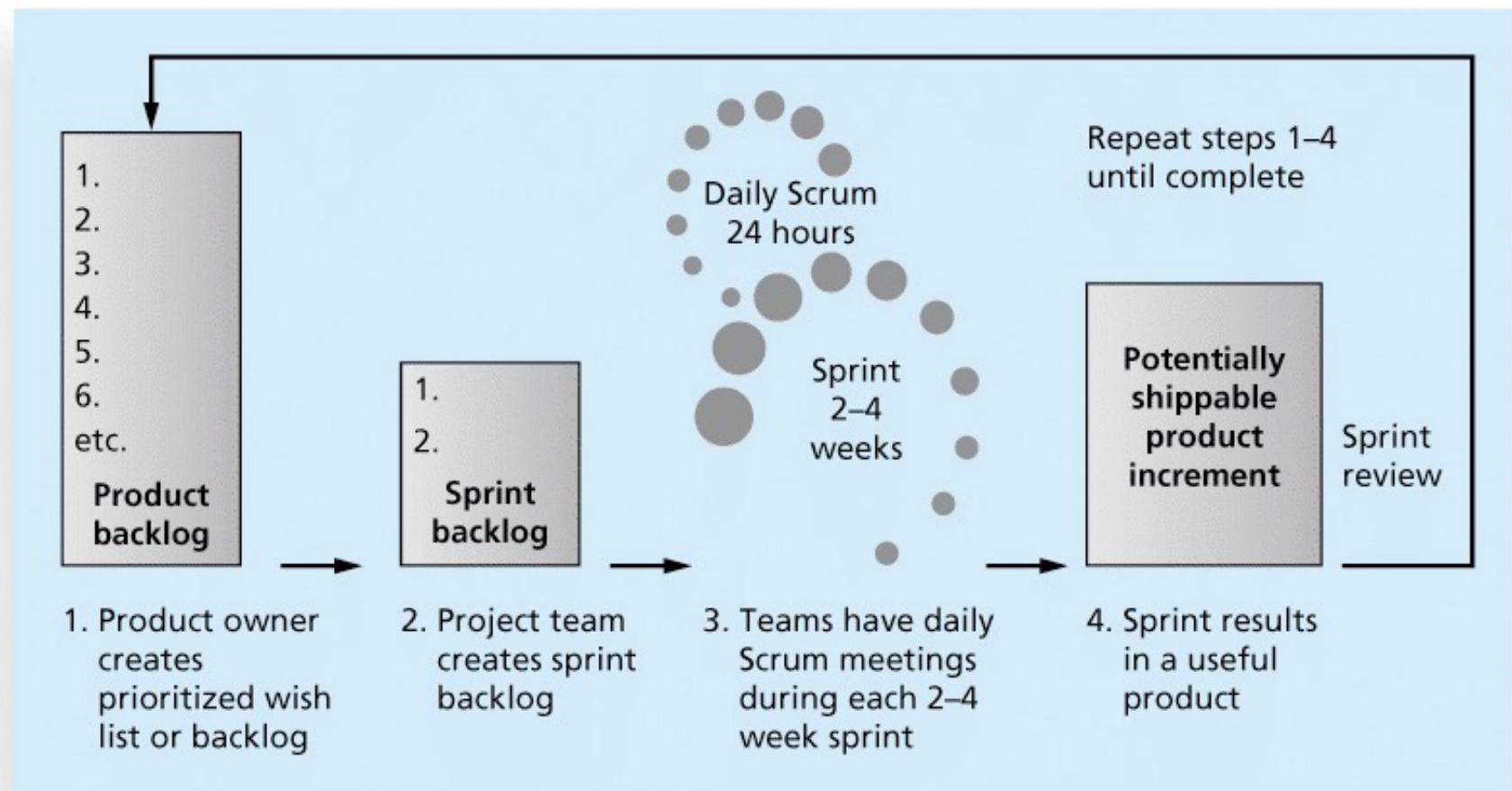
- ▶ In February 2001, a group of 17 people that called itself the Agile Alliance developed and agreed on the Manifesto for Agile Software Development, as follows:
- ▶ “We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:
- ▶ Individuals and interactions over processes and tools
- ▶ Working software over comprehensive documentation
- ▶ Customer collaboration over contract negotiation
- ▶ Responding to change over following a plan”*

*Agile Manifesto, www.agilemanifesto.org.

Scrum

- ▶ According to the Scrum Alliance, Scrum is the leading agile development method for completing projects with a complex, innovative scope of work.
- ▶ The term was coined in 1986 in a Harvard Business Review study that compared high-performing, cross-functional teams to the scrum formation used by rugby teams.

Figure 2-6. Scrum Framework



Agile, the PMBOK® Guide, and a New Certification

- ▶ The PMBOK® Guide describes best practices for *what* should be done to manage projects.
- ▶ Agile is a methodology that describes *how* to manage projects.
- ▶ The Project Management Institute (PMI) recognized the increased interest in Agile, and introduced a new certification in 2011 called Agile Certified Practitioner (ACP).
- ▶ Seasoned project managers understand that they have always had the option of customizing how they run projects, but that project management is not easy, even when using Agile.

Chapter Summary

- ▶ Project managers need to take a systems approach when working on projects
- ▶ Organizations have four different frames: structural, human resources, political, and symbolic
- ▶ The structure and culture of an organization have strong implications for project managers
- ▶ Projects should successfully pass through each phase of the project life cycle
- ▶ Project managers need to consider several factors due to the unique context of information technology projects
- ▶ Recent trends affecting IT project management include globalization, outsourcing, virtual teams, and Agile

快速测验

- ▶ 下面_不是系统管理的三球模型的组成部分。
- ▶ a.业务
- ▶ b.信息
- ▶ c.技术
- ▶ d.组织

快速测验

- ▶ 在组织4个框架中， 涉及如何举行会议、员工衣着样式和预期工作时间。
 - ▶ a.结构
 - ▶ b.人力资源
 - ▶ c.政治
 - ▶ d.标志

快速测验

- ▶ 人员 在组织结构中通常向两个或更多的上级报告。
 - ▶ a.职能型
 - ▶ b.项目型
 - ▶ c.矩阵型
 - ▶ d.混合型

快速测验

- ▶ 项目工作通常在这样的组织文化中最容易成功，该文化具有很高的特性，除了__
 - ▶ a.人员认同
 - ▶ b.强调群体
 - ▶ c.风险容忍
 - ▶ d.控制

快速测验

- ▶ _____是作为项目的一部分所提供的一件产品或一项服务，例如，一份技术报告、一个培训项目或者硬件。
- ▶ a. 可交付成果
- ▶ b. 产品
- ▶ C. 作包
- ▶ d. 切实目标

快速测验

- ▶ 下面__是错误的。
- ▶ a.分析项目生命周期是项目阶段的集合
- ▶ b.产品生命周期和项目生命周期是一样的
- ▶ c.瀑布方法是预测生命周期模型的一个例子
- ▶ d敏捷开发是自适应生命周期模型的一个例子

快速测验

- ▶ 在开发信息系统时，以下__用来描述一个阶段性的框架
 - ▶ a.系统开发生命周期
 - ▶ b.快速应用软件开发
 - ▶ c.预测生命周期
 - ▶ d.极限编程

快速测验

- ▶ IT 项目的性质不同于许多其他行业的项目，因为它们是很__。
 - ▶ a. 昂贵的
 - ▶ b. 技术性的
 - ▶ c. 多样的
 - ▶ d. 具有挑战性的

快速测验

- ▶ 下列术语中， 可以用来描述组织从国外寻找外部资源以获取需要的产品或服务。
 - ▶ a. 全球化
 - ▶ b. 境外生产
 - ▶ c. 出口
 - ▶ d. 全球采购

快速测验

- ▶ __是最主要的敏捷开发方法
 - ▶ a. 极限编程
 - ▶ b. 冲刺
 - ▶ c. 六西格玛
 - ▶ d. Scrum

讨论题

- ▶ 1、传统项目生命周期的四个阶段？
- ▶ 2、组织结构分为哪三类？
- ▶ 3、影响IT项目管理的最新趋势？

讨论题

- ▶ 1、传统项目生命周期的四个阶段？
- ▶ 概念阶段
- ▶ 开发阶段
- ▶ 实施阶段
- ▶ 收尾阶段

讨论题

- ▶ 2、组织结构分为哪三类？
- ▶ 职能型组织结构
- ▶ 项目型组织结构
- ▶ 矩阵型组织结构

讨论题

- ▶ 3、影响IT项目管理的最新趋势？
- ▶ 全球化
- ▶ 外包
- ▶ 虚拟团队
- ▶ 敏捷项目管理