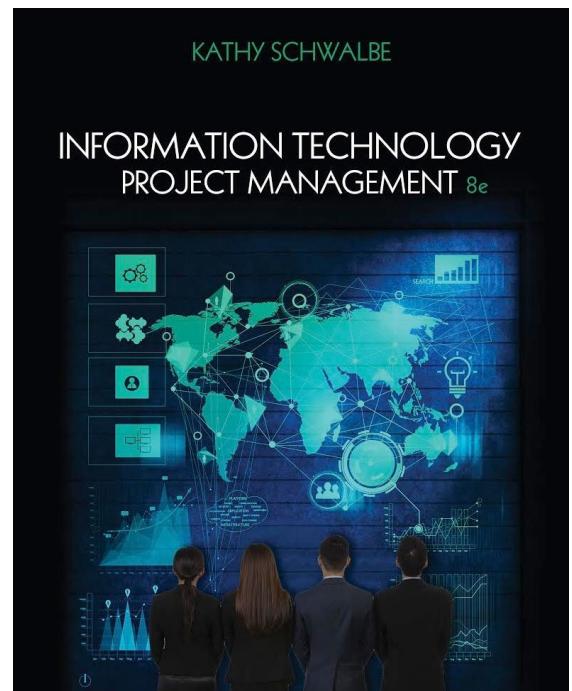


# Chapter 2

## The Project Management and Information Technology Context

**Information Technology Project Management, Eighth Edition**

Note: See the text itself for full citations.  
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# Chapter 2A

## The Project Management and Information Technology Context

# Learning Objectives

- Describe the systems view of project management and how it applies to information technology (IT) projects
- Analyze a formal organization using frames:
  1. Structural organizational (informal, || formal)
  2. Human resources
  3. Political organizational
  4. Symbolic organizational
- Explain the differences among functional, matrix, and project organizational structures
- Explain why stakeholder management and top management commitment are critical for a project's success

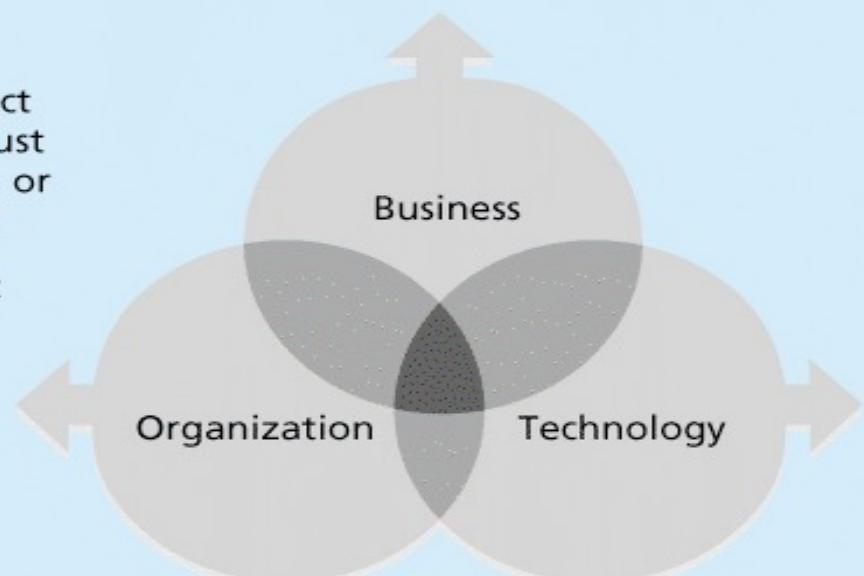
# Learning Objectives

- 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

# A Systems View of Project Management

- A system approach: describe analytical approach to management and problem solving
- Three parts include:
  - **Systems philosophy:** View things as systems, interacting components working within an environment to fulfill some purpose
  - **Systems analysis:** problem-solving approach
  - **Systems management:** Address business, technological, and organizational issues before making changes to systems

# Three Sphere Model for Systems Management

- What will the tablet project cost the college?
  - What will it cost students?
  - What will support costs be?
  - What will the impact be on enrollments?
- Will the tablet project affect all students, just traditional students, or only certain majors?
  - How will the project affect students who already have tablets or laptops?
  - Who will develop special applications or books for the tablets?
  - Who will train students, faculty, and staff?
- Should the tablets be based on Apple, Microsoft, Android, or another system?
  - What applications will be required?
  - What will the hardware specifications be?
  - How will the tablets affect various networks and speed?
  - Will more power cords be required in the classroom?
- 

# Perspectives on Organizations

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

# Many Organizations Focus on the Structural Frame

- Most people understand what organizational charts are
- Many new managers try to change organizational structure when other changes are needed
- 3 basic organizational structures
  1. functional
  2. project
  3. matrix

# 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

# Functional, Project, and Matrix Organizational Structures

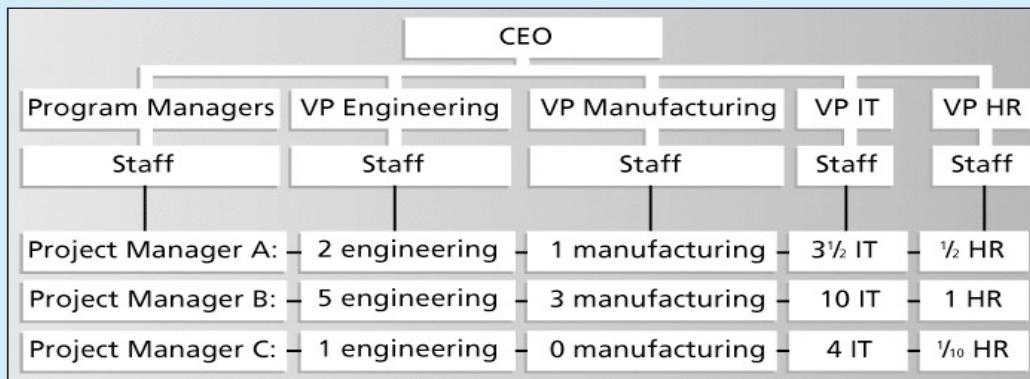
Functional



Project



Matrix



# Organizational Structure Influences on Projects

Project Characteristics	Organizational Structure Type				Project	
	Functional		Matrix			
	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	

# Recognize the Importance of Project Stakeholders

- Recall that project stakeholders are the people involved in or affected by project activities
- 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 are very important stakeholders

# 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.

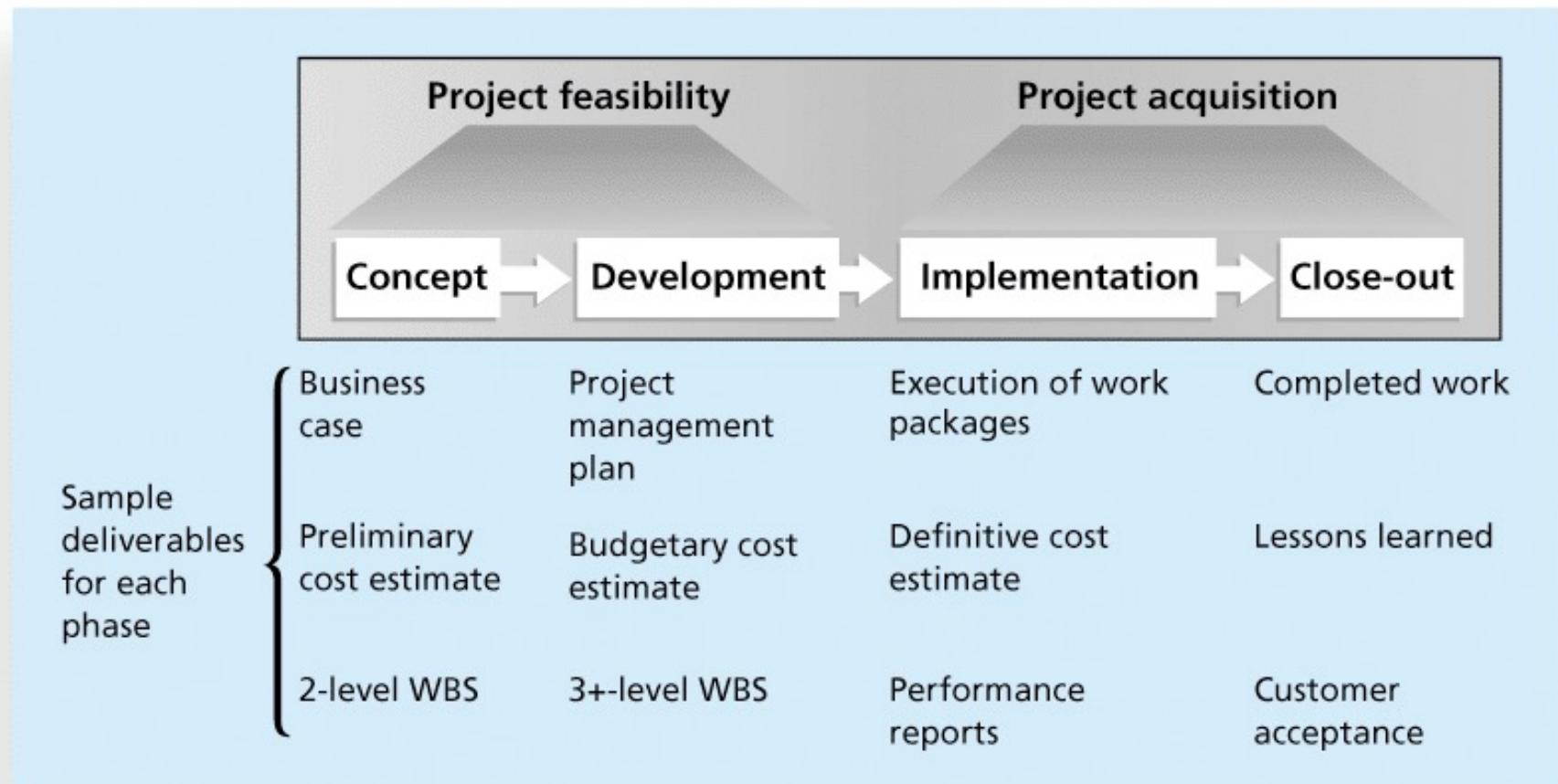
# Project Phases and the Project Life Cycle

- 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

# Phases of the Traditional Project Life Cycle



# Software Plan driven process vs. Agile process models

# Plan-driven vs. agile processes

- Plan-driven processes (predictive Life cycle) processes where all of the process activities are planned and progress is measured against this plan. Project can be clearly articulated and the schedule and cost can be predicted
- In agile processes: planning is incremental to reflect changing customer requirements.
- In practice, most practical processes include elements of both plan-driven and agile approaches.
- There are no right or wrong software processes.

# Plan-driven (Predictive) vs. agile

**A. Plan Driven (Predictive) Process Models:** models advocate an orderly approach to software engineering

1. Waterfall Model (traditional, best-known)
2. Incremental/Prototyping Model: enhance and evolve to the final (Evolutionary prototyping)
3. Integration and configuration
4. Spiral Model: Oriented towards phased reduction of risks
5. Others such as: Code-and-Fix, Rational Unified Process

**B. Agile Process Models** advocate flexibility and speed

1. Scrum
2. XP (Extreme Programming)

Both types of process models are used in place in software Engineering

# Product Life Cycles

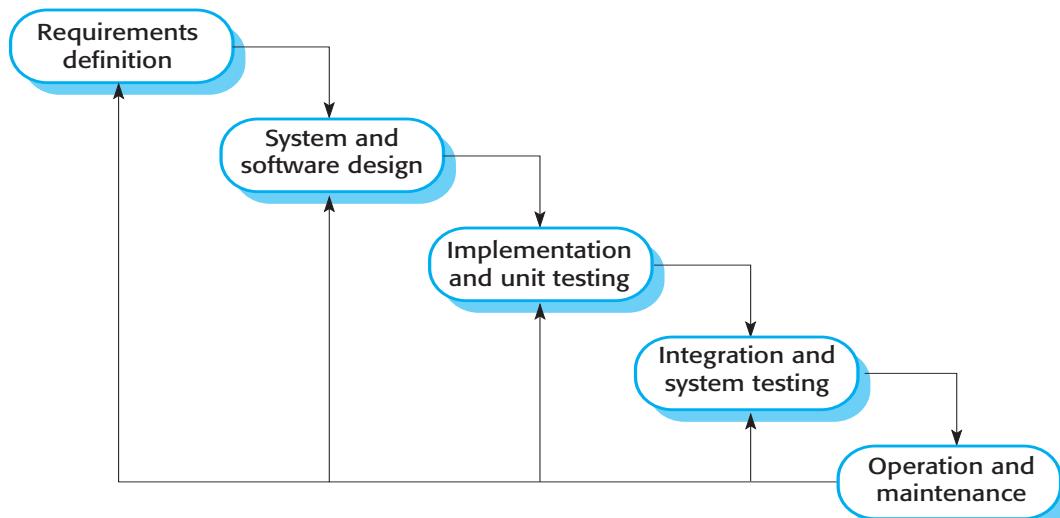
- Products also have life cycles
- The *Systems Development Life Cycle (SDLC)* is a framework for describing the phases involved in developing and maintaining information systems
- Systems development projects can follow
  - Predictive life cycle: the scope of the project can be clearly articulated and 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

# Plan-driven (Predictive) Life Cycle Models

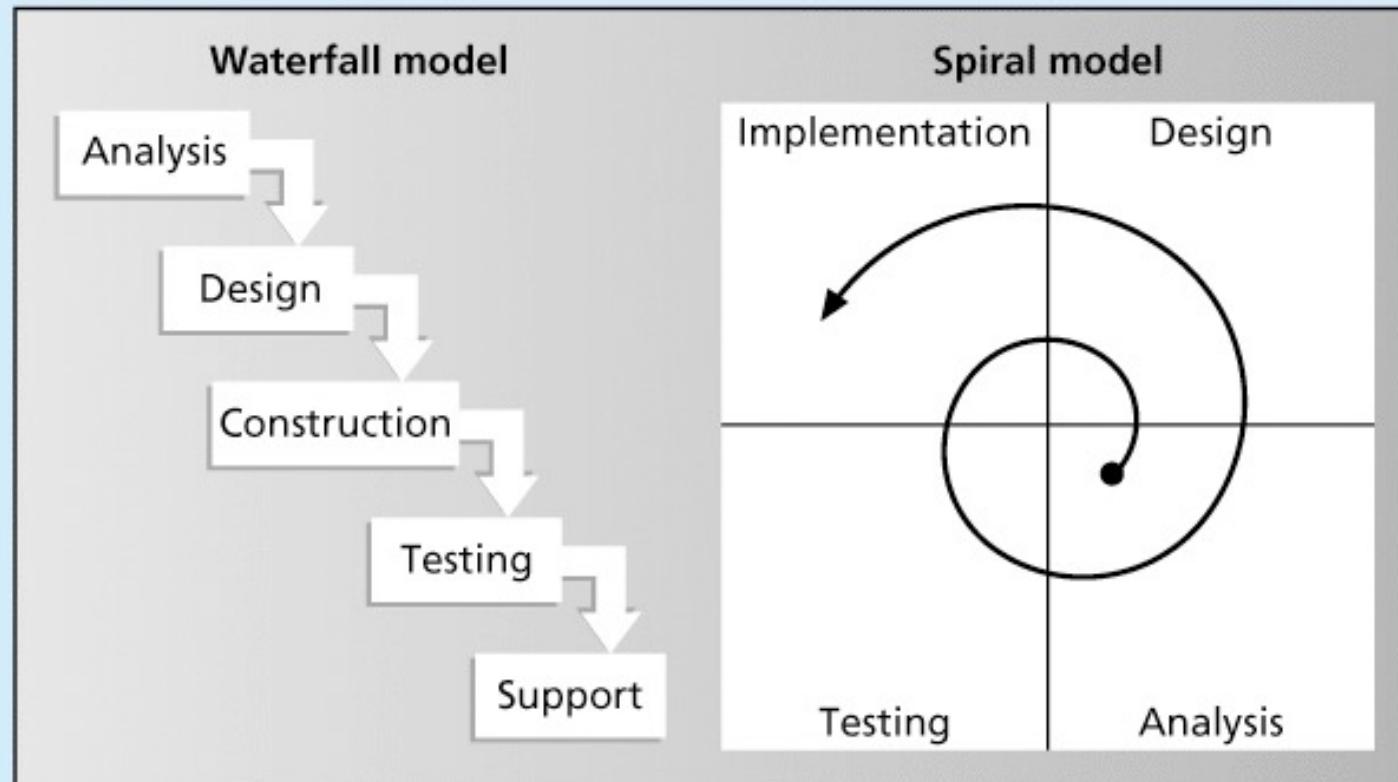
- **Waterfall model:** has well-defined, linear stages of systems development and support
- **Spiral model:** shows that software is developed using an iterative or spiral approach rather than a linear approach
- **Incremental build model:** provides for progressive development of operational software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

# Waterfall Model

- Plan-driven model. Separate and distinct phases of specification and development(**performed in sequence**)
- Linear process flow executes each of the five activities in sequence with no backtracking
- Fundamental flaw: Assumption that each stage can and must be completed before the next one occurs
- User(s) may need to see finished product to express whether requirements are fulfilled



# 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

# 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

# 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

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# Agile software development (Next Chap 2B)

- The Agile Manifesto<sup>[1]</sup> introduced the term in 2001.
- is a group of software development methods based on iterative and incremental development, where requirements and solutions evolve through collaboration between self-organizing, cross-functional teams.
  - Methods
  - Iterative
  - Incremental
- Goal: outline values and principles to allow software teams to
  - develop quickly and
  - respond to change.