Chapter 2: The Project Management and Information Technology Context

Managing Information Technology Projects, Revised Sixth Edition Schwalbe

Note: See the text itself for full citations.

Learning Objectives

▸ Describe the systems view of project management and how it applies to information technology 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 (continued)

- 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 information technology projects
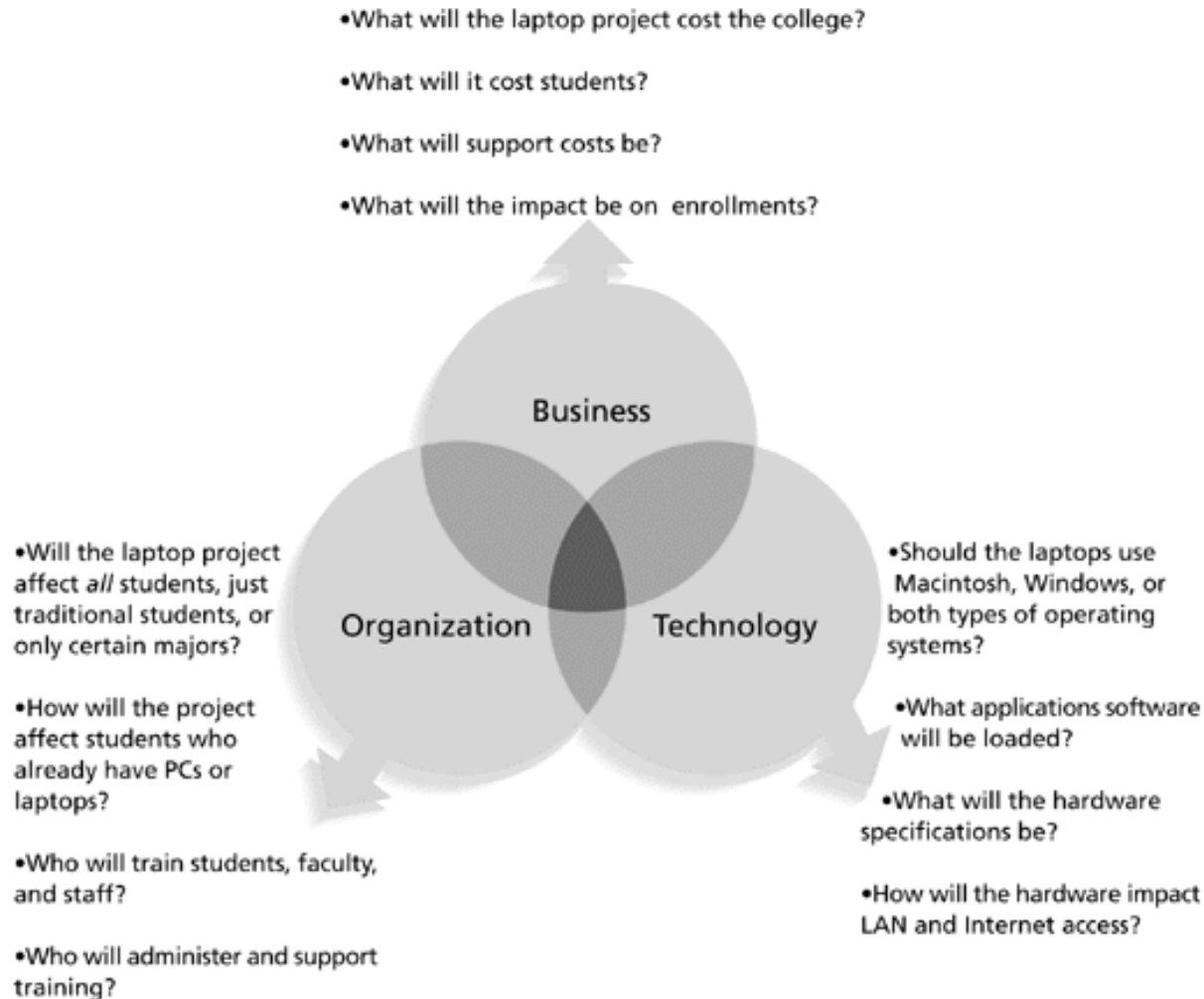- Describe recent trends affecting IT project management, including globalization, outsourcing, and virtual teams

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

- What will the laptop project cost the college?
- What will it cost students?
- What will support costs be?
- What will the impact be on enrollments?

Business

- Will the laptop project affect *all* students, just traditional students, or only certain majors?
- How will the project affect students who already have PCs or laptops?
- Who will train students, faculty, and staff?
- Who will administer and support training?

Organization

Technology

- Should the laptops use Macintosh, Windows, or both types of operating systems?
- What applications software will be loaded?
- What will the hardware specifications be?
- How will the hardware impact LAN and Internet access?

Understanding Organizations

Structural frame: Focuses on roles and responsibilities, coordination and control. Organization charts help define this frame.	**Human resources frame:** Focuses on providing harmony between needs of the organization and needs of people.
Political frame: Assumes organizations are coalitions composed of varied individuals and interest groups. Conflict and power are key issues.	**Symbolic frame:** Focuses on symbols and meanings related to events. Culture is important.

What Went Wrong?

Many enterprise resource planning (ERP) projects fail due to organizational issues, not technical issues. For example, Sobey's Canadian grocery store chain abandoned its two-year, $90 million ERP system due to organizational problems.

As Dalhousie University Associate Professor Sunny Marche states, "The problem of building an integrated system that can accommodate different people is a very serious challenge. You can't divorce technology from the sociocultural issues. They have an equal role." Sobey's ERP system shut down for five days, and employees were scrambling to stock potentially empty shelves in several stores for weeks. The system failure cost Sobey's more than $90 million and caused shareholders to take an 82-cent after-tax hit per share.*
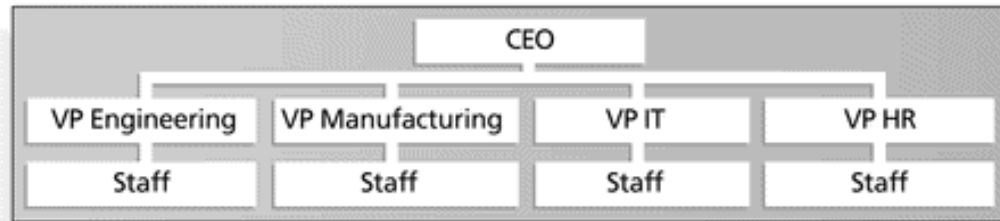
*Hoare, Eva. "Software hardships," The Herald, Halifax, Nova Scotia (2001).

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

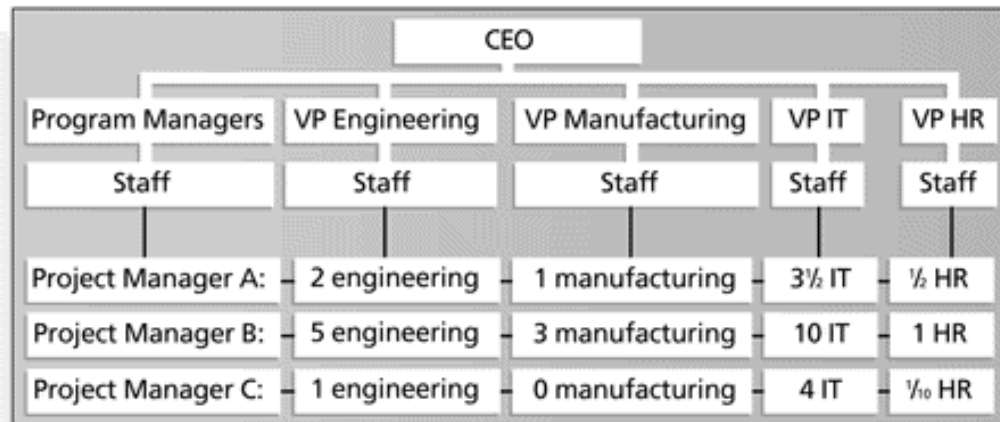# Figure 2-2. Functional, Project, and Matrix Organizational Structures

Functional

CEO			
VP Engineering	VP Manufacturing	VP IT	VP HR
Staff	Staff	Staff	Staff

Project

CEO		
Program Manager A	Program Manager B	Program Manager C
Staff	Staff	Staff

Matrix

CEO				
Program Managers	VP Engineering	VP Manufacturing	VP IT	VP HR
Staff	Staff	Staff	Staff	Staff
Project Manager A:	2 engineering	1 manufacturing	3½ IT	½ HR
Project Manager B:	5 engineering	3 manufacturing	10 IT	1 HR
Project Manager C:	1 engineering	0 manufacturing	4 IT	1/10 HR

Table 2-1. Organizational Structure Influences on Projects

Project Characteristics	Organizational Structure Type				
	Functional	**Matrix**			**Project**
		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 performing 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

PMBOK® Guide, 2000, 19, and *PMBOK® Guide 2004*, 28.

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

Media Snapshot

▸ The New York Times reported that the project to rebuild Ground Zero in New York City is having severe problems; imagine all of the stakeholders involved in this huge, highly emotional project

▸ A 34-page report describes the many challenges faced in the reconstruction of the former World Trade Center site nearly seven years after the terrorist attack of September 11, 2001

▸ The report identified the need for a steering to make final decisions on important matters

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

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)

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 encourages 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
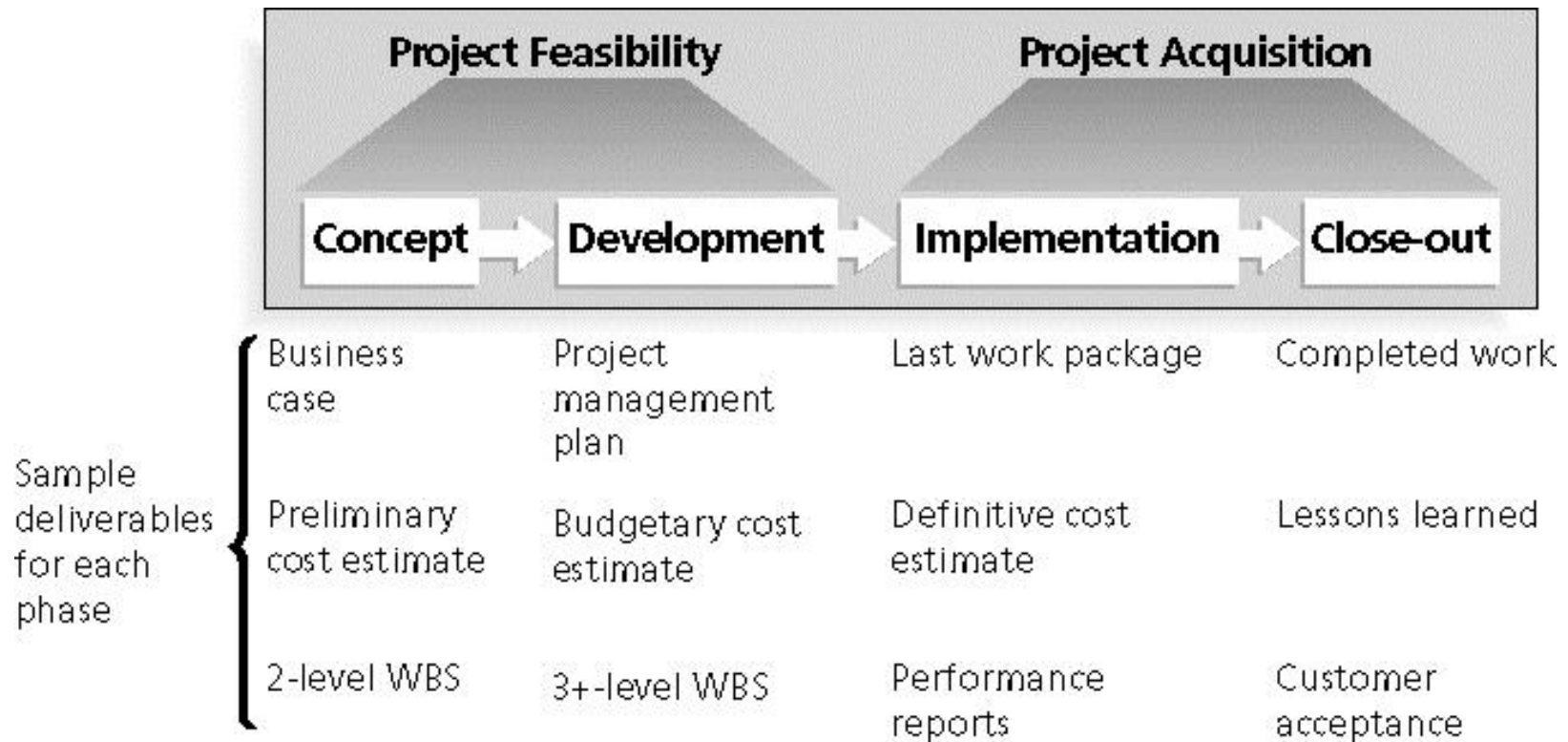- The creation of a project management office or center of excellence

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
- 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 2-3. Phases of the Traditional Project Life Cycle

	Project Feasibility		Project Acquisition	
	Concept	**Development**	**Implementation**	**Close-out**
Sample deliverables for each phase	Business case	Project management plan	Last work package	Completed work
	Preliminary cost estimate	Budgetary cost estimate	Definitive cost estimate	Lessons learned
	2-level WBS	3+-level WBS	Performance reports	Customer acceptance

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

Agile Software Development

▶ Agile software development has become popular to describe new approaches that focus on close collaboration between programming teams and business experts

▶ Visit www.agilealliance.org for information

▶ See the companion Web site for Suggested Readings

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: lower trade and political barriers and the digital revolution have made it possible to interact almost instantaneously with billions of other people across the planet

▸ 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

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 competiveness 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

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, and virtual teams