Chapter 2:
The Project Management and Information Technology Context

Learning Objectives

Define	Define the systems view of project management and how it applies to information technology (IT) projects
Summarize	Summarize organizations, including the four frames, organizational structures, and organizational culture
Explain	Explain why stakeholder management and top management commitment are critical for a project's success
Distinguish	Distinguish between project and product life cycles
Discuss	Discuss the unique attributes and diverse nature of IT projects
Summarize	Summarize recent trends affecting IT project management, including globalization, outsourcing, virtual teams, and agile project management

A Systems View of Project Management

Projects must operate in a broad organizational environment

Project managers need to use systems thinking:

- Taking a complete view of carrying out projects within the context of the organization

What Is a Systems Approach?

A systems approach emerged in the 1950s to describe a holistic and 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

The Three-Sphere Model for Systems Management

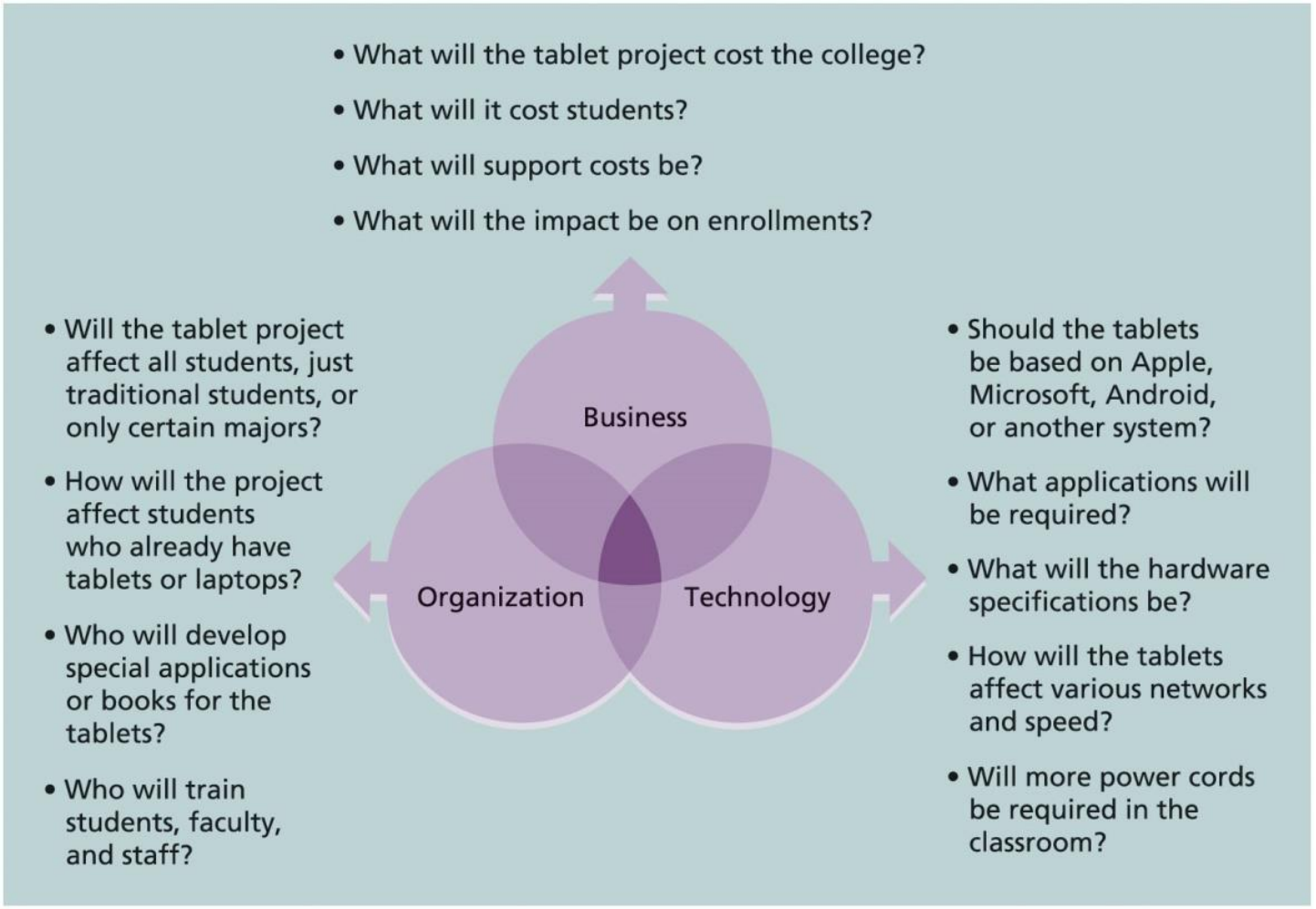


FIGURE 2-1 Three-Sphere model for systems management

Advice for Young Professionals

- It's difficult enough trying to understand the various technologies an organization uses. How can you begin to understand the business and organizational aspects?
  - ***Make it a priority.*** Don't just focus on the technology, no matter how exciting it seems to you. Even if you take just a few minutes each day learning about other aspects of the organization, that's a start**.**
  - ***Tell your boss or other people you work with that you want to understand how the entire organization works.*** Ask important questions like how the company makes money, who key customers are, what the priorities are for the year, what meetings you can attend or documents you can read to gain more knowledge, etc**.**
  - ***Network, network, network! Find out which people inside or outside of your organization can help you in developing a systems approach.*** You might be surprised how quickly you can move up in your career once you understand the big picture.

Understanding Organizations

Systems approach requires that project managers always view their projects in the context of the larger organization

Organizational issues are often the most difficult part of working on and managing projects

Important for project managers to develop a better understanding of people as well as organizations

- ***To improve the success rate of IT projects***

The Four Frames of 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.

Source: Bolman and Deal.

FIGURE 2-2 Perspectives on organizations[2]

Organizational Structures

- Three basic organizational 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

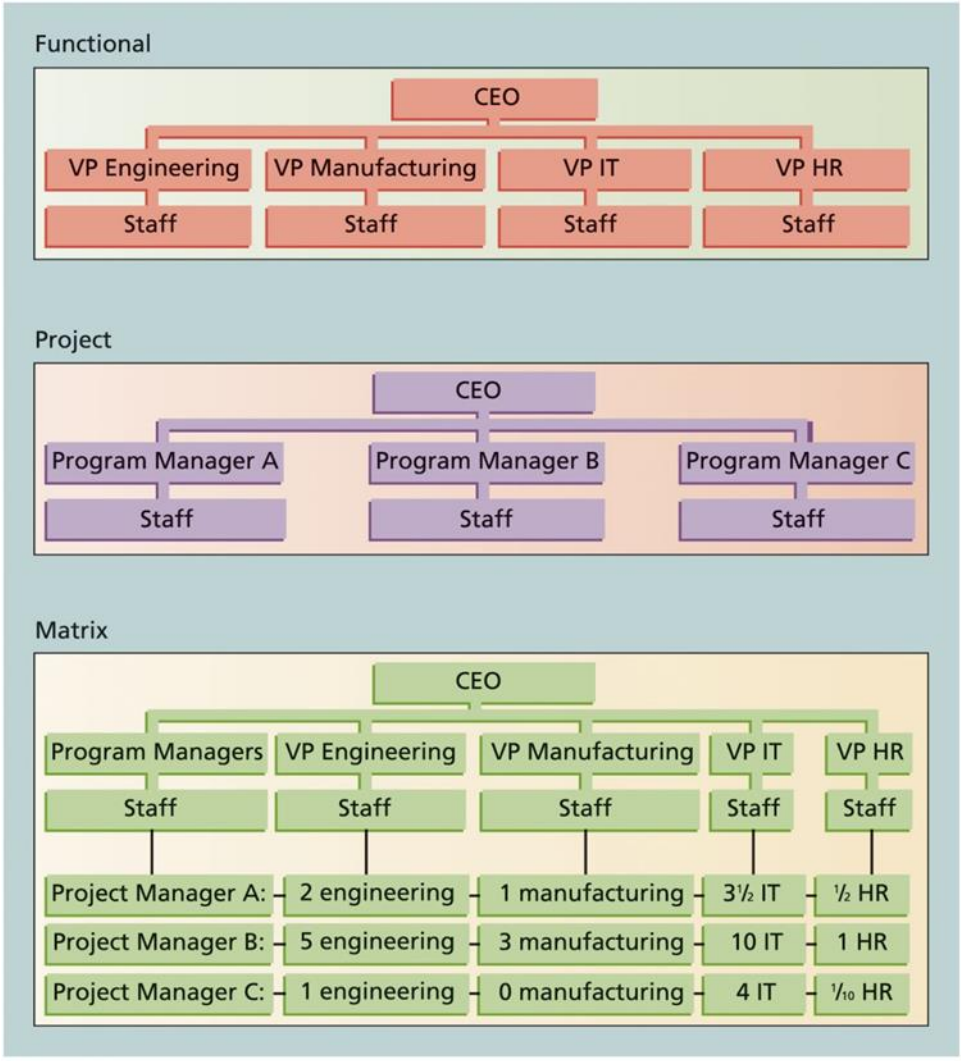


FIGURE 2-3 Functional, project, and matrix organizational structures

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:

1. **Member identity*** **The degree to which employees identify with the organization as a whole rather than with their type of job or field of profession expertise**.
2. **Group emphasis*** **Teamwork**
3. **People focus** **Companies that place a high value on this characteristic of organizational culture place great importance on how their decisions will affect the people in their organization** **Unit integration***
4. **Unit integration*** **The degree to which units within the organization are encouraged to operate in a coordinated or interdependent manner.**
5. **Control the degree** **to which rules, policies, and direct supervision are used to oversee and control employee behavior.**
6. **Risk tolerance*** **the level of risk an investor is willing to take**
7. **Reward criteria*** **Degree to which rewards are allocated according to employee performance rather than non performance criteria.**
8. **Conflict tolerance*** **the degree to which employees are encouraged to air conflicts and criticisms openly**.
9. **Means-ends orientation** **the degree to which management focuses on out comes rather than on techniques and processes used to achieve those result**
10. **Open-systems focus*** **the degree to which the organization monitors and responds to changes in the external environment**

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

Focusing on Stakeholder Needs

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

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

Facilitates conversion of strategic goals into IT projects. Assists in project management. Helps in compliance and governance.

A lack of alignment between IT and the business strategy, objectives, and priorities, leading to wasted resources, missed opportunities, and conflicting goals

can delay the organization's ability to achieve its strategic goals	Loss of Competitive Advantage	

The Need for Organizational Commitment to Information Technology

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

The 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 and Product Life Cycles

It is good practice to divide projects into several phases

Because projects operate as part of a system and involve uncertainty

The same can be said for developing products

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

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

Product Life Cycles

- Products also have life cycles
- The Systems Development Life Cycle (SDLC) is a framework for describing the phases of developing information systems
- Systems development projects can follow
  - *Predictive life cycle* The project follows a linear progression through the five steps of the project cycle: initiate, plan, execute, control, and close
  - Iterative life cycle (agile) are composed of several iterations, which repeat one or more of the phases before proceeding to the next one
  - Incremental life cycle the project is delivered in multiple increments or sets There's a new functionality being added to the website for each iteration, but the full website is delivered to the customer at the end of the project.

  The iterative method favors introducing periodic changes since the development team can simply incorporate new adjustments to the product during the next iterative cycle. In comparison, **the incremental method** is more rigid since changes only come at the very end of the product development process
  - Adaptive life cycle is a combination of both the Iterative and Incremental models
  - Hybrid life cycle s a combination of project management approaches. An example is the agile life cycle, which combines iterative and incremental project management approaches.
- 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
  - Prototyping model: used for developing prototypes to clarify user requirements
  - Rapid Application Development (RAD) model: used to produce systems quickly without sacrificing quality

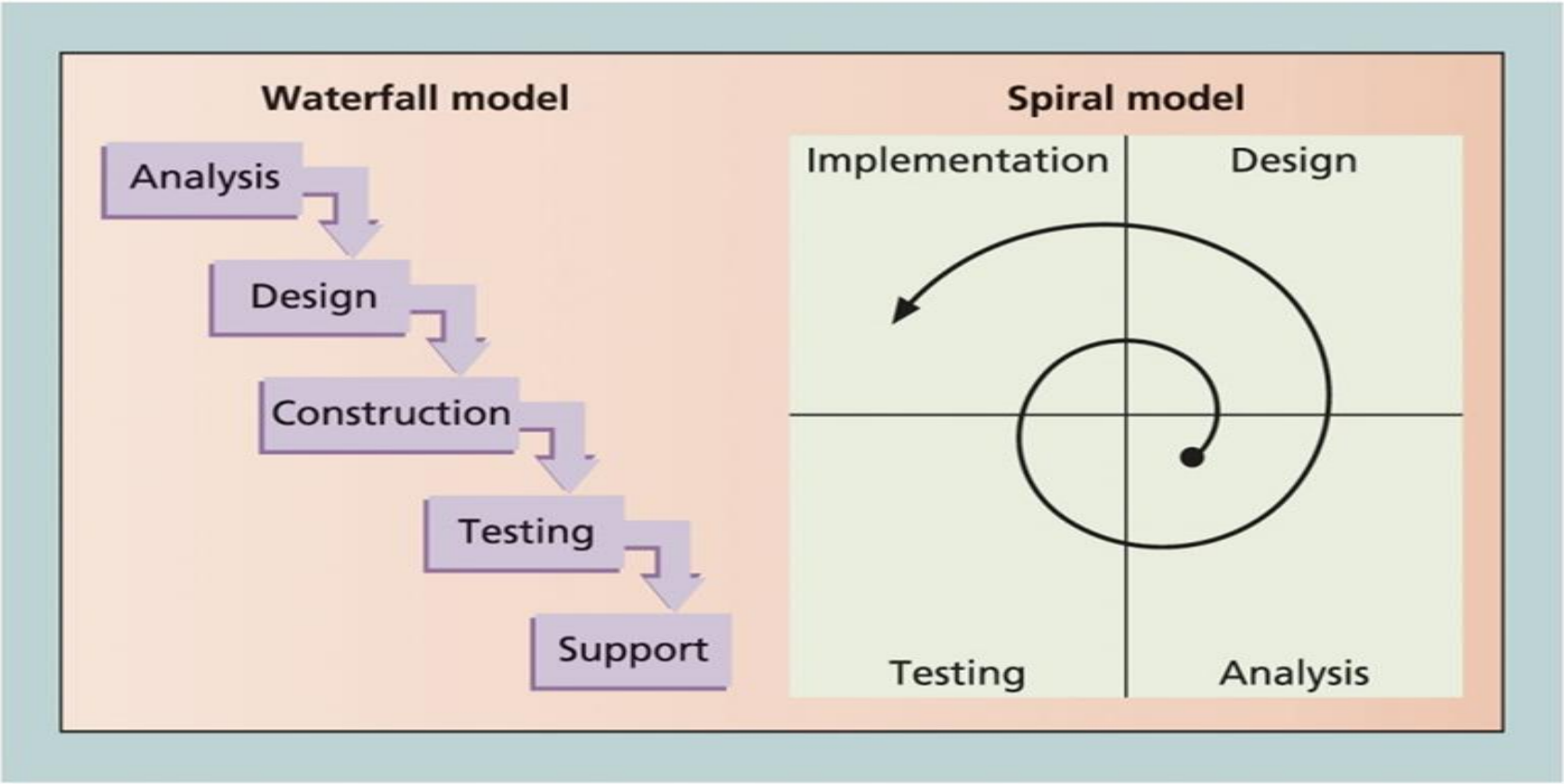


FIGURE 2-4 Waterfall and spiral life cycle models

The Importance of Project Phases and Management Reviews

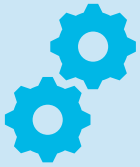
A project should successfully pass through each of the project phases in order to continue on to the next

Management reviews, also called phase exits, phase gate reviews, or kill points, should occur after each phase to evaluate the project's progress, likely success, and continued compatibility with organizational goals

It is unwise to wait until the end of project or product phases to have management inputs

- Many projects are reviewed by management on a regular basis

The Context of Information Technology Projects



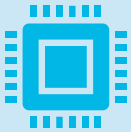
Project context

Has a critical impact on which product development life cycle will be most effective for a particular software development project

Several issues unique to the IT industry have a critical impact on managing IT projects

The Nature of IT Projects

IT projects can be very diverse in terms of size, complexity, products produced, application area, and resource requirements



The nature of software development projects is even more diverse than hardware-oriented projects

IT projects also support every possible industry and business function

Characteristics of IT Project Team Members

IT project team members often have diverse backgrounds and skill sets

Many companies purposely hire graduates with degrees in other fields such as business, mathematics, or the liberal arts to provide different perspectives on IT projects

Some IT projects require the skills of people in just a few job functions

But some require inputs from many or all of them

Diverse Technologies

IT projects use diverse technologies that change rapidly

Differences in technical knowledge can make communication between professionals challenging

New technologies have also shortened the time frame many businesses have to develop, produce, and distribute new products and services

Recent Trends Affecting Information Technology 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

Globalization

Issues

- Communications
- Trust
- Common work practices
- Tools

Suggestions

- Employ greater project discipline
- Think globally but act locally
- Consider collaboration over standardization
- 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

Practice can be unpopular on some countries

Project managers should become more familiar with many global and procurement issues

Virtual Teams

Advantages

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

Disadvantages

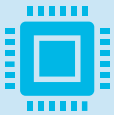
- Isolating team members
- Increasing the potential for communications problems
- Reducing the ability for team members to network and transfer information informally
- Increasing the dependence on technology to accomplish work

A list of factors that help virtual teams succeed, including team processes, trust/relationships, leadership style, and team member selection

Agile

Agile project management is an iterative approach to managing software development projects that focuses on continuous releases and incorporating customer feedback with every iteration

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 technology and businesses became more complex, the approach was often difficult to use because requirements were unknown or continuously changing

Agile today means using an approach where requirements and solutions evolve through collaboration

Agile methodology

Scrum (1 of 4)

According to the **Scrum Alliance**, *Scrum is the leading agile development method for completing projects with a complex, innovative scope of work.*

Scrum *is a management framework that teams use to self-organize and work towards a common goal.*

It describes a set of meetings, tools, and roles for efficient project delivery.

Agile is a project management philosophy that utilizes a core set of values or principles, Scrum is a specific Agile methodology that is used to facilitate a project.,

Scrum practices allow teams to self-manage, learn from experience, and adapt to change..

Scrum (2 of 4)

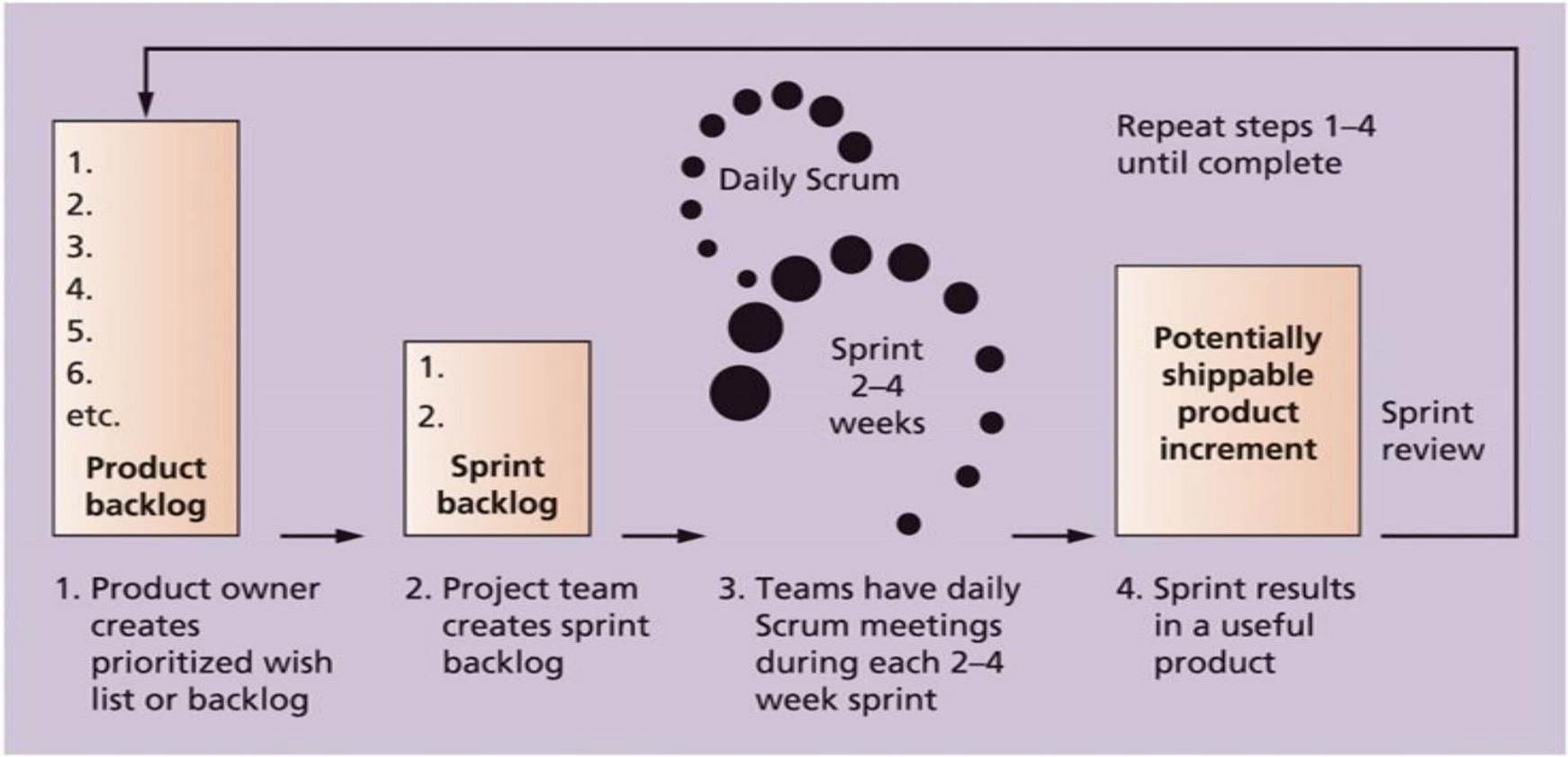


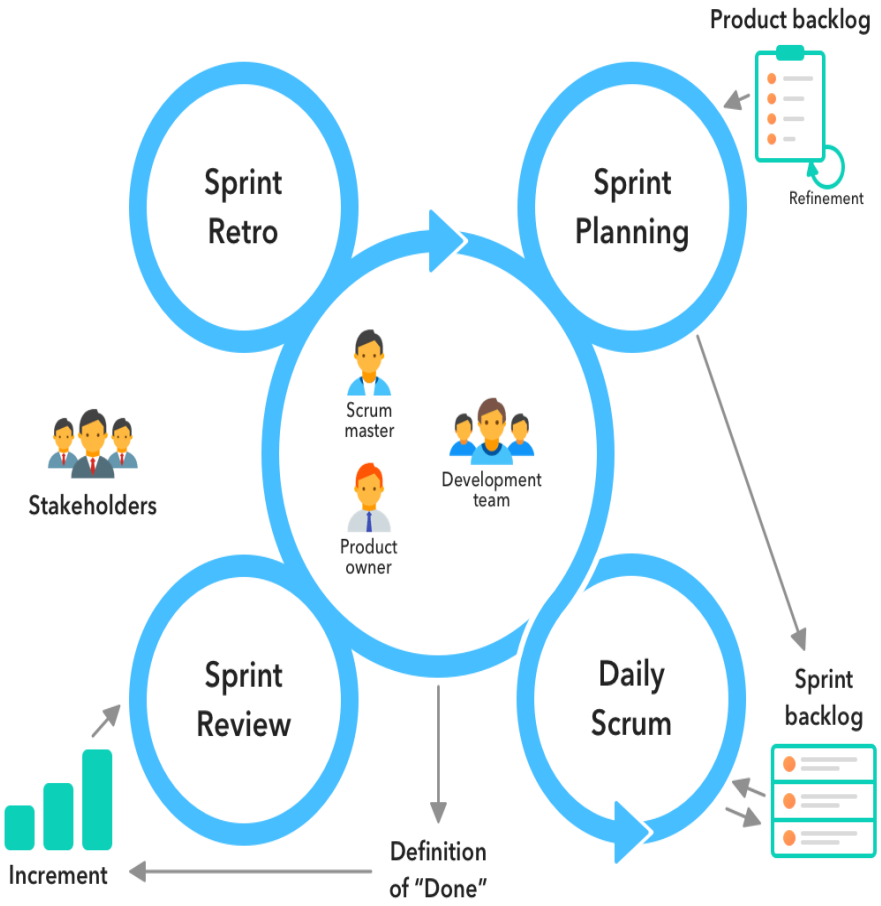
FIGURE 2-5 Scrum framework

Scrum (3 of 4)

- Kanban
  - Technique that can be used in conjunction with Scrum
  - Developed in Japan by Toyota Motor Corporation
  - Uses visual cues to guide workflow
  - Kanban cards show new work, work in progress, and work completed
- 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.

Scrum (4 of 4)

Sprint Retro is a recurring repetitive dedicated to discussing what went well and what can be improved in a sprint.
Sprint Planning is an event in the Scrum framework where the team determines the product backlog items they will work on during that sprint and discusses ...
Sprint Review is to inspect the increment that was developed in that sprint and collect feedback from key stakeholders
Daily scrum are quick meetings held each day at the same time for members of the product development team working on a particular sprint



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 project management