IT Project management

62FIT2PRM . LECTURE 2.

The Project Management and Information Technology Context

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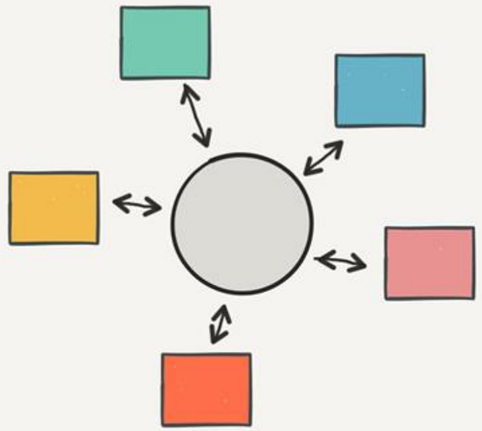
LEARNING OBJECTIVES

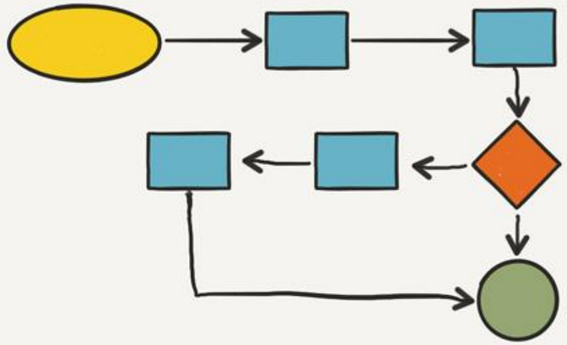
- **Define** the systems view of project management and how it applies to information technology (IT) projects
- **Summarize** organizations, including the four frames, organizational structures, and organizational culture
- **Explain** why stakeholder management and top management commitment are critical for a project's success
- **Distinguish** between project and product life cycles
- **Discuss** the unique attributes and diverse nature of IT projects
- **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 holistic view of carrying out projects within the context of the organization



SYSTEMS



PROCESS

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Why should you care about project management systems?

77%

of high-performing companies surveyed reported regular usage of project management software

11.4%

of investment is **wasted** *owing to poor project performance*

88%

of remote workers encounter inconsistent leadership and **miscommunications**

498 hours

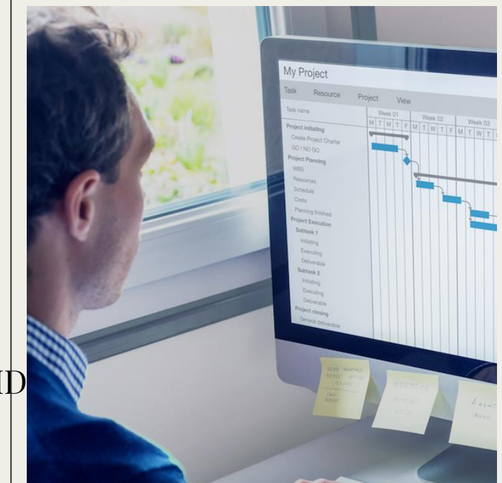
saves the average employee

63%

of **workers** *in the US currently feeling ready to quit their jobs due to stress, creating a smoother, more efficient work environment is a big deal.*

42%

of companies achieved significant **benefits from** *their project management software investment.*



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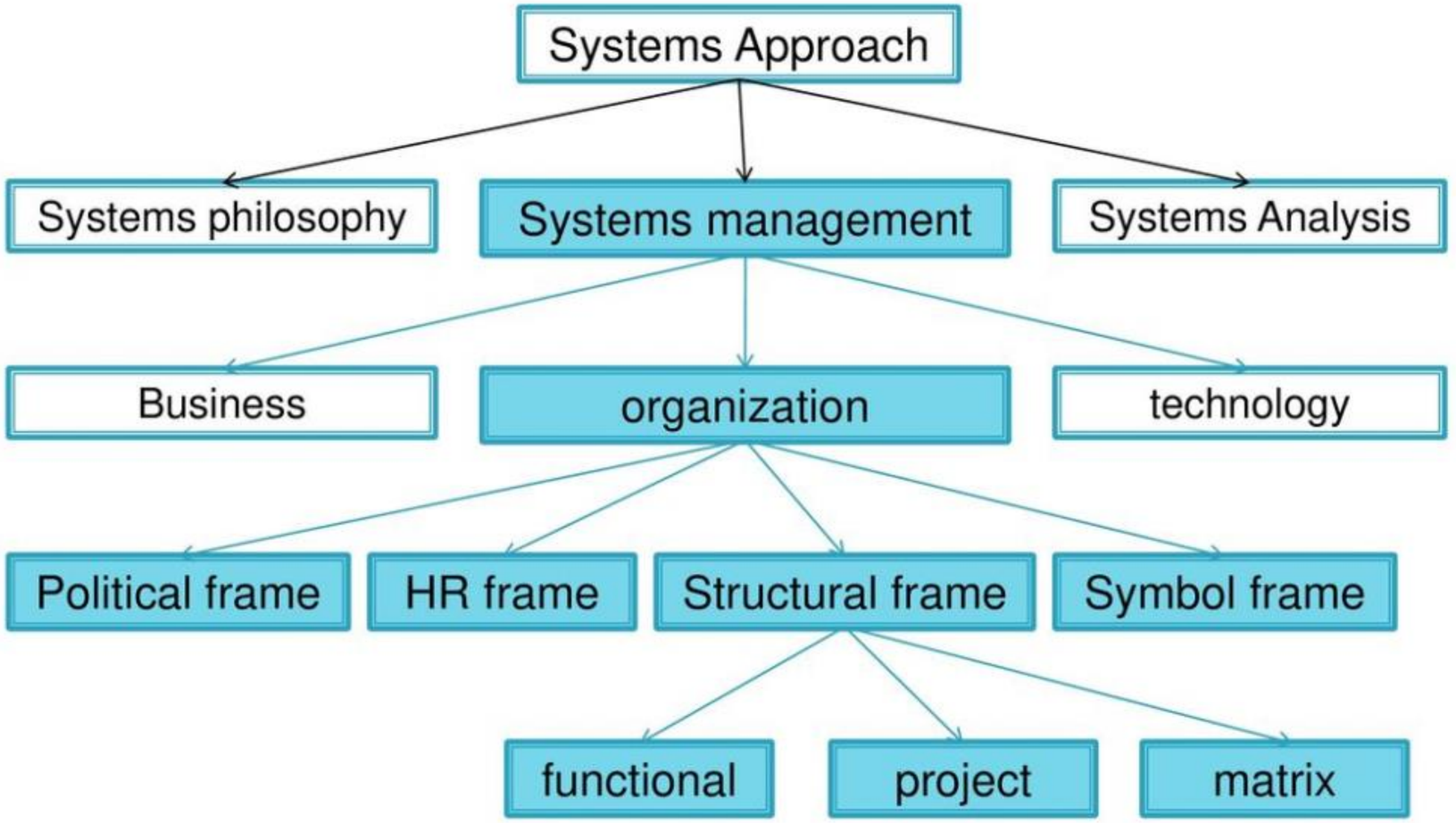
What Is a Systems Approach?

- 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

A systems approach



Systems are sets of interacting components that work within an environment to fulfill some purpose. Organizations are also systems, with people in various roles working together to design, develop, deliver, and sell various products and services.

A systems philosophy is an overall model for thinking about things as systems.

Jim. Director of Information Technology
15 years experience

Jim notices some issues at school:

- Wifi is available everywhere on campus
- Most other classrooms have only instructor stations and projection systems
- Many instructors supplement their courses with information on the Internet and course websites, but the college does not offer distance learning programs
- But only a few classrooms on campus have computers for the instructors and students

Jim proposes some solutions:

- he developed plans to start requiring students either to lease or purchase **tablets** at their college starting the next academic year.
- he sent an e-mail to all faculty and staff in September and briefly described his plans. He did not get much response until the February faculty meeting

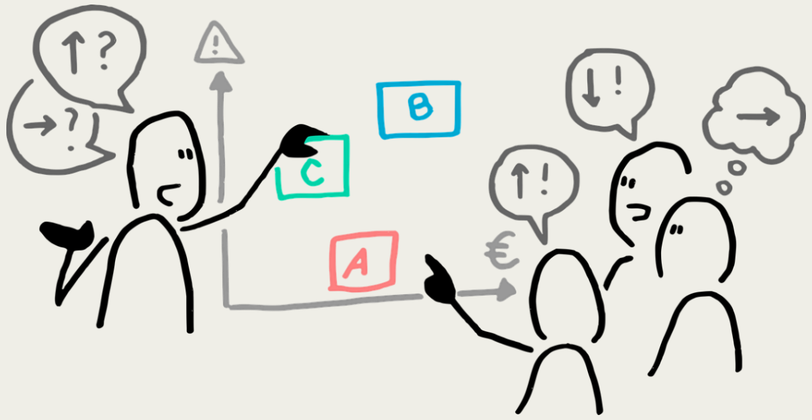
Results:

- the chairs of the History, English, Philosophy, and Economics departments all voiced **opposition to the idea** because they thought the college was not a technical training school and that they did not have time to write their course materials to run on tablets
- students already had state-of-the-art laptops and would **not want to pay a mandatory fee** to lease less-powerful tablets

What was Jim's mistake?

Poor Collaboration

Members of his IT department did all of the planning. Even though Jim sent an e-mail describing the tablet project to all faculty and staff, he did not address many of the organizational issues involved in such a complex project. Most faculty and staff are very busy at the beginning of the fall term, and many may not have read the entire message. Others may have been too busy to communicate their concerns to the IT department.



Unaware of the effects

He did not clearly define the business, technological, and organizational issues associated with the project. Jim and the IT department began **work** on the tablet project **in isolation**. If they had taken a systems approach, considering other dimensions of the project and involving key stakeholders, they could have identified and addressed many of the issues raised at the February faculty meeting before the meeting.

Jim planned the tablet project without using a systems approach

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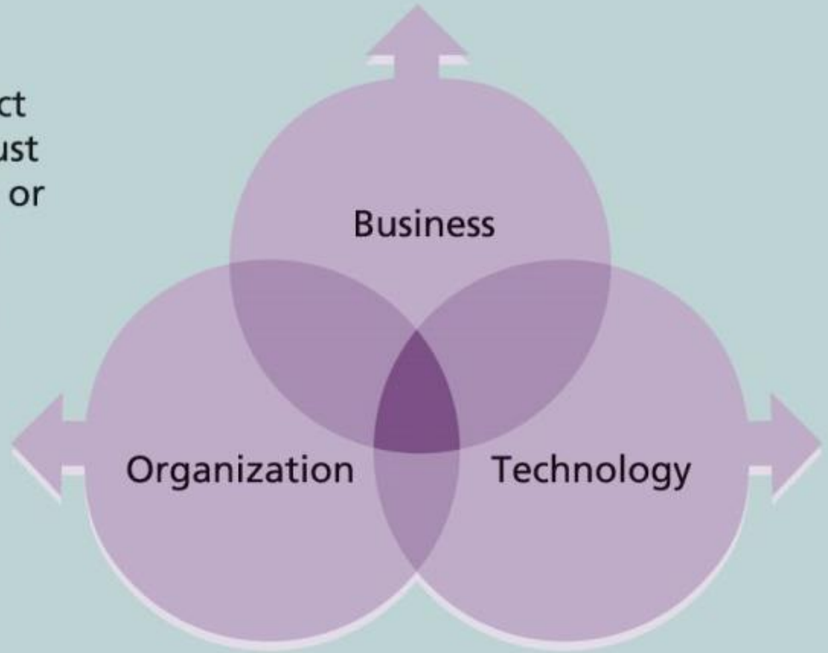
Figure 2-1 The Three-Sphere Model for Systems Management

- 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?

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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 to learn 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

FIGURE 2-2 PERSPECTIVES ON ORGANIZATION

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?

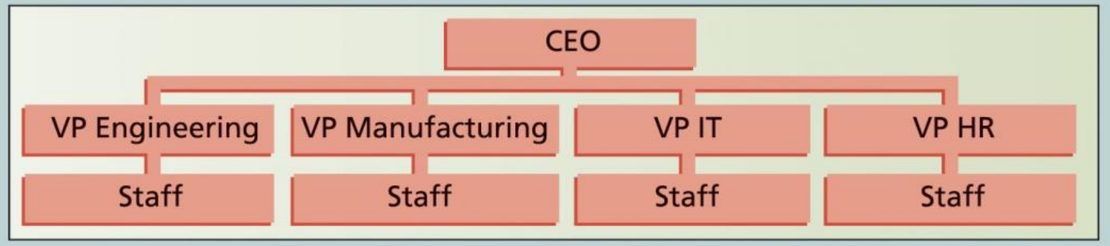
- In a paper titled “A Study in Project Failure,” two researchers examined the success and failure of 214 IT projects over eight years in several European countries
- The researchers found that only one in eight (12.5 percent) were considered successful in terms of meeting scope, time, and cost goals
- 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 (1 OF 2)

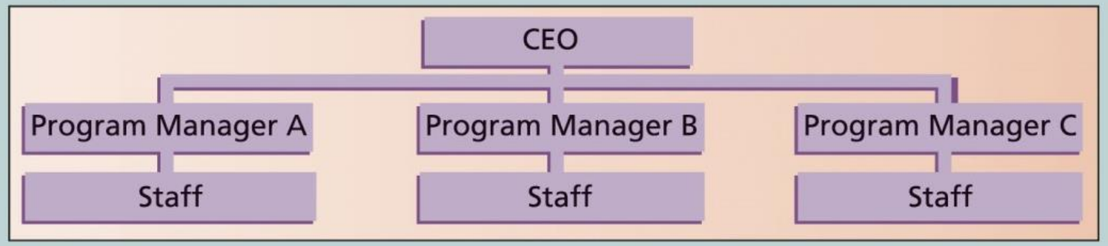
- Three basic organizational structures
  - **Functional**: functional managers report to the CEO
  - **Project**: program managers report to the CEO
  - **Matrix**: middle ground between functional and project structures; personnel often report to two or more bosses; the structure can be weak, balanced,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

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

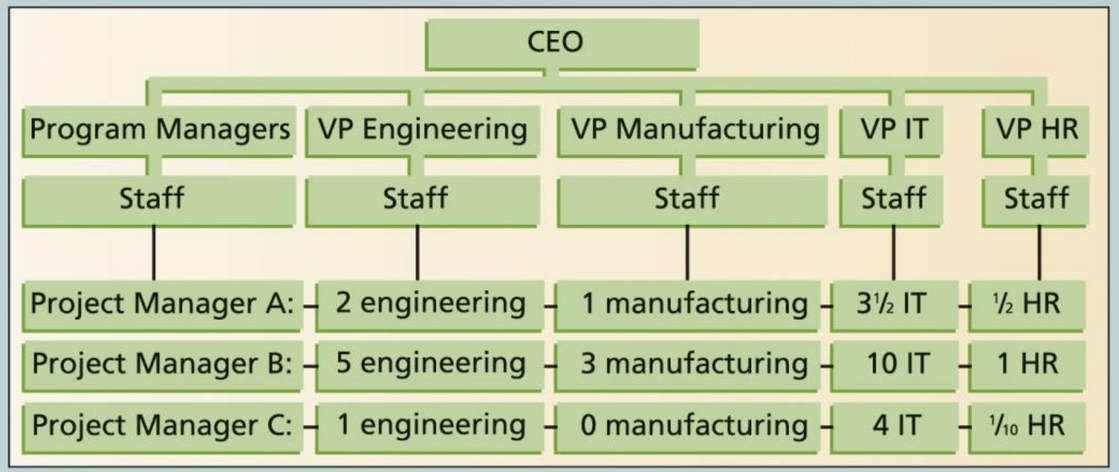
Functional



Project

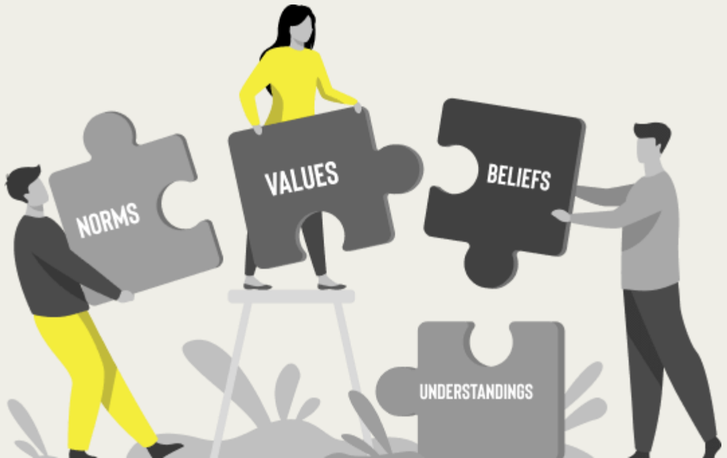


Matrix



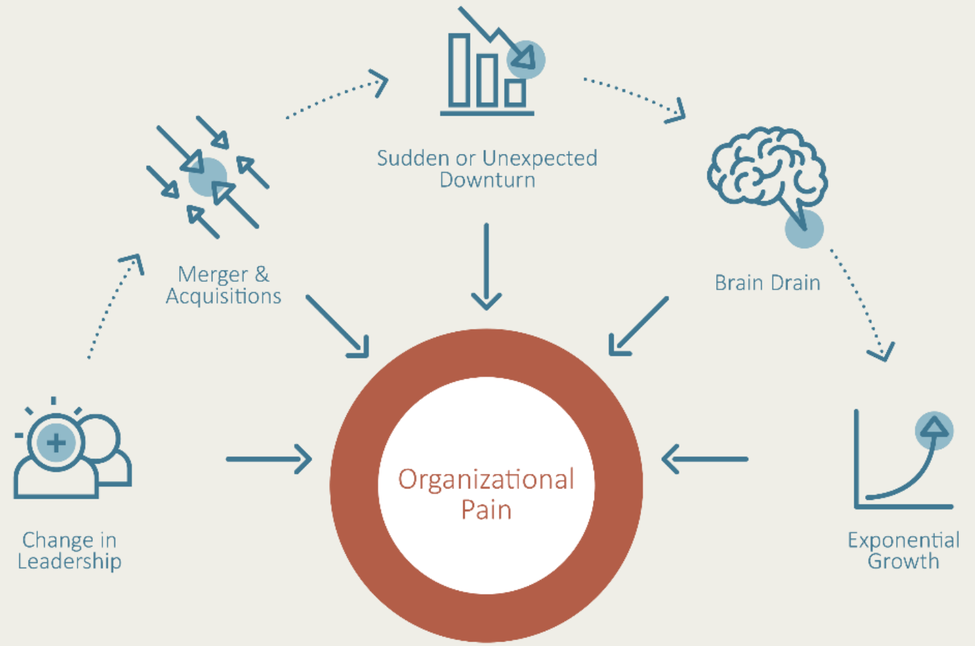
ORGANIZATIONAL CULTURE (1 OF 2)

- 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



ORGANIZATIONAL CULTURE (1 OF 2)

- **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.*

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
- See Chapter 13, Project Stakeholder Management, for more information

MEDIA SNAPSHOT

- Before the 2014 football season, Microsoft paid the NFL $400 million as part of a five-year deal to use their Surface as “the official tablet of the NFL”
- All 32 NFL teams were involved, and the deal was renewed for a sixth year in 2017
- Smooth transition?
  - During week one of the season at least two television announcers mistakenly referred to the tablets as iPads, giving Apple unexpected exposure
  - Microsoft also had to defend the use of tablets after the New England Patriots stopped using them

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.

The Importance of Top Management Commitment

- **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
  - One.Tel's billing system

The Need for Organizational Commitment to Information Technology

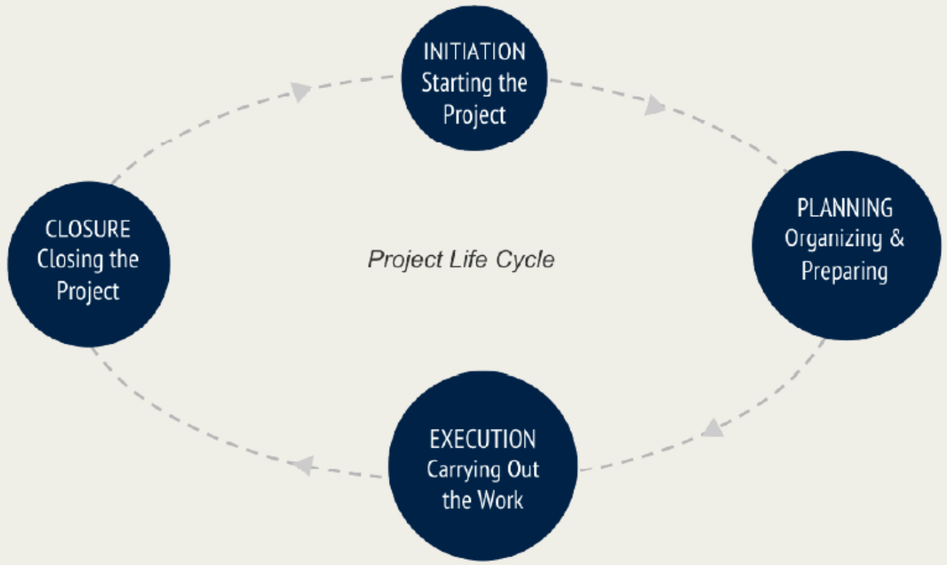
- If the organization has a negative attitude toward IT, it will be difficult for an IT project to succeed
- Having a Chief Information Officer (CIO) at a high level in the organization helps IT projects
- Assigning non-IT people to IT projects also encourages more commitment

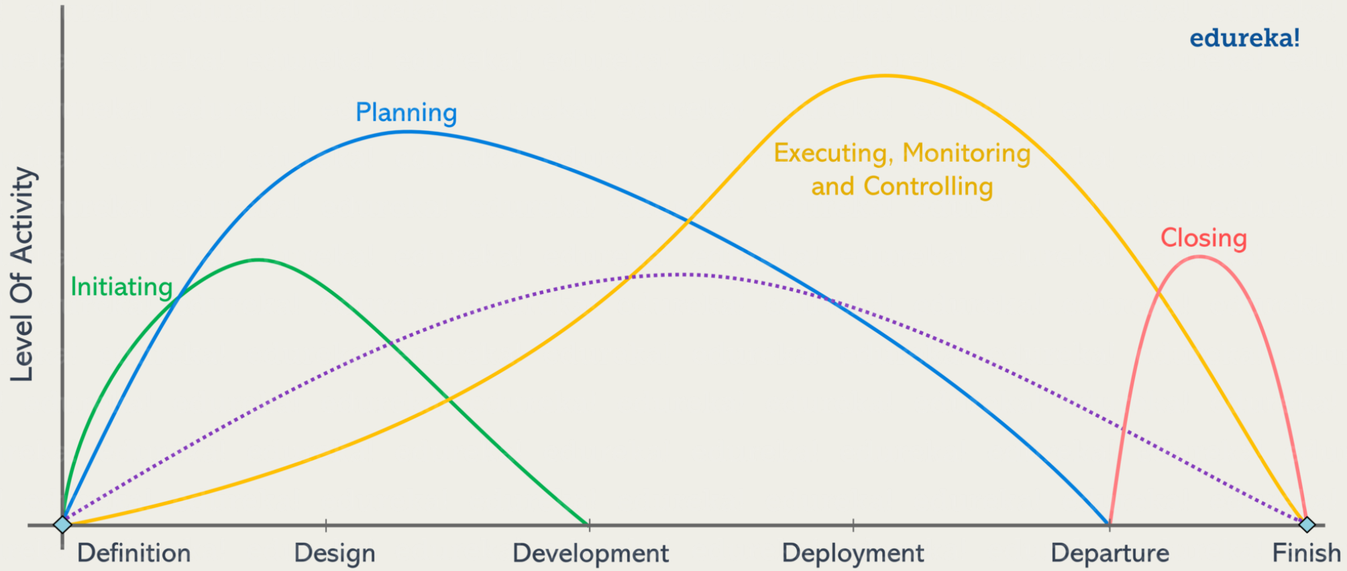
The Need for Organizational Standards

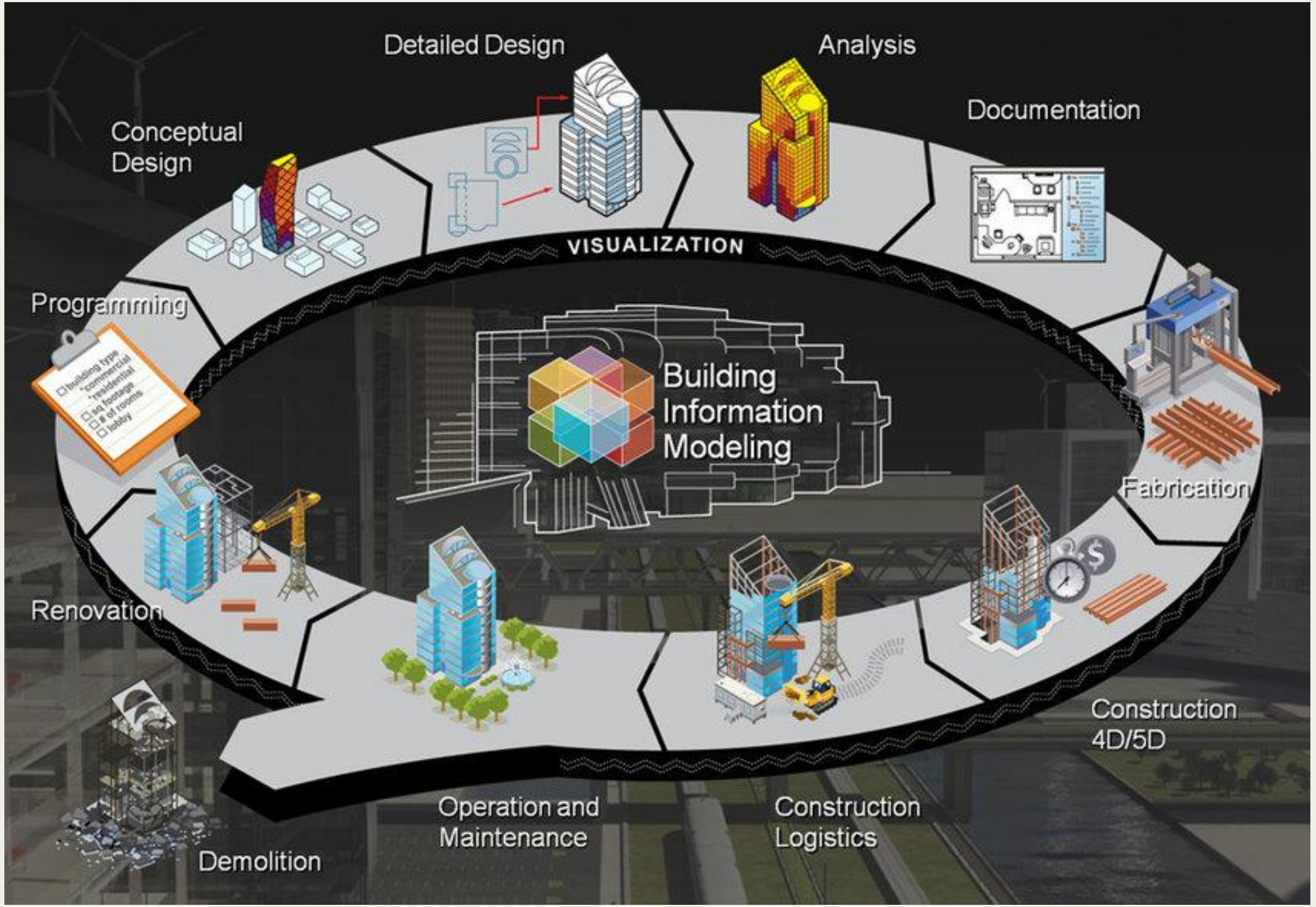
- Standards and guidelines help project managers be **more effective**
- Senior management can encourage
  - the use of standard forms and software for project management
  - the development and use of guidelines for writing project plans or providing status information
  - the creation of a project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






Detailed Design
Analysis
Documentation
Conceptual Design
VISUALIZATION
Programming
building type
commercial
residential
sq footage
# of rooms
lobby
Building Information Modeling
Fabrication
Renovation
Construction 4D/5D
Demolition
Operation and Maintenance
Construction Logistics

Project Life Cycle (1 of 2)

- 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

Project Life Cycle (2 of 2)

- 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

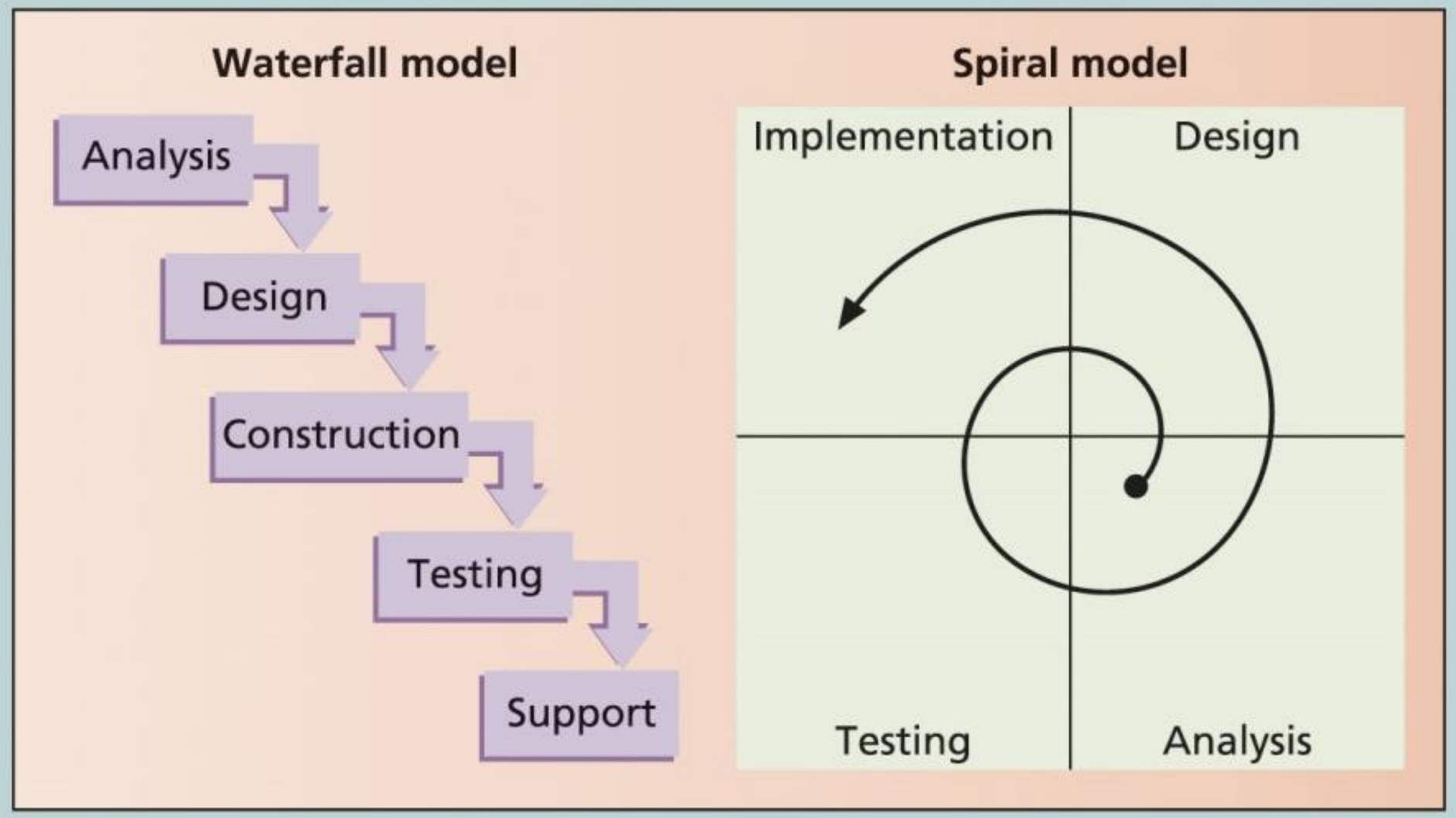
Product Life Cycles (1 of 3)

- 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
  - Iterative life cycle
  - Incremental life cycle
  - Adaptive life cycle
  - Hybrid life cycle

Product Life Cycles (2 of 3)

- 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

Product Life Cycles (3 of 3)



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

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.
- Some projects still go on a long time before being killed, like Blizzard's Titan game project.

*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 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 (1 of 2)

- **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

Virtual Teams (2 of 2)

- **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 (1 of 2)

- 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 (2 of 2)

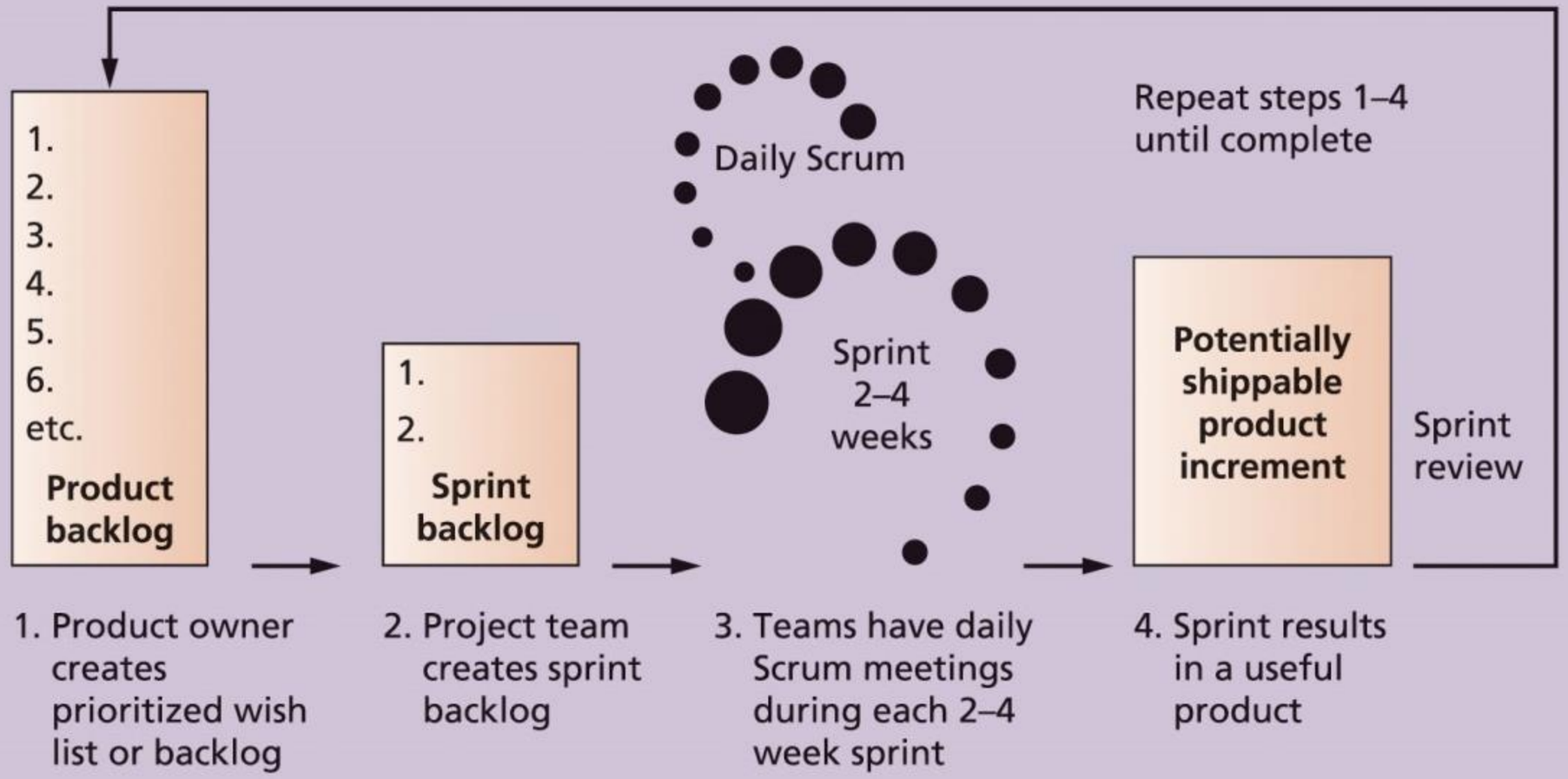
- **Manifesto for Agile Software Development**
  - In February 2001, a group of 17 people that called itself the Agile Alliance developed and agreed on the Manifesto for Agile Software Development, as follows:
  - “We are uncovering better ways of developing software by doing it and helping others do 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

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.
- 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.

Scrum (2 of 4)


1.
2.
3.
4.
5.
6.
etc.
Product backlog
1.
2.
Sprint backlog
Daily Scrum
Sprint 2–4 weeks
Potentially shippable product increment
Sprint review
Repeat steps 1–4 until complete
1. Product owner creates prioritized wish list or backlog
2. Project team creates sprint backlog
3. Teams have daily Scrum meetings during each 2–4 week sprint
4. Sprint results in a useful product

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

Scrum (4 of 4)

- 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 project management

Thank you!

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