Chapter 1:
Introduction to Project Management

Information Technology Project Management, Fourth Edition

Learning Objectives

- Understand the growing need for better project management, especially for information technology projects.
- Explain what a project is, provide examples of information technology projects, list various attributes of projects, and describe the triple constraint of projects.

Learning Objectives

- Describe project management and discuss key elements of the project management framework, including project stakeholders, the project management knowledge areas, common tools and techniques, and project success factors.
- Understand the role of the project manager by describing what project managers do, what skills they need, and what the career field is like for information technology project managers.

Learning Objectives

- Describe the project management profession, including its history, the role of professional organizations such as the Project Management Institute, the importance of certification and ethics, and the growth of project management software.

Introduction

- Many organizations today have a new or renewed interest in project management.
- Computer hardware, software, networks, and the use of interdisciplinary and global work teams have radically changed the work environment.
- The U.S. spends $2.3 trillion on projects every year, or one-quarter its gross domestic product, and the world as a whole spends nearly $10 trillion of its $40.7 gross product on projects of all kinds.*

*PMI, *The PMI Project Management Fact Book*, Second Edition, 2001.

Project Management Statistics

- Worldwide IT spending continues to grow, and Forrester Research predicts that U.S. IT spending will grow by another 5.7 percent in 2005, to reach $795 billion.*
- In 2003, the average senior project manager in the U.S. earned almost $90,000 per year, and the average Project Management Office (PMO) Director earned more than the average Chief Information Officer ($118,633 vs. $103,925).**
- *The Apprentice*, the number-one U.S. reality television show in 2004, portrayed the important role of project managers.

*Butler, Steve, "IT Spending," *Analyst Views*, February 2004.
**PMI, *Project Management Salary Survey*, Third Edition, 2003.

Motivation for Studying Information Technology (IT) Project Management

- IT projects have a terrible track record.
  - A 1995 Standish Group study (CHAOS) found that only 16.2 percent of IT projects were successful in meeting scope, time, and cost goals.
  - Over 31 percent of IT projects were canceled before completion, costing over $81 billion in the U.S. alone.*

*The Standish Group, "The CHAOS Report" (*www.standishgroup.com*) (1995). Another reference is Johnson, Jim, "CHAOS: The Dollar Drain of IT Project Failures," *Application Development Trends* (January 1995).

Advantages of Using Formal Project Management

- Better control of financial, physical, and human resources.
- Improved customer relations.
- Shorter development times.
- Lower costs.
- Higher quality and increased reliability.
- Higher profit margins.
- Improved productivity.
- Better internal coordination.
- Higher worker morale (less stress).

What Is a Project?

- A **project** is "a temporary endeavor undertaken to create a unique product, service, or result."*
- Operations is work done to sustain the business.
- A project ends when its objectives have been reached, or the project has been terminated.
- Projects can be large or small and take a short or long time to complete.

*PMI, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* (2004), p. 5.

Examples of IT Projects

- A help desk or technical worker replaces laptops for a small department.
- A small software development team adds a new feature to an internal software application.
- A college campus upgrades its technology infrastructure to provide wireless Internet access.

Examples of IT Projects

- A cross-functional task force in a company decides what software to purchase and how it will be implemented.
- A television network develops a system to allow viewers to vote for contestants and provide other feedback on programs.
- A government group develops a system to track child immunizations.

Project Attributes

- A project:
  - Has a unique purpose.
  - Is temporary.
  - Is developed using progressive elaboration.
  - Requires resources, often from various areas.
  - Should have a primary customer or sponsor.
    - The **project sponsor** usually provides the direction and funding for the project.
  - Involves uncertainty.

Project and Program Managers

- Project managers work with project sponsors, project teams, and other people involved in projects to meet project goals.
- **Program**: "A group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually."*
- Program managers oversee programs and often act as bosses for project managers.

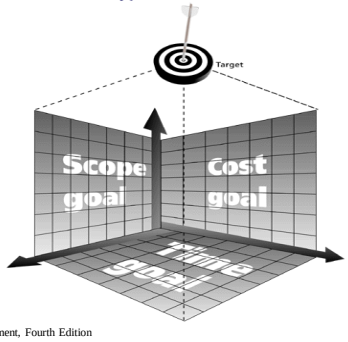
*PMI, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* (2004), p. 16.

The Triple Constraint

- Every project is constrained in different ways by its:
  - **Scope** goals: What work will be done?
  - **Time** goals: How long should it take to complete?
  - **Cost** goals: What should it cost?
- It is the project manager's duty to balance these three often-competing goals.

Figure 1-1. The Triple Constraint of Project Management

Successful project management means meeting all three goals (scope, time, and cost) – and satisfying the project's sponsor!

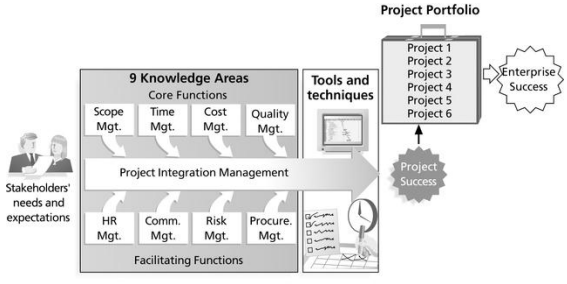


What is Project Management?

- **Project management** is "the application of knowledge, skills, tools and techniques to project activities to meet project requirements."*

*PMI, *A Guide to the Project Management Body of Knowledge (PMBOK® Guide)* (2004), p. 8.

Figure 1-2. Project Management Framework



Project Stakeholders

- **Stakeholders** are the people involved in or affected by project activities.
- Stakeholders include:
  - Project sponsor
  - Project manager
  - Project team
  - Support staff
  - Customers
  - Users
  - Suppliers
  - Opponents to the project

Nine Project Management Knowledge Areas

- Knowledge areas describe the key competencies that project managers must develop.
  - Four core knowledge areas lead to specific project objectives (scope, time, cost, and quality).
  - Four facilitating knowledge areas are the means through which the project objectives are achieved (human resources, communication, risk, and procurement management).
  - One knowledge area (project integration management) affects and is affected by all of the other knowledge areas.
  - All knowledge areas are important!

Project Management Tools and Techniques

- Project management tools and techniques assist project managers and their teams in various aspects of project management.
- Specific tools and techniques include:
  - Project charters, scope statements, and WBS (scope).
  - Gantt charts, network diagrams, critical path analyses, critical chain scheduling (time).
  - Cost estimates and earned value management (cost).
  - See Table 1-1 for other examples.

Project Portfolio Management

- Many organizations support an emerging business strategy of **project portfolio management**:
  - Organizations group and manage projects as a portfolio of investments that contribute to the entire enterprise's success. (For more information, see Chapter 7, Project Cost Management.)

Improved Project Performance

- The Standish Group's CHAOS studies show improvements in IT projects in the past decade.*

Measure	1994 Data	2002 Data	Result
Successful projects	16%	34%	Doubled
Failed projects	31%	15%	Halved
Money wasted on challenged and failed projects	$140 B out of $250 B	$55 B out of $255 B	More than halved

*The Standish Group, "Latest Standish Group CHAOS Report Shows Project Success Rates Have Improved by 50%" (March 25, 2003).

Why the Improvements?

"The reasons for the increase in successful projects vary. First, the average cost of a project has been more than cut in half. Better tools have been created to monitor and control progress and **better skilled project managers with better management processes** are being used. The fact that there are processes is significant in itself."*

*The Standish Group, "CHAOS 2001: A Recipe for Success" (2001).

Project Success Factors*

1. Executive support
2. User involvement
3. Experienced project manager
4. Clear business objectives
5. Minimized scope
6. Standard software infrastructure
7. Firm basic requirements
8. Formal methodology
9. Reliable estimates
10. Other criteria, such as small milestones, proper planning, competent staff, and ownership

*The Standish Group, "Extreme CHAOS" (2001).

What the Winners Do*

- Recent research findings show that companies that excel in project delivery capability:
  - Use an integrated project management toolbox that includes standard and advanced tools and lots of templates.
  - Grow project leaders, emphasizing business and soft skills.
  - Develop a streamlined project delivery process.
  - Measure project health using metrics, including customer satisfaction and return on investment.

*Milosevic, Dragan and And Ozbay, "Delivering Projects: What the Winners Do," Proceedings of the Project Management Institute Annual Seminars & Symposium (November 2001).

The Role of the Project Manager

- Job descriptions vary, but most include responsibilities such as planning, scheduling, coordinating, and working with people to achieve project goals.
- Remember that 97 percent of successful projects were led by experienced project managers.

Table 1-3. Fifteen Project Management Job Functions*

- Define scope of project.
- Identify stakeholders, decision-makers, and escalation procedures.
- Develop detailed task list (work breakdown structures).
- Estimate time requirements.
- Develop initial project management flow chart.
- Identify required resources and budget.
- Evaluate project requirements.
- Identify and evaluate risks.
- Prepare contingency plan.
- Identify interdependencies.
- Identify and track critical milestones.
- Participate in project phase review.
- Secure needed resources.
- Manage the change control process.
- Report project status.

*Northwest Center for Emerging Technologies, "Building a Foundation for Tomorrow: Skills Standards for Information Technology," Belleview, WA, 1999.

Suggested Skills for Project Managers

- Project managers need a wide variety of skills.
- They should:
  - Be comfortable with change.
  - Understand the organizations they work in and with.
  - Lead teams to accomplish project goals.

Suggested Skills for Project Managers

- Project managers need both "hard" and "soft" skills.
  - **Hard skills** include product knowledge and knowing how to use various project management tools and techniques.
  - **Soft skills** include being able to work with various types of people.

Suggested Skills for Project Managers

- **Communication skills**: Listens, persuades.
- **Organizational skills**: Plans, sets goals, analyzes.
- **Team-building skills**: Shows empathy, motivates, promotes esprit de corps.
- **Leadership skills**: Sets examples, provides vision (big picture), delegates, positive, energetic.
- **Coping skills**: Flexible, creative, patient, persistent.
- **Technology skills**: Experience, project knowledge.

Media Snapshot – Good Project Management Skills from *The Apprentice*

- Leadership and professionalism are crucial.
- Know what your sponsor expects from the project, and learn from your mistakes.
- Trust your team and delegate decisions.
- Know the business.
- Stand up for yourself.
- Be a team player.
- Stay organized and don't be overly emotional.
- Work on projects and for people you believe in.
- Think outside the box.
- There is some luck involved in project management, and you should always aim high.

Table 1-4. Most Significant Characteristics of Effective and Ineffective Project Managers

Effective Project Managers	Ineffective Project Managers
• Leadership by example • Visionary • Technically competent • Decisive • Good communicator • Good motivator • Stands up to upper management when necessary • Supports team members • Encourages new ideas	• Sets bad example • Not self-assured • Lacks technical expertise • Poor communicator • Poor motivator

Importance of Leadership Skills

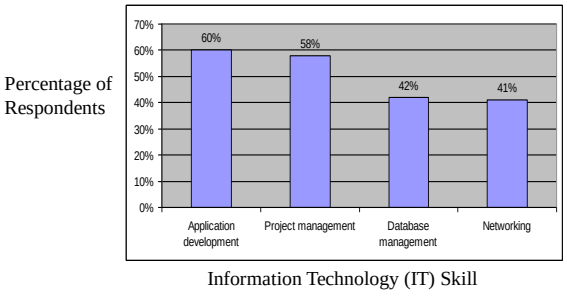
- Effective project managers provide leadership by example.
- A leader focuses on long-term goals and big-picture objectives while inspiring people to reach those goals.
- A manager deals with the day-to-day details of meeting specific goals.
- Project managers often take on both leader and manager roles.

Table 1-5. Top Ten Most In-Demand IT Skills

Rank	IT Skill/Job	Average Annual Salary
1	SQL Database Analyst	$80,664
2	Oracle Database Analyst	$87,144
3	C/C++ Programmer	$95,829
4	Visual Basic Programmer	$76,903
5	E-commerce/Java Developer	$89,163
6	Windows NT/2000 Expert	$80,639
7	Windows/Java Developert	$93,785
8	Security Architect	$86,881
9	Project Manager	$95,719
10	Network Engineer	$82,906

Paul Ziv, "The Top 10 IT Skills in Demand," Global Knowledge Webcast (*www.globalknowledge.com*) (11/20/2002).

Figure 1-3. Top Information Technology Skills



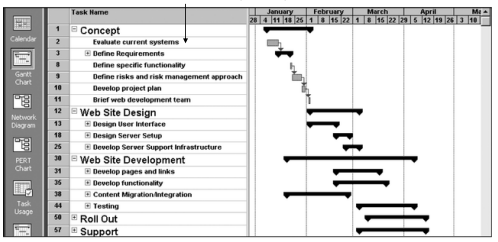
Cosgrove, Lorraine, "January 2004 IT Staffing Update," *CIO Research Reports* (February 3, 2004).

History of Project Management

- Some people argue that building the Egyptian pyramids was a project, as was building the Great Wall of China.
- Most people consider the **Manhattan Project** to be the first project to use "modern" project management.
  - This three-year, $2 billion (in 1946 dollars) project had a separate project and technical managers.

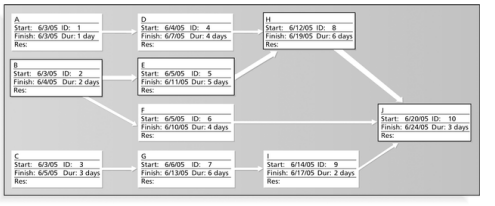
Figure 1-4. Sample Gantt Chart

Work Breakdown Structure (WBS)



The WBS is shown on the left, and each task's start and finish dates are shown on the right. First used in 1917, early Gantt charts were drawn by hand.

Figure 1-5. Sample Network Diagram



Each box is a project task from the WBS. Arrows show dependencies between tasks. The bolded tasks are on the critical path. If any task on the critical path takes longer to complete than planned, the whole project will slip unless something is done. Network diagrams were first used in 1958 on the Navy Polaris project before project management software was available.

Project Management Office (PMO)

- A PMO is an organizational group responsible for coordinating the project management function throughout an organization.
- Possible goals include:
  - Collect, organize, and integrate project data for the entire organization.
  - Develop and maintain templates for project documents.
  - Develop or coordinate training in various project management topics.
  - Develop and provide a formal career path for project managers.
  - Provide project management consulting services.
  - Provide a structure to house project managers while they are acting in those roles or are between projects.

Project Management Software

- Enterprise PM software integrates information from multiple projects to show the status of active, approved, and future projects across an entire organization.
- It also provides links to more detailed information on each project.
- Many managers like to see status in color – red, yellow, and green.

Figure 1-6. Sample Enterprise Project Management Tool

Company ABC Project Portfolio

Project Name	Scope	Schedule	Budget	Links
Active Projects				
Project 1	○	●	●	
Project 2	●	●	●	
Project 3	○	○	○	
Project 4	○	●	●	
Approved Projects				
Project 10	○	○	○	
Project 11	○	○	○	
Project 12	○	○	○	
Project 13	○	○	○	
Project 14	○	○	○	
Opportunities				
Project 100				
Project 200				
○	White = going well			
●	Gray = some problems			
●	Black = major problems			

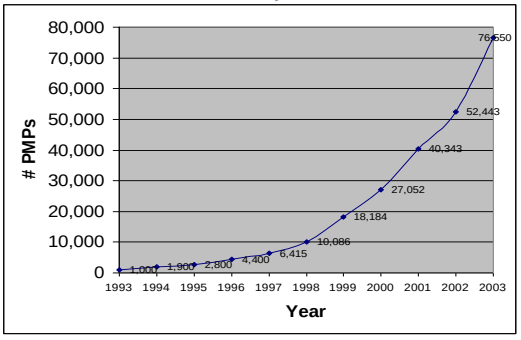
The Project Management Profession

- Professional societies such as the Project Management Institute (PMI) have grown significantly.
- There are specific interest groups in many areas, such as engineering, financial services, health care, and IT.
- Project management research and certification programs continue to grow.

Project Management Certification

- PMI provides certification as a Project Management Professional (PMP).
- A PMP has documented sufficient project experience, agreed to follow a code of ethics, and passed the PMP exam.
- The number of people earning PMP certification is increasing quickly.
- PMI and other organizations are offering new certification programs (see Appendix B).

Figure 1-7. Growth in PMP Certification, 1993-2003



Ethics in Project Management

- Ethics is an important part of all professions.
- Project managers often face ethical dilemmas.
- In order to earn PMP certification, applicants must agree to the PMP code of professional conduct.
- Several questions on the PMP exam are related to professional responsibility, including ethics.

Project Management Software

- There are currently hundreds of different products to assist in performing project management.
- Three main categories of tools:
  - **Low-end tools**: Handle single or smaller projects well; cost under $200 per user.
  - **Midrange tools**: Handle multiple projects and users; cost $200-500 per user; Project 2003 most popular (includes an enterprise version).
  - **High-end tools**: Also called enterprise project management software; often licensed on a per-user basis; VPMi Enterprise Online (www.vcsonline.com).

Chapter Summary

- As the number and complexity of projects continue to grow, it is becoming even more important to practice good project management.
- A project has several attributes, such as being unique, temporary and developed incrementally.
- A framework for project management includes project stakeholders, the nine knowledge areas, tools and techniques, and creating project portfolios to ensure enterprise success.
- Successful project managers must possess and development many skills and lead their teams by example.
- The project management profession continues to mature as more people become certified and more tools are created.