



دانشگاه صنعتی امیرکبیر  
(پلی تکنیک تهران)



دانشکده مهندسی کامپیوتر  
و فناوری اطلاعات

# مدیریت پروژه های فناوری اطلاعات

دانشگاه صنعتی امیرکبیر (پلی تکنیک تهران)

دانشکده مهندسی کامپیوتر و فناوری اطلاعات

دوره کارشناسی

# **نکات مهم**

## نکات مهم

- کلیه دانشجویان موظفند، تا تاریخ اعلام شده با مراجعه به پرتال درس با آدرس [vl.alirezahashemi.ir](http://vl.alirezahashemi.ir) در آن ثبت نام نمایند.
- مراحل ثبت نام در پورتال درس:
  - ثبت نام و تعریف شناسه و رمز عبور ورود به پرتال
  - برای افرادی که برای اولین بار مراجعه می نمایند
  - ورود به پرتال و انتخاب منوی دروس
  - ثبت نام و ایجاد دسترسی به درس
  - انتخاب عنوان درس
  - ورود رمز دسترسی به درس ( itpm972 )
  - عضویت در گروه تلگرامی درس

## نکات مهم

- در صورت عدم مراجعه و ثبت نام تا موعد مقرر، دانشجو منصرف از درس شناخته شده و به عنوان غایب به آموزش معرفی خواهد شد.
- کلیه تمارین و پروژه های درس و سایر موارد خواسته شده فقط و فقط از طریق پرتال از دانشجو اخذ خواهد شد.
- هرگونه عدم حضور دانشجو در کلاس باید قبلاً به صورت حضوری یا از طریق درج پیام در پرتال، با ذکر دلیل به اطلاع استاد درس برسد.
- عدم حضور در کلاس، به هیچ عنوان توجیهی برای عدم انجام تکالیف و وظایف خواسته شده از دانشجو نبوده و هیچ عذری از این بابت پذیرفته نیست.
- در صورت وجود هر گونه شرایط حاد یا پیشامد اضطراری باید موضوع به اطلاع استاد درس به صورت حضوری یا از طریق درج پیام در پرتال به اطلاع استاد درس رسانده شود. در غیر اینصورت هیچ عذری پذیرفته نیست.

# Chapter 1: Introduction to Project Management

Information Technology Project  
Management, Seventh Edition



Information Technology  
PROJECT MANAGEMENT | 7e

Kathy Schwalbe

Note: See the text itself for full citations.

# Project Stakeholders

- ▶ **Stakeholders** are the people involved in or affected by project activities
- ▶ Stakeholders include
  - the project sponsor
  - the project manager
  - the project team
  - support staff
  - customers
  - users
  - suppliers
  - opponents to the project

# 10 Project Management Knowledge Areas

- ▶ **Knowledge areas** describe the key competencies that project managers must develop
- ▶ Project managers must have knowledge and skills in all 10 knowledge areas
  - (project integration, scope, time, cost, quality, human resource, communications, risk, procurement, and stakeholder management)
- ▶ This text includes an entire chapter on each knowledge area

# **Project Management Tools and Techniques**

- ▶ **Project management tools and techniques**
  - assist project managers and their teams in various aspects of project management
- ▶ Some specific ones include
  - Project charter, scope statement, and WBS (scope)
  - Gantt charts, network diagrams, critical path analysis, critical chain scheduling (time)
  - Cost estimates and earned value management (cost)
  - See Table 1-1 for many more

# Super Tools

- ▶ “**Super tools**” are those tools that have high use and high potential for improving project success, such as:
  - Software for task scheduling (such as project management software)
  - Scope statements
  - Requirements analyses
  - Lessons-learned reports
- ▶ Tools already extensively used that have been found to improve project importance include:
  - Progress reports
  - Kick-off meetings
  - Gantt charts
  - Change requests

# Project Success

- ▶ There are several ways to define project success:
  - The project met scope, time, and cost goals
  - The project satisfied the customer/sponsor
  - The results of the project met its main objective, such as making or saving a certain amount of money, providing a good return on investment, or simply making the sponsors happy

# Table 1-2: What Helps Projects Succeed?\*

1. User involvement
2. Executive support
3. Clear business objectives
4. Emotional maturity
5. Optimizing scope
6. Agile process
7. Project management expertise
8. Skilled resources
9. Execution
10. Tools and infrastructure

\*The Standish Group, “CHAOS Activity News” (August 2011).

# **Program and Project Portfolio Management**

- ▶ **A program**
  - is “a group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually” (PMBOK® Guide, Fifth Edition, 2012)
- ▶ **A program manager**
  - provides leadership and direction for the project managers heading the projects within the program
- ▶ Examples of common programs in the IT field include infrastructure, applications development, and user support

# Project Portfolio Management

- ▶ As part of **project portfolio management**,
  - organizations group and manage projects and programs as a portfolio of investments that contribute to the entire enterprise's success
- ▶ Portfolio managers
  - help their organizations make wise investment decisions by helping to select and analyze projects from a strategic perspective

# **Figure 1-3. Project Management Compared to Project Portfolio Management**



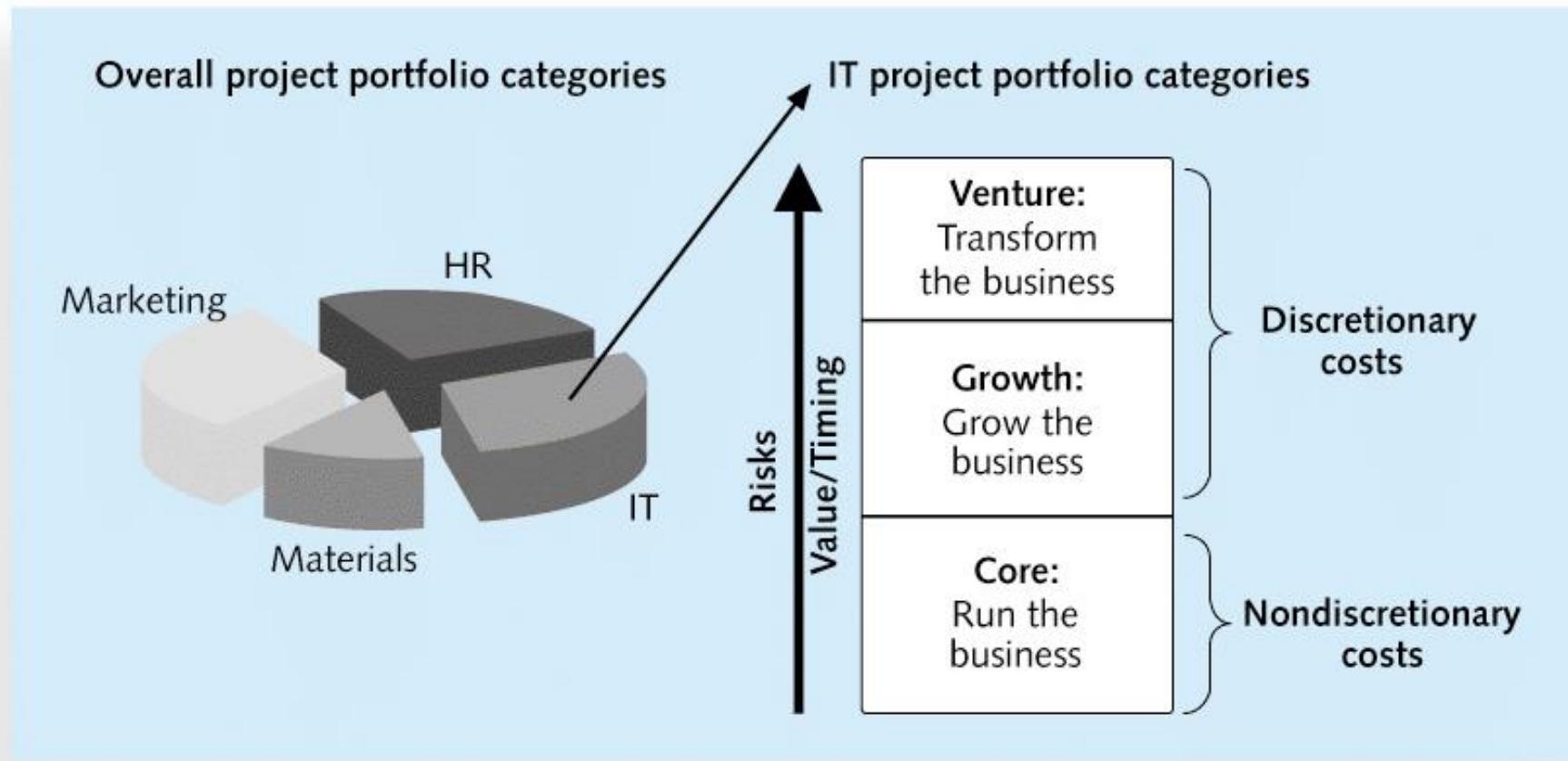
## **Project portfolio management**

- Are we working on the right projects?
- Are we investing in the right areas?
- Do we have the right resources to be competitive?

## **Project management**

- Are we carrying out projects well?
- Are projects on time and on budget?
- Do project stakeholders know what they should be doing?

# Figure 1-4. Sample Project Portfolio Approach



# Figure 1-5. Sample Project Portfolio Management Screen Showing Portfolio Optimization

The screenshot displays the ActTask Project Portfolio Management software interface. The top navigation bar includes 'ActTask' logo, 'My' dropdown, 'Find', 'Create', 'Recent', 'Favorites', 'Help', 'Logout', and a search bar. A sidebar on the left contains links for 'Portfolio Management', 'Portfolio', 'View Portfolio', 'Edit Portfolio', 'Active Projects', 'Requested Projects', 'Portfolio Optimization', 'Capacity Planning', 'Delete Portfolio', 'Programs', 'New Program', 'Reports', and 'Portfolios'. The main content area shows the 'Information Technology' portfolio with '7 Projects'. Key metrics displayed are Budget (\$573,225.00), Remaining (\$573,225.00), Risk (\$209,500.00), Net Value (\$2,567,275.00), Benefit (\$3,350,000.00), ROI (484.4%), Alignment (59%), and Risk To Net Value (0.08). Below this is a 'Project Prioritization' section with a table listing seven projects based on score, name, net value, alignment, cost, risk, ROI, status, and flags. The projects listed are: The Convention, Localization, Branch Merger, Infinity Web Site, New Product Dev: Ecorpaper, Corporate Sales Initiative, and HR System Integration.

#	Score	Name	Net Value	Alignm...	Cost	Risk	ROI	Status	Flags
1	✓	The Convention	\$61,500.00	46%	\$37,000.00	\$1,500.00	170.3%	Current	▼
2	✓	Localization	\$245,000.00	69%	\$47,500.00	\$7,500.00	531.6%	Current	▼
3	✓	Branch Merger	\$279,000.00	34%	\$96,000.00	\$75,000.00	368.8%	Current	▼
4	✓	Infinity Web Site	\$840,525.00	86%	\$146,725.00	\$12,750.00	581.5%	Current	▼
5	✓	New Product Dev: Ecorpaper	\$721,000.00	82%	\$179,000.00	\$100,000.00	458.7%	Current	▼
6	✓	Corporate Sales Initiative	\$425,500.00	82%	\$62,000.00	\$12,500.00	706.5%	Current	▼
7	✓	HR System Integration	(\$5,250.00)	13%	\$5,000.00	\$250.00	-100%	Current	▼

# The Role of the Project Manager

- ▶ Job descriptions vary, but most include responsibilities like
  - planning, scheduling, coordinating, and working with people to achieve project goals
- ▶ Remember that 97% of successful projects were led by experienced project managers, who can often help influence success factors

# Suggested Skills for Project Managers

- ▶ The Project Management Body of Knowledge
- ▶ Application area knowledge, standards, and regulations
- ▶ Project environment knowledge
- ▶ General management knowledge and skills
- ▶ Soft skills or human relations skills

# **Table 1-3 Ten Most Important Skills and Competencies for Project Managers**

1. People skills
2. Leadership
3. Listening
4. Integrity, ethical behavior, consistent
5. Strong at building trust
6. Verbal communication
7. Strong at building teams
8. Conflict resolution, conflict management
9. Critical thinking, problem solving
10. Understands, balances priorities

# Different Skills Needed in Different Situations

- ▶ Large projects:
  - Leadership, relevant prior experience, planning, people skills, verbal communication, and team-building skills were most important
- ▶ High uncertainty projects:
  - Risk management, expectation management, leadership, people skills, and planning skills were most important
- ▶ Very novel projects:
  - Leadership, people skills, having vision and goals, self confidence, expectations management, and listening skills were most important

# 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 the role of both leader and manager

# Careers for IT Project Managers

- ▶ In a 2011 survey, IT executives listed the “nine hottest skills” they planned to hire for in 2012
- ▶ Project management was second only to programming and application development

# Table 1-4. Nine Hottest Skills\*

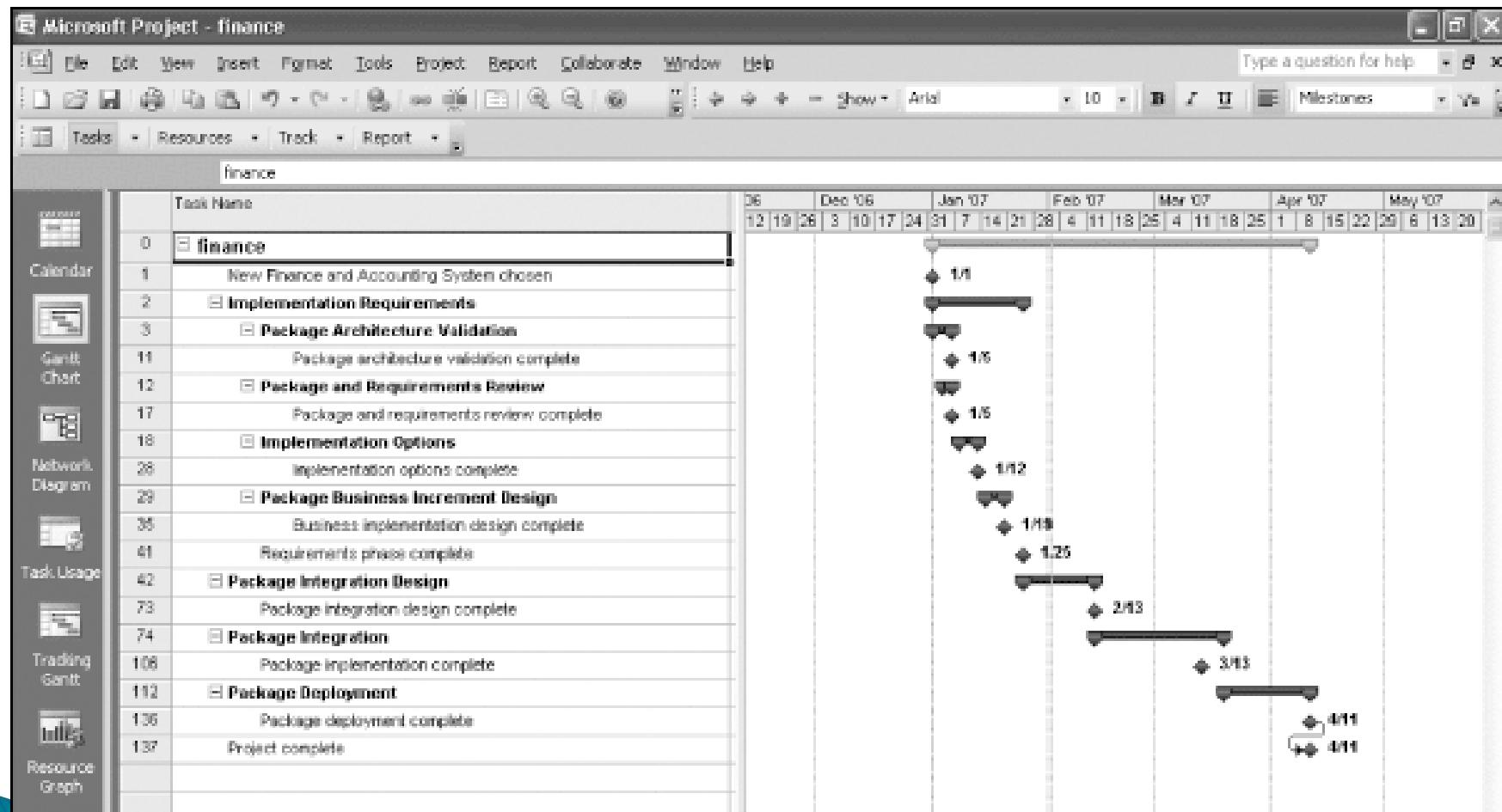
Skill	Percentage of Respondents
Programming and application development	60%
Project management	44%
Help desk/technical support	35%
Networking	35%
Business intelligence	23%
Data center	18%
Web 2.0	18%
Security	17%
Telecommunications	9%

\*Source: Rick Saia, “9 Hot IT Skills for 2012,” Computerworld, September 26, 2011.

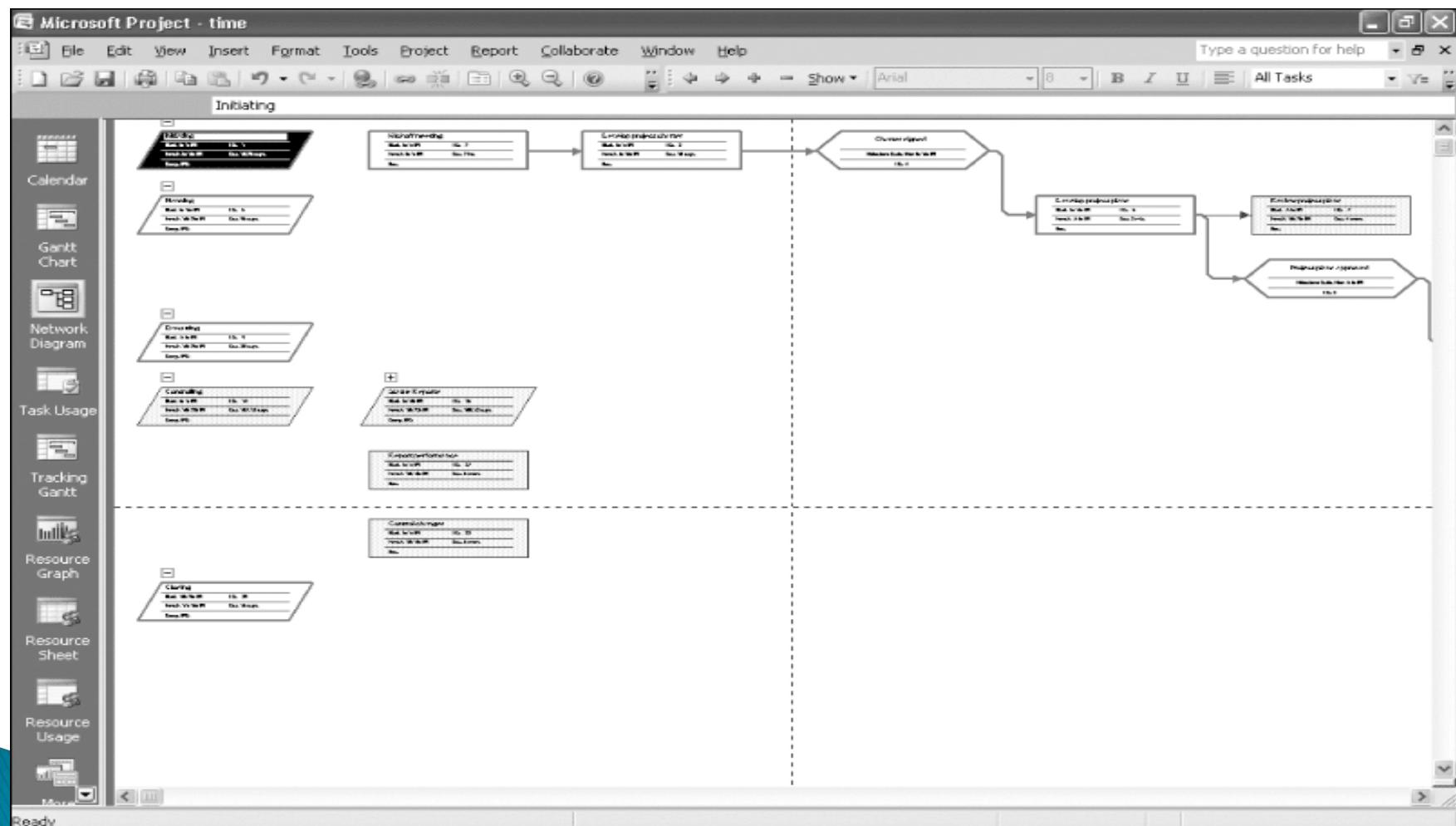
# The Project Management Profession

- ▶ The profession of project management is growing at a very rapid pace
- ▶ It is helpful to understand
  - the history of the field,
  - the role of professional societies like the Project Management Institute, and
  - the growth in project management software

# Figure 1-6. Sample Gantt Chart Created with Project 2010



# Figure 1-7. Sample Network Diagram Created with Project 2010





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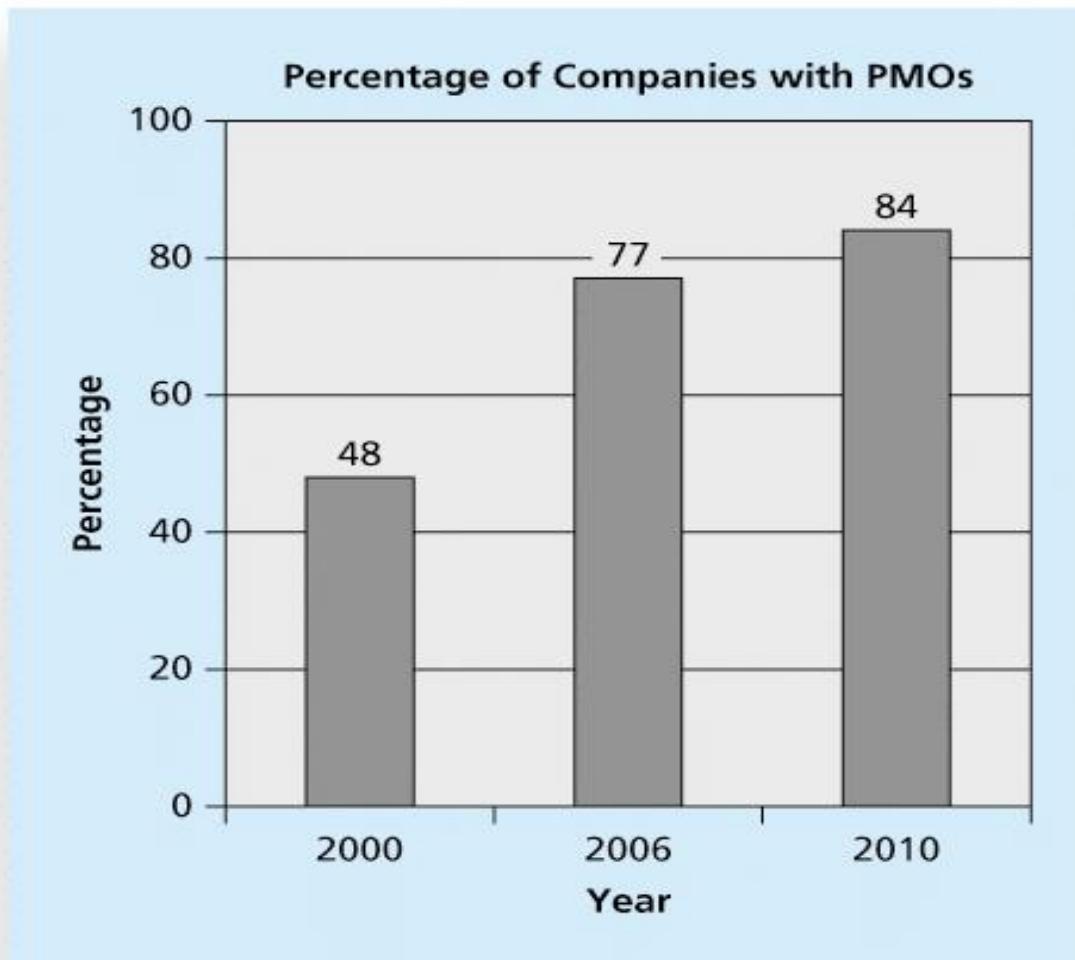
دانشکده مهندسی کامپیوتر و فناوری اطلاعات

دوره کارشناسی

# Project Management Offices

- ▶ In the 100s, many companies began creating PMOs to help them handle the increasing number and complexity of projects
- ▶ **A Project Management Office (PMO)**
  - is an organizational group responsible for coordinating the project management function throughout an organization

# Figure 1-8. Growth in the Number of Project Management Offices



# Global Issues

- ▶ Several global dynamics are forcing organizations to rethink their practices:
  - Talent development for project and program managers is a top concern
  - Good project portfolio management is crucial in tight economic conditions
  - Basic project management techniques are core competencies
  - Organizations want to use more agile approaches to project management
  - Benefits realization of projects is a key metric

# The Project Management Institute

- ▶ The Project Management Institute (PMI) is an international professional society for project managers founded in 1969
- ▶ PMI has continued to attract and retain members, reporting more than 380,000 members worldwide by 2012
- ▶ There are communities of practices in many areas, like information systems, financial services, and health care
- ▶ Project management research and certification programs continue to grow
- ▶ Students can join PMI at a reduced fee and earn the Certified Associate in Project Management (CAPM) certification(see [www.pmi.org](http://www.pmi.org) for details)

# Ethics in Project Management

- ▶ **Ethics**, loosely defined, is a set of principles that guide our decision making based on personal values of what is “right” and “wrong”
- ▶ Project managers often face ethical dilemmas
- ▶ In order to earn PMP certification, applicants must agree to PMI’s Code of Ethics and Professional Conduct
- ▶ Several questions on the PMP exam are related to professional responsibility, including ethics

# Project Management Software

- ▶ There are 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-\$1,000 per user, Project 2010 most popular
  - High-end tools:
    - Also called enterprise project management software, often licensed on a per-user basis, like Microsoft Enterprise Project Management solution

# Chapter Summary

- ▶ A project is a temporary endeavor undertaken to create a unique product, service, or result
- ▶ Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements
- ▶ A program is a group of related projects managed in a coordinated way
- ▶ Project portfolio management involves organizing and managing projects and programs as a portfolio of investments
- ▶ Project managers play a key role in helping projects and organizations succeed
- ▶ The project management profession continues to grow and mature

# Chapter 2:

# The Project Management and Information Technology Context

Information Technology Project Management, Seventh Edition



Information Technology  
PROJECT MANAGEMENT | 7e

Kathy Schwalbe

Note: See the text itself for full citations.

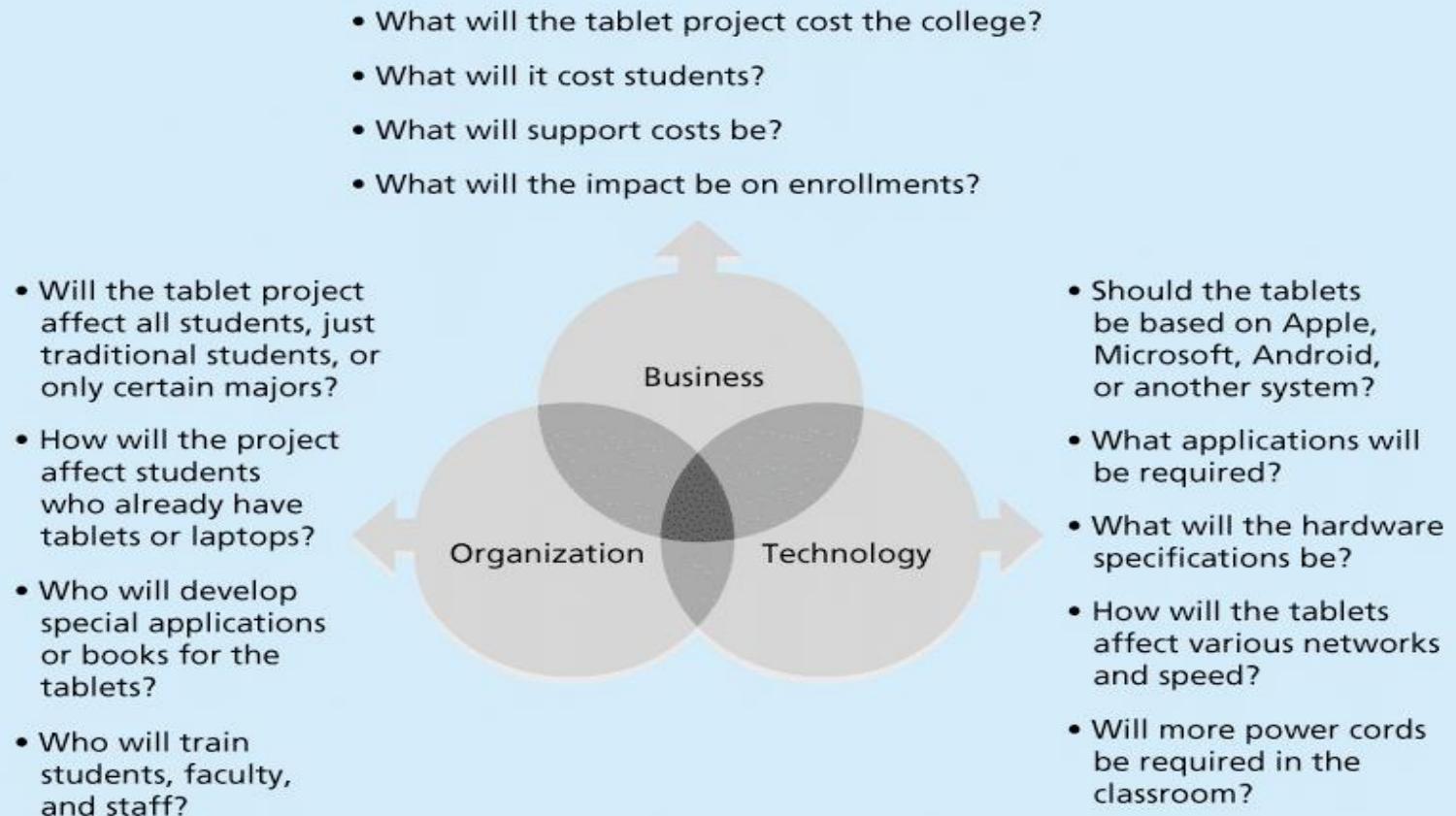
# Projects Cannot Be Run In Isolation

- ▶ 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



# Figure 2-2. 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>

# 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 2-3. Functional, Project, and Matrix Organizational Structures

Functional



Project



Matrix



# Table 2-1. Organizational Structure Influences on Projects

Project Characteristics	Organizational Structure Type			Project	
	Functional	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

# 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

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

# 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 encourage 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, and
  - how management will control and approve work produced in each phase

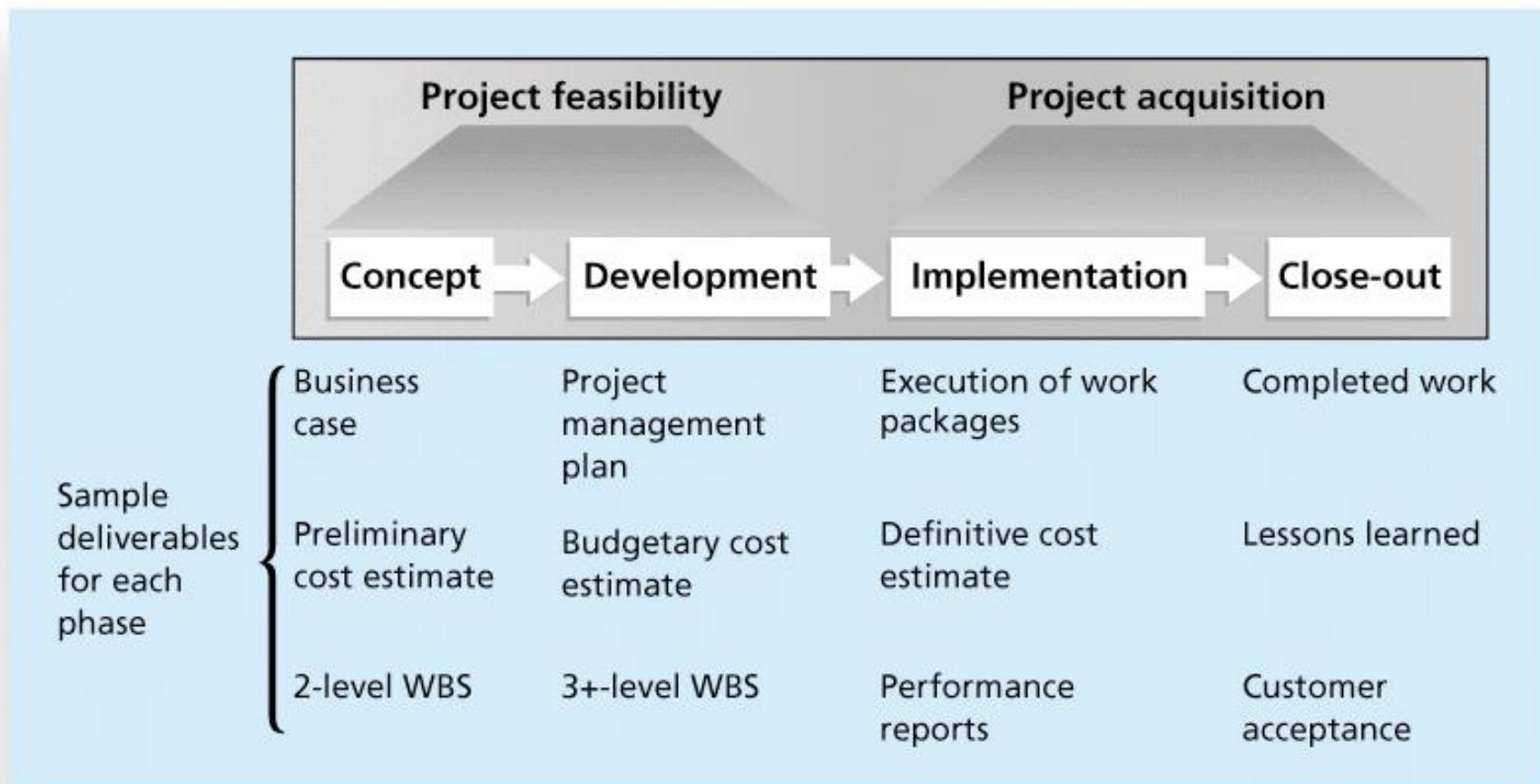
## ► A deliverable

- 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

# Figure 2-4. Phases of the Traditional Project Life Cycle



# **معماری سامانه های فناوری اطلاعات**

# سیستم های فناوری اطلاعات

- تعریف سامانه فناوری اطلاعات
  - ارائه دهنده خدمت الکترونیکی
  - در قالب تبادل محتوای الکترونیکی
  - به کاربران در سطوح مختلف فردی، سازمانی، اجتماعی
  - مرکب از ابزار کاربری، شبکه کامپیوتری، خدمت افزار الکترونیکی و زیرساخت پردازشی
- سامانه فناوری اطلاعات مجموعه ای از اجزاء
  - مشتمل بر انسان، ابزارها و خدمات و قابلیت های پردازشی
  - به هم مرتبط
  - برای انجام ماموریتی مشخص
  - برای ارائه خدمت یا خدماتی مشخص
  - بر روی بستر های الکترونیکی
  - برای رفع نیاز مخاطبان (کاربران) و توانمندسازی آنان
- مثال:
  - سامانه تجارت الکترونیکی / سامانه سلامت الکترونیکی / سامانه آموزش الکترونیکی / سامانه بانکداری الکترونیکی