Lecture 1: Introduction to Project Management

Learning Objectives

▸ Understand the growing need for better project management, especially for information technology (IT) projects

▸ Explain what a project is, provide examples of IT projects, list various attributes of projects, and describe the triple constraint of project management

▸ 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

Learning Objectives

▸ Discuss the relationship between project, program, and portfolio management and the contributions each makes to enterprise success

▸ Understand the role of project managers by describing what they do, what skills they need, and career opportunities for IT project managers

▸ Describe the project management profession, including its history, the role of professional organizations like the Project Management Institute (PMI), the importance of certification and ethics, and the advancement of project management software

Introduction

▸ Many organizations today have a new or renewed interest in project management

▸ Worldwide IT spending was $3.8 trillion in 2014, a 3.2 percent increase from 2013 spending

▸ The Project Management Institute estimates demand for 15.7 million project management jobs from 2010 to 2020, with 6.2 million of those jobs in the United States

Project Management Statistics

- In 2013 (the most recent year of PMI's salary survey), the average salary in U.S. dollars for someone in the project management profession was $108,000 per year in the United States; $134,658 in Australia, (the highest-paid country); and $24,201 in Egypt (the lowest-paid country)
- The top skills employers look for in new college graduates are all related to project management: team-work, decision-making, problem-solving, and verbal communications
- Organizations waste $109 million for every $1 billion spent on projects, according to PMI's Pulse of the Profession® report

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% of IT projects were successful in meeting scope, time, and cost goals; over 31% of IT projects were canceled before completion
- A PricewaterhouseCoopers study found that overall half of all projects fail and only 2.5% of corporations consistently meet their targets for scope, time, and cost goals for all types of project.

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

What Is a Project?

▸ A **project** is "a temporary endeavor undertaken to create a unique product, service, or result" (PMBOK® Guide, Fifth Edition, 2013)

▸ Operations is work done to sustain the business

▸ Projects end when their 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

Examples of IT Projects

- A team of students creates a smartphone application and sells it online
- A company develops a driverless car
- A government group develops a system to track child immunizations
- A global bank acquires other financial institutions and needs to consolidate systems and procedures

Top Strategic Technologies (Gartner)

- Computing everywhere
- The Internet of things
- 3D printing
- Advanced, pervasive, and invisible analytics

Media Snapshot: Unproductive Apps

▸ Gartner predicted that by 2014, there would be more than 70 billion mobile application downloads every year, but it was almost double

▸ Facebook is by far the most downloaded app, and the most popular category of all apps continues to be games

▸ The challenge is to develop useful apps and get workers to focus on them instead of the many distracting options available

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 team, and other people involved in a project to meet project goals

- **Program**: group of related projects managed in a coordinated way to obtain benefits and control not available from managing them individually (PMBOK® Guide, Fifth Edition, 2013)

- **Program managers** oversee programs; often act as bosses for project managers

The Triple Constraint of Project Management

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

Target

Scope goal

Cost goal

Time goal

What is Project Management?

▸ **Project management** is "the application of knowledge, skills, tools and techniques to project activities to meet project requirements" (PMBOK® Guide, Fourth Edition, 2013)

▸ Project managers strive to meet the **triple constraint** (project scope, time, and cost goals) and also facilitate the entire process to meet the needs and expectations of project stakeholders

Project Management Framework
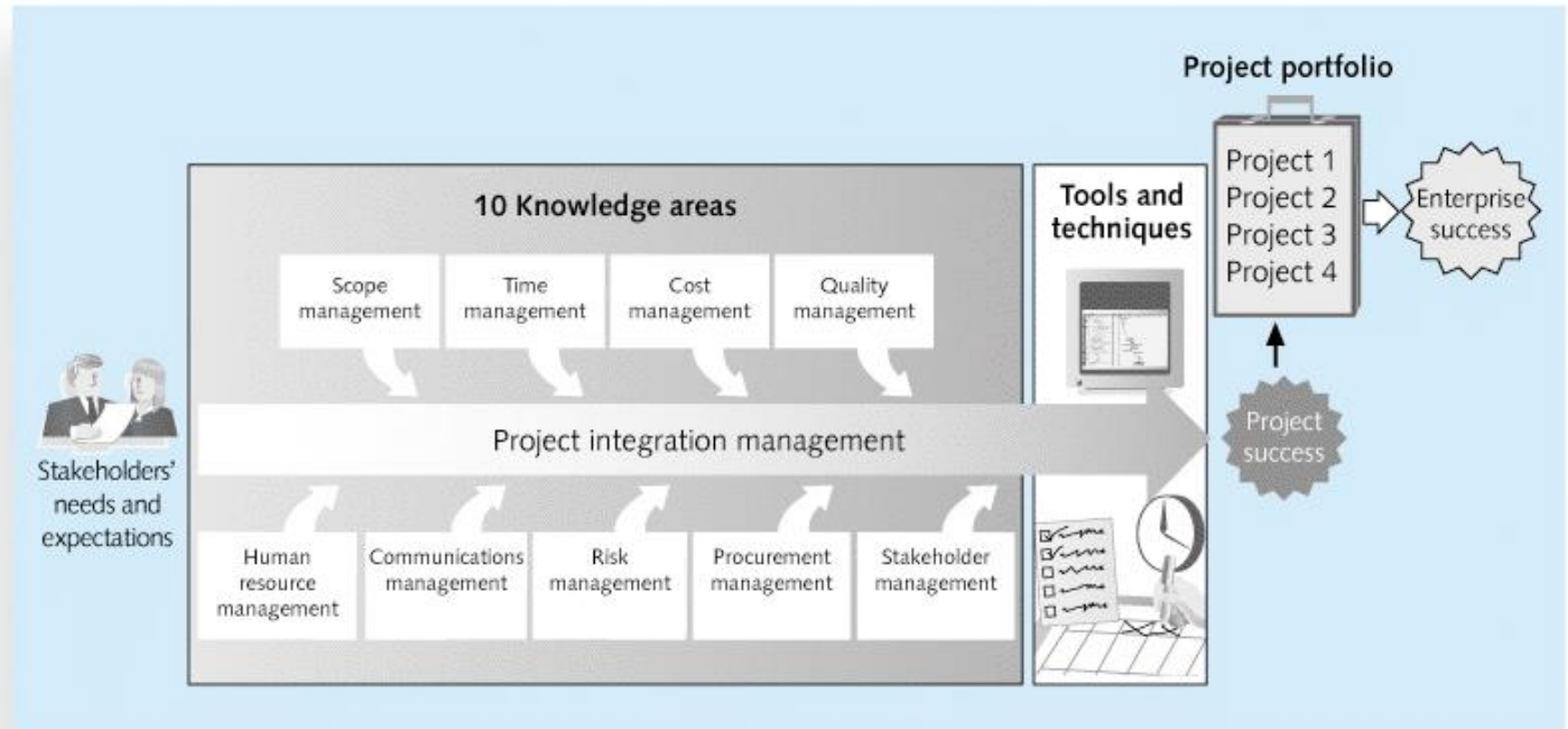
Project Stakeholders

- **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)

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)

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

What Went Right? Improved Project Performance

The Standish Group's CHAOS studies show improvements in IT projects in the past decade:

- The number of successful IT projects has more than doubled, from 16 percent in 1994 to 39 percent in 2012
- The number of failed projects decreased from 31 percent in 1994 to 18 percent in 2012
- Success rates were much higher for small projects than large ones – 76 percent versus 10 percent

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

What Helps Projects Succeed?*

1. Executive support
2. User involvement
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 Manifesto 2013: Think Big, Act Small" (2013).

Top Three Reasons Why Federal Technology Project Succeed

- Adequate funding
- Staff expertise
- Engagement from all stakeholders

What the Winners Do…

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

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, 2013)

- 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

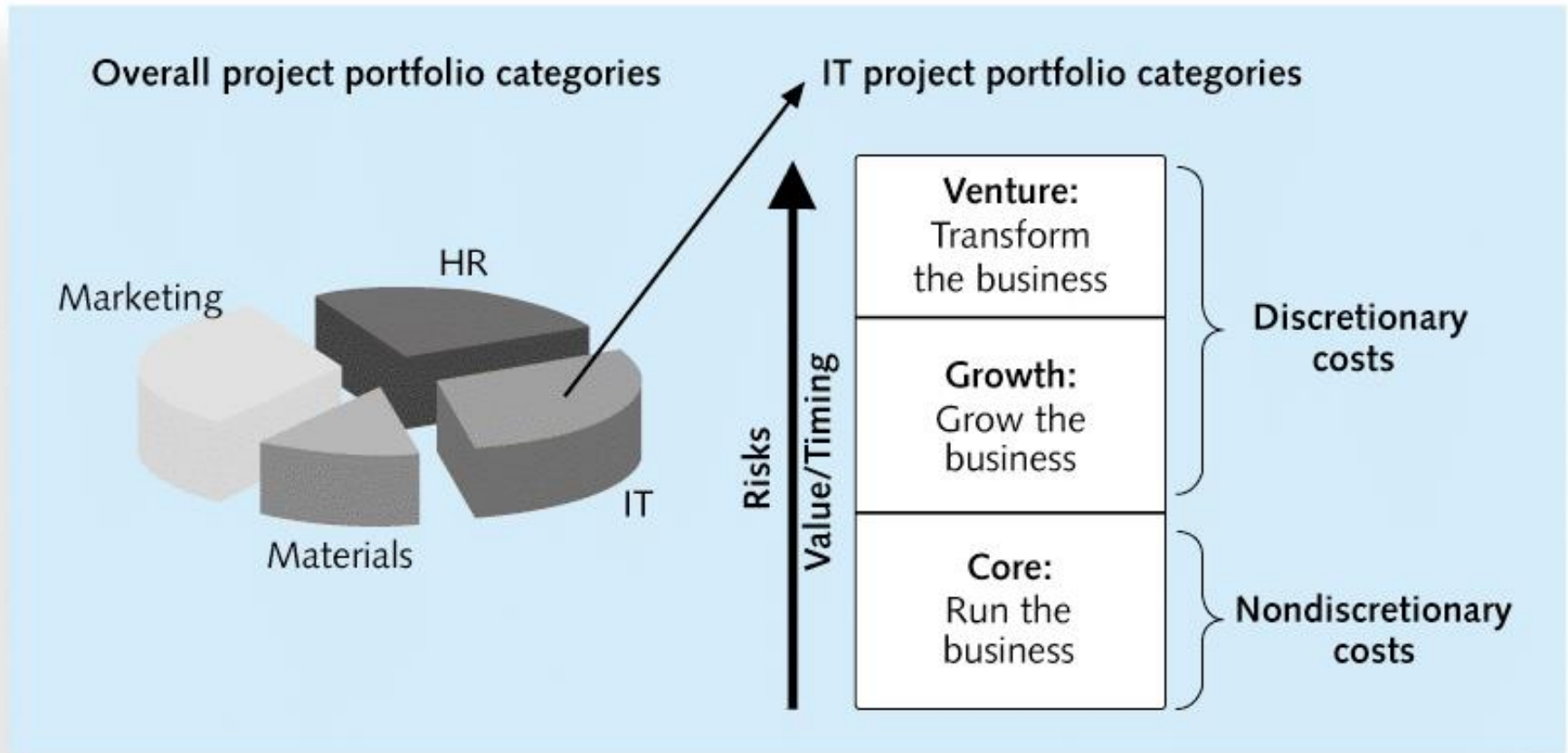# Project Management Compared to Project Portfolio Management

Strategic goals

Tactical goals

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?

Best Practice

▸ A **best practice** is "an optimal way recognized by industry to achieve a stated goal or objective"*

▸ Robert Butrick *suggests that organizations* need to follow basic principles of project management, including these two mentioned earlier:

◦ Make sure your projects are driven by your strategy. Be able to demonstrate how each project you undertake fits your business strategy, and screen out unwanted projects as soon as possible

◦ Engage your stakeholders. Ignoring stakeholders often leads to project failure. Be sure to engage stakeholders at all stages of a project, and encourage teamwork and commitment at all times

*Project Management Institute, *Organizational Project Management Maturity Model (OPM3) Knowledge Foundation (2003), p. 13.*

Sample Project Portfolio Approach

Overall project portfolio categories

Marketing
HR
Materials
IT

IT project portfolio categories

Risks
Value/Timing

Venture: Transform the business

Growth: Grow the business

Core: Run the business

Discretionary costs

Nondiscretionary costs

Microsoft project portfolio management capabilities

Source: Microsoft, "PPM Solution Guide" (October 2013).

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

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 2014 survey, IT executives listed the "ten hottest skills" they planned to hire for in 2015
- Project management was second only to programming and application development
- Even if you choose to stay in a technical role, you still need project management knowledge and skills to help your team and organization

Ten Hottest IT Skills

Skill	Percentage of Respondents
Programming and application development	48
Project management	35
Help desk/technical support	30
Security/compliance governance	28
Web development	28
Database administration	26
Business intelligence/analytics	24
Mobile application and device management	24
Networking	22
Big data	20

Source: Mary K. Pratt, "10 Hottest IT Skills for 2015," *Computerworld*, November 18, 2014.

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
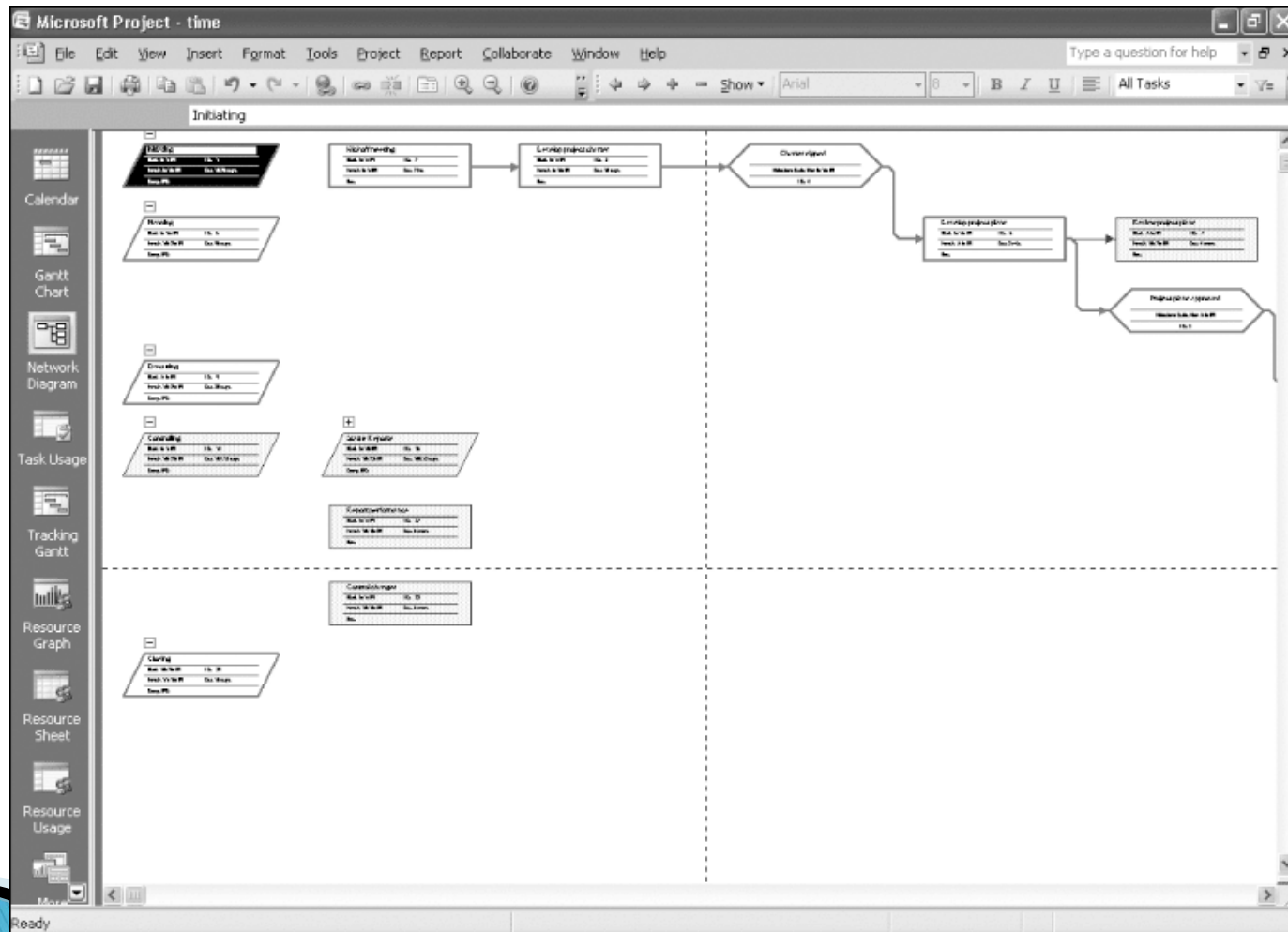
History of Project Management

- 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 manager and a technical manager

# Sample Gantt Chart Created with Project 2013
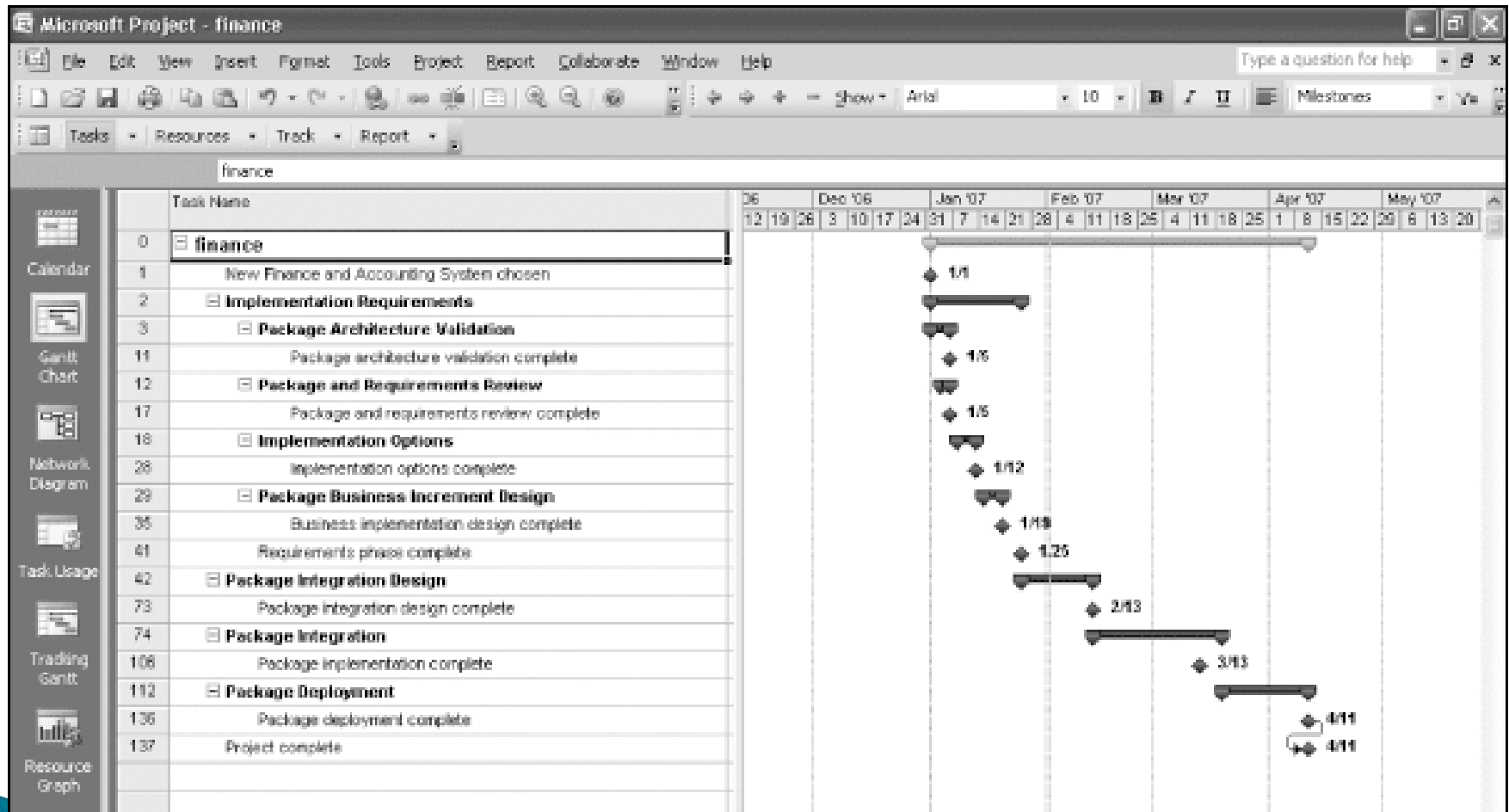
Sample Network Diagram Created with Project 2013

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

Growth in the Number of Project Management Offices
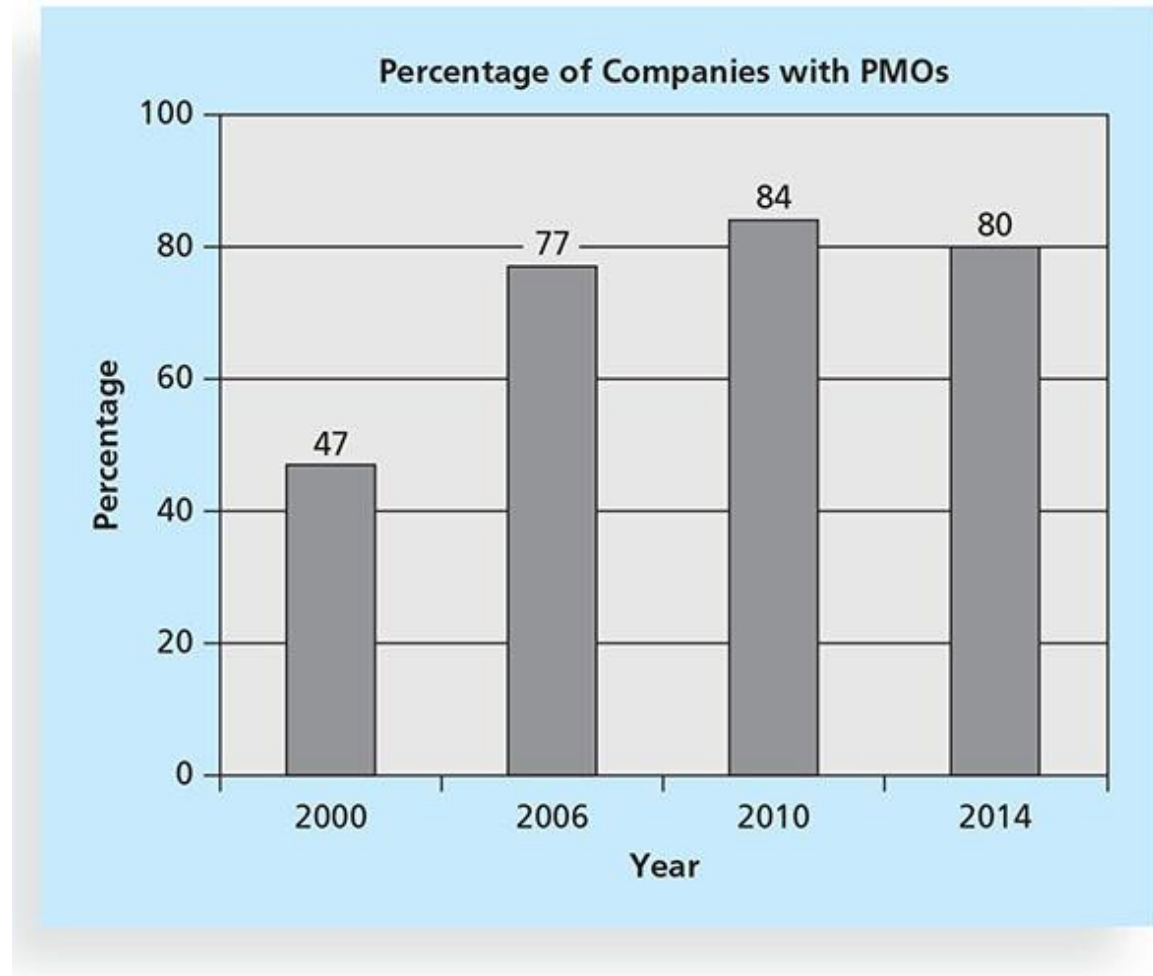
Source: PM Solutions, "The State of the PMO 2010" (2010).

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 449,000 members worldwide by late 2014

- 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 for details)

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

Growth in PMP Certification, 1993-2014

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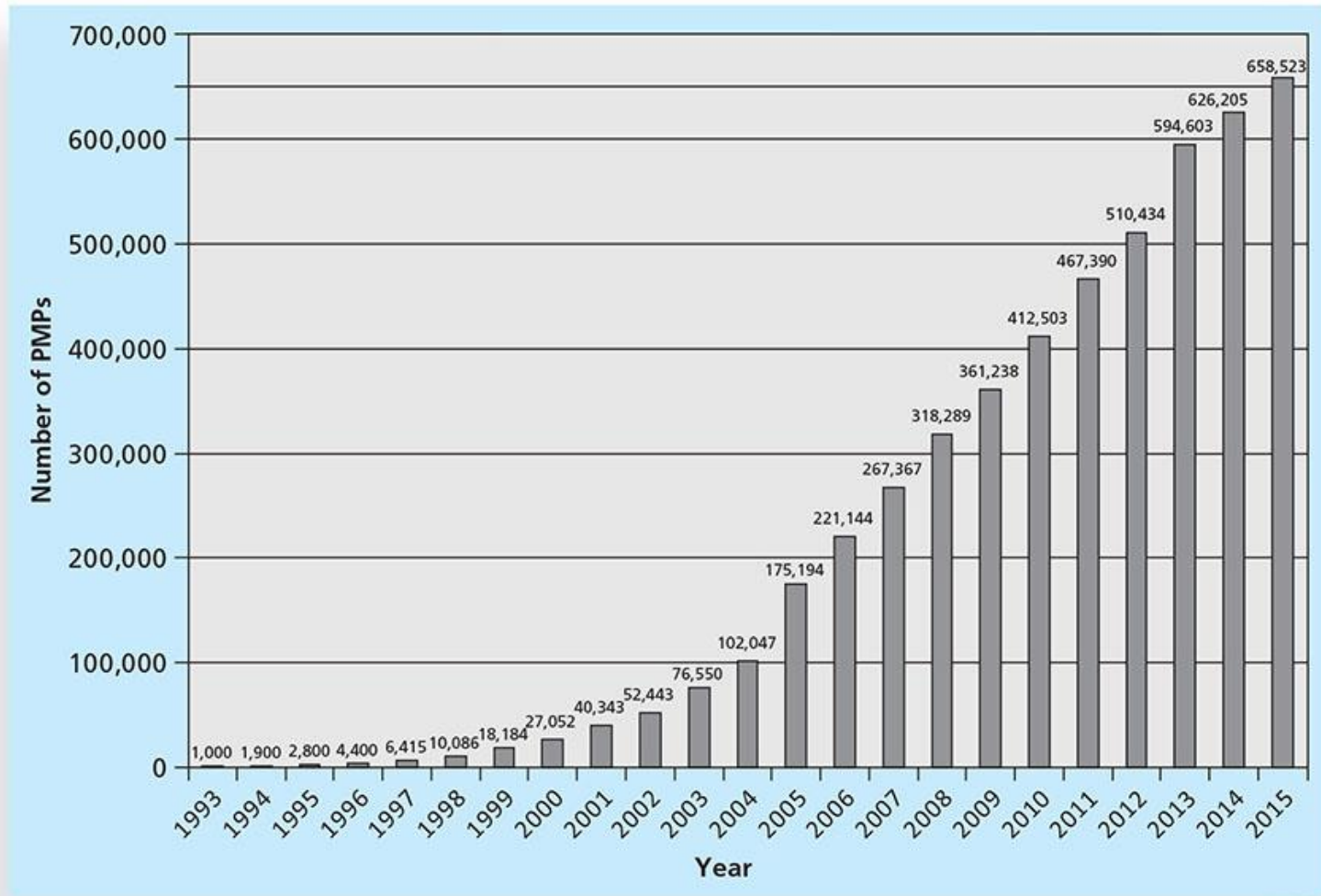
Ethics in Project Management

▸ **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 2013 most popular
  - High-end tools: Also called enterprise project management software, often licensed on a per-user basis
- Several free or open-source tools are also available

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