Chapter 1: Introduction to Project Management

Information Technology Project Management, Ninth Edition

Note: See the text itself for full citations

Learning Objectives (1 of 2)

- Articulate 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 constraints of project management

- Define 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 (2 of 2)

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

- Summarize the role of project managers by describing what they do, what skills they need, the talent triangle, and career opportunities for IT project managers

- Recall key aspects of the project management profession, including important components of 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 people and organizations today have a new or renewed interest in project management

- Worldwide IT spending was $3.5 trillion in 2017, a 2.4 percent increase from 2016 spending

- ***The Project Management Institute*** reported that the number of jobs reached almost 66 million in 2017.

  - By 2027, employers will need 87.7 million individuals working in project management–oriented roles

Introduction

- In 2017, the average annual salary (without bonuses) for someone in the project management profession was $112,000 in the U.S. and $130,866 in Switzerland

- The top skills employers look for in new college graduates are all related to project management: *team-work*, *problem-solving*, and *verbal communications*

Advantages of Using Formal Project Management

- Better control of financial, physical, and human resources

- Improved customer relations

- Shorter development times

- Lower costs and improved productivity

- Higher quality and increased reliability

- Higher profit margins

- Better internal coordination

- Positive impact on meeting strategic goals

- Higher worker morale

What Went Wrong?

- 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

- Another study found that over 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

What Is a Project?

- A project is "*a temporary endeavor undertaken to create a unique product, service, or result*" (PMBOK® Guide, Sixth Edition, 2017)

- Project vs. operations?

    - Operations is work done to sustain the business

    - Projects end when their objectives have been reached or the project has been terminated

Examples of IT Projects (1 of 2)

- 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

Project Attributes

- A ***project***
  - has a unique purpose
  - is temporary
  - drives change and enable value creation
  - 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 Constraints

Triple constraint

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

Target

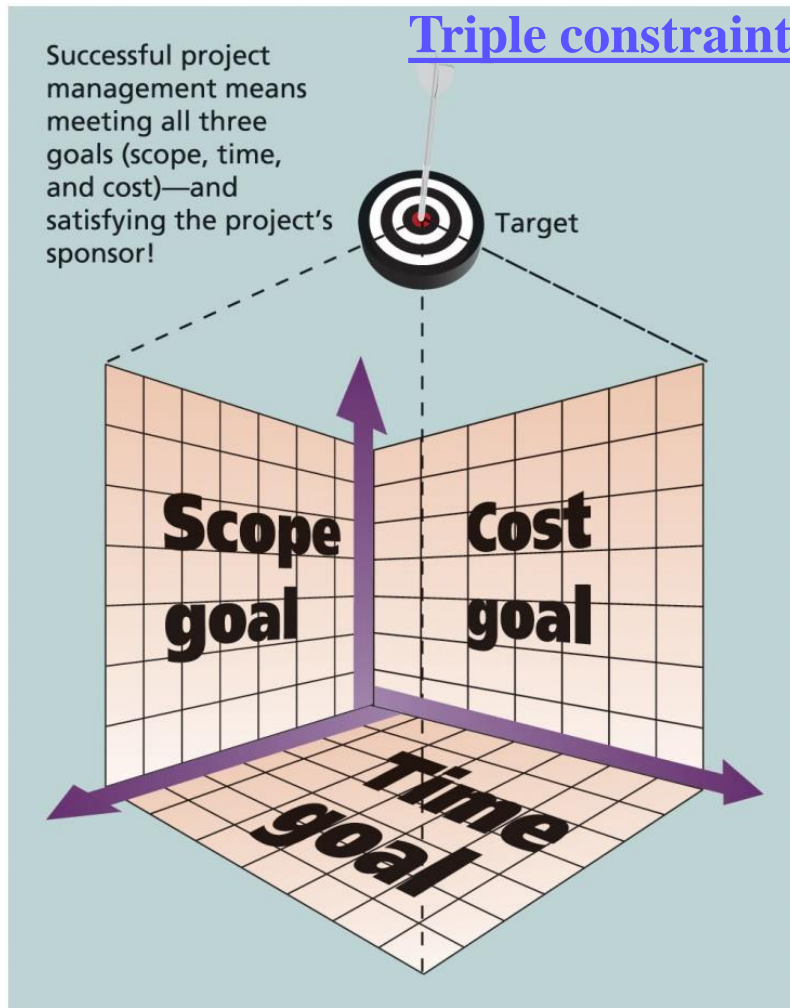Scope goal

Cost goal

Time goal

FIGURE 1-1   Project constraints

- Other people focus on the **quadruple constraint**, which adds quality as a fourth constraint.
  - ➢ Quality: How good does the quality of the products or services need to be? What do we need to do to satisfy the customer?

What is Project Management? (1 of 2)

- ***Project management*** is "*the application of knowledge, skills, tools and techniques to project activities to meet project requirements*" (PMBOK® Guide, Sixth Edition, 2017)

- Project managers strive to

  - meet the triple constraint

  - facilitate the entire process to meet the needs and expectations of project stakeholders
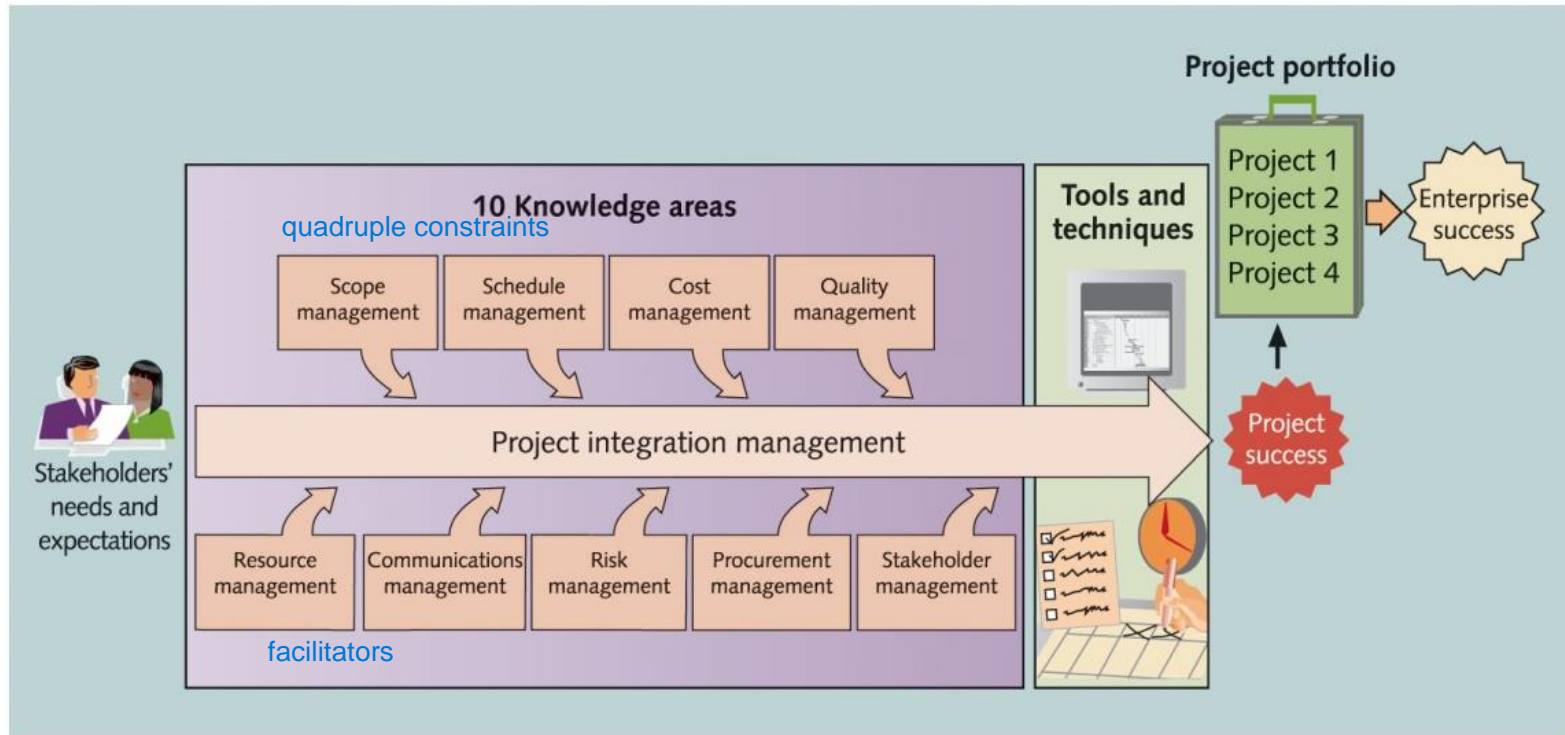   affected pos or neg

What is Project Management? (2 of 2)

FIGURE 1-2 Project management framework

Project Stakeholders

- **Stakeholders** are the people involved in or affected by project activities

- Stakeholders include

  - the project sponsor

  - banks and other financial institutions

  - the project manager

  - the project team

  - support staff   ceo, board

  - suppliers

  - opponents to the project

10 Project Management Knowledge Areas

- Knowledge areas describe the key competencies that project managers must develop

  - 4 core knowledge areas lead to specific project objectives (scope, time, cost, and quality)

  - 5 facilitating knowledge areas are the means through which the project objectives are achieved (human, resources, communication, risk, and procurement management)

  - 1 knowledge area (project integration management) affects and is affected by all of the other knowledge areas

Project Management Process Groups					
Knowledge Areas	**Initiating Process Group**	**Planning Process Group**	**Executing Process Group**	**Monitoring & Controlling Process Group**	**Closing Process Group**
Project Integration Management	Develop project charter	Develop project management plan	Direct and manage project work Manage project knowledge	Monitor and control project work Perform integrated change control	Close project or phase
Project Scope Management		Plan Scope Management Collect Requirements Define Scope Create WBS		Validate Scope Control Scope	
Project Schedule Management		Plan schedule management Define activities Sequence activities Estimate activity durations Develop Schedule		Control Schedule	
Project Cost Management		Plan cost management Estimate costs Determine budget		Control costs	
Project Quality Management		Plan quality management	Manage quality	Control quality	
Project Resource Management		Plan resource management Estimate activity resources	Acquire resources Develop team Manage team	Control resources	
Project Communications Management		Plan communications management	Manage communications	Monitor communications	
Project Risk Management		Plan risk management Identify risks Perform qualitative risk analysis Perform quantitative risk analysis Plan risk responses	Implement risk responses	Monitor risks	
Project Procurement Management		Plan procurement management	Conduct procurements	Control procurements	
Project Stakeholder Management	Identify stakeholders	Plan stakeholder engagement	Manage stakeholder engagement	Monitor stakeholder engagement	

The relation between project management process groups and knowledge areas

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
  work breakdown structure
  - 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 1-4 for many more

Knowledge Area/Category	Tools and Techniques
Integration management	Project selection methods, project management methodologies, project charters, project management plans, **project management software, change requests**, change control boards, project review meetings, **lessons-learned reports**
Scope management	**Scope statements, work breakdown structures**, mind maps, statements of work, **requirements analyses**, scope management plans, scope verification techniques, and scope change controls
Schedule management	**Gantt charts**, project network diagrams, critical-path analyses, crashing, fast tracking, schedule performance measurements
Cost management	Net present value, return on investment, payback analyses, earned value management, project portfolio management, cost estimates, cost management plans, cost baselines
Quality management	Quality metrics, checklists, quality control charts, Pareto diagrams, fishbone diagrams, maturity models, statistical methods
Resource management	Motivation techniques, empathic listening, responsibility assignment matrices, project organizational charts, resource histograms, team building exercises
Communications management	Communications management plans, **kickoff meetings**, conflict management, communications media selection, **status and progress reports**, virtual communications, templates, project websites
Risk management	Risk management plans, risk registers, probability/impact matrices, risk rankings
Procurement management	Make-or-buy analyses, contracts, requests for proposals or quotes, source selections, supplier evaluation matrices
Stakeholder management	Stakeholder registers, stakeholder analyses, issue logs, interpersonal skills, reporting systems

Figure 1-4. Common project management tools and techniques by knowledge area
Note: The bolded items are "super tools."

Project Management Tools and Techniques

for certification

- PMBOK® Guide – Sixth Edition lists tools and techniques based on their purpose:
  - Data gathering
  - Data analysis
  - Data representation
  - Decision making
  - Communication
  - Interpersonal and team skills
  - Ungrouped

What Went Right?

- The Standish Group's CHAOS studies show improvements in the statistics for IT projects:
  - The number of successful software development projects was 29% in 2015
  - 62% of small projects were successful, 6% of large, 9% of medium, and 21% of moderate size
  - 39% of all agile projects were successful compared to 11% of waterfall projects

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

Program and Project Portfolio Management

- About one-quarter of the world's gross domestic product is spent on projects

- Two important concepts that help projects meet enterprise goals:

  - Use of *programs*

  - *Project portfolio management*

Programs

- A **program** is "*a group of related projects managed in a coordinated manner to obtain benefits and control not available from managing them individually*" (PMBOK® Guide — Sixth Edition, 2017)

- Examples of common programs in the IT field include infrastructure, applications development, and user support

- A **program manager** provides leadership and direction for the project managers heading the projects within the program

portofolio, program, projects

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Project Portfolio Management (1 of 2)

- A **portfolio** is defined as "*projects, programs, subsidiary portfolios, and operations managed as a group to achieve strategic objectives*. "

- 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

Project Portfolio Management (2 of 2)

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?

Strategic goals

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

Tactical goals

FIGURE 1-3 Project management compared to project portfolio management

Organizational Project Management

- **Organizational project management**

  - *Framework in which portfolio, program, and project management are integrated with organizational enablers in order to achieve strategic objectives*

The Role of the Project Manager

- Project managers must work closely with the other stakeholders on a project, especially the sponsor and project team

- They are also more effective if they are familiar with the 10 project management knowledge areas

  - And the various tools and techniques related to project management

Project Manager Job Description

- Job descriptions vary, but most include responsibilities like planning, scheduling, coordinating, and working with people to achieve project goals

- Project management is a skill needed in every major IT field, from database administrator to network specialist to technical writer

Advice for Young Professionals

- A few questions to ask yourself to know if you would be a good project manager
  - Do you get frustrated by bad bosses? Do you think you could do a better job?
  - Are you interested in understanding the big picture of how organizations work and how your individual work or your project fits in?
  - Have you had other leadership roles, such as being a team captain, president of a club, or entrepreneur of a small business? Did you enjoy it? Did others think you did a good job?
  - Are you good at mentoring others? Do people ask you for help in developing their skills or your advice on what to do?

Suggested Skills for Project Managers (1 of 2)

- 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

Suggested Skills for Project Managers (2 of 2)

- Six traits of highly effective project managers as follows:

  - Be a strategic business partner

  - Encourage and recognize valuable contributions

  - Respect and motivate stakeholders

  - Stress integrity and accountability

  - Work in the gray/Be able to deal with ambiguity

Careers for IT Project Managers (1 of 2)

- In a 2017 survey, IT executives listed the "ten hot tech skills" they planned to hire for in 2017

- Project management was second only to full-stack software 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

Careers for IT Project Managers (2 of 2)

1.	Full-stack software development
2.	Project management
3.	Cyber-security
4.	Networking
5.	User experience/user interface (UX/UI) design
6.	Quality assurance (QA)/testing
7.	Cloud engineering
8.	Big data
9.	Machine learning/artificial intelligence
10.	DevOps

Source: Sharon Florentine, "10 IT skills that employers need in 2017," CIO from IDG (February 1, 2017).

Table 1-4 Ten hot tech skills for 2017

Careers for Project Managers

- In mid 2020 LinkedIn lists project management jobs as #3 in the top 10 jobs identified as having the greatest number of openings, steady growth, and a livable wage.

These 10 jobs were identified as having the greatest number of job openings*, have had steady growth over the past four years, pay a livable wage, and require skills that can be learned online.

*Number of job openings posted globally on LinkedIn in 2020

Software developer

Programming, storage, networking, security, and deployment; HTML, CSS, SQL, Javascript, Python.

22.7M+ jobs

Start learning

Sales representative

Negotiation, CRM, new business development, B2B, storytelling, social media.

17.8M+ jobs

Start learning

Project manager

Program management, process improvement, project performance.

3.9M+ jobs

Start learning

IT administrator

Manage systems, subscriptions, configuration, and identity; Windows Server, Active Directory.

3.9M+ jobs

Start learning

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.
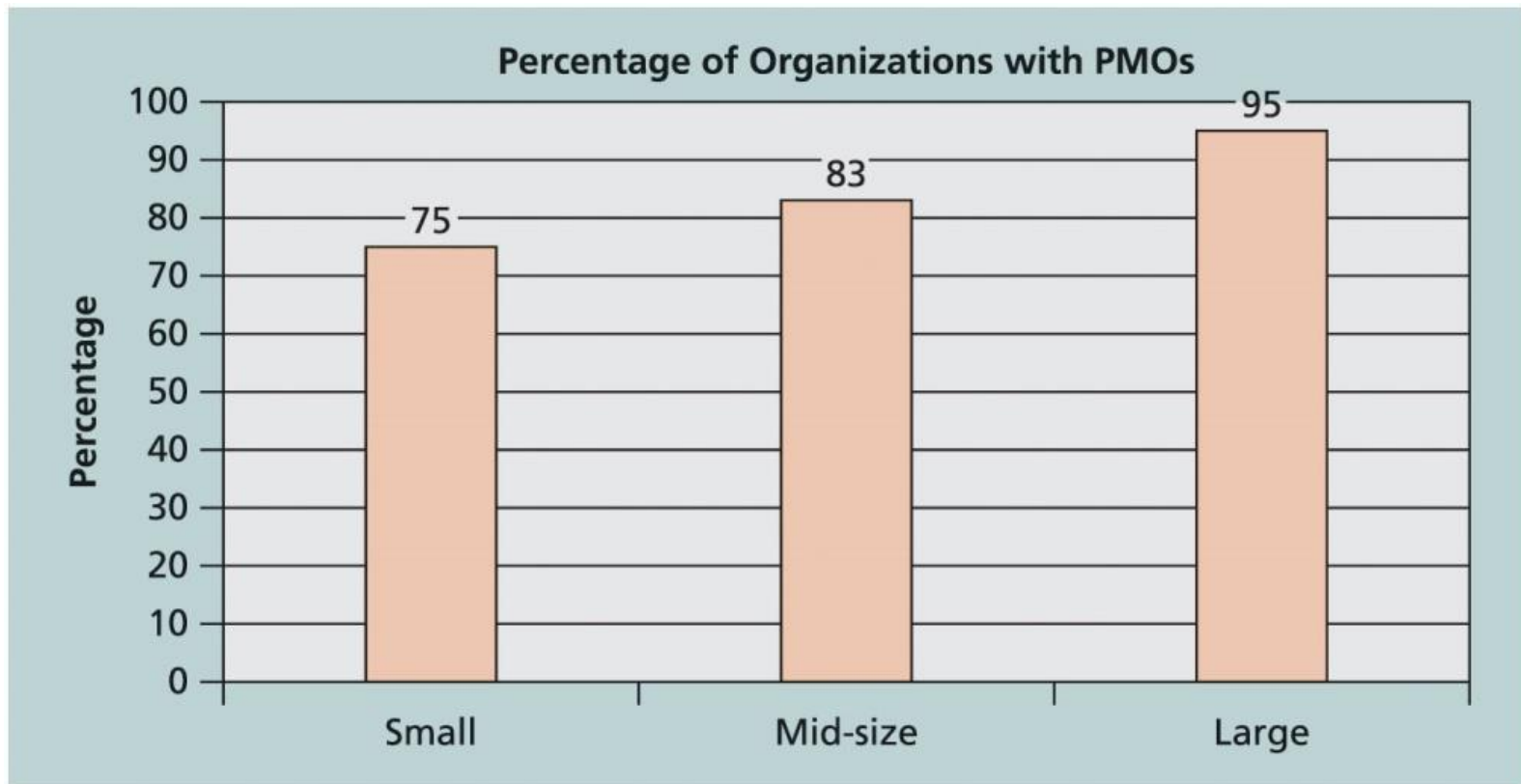
History of Project Management

- 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

History of Project Management

- In the 1990s, 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

History of Project Management

Percentage of Organizations with PMOs

Source: PM Solutions, "The State of the Project Management Office (PMO) 2016," 2016.

FIGURE 1-6   Percentage of organizations with PMOs by size

ESTABLISHMENT

Council of Ministers Resolution No. (485) issued on 16/11/1436H states the establishment of a national program titled "National Program to Support the Management of Projects in Public Entities" Target to contribute in upgrading the quality of project execution in public entities through applying the best international practices in project management.

▶ Improve efficiency and quality of projects.

▶ Establish the criteria for program Management Offices.

▶ Implement best international practices.

▶ Develop project standard contract template for PMO.

Read more
- https://www.pmi.org/learning/library/kingdom-pmo-saudi-arabia-10814
- https://www.mep.gov.sa/en/npmo

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 500,000 members worldwide by late 2017

- There are communities of practices in many areas, like information systems, financial services, and health care

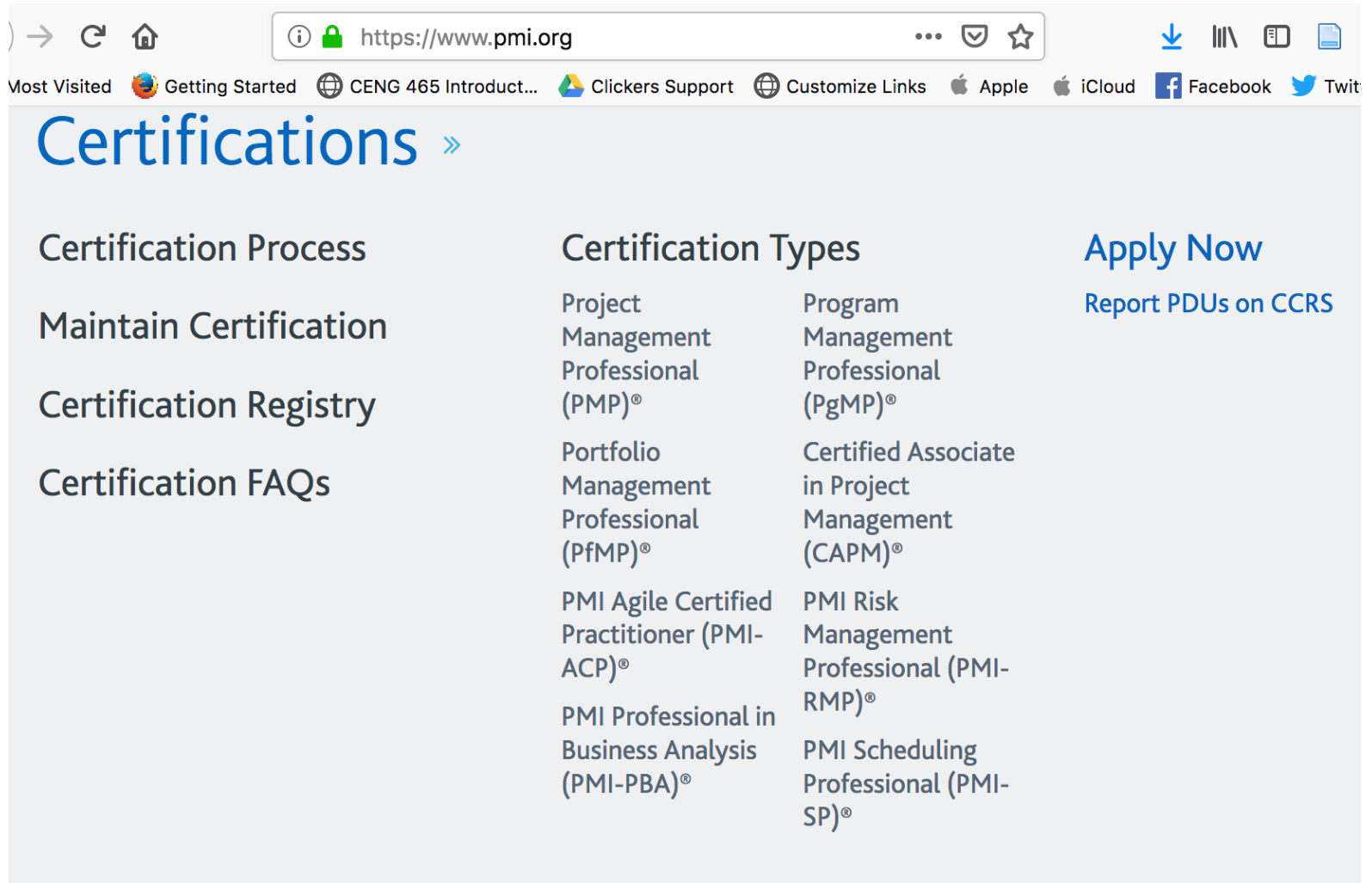- Project management research and certification programs continue to grow

PMI Student Membership

- Students can join PMI at a reduced fee and earn the Certified Associate in Project Management (CAPM) certification(see PMI 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

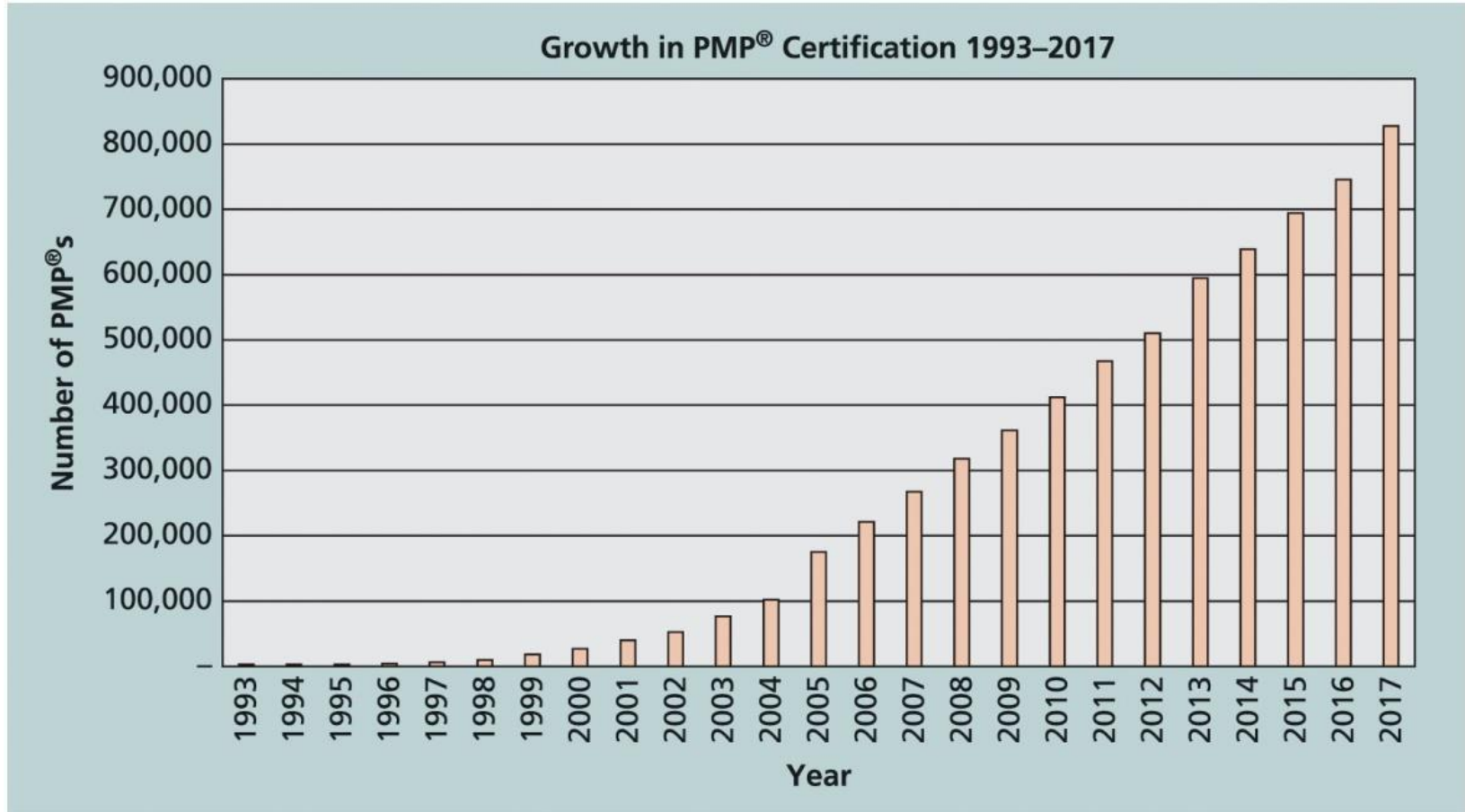- The number of people earning PMP® certification is increasing quickly

Project Management Certification

https://www.pmi.org

Certifications »

Certification Process

Maintain Certification

Certification Registry

Certification FAQs

Certification Types

Project Management Professional (PMP)®

Portfolio Management Professional (PfMP)®

PMI Agile Certified Practitioner (PMI-ACP)®

PMI Professional in Business Analysis (PMI-PBA)®

Program Management Professional (PgMP)®

Certified Associate in Project Management (CAPM)®

PMI Risk Management Professional (PMI-RMP)®

PMI Scheduling Professional (PMI-SP)®

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Project Management Certification

Source: Data points from Project Management Institute, PMI Today® (annual issues).

FIGURE 1-7 Growth in PMP® certification, 1993–2017

Number of PMP holders by Country

- According to the PMI, there are more than 1,000,000 holders of the internationally recognized PMP credential across 214 territories worldwide.

- The following are the top ten countries:

Rank	Country	Active PMP Holders
1	United States	372726
2	China	342889
3	Canada	67825
4	India	47073
5	Japan	38379
6	Saudi Arabia	21732
7	Brazil	16957
8	Germany	16032
9	Spain	13227
10	Singapore	12553

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

Ethics in Project Management

"As <u>practitioners</u> in the global project management community:

2.2.1	We make decisions and take actions based on the best interests of society, public safety, and the environment.
2.2.2	We accept only those assignments that are consistent with our background, experience, skills, and qualifications.
2.2.3.	We fulfill the commitments that we undertake—we do what we say we will do.
3.2.1	We inform ourselves about the norms and customs of others and avoid engaging in behaviors they might consider disrespectful.
3.2.2	We listen to others' points of view, seeking to understand them.
3.2.3	We approach directly those persons with whom we have a conflict or disagreement.

Project Management Software*

- 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 (ex. BaseCamp, Smartsheet, and Trello)
  - **Midrange tools:** Handle multiple projects and users, cost $200-$1,000 per user, Microsoft Project is still the most popular
  - **High-end tools:** Also called enterprise project management software, often licensed on a per-user basis (ex. Microsoft Enterprise Project Management)
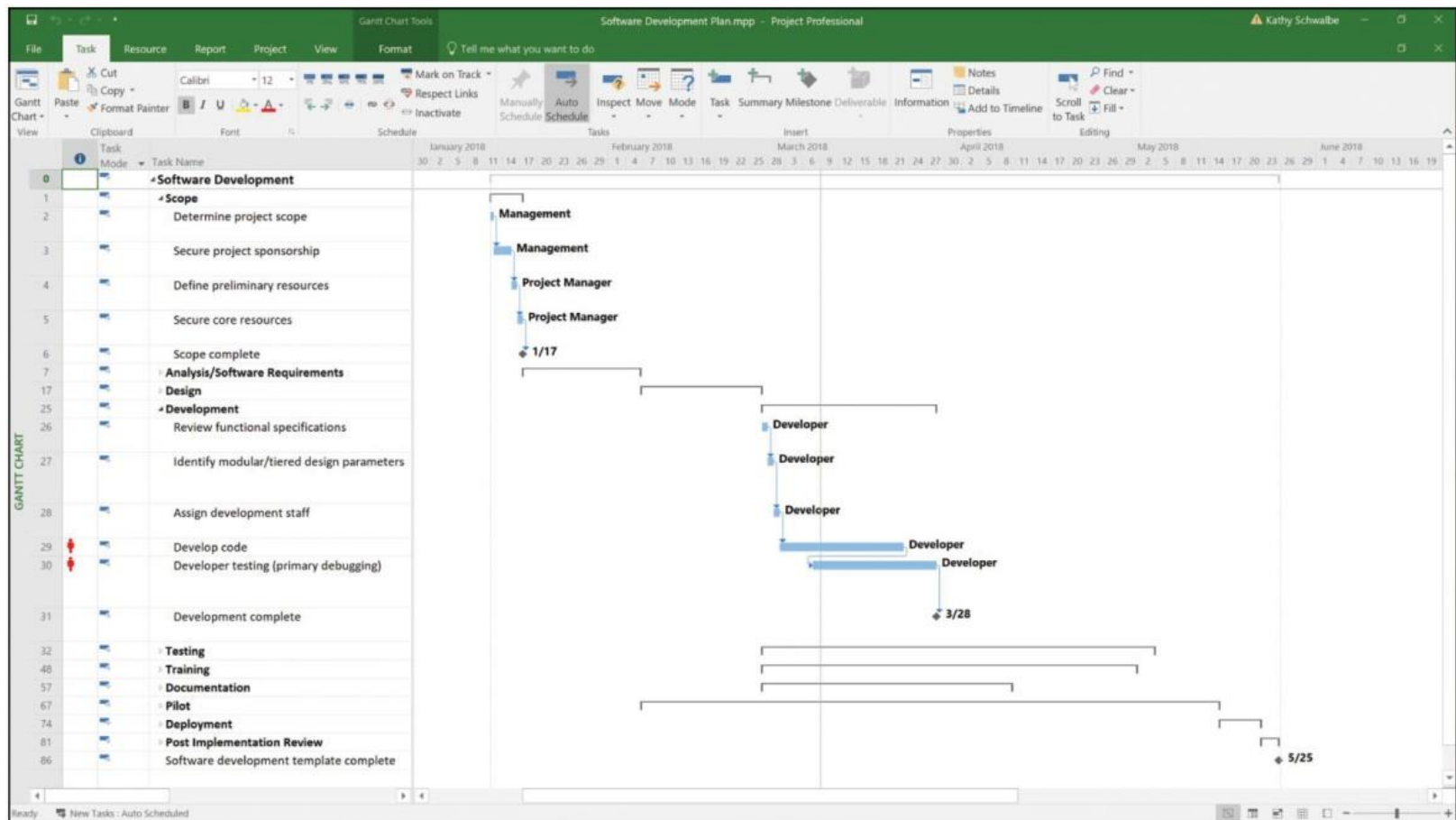- Several free or open-source tools are also available

FIGURE 1-5 Sample Gantt chart from Project 2016 software development plan template

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