

# Study Guide for Software Project Management - Chapter 1

## Introduction TO Software Project Management

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# My study notes:

## 9 advantages of using project management techniques are as follows:

1. Better control of financial, physical, and human resources
2. Improved customer relations
3. Shorter development times
4. Lower costs and improved productivity
5. Higher quality and increased reliability
6. Higher profit margins
7. Better internal coordination
8. Positive impact on meeting strategic goals
9. Higher worker morale

## What is a project?

A project is “a temporary endeavor undertaken to create a unique product, service, or result.”

## 7 attributes of a project:

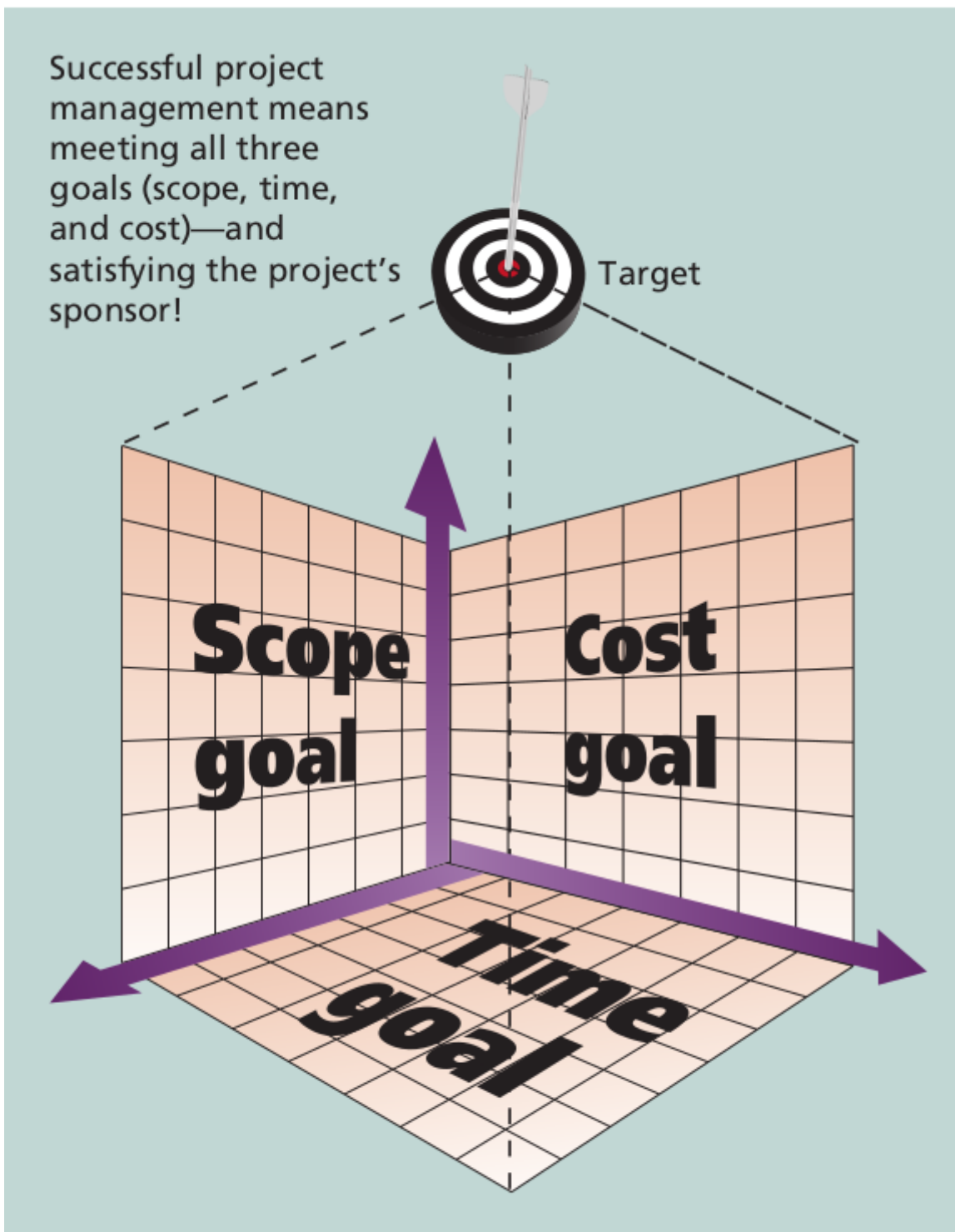
1. Unique Purpose: Every project has a specific, well-defined objective.
2. Temporary: Projects have a definite start and end date.
3. Drives Change and Value Creation: Projects initiate change to fulfill a need or desire, moving from a current state to a desired future state.
4. Progressive Elaboration: Projects start broad and get more detailed as they progress. They should be developed incrementally.
5. Resource-Intensive: Projects need various resources like people, hardware, and software, often from different departments.
6. Primary Customer or Sponsor: Projects need a main sponsor for direction and funding. Executive support is crucial.
7. Involves Uncertainty: Projects face uncertainty in defining objectives, time estimates, and costs. External factors can also introduce uncertainty.

## The Triple Constraint

The Triple Constraint in project management consists of the following three items:

1. **Time:** The schedule or deadline for completing the project.
2. **Cost:** The budget allocated for executing the project.
3. **Scope:** The specific deliverables and tasks that must be completed to finish the project.

These three factors are interdependent, meaning a change in one often impacts the others. Managing the Triple Constraint effectively is crucial for project success.



**FIGURE 1-1** Project constraints

### The Quadruple Constraint

The Quadruple Constraint adds a fourth dimension to the traditional Triple Constraint in project management. Alongside Time, Cost, and Scope, the Quadruple Constraint includes:

4. **Quality:** This refers to the standards that the project's deliverables should meet. Quality may involve performance, reliability, and other critical factors that the client or stakeholders expect.

The Quadruple Constraint recognizes that maintaining the quality of work is equally important as meeting time, cost, and scope objectives. Balancing all four elements is crucial for delivering a successful project.

## The Project Management Framework

### A. Stakeholders

The stakeholders/customers needs

### B. Knowledge Areas

The Project Management Institute (PMI) defines 10 knowledge areas within the framework of project management, as described in the PMBOK (Project Management Body of Knowledge):

1. **Project Integration Management:** This area focuses on coordinating all parts of a project. It includes tasks like developing project charters, project management plans, and directing and managing work.
2. **Project Scope Management:** This involves defining and controlling what work is included and what is not included in the project.
3. **Project Time Management:** This area is concerned with planning and scheduling project timelines and milestones.
4. **Project Cost Management:** This involves planning and controlling the budget.
5. **Project Quality Management:** This focuses on ensuring that the project meets the required quality standards.
6. **Project Human Resource Management:** This involves planning, acquiring, and managing the project team.
7. **Project Communications Management:** This area focuses on ensuring proper planning, creation, distribution, and storage of project information.
8. **Project Risk Management:** This involves identifying, analyzing, and responding to potential risks.
9. **Project Procurement Management:** This involves obtaining and managing project resources.
10. **Project Stakeholder Management:** This involves identifying and managing people, organizations, or entities that may affect or be affected by the project.

Each of these knowledge areas contains processes that need to be managed effectively to ensure project success.

### C. Tools and Techniques

Project management has a wide array of tools and techniques that can be employed across its various knowledge areas. Here are some of the most popular ones:

#### Planning Tools

1. **Gantt Charts:** For scheduling tasks over time.
2. **Work Breakdown Structure (WBS):** For breaking down tasks into sub-tasks and assigning responsibility.
3. **PERT Charts (Program Evaluation and Review Technique):** For analyzing the tasks involved in completing a given project.

## Scheduling Tools

1. **Critical Path Method (CPM)**: For determining the longest path of planned activities to logical end points.
2. **Resource Leveling**: For optimizing the distribution of resources.

## Financial Tools

1. **Budgeting and Cost Estimation**: For financial planning.
2. **Earned Value Management (EVM)**: For performance and progress measurement.
3. **Net Present Value (NPV), Internal Rate of Return (IRR)**: For project valuation and economic feasibility.

## Quality Management Tools

1. **Six Sigma**: For process improvement.
2. **Total Quality Management (TQM)**: For organization-wide quality.
3. **Quality Assurance and Quality Control Metrics**: For maintaining project quality.

## Risk Management Tools

1. **SWOT Analysis**: For identifying Strengths, Weaknesses, Opportunities, and Threats.
2. **Risk Matrix**: For risk evaluation.

## Collaboration Tools

1. **MS Project, Jira, Trello**: For project tracking and collaboration.
2. **Slack, Microsoft Teams**: For communication.

## Monitoring and Control Tools

1. **KPI Dashboards**: For real-time tracking of performance indicators.
2. **Status Reports**: For routine status updates.

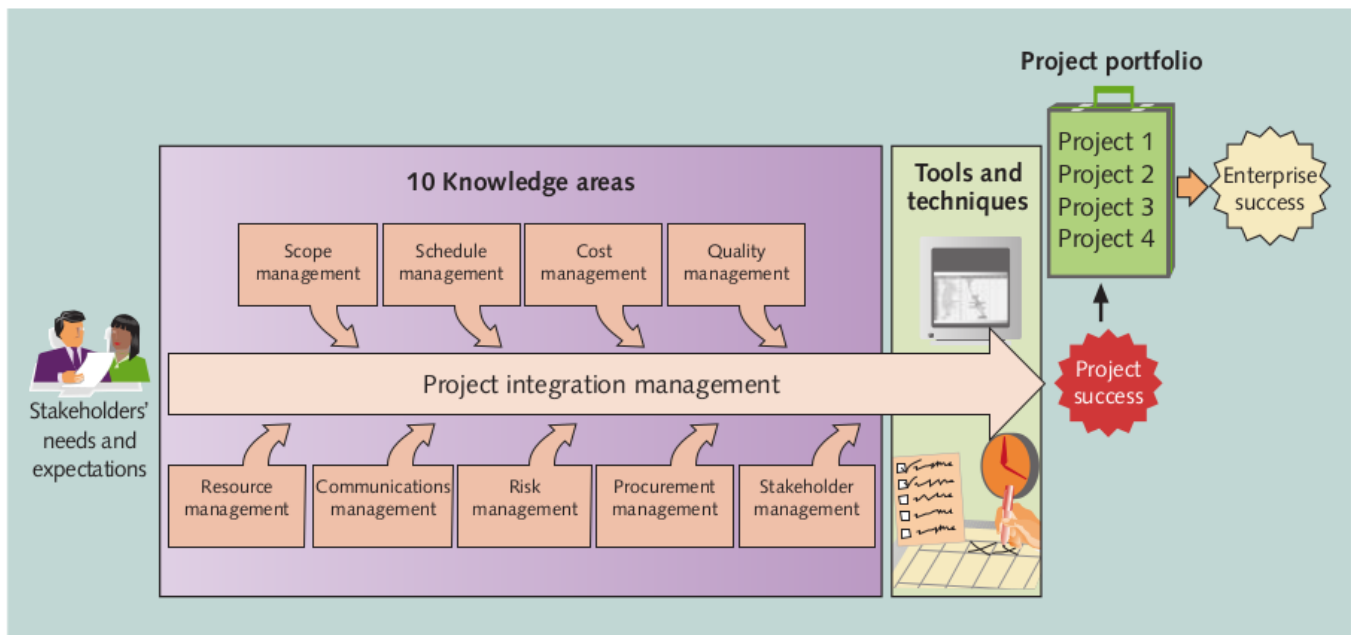
## Document Management Tools

1. **SharePoint, Google Drive**: For document storage and sharing.

## Stakeholder Management

1. **Stakeholder Analysis Grids**: For identifying and prioritizing stakeholders.
2. **Communication Plans**: For managing communications with various stakeholders.

Different projects may require different combinations of these tools and techniques, depending on the project's complexity, duration, and specific requirements.



**FIGURE 1-2** Project management framework

## A Projects Success

### General Indicators of Project Success:

1. **On-Time Completion:** Meeting or beating the project timeline.
2. **Budget Adherence:** Completion without exceeding the budget.
3. **Quality:** Deliverables meet or exceed the quality standards.
4. **Scope:** All project goals were met.
5. **Stakeholder Satisfaction:** Customers, team members, and stakeholders are satisfied with the outcome.
6. **Risk Management:** Risks were effectively managed and mitigated.
7. **Team Satisfaction:** High levels of team morale and low turnover.
8. **Post-Project Utility:** The project's deliverables are useful in a long-term context.

### U.S. Government Indicators of Project Success:

1. **Regulatory Compliance:** Adherence to federal, state, and local laws.
2. **Security Compliance:** Meeting all governmental security requirements.
3. **Transparency:** Openness about project status, especially regarding public funds.
4. **Sustainability:** Long-term viability and environmental responsibility.
5. **Audit Outcomes:** Positive reviews from internal and external audits.
6. **Public Impact:** Measurable benefits to the public or specific governmental functions.

### Best Practices Indicators of Project Success:

1. **Return on Investment (ROI):** High ROI relative to project costs.
2. **Knowledge Transfer:** Lessons learned are documented and transferred.
3. **Process Improvement:** The project led to improvements in underlying processes.

4. **Vendor Performance:** Third-party vendors met or exceeded expectations.
5. **Resource Utilization:** Efficient use of resources, including human resources.
6. **Alignment with Strategy:** The project is in line with organizational or governmental objectives.
7. **Adaptability:** The project adapted well to changes and unexpected challenges.

Different organizations and types of projects may have additional or specific criteria for success. It's important to define what success means for each project at the outset.

## Program and Portfolio Management

### Program Management - Is Tactical in nature

#### Definition:

Program Management involves the coordinated management of multiple related projects, often with the intention of improving an organization's performance. It focuses on more than just the delivery of project outputs, seeking to deliver outcomes or benefits that are of strategic importance to an organization.

#### Examples:

1. **Software Suite Development:** Managing the development of a suite of related software products, such as Microsoft Office, which includes Word, Excel, PowerPoint, etc.
2. **Infrastructure Development:** Managing the various projects involved in building a new airport, including runway construction, terminal building, and traffic control systems.

#### Characteristics:

- **Strategic Objective:** Generally aims to achieve a strategic business or organizational objective.
- **Governance:** Has its governance structure to oversee related projects.
- **Scope:** Encompasses multiple related projects.

### Portfolio Management - Is Strategic in nature

#### Definition:

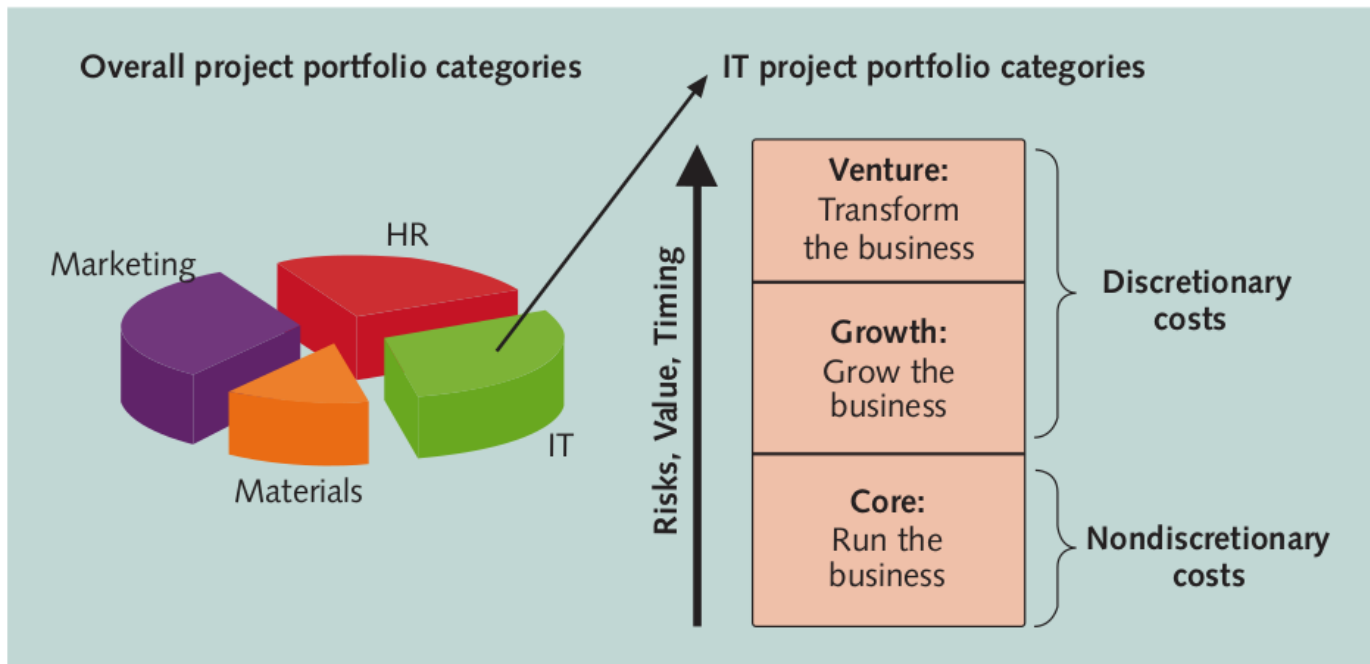
Portfolio Management is the centralized management of one or more portfolios, which include identifying, prioritizing, authorizing, managing, and controlling projects, programs, and other related work, to achieve specific strategic business objectives.

#### Examples:

1. **IT Portfolio:** Managing an organization's various IT projects, ranging from infrastructure upgrades to software developments, to achieve strategic business goals like cost reduction and business agility.
2. **Product Portfolio:** Managing the development of a range of products in a consumer goods company to balance risk and optimize returns.

#### Characteristics:

- **Alignment:** Aims to align projects and programs with an organization's strategy and goals.
- **Resource Allocation:** Focuses on optimal resource allocation among projects and programs.
- **Financial Management:** Often involves financial considerations, such as ROI and budget allocation.



**FIGURE 1-4** Sample project portfolio approach

## Differences:

### 1. Scope:

- Program management is about managing closely related projects.
- Portfolio management is about managing all projects and programs, related or unrelated, that align with an organization's objectives.

### 2. Objective:

- Program management aims to achieve coordinated benefits.
- Portfolio management aims to balance the portfolio to achieve the organization's strategic objectives.

### 3. Examples:

- Program management might focus on integrating the projects within a software development program.
- Portfolio management would look at all software projects, hardware upgrades, and process improvement initiatives to ensure they align with organizational strategy.

### 4. Governance:

- Program management has a governance structure that may be independent of the organization's main governance.
- Portfolio management usually ties directly into corporate governance and strategy.

### 5. Resource Management:

- Program management often involves sharing resources between projects within the program.
- Portfolio management involves allocating resources across all projects and programs in the portfolio.

### 6. Financial Metrics:



- Program management may focus on metrics related to specific program objectives.
- Portfolio management focuses on broad financial metrics like ROI, NPV, etc., across the entire portfolio.

By understanding these differences, organizations can better manage their projects and programs to achieve specific goals and broader strategic objectives.



**FIGURE 1-3** Project management compared to project portfolio management

### The role of the project manager

The key responsibilities of a project manager include business analysis, requirements gathering, project planning, budget estimating, development, testing, and implementation. They are also responsible for monitoring projects from initiation through delivery, ensuring completion of the project on schedule.

Additionally, project managers need to have good soft skills such as effective communication, leadership, motivation, negotiation, conflict management, and problem-solving.

The key skills required for a project manager include strategic thinking and being a strategic business partner, encouraging and recognizing valuable contributions, respecting and motivating stakeholders, being fully vested in success, stressing integrity and accountability, and being able to work in ambiguous situations. It is also

important for project managers to continue developing their knowledge and experience in project management, general management, soft skills, and the industries they support.

## The project management profession

See textbook...

## Leadership Styles

### PMBOK Leadership

The PMBOK (Project Management Body of Knowledge) identifies various leadership styles that project managers can adopt. These include:

1. **Autocratic:** The project manager makes decisions without soliciting input from team members.
2. **Consultative:** The project manager consults team members before making a decision but retains the final say.
3. **Consensus:** The project manager allows the team to make the decision, usually through a majority vote.
4. **Charismatic:** The project manager uses their charm and personality to influence the team.
5. **Transactional:** The project manager sets clear roles and rewards or penalizes team members based on performance.
6. **Transformational:** The project manager motivates the team through a shared vision and enthusiasm.

### Goleman's Leadership Styles

Daniel Goleman, a psychologist and author, has identified six leadership styles:

1. **Coercive:** The leader demands compliance from team members.
2. **Authoritative:** The leader sets a vision and motivates the team to follow.
3. **Affiliative:** The leader focuses on creating emotional bonds and harmony.
4. **Democratic:** The leader builds consensus through participation.
5. **Pacesetter:** The leader sets high standards for performance and exemplifies them himself/herself.
6. **Coaching:** The leader focuses on the personal development of team members.

Both PMBOK and Goleman's leadership styles offer a range of approaches that can be beneficial in various project scenarios. The choice of leadership style can depend on the project's needs, the team's characteristics, and the overall organizational culture.

### Ethics

Many project managers adhere to ethical agreements or codes of ethics established by professional organizations such as the Project Management Institute (PMI) or the International Project Management Association (IPMA). These ethical guidelines often include the following key areas:

## Honesty and Integrity

- Project managers are expected to provide accurate information and not deceive stakeholders or team members.

## Responsibility

- They should take ownership of their decisions and actions, as well as their consequences.

## Respect

- They are expected to treat team members, clients, and all stakeholders with professional respect.

## Fairness

- Project managers should make decisions and act impartially and objectively, ensuring fair treatment for all.

## Transparency

- Open communication is valued, and project managers should keep stakeholders informed of project status, risks, and changes.

## Compliance with Laws

- They should adhere to all laws and regulations governing their work and their projects.

## Confidentiality

- Project managers should respect the confidentiality of information and not use it for personal gain.

## Professionalism

- They are expected to continually develop their skills and apply them appropriately.

Each organization may have its own specific ethical guidelines, but these are some of the universal themes that most project managers are expected to adhere to.

## Project Management Software

1. **Low-end Tools:** Cost-effective (usually under \$200 per user or a low monthly fee) and suitable for small projects and individual users. Features include Gantt chart creation and smartphone integration. Examples include Basecamp, Smartsheet, and Zoho Projects.
2. **Midrange Tools:** Designed for larger projects and multiple users, costing between \$200 to \$600 per user. Features include Gantt charts, network diagrams, critical path analysis, and resource allocation. Microsoft Project is the most popular in this category.
3. **High-end Tools:** Also known as Enterprise or PPM tools, these are designed for large-scale projects and enterprise portfolio management. They integrate with enterprise databases and offer robust capabilities for

dispersed teams. Examples include Microsoft's Enterprise Project Management and Oracle's Primavera.

## Key Terms

### Best Practice

A method or technique that has consistently shown superior results compared to other means. In software project management, best practices often come from frameworks like Agile, Scrum, or methodologies like PMBOK.

### Project and Portfolio Management Software

A category of software that helps organizations to manage multiple projects and align them with business objectives. It includes features like resource allocation, budgeting, scheduling, and analytics.

### Charismatic

Refers to a leadership style where the leader uses their charm and personality to influence team members. This is often effective in motivating the team but may lack in other managerial aspects.

### Project Management

The practice of initiating, planning, executing, monitoring, and closing projects. It involves various methodologies and tools to deliver software projects successfully.

### DevOps

A set of practices that automates the processes between software development and IT teams, in order to build, test, and release software more efficiently.

### Project Management Institute (PMI)

A global non-profit professional organization for project management professionals. PMI is known for its Project Management Professional (PMP) certification.

### Enterprise Project Management Software

Software designed to be used by larger organizations to manage complex, multi-faceted projects.

### Project Management Knowledge Areas

Specific domains of project management where knowledge and skills are applied. Examples include scope management, time management, cost management, etc.

## **Ethics**

Moral principles that govern the behavior of the project team and the conduct of the project.

## **Project Management Office (PMO)**

A centralized team or department within an organization that defines and maintains standards for project management.

## **Gantt Chart**

A type of bar chart that illustrates a project schedule. It is commonly used in project management for task scheduling.

## **Project Management Professional (PMP®)**

A professional certification offered by PMI, known globally as a standard for project management skills.

## **Interactional**

A leadership style combining multiple types of leadership styles such as transformational, transactional, and charismatic.

## **Project Management Tools and Techniques**

Various applications and methods used by project managers to plan, execute, and close projects.

## **Laissez-faire**

A "hands-off" leadership style where team members are provided the freedom to make decisions.

## **Project Manager**

The individual responsible for planning, executing, and closing projects.

## **Leader**

An individual who influences a group of people towards the achievement of a goal.

## **Manager**

An individual who is charged with overseeing a project or a team within a project.

## **Project Portfolio Management or Portfolio Management**

The centralized management of multiple projects to ensure that they align with organizational objectives.

## **Megaproject**

An extremely large-scale project often costing billions of dollars and impacting multiple areas of business and even public life.

## **Project Sponsor**

An executive in the organization who champions the project and provides financial and political support.

## **Organizational Project Management**

An organization's framework to deliver projects successfully, aligned with business strategy.

## **Servant Leader**

A leader who serves the team, removes roadblocks, and focuses more on the well-being of the team rather than achieving specific goals.

## **Portfolio**

A collection of projects or programs managed as a group to achieve strategic business objectives.

## **Stakeholders**

Individuals or organizations that have a vested interest in the outcome of the project.

## **Program**

A group of related projects managed in a coordinated way to gain benefits that could not be achieved if the projects were managed separately.

## **Transactional**

A leadership style where the leader rewards or punishes the team based on their performance.

## **Program Manager**

An individual responsible for managing a program, which is a collection of related projects.

## **Transformational**

A leadership style where the leader works with teams to identify needed change, creating a vision to guide the change through inspiration.

## Project

A temporary endeavor undertaken to create a unique product, service, or result.

## Triple Constraint

The balancing of scope, time, and cost in a project.

These terms are critical in understanding the nuanced practices and methodologies within software project management.

## Chapter 1 Summary - direct from textbook

Many people and organizations have a new or renewed interest in **project management** as the number of **projects** continues to grow and their complexity continues to increase. The success rate of **IT projects** has more than doubled since 1995, but still only about one-third are successful in meeting **scope, time, and cost goals**. Using a more disciplined approach to managing projects can help projects and organizations succeed.

A **project** is a temporary endeavor undertaken to create a unique product, service, or result. An **IT project** involves the use of hardware, software, and networks. **Projects** are unique, temporary, and developed incrementally; they require **resources**, have a **sponsor**, and involve **uncertainty**. The **triple constraint** of project management refers to managing the **scope, time, and cost** dimensions of a project. It is important to address these dimensions as well as other **constraints** (such as quality, resources, and risks) and to satisfy the **project sponsor**.

**Project management** is the application of knowledge, skills, tools, and techniques to **project activities** to meet **project requirements**. **Stakeholders** are the people involved in or affected by **project activities**. A framework for project management includes the **project stakeholders**, **project management knowledge areas**, and **project management tools and techniques**. The 10

**knowledge areas** are project integration management, scope, schedule, cost, quality, resource, communications, risk, procurement, and **stakeholder management**. There are many **tools and techniques** in each **knowledge area**. There are different ways to define **project success**, and **project managers** must understand the criteria that define success for their unique **projects**.

A **program** is a group of related projects, subsidiary programs, and program activities managed in a coordinated way to obtain benefits and control that are not available from managing the **projects** individually. **Project portfolio management** involves organizing and managing **projects** and **programs** as a portfolio of investments that contribute to the entire enterprise's success. **Portfolio management** emphasizes meeting strategic goals, while **project management** focuses on tactical goals. Studies show that user involvement is crucial to **project success**, as are other factors like **executive support** and clear business objectives.

**Project managers** play a key role in helping **projects** and organizations succeed. They must perform various job duties, possess many skills, and continue to develop skills in **project management**, **general management**, and their application area, such as **IT**. Soft skills, especially **leadership**, are particularly important for **project managers**.

The profession of **project management** continues to grow and mature. In the United States, the military took the lead in **project management** and developed many **tools** such as **Gantt charts** and **network diagrams**, but today people use **project management** in virtually every industry around the globe. The **Project Management Institute (PMI)** is an international professional society that provides several certifications and upholds a **code of ethics**. Today, hundreds of **project management software products** are available to assist people in managing **projects**.