Introduction to Software Engineering Project Management

CS413 - Software Engineering Project Management

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Basic Definitions

- **Software**: Computer programs and associated documentation. Software products may be developed for a particular customer or may be developed for a general market.

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Basic Definitions

- **Software engineering**: An engineering discipline that is concerned with all aspects of software production from initial conception to operation and maintenance.

Basic Definitions

- **Software engineering vs. computer science.** Computer science focuses on theory and fundamentals; software engineering is concerned with the practicalities of developing and delivering useful software.

Basic Definitions

- **Outcome**: An end result or consequence of a process or project. Outcomes can include outputs and artifacts, but have a broader intent by focusing on the benefits and value that the project was undertaken to deliver.

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Basic Definitions

- **Portfolio**: Projects, programs, subsidiary portfolios, and operations managed as a group to achieve strategic objectives.

- **Product**: An artifact that is produced, is quantifiable, and can be either an end item in itself or a component item.

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Basic Definitions

- **Program**: Related projects, subsidiary programs, and program activities that are managed in a coordinated manner to obtain benefits not available from managing them individually.

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Basic Definitions

- **Project**: A temporary endeavor undertaken to create a unique product, service, or result. The temporary nature of projects indicates a beginning and an end to the project work or a phase of the project work. Projects can stand alone or be part of a program or portfolio.

Basic Definitions

- **Project management**: The application of knowledge, skills, tools, and techniques to project activities to meet project requirements. Project management refers to guiding the project work to deliver the intended outcomes. Project teams can achieve the outcomes using a broad range of approaches (e.g., predictive, hybrid, and adaptive).

Basic Definitions

- **Project manager**: The person assigned by the performing organization to lead the project team that is responsible for achieving the project objectives. Project managers perform a variety of functions, such as facilitating the project team work to achieve the outcomes and managing the processes to deliver intended outcomes.

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Basic Definitions

- **Project team**: A set of individuals performing the work of the project to achieve its objectives.

- **System for value delivery**: A collection of strategic business activities aimed at building, sustaining, and/or advancing an organization. Portfolios, programs, projects, products, and operations can all be part of.

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Basic Definitions

- **Value**: The worth, importance, or usefulness of something. Different stakeholders perceive value in different ways. Customers can define value as the ability to use specific features or functions of a product.

Basic Definitions

- **Value**: Organizations can focus on business value as determined with financial metrics, such as the benefits less the cost of achieving those benefits. Societal value can include the contribution to groups of people, communities, or the environment.

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Management Science

- Scientific approach to solving management problems
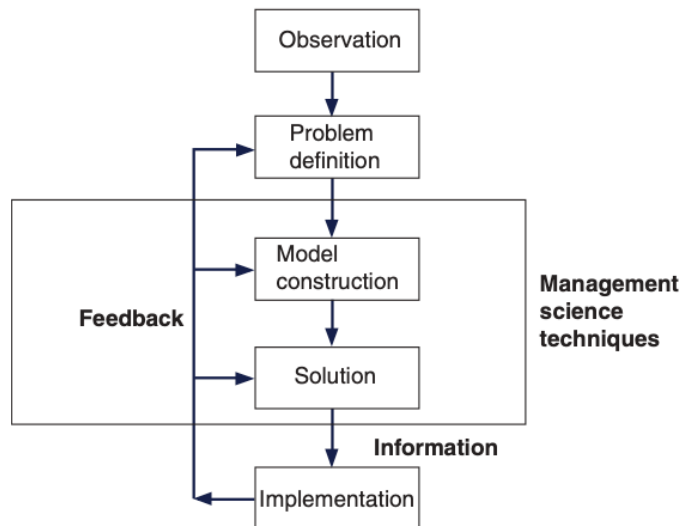
PMBOK

PMBOK® Guide – Seventh Edition

The Standard for Project Management:

- Introduction
- System for Value Delivery
- Project Management Principles
  - Stewardship
  - Team
  - Stakeholders
  - Value
  - Systems Thinking
  - Leadership
  - Tailoring
  - Quality
  - Complexity
  - Risk
  - Adaptability and Resiliency
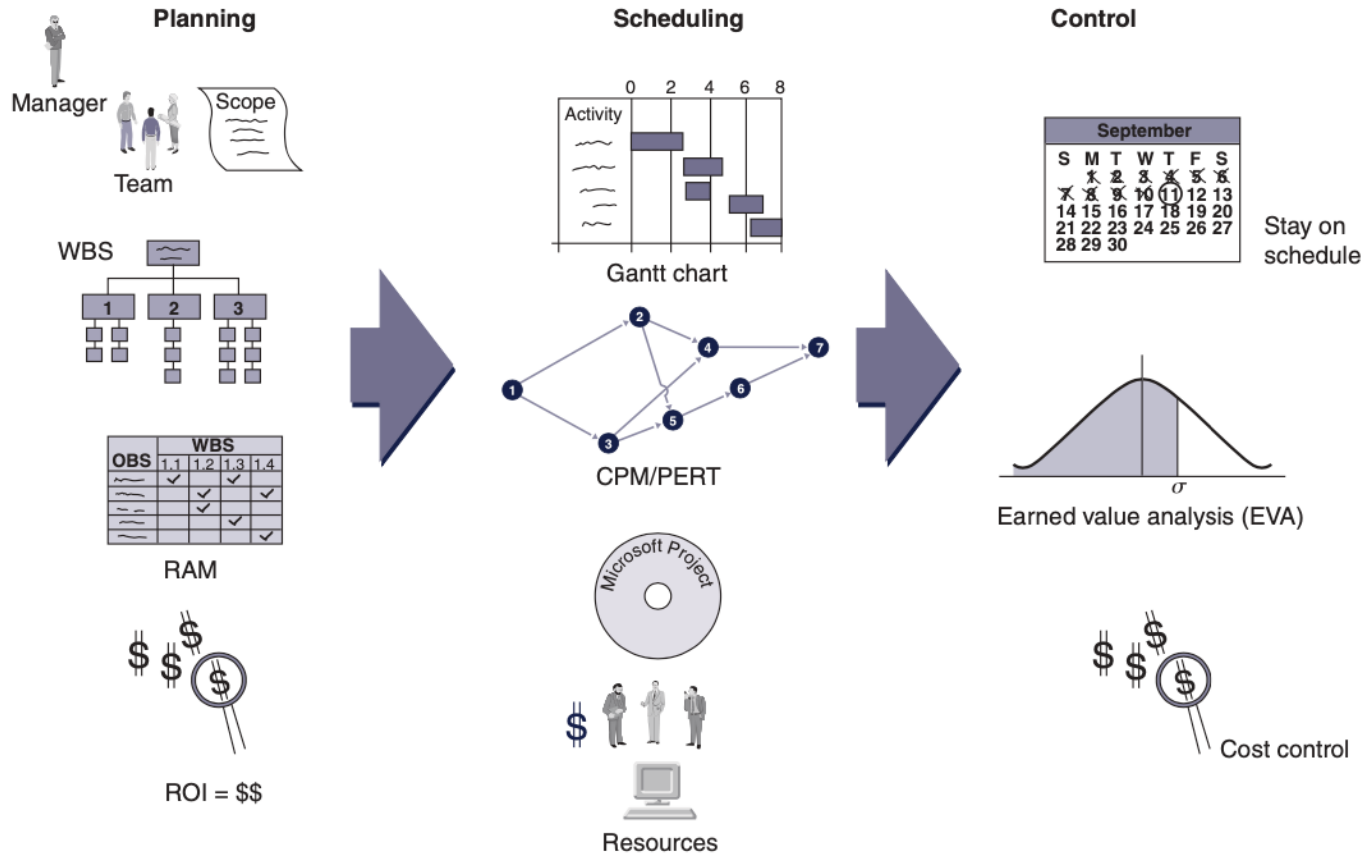 - Change

A Guide to the Project Management Body of Knowledge:

- Project Performance Domains:
  - Stakeholders
  - Team
  - Development Approach and Life Cycle
  - Planning
  - Project Work
  - Delivery
  - Measurement
  - Uncertainty
- Tailoring
- Models, Methods, and Artifacts

Appendixes, Glossary, and Index

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Project Management Process

Functions Associated with Projects

- Provide Oversight and Coordination

- Present Objectives and Feedback

- Facilitate and Support

- Perform Work and Contribute Insights

- Apply Expertise

- Provide Business Direction and Insight

- Provide Resources and Direction

- Maintain Governance

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Project Environment

- **Internal**

  - Process assets; Governance documentation; Data assets; Knowledge assets; Security and safety; Organizational culture, structure, and governance; Geographic distribution of facilities and resources; Infrastructure; IT software; Resource availability; Employee capability
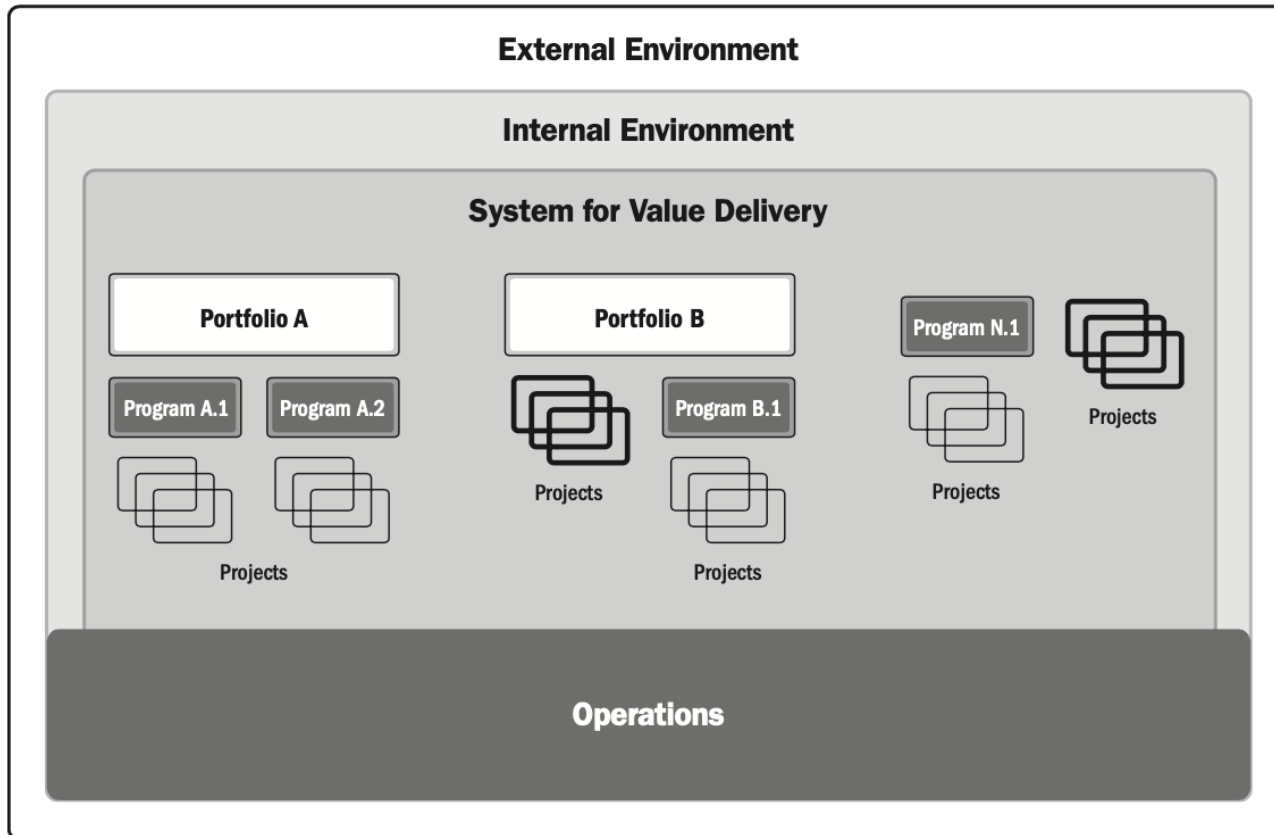
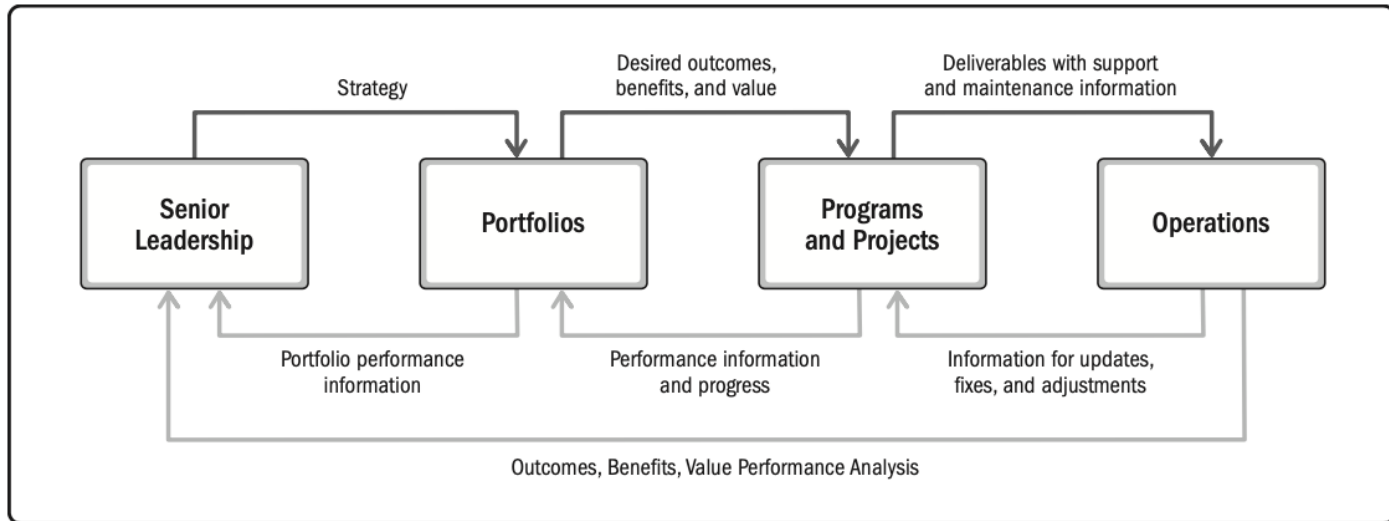Bilkent University

Project Environment

- **External**

  - Marketplace conditions; Social and cultural influences and issues; Regulatory environment; Commercial databases; Academic research; Industry standards; Financial considerations; Physical environment
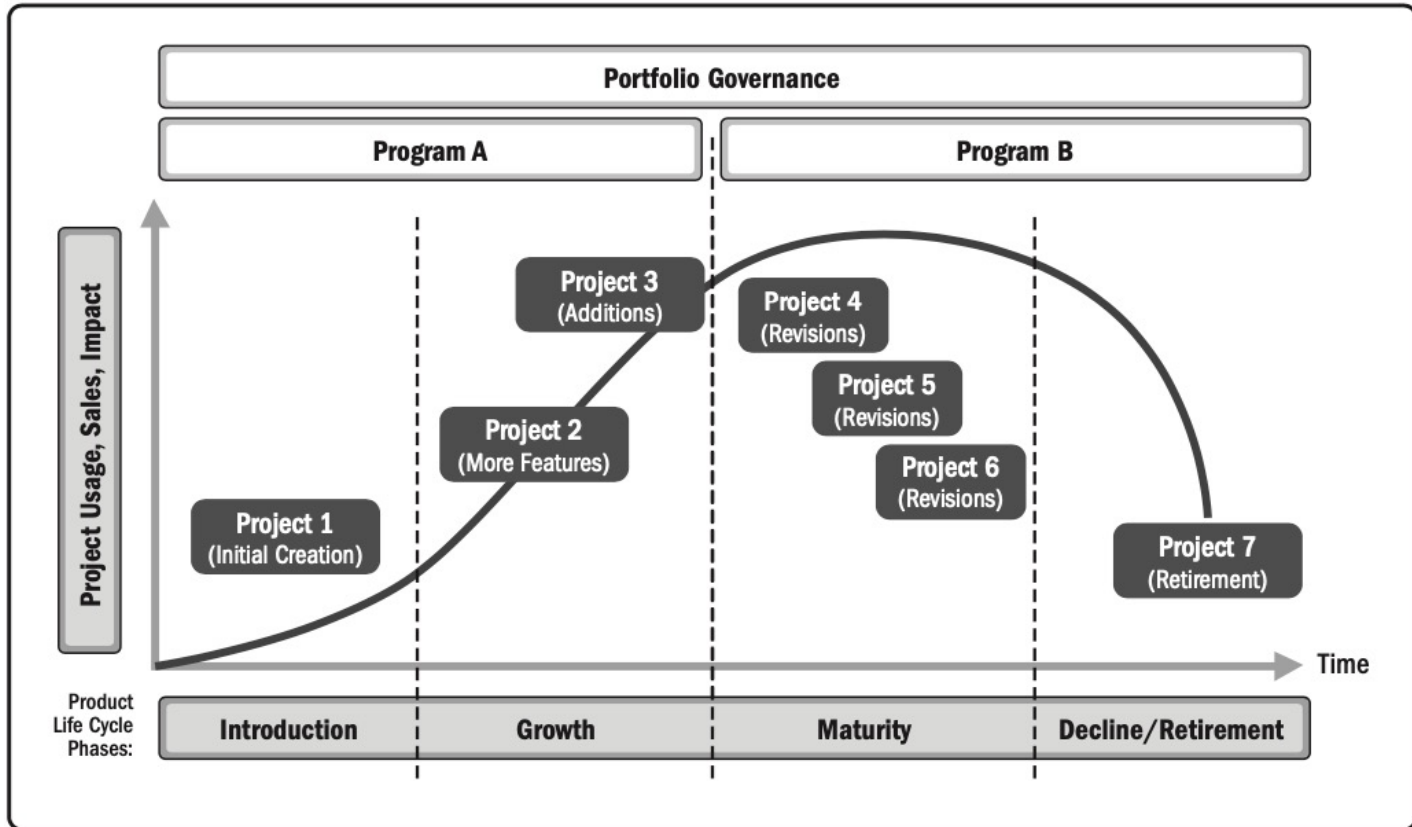
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Components of a System for Value Delivery

Information Flow

Product Lifecycle

Principles and Domains

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Views of Project and Product Management

Attribute	Project View	Product View
Focus	Outcomes	Outcomes
Typical metrics	Value	Business value
Staffing model	Temporary teams	Stable teams
Delivery emphasis	"Deliver value" accountability	"Inception to retirement" accountability

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Unique Characteristics

Characteristic	Project	Program	Product
Duration	Short term, temporary	Longer term	Long term
Scope	Projects have defined objectives. Scope is progressively elaborated throughout the life cycle.	Programs produce aggregate benefits delivered through multiple components.	Products are customer focused and benefits driven.
Change	Project teams expect changes and implement processes to address the changes, as needed.	Program teams explore changes and adapt to optimize the delivery of benefits.	Product teams explore changes to optimize the delivery of benefits.
Success	Success is measured by product and project quality, time lines, budget, customer satisfaction, and achievement of intended outcomes.	Success is measured by the realization of intended benefits and the efficiency and effectiveness of delivering those benefits.	Success is measured by the ability to deliver intended benefits and ongoing viability for continued funding.
Funding	Funding is largely determined up front based on ROI projections and initial estimates. Funding is updated based on actual performance and change requests.	Funding is up front and ongoing. Funding is updated with results showing how benefits are being delivered.	Product teams engage in continuous development via funding, development blocks, and reviews of value delivery.

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Technical Management Processes

- Project planning
- Project assessment and control
- Decision management
- Risk management
- Configuration management
- Information management
- Measurement
- Quality assurance

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Organization's Project-enabling Processes

- Life Cycle Model Management

- Infrastructure Management

- Portfolio Management
  Human Resource management

- Quality Management

- Knowledge Management

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Elements of the project Management Plan

- General

- Front matter

- Project overview

- References

- Definitions

- Project context

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Elements of the project Management Plan

- Project planning

- Project assessment and control

- Product delivery

- Supporting processes

- Additional plans

- End matter

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References

- Project Management Body of Knowledge (PMBOK) - 7th Edition

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- ISO/IEC/IEEE 16326:2019, Systems and software engineering — Life cycle processes — Project management

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