MUNI
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Role of Project Management in IT

MDA402 Project Management

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Lecture Overview

1. Definition and history of Project Management
What is Project?
Project vs. Process
What is Project Management?
History of Project Management

2. Successful vs. unsuccessful projects
How to define project success?

3. Project Management in IT
Characteristics of PM in IT
ITIL
IT project types

What is Project?

Project is...

Definition 1.1

... a **unique**, **temporary**, multi-disciplinary and organised endeavour to realise agreed deliverables within pre-defined requirements and constraints. [1]

Definition 1.2

... a **temporary** endeavor undertaken to create a **unique** product, service, or result. [4]

Definition 1.3

... **temporary** organization created for the purpose of delivering one or more business products according to an agreed business case.

Project Characteristics

We distinguish these key attributes of a project:

1. **Uniqueness**
2. **Temporariness**
3. **Change -driving & -driven**
4. **Uncertainty**

Project Characteristics

Uniqueness

- every project create unique product, service, result or improvement
- even though some projects can share the same repetitive elements, patterns and activities → outcome is **unique**

Example 1.1

Buildings can be constructed with the same materials and by the same teams. However, each building project remains unique with a different location, different design, different circumstances and situations different stakeholders ...

Project Characteristics

Temporariness

- TEMPORARY $\neq$ SHORT $\rightarrow$ referring to project's engagement and its longevity
- project should have defined start and end
- project ends when:
    - objectives and goals have been achieved
    - objectives and goals will not or cannot be achieved
    - client wishes to terminate the project
- project is defined by its life cycle

Example 1.2

Buildings construction is always temporary, because we know it will end at some point. But the outcome (building itself) will serve decades.

Project Characteristics

Change -driving & -driven

- -driving = project is the mean of introducing the change
- -driven = project is open to make and accept changes to the original scope of the project
- by introducing the change project creates value

Uncertainty

- project tend to be more risky
  - deadlines
  - working with a something unknown
  - trying to make an impact and introduce change
- the above-mentioned characteristics create additional threats that makes projects uncertain

Project vs. Process

Project

- unique
- cannot be repeated, is executed only once
- can be visualized by a Gantt chart

Process

- reusable
- can be repeated and has many instances
- its instances are part of a project
- can be visualized by a Flow chart

What is Project Management?

Project Management is...

> **Definition 1.4**
>
> ... the application of methods, tools, techniques and competences to a project to achieve goals. [1]

> **Definition 1.5**
>
> ... the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. [4]

> **Definition 1.6**
>
> ... is the planning, delegating, monitoring and control of all aspects of the project, and the motivation of those involved, to achieve the project objectives within the expected performance targets for time, cost, quality, scope, benefits and risk. [8]

History of Project Management

- humans have worked on project since **ancient history** → Pyramids of Giza, The Great Wall of China [9]
- history is filled with many projects that had project management team sustaining all the rules and processes for successful completion
- current project management is result of natural evolution → every successfully completed project added new knowledge, skills and tools to be even better with next one
- two proclaimed forefathers of PM [3]:
    - **Henri Fayol** (1841 - 1925) → led largest French iron and steel company, first formulation of PM principles
    - **Henry Gantt** (1861 - 1919) → American engineer, creator of Gantt chart

History of Project Management

- hard to find unified start of modern PM $\rightarrow$ one can consider development of **Program Evaluation Review Technique** (PERT) & **Critical Path Method** (CPM) in 1957 [6]
- The US Project Management Institute (PMI) was founded in 1969
- International Management Systems Association (now called International Project Management Association - IPMA) was founded in 1972
- introduction of PCs in in the 1980s made a great impact also on PM evolution $\rightarrow$ PM programs were based on Projects Resource Organization Management Planning Technique II (PROMPT II), which than became PRojects In Controlled Environments (PRINCE)

History of Project Management

- the term Theory of Constraints (TOC) was also developed in 1980s
- in 1986, Scrum, an agile software development model, was created
- in 1987, first version of Project Management Body Of Knowledge (PMBOK) was published
- in 1996, PRINCE was upgraded to PRINCE2 and The American National Standards Institute (ANSI) and Institute of Electrical and Electronics Engineers (IEEE) recognized PMBOK as a standard
- in 2008, new term **Software as a Service** (SaaS) was introduced → organizations can have access to a software for a fee per use/month and software is hosted remotely and delivered by cloud

Project Management Standards

There are three most used project management standards:

1. **Individual Competence Baseline by International Project Management Association (ICB)**
2. **Project Management Body Of Knowledge by Project Management Institute (PMBOK)**
3. **PRojects IN Controlled Environments by Axelos (PRINCE2)**

How to define project success?

Project success can be conceptualized by the criteria of success. Most frequently used ones are **cost**, **time**, **quality** $\rightarrow$ iron triangle / triple constraint.

Projects success also usually depends on **stakeholders' perceptions** depending on the situation project is executed in.

> **Definition 1.7**
> Project success is a multi-dimensional concept depending on criteria, stakeholder perception, the context, and the phase the project is found. [5]

Project success is a core of project management.

How to define project success?

Based on reviewing 39 publications 14 criteria were created within 5 categories [5] :

Project Management

- Scope / Specifications
- Process Efficiency
- Goals & Achievements
- Quality of PM
- Project Stakeholder satisfaction
- Team Satisfaction

User Satisfaction

- Customer Satisfaction
- Intention To Use

Time & Budget

- On Time
- On Budget

System Quality

- System Quality
- Information Quality

Economic Value

- Business Impact
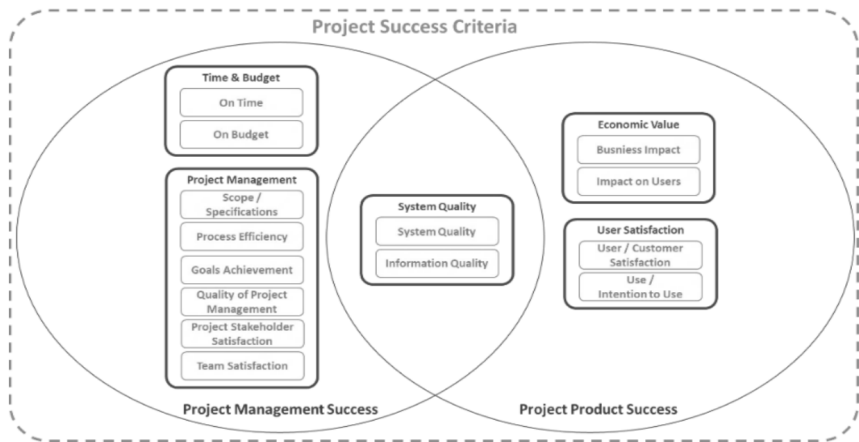- Impact on Users

How to define project success?

Figure: Synthesis of IT project success criteria. [5]

Characteristics of PM in IT

Project Management in IT consists of these unique characteristics [2]:

- rapid changes to the technologies
- changes to the requirements
- large amount of scenarios/use cases that is preventing us from full and ideal test coverage
- possible issues with gathering client's requirement
- interdependent on other projects in the portfolio
- frequent employee changes $\rightarrow$ requires proper constant training

high risk of failure

Characteristics of PM in IT

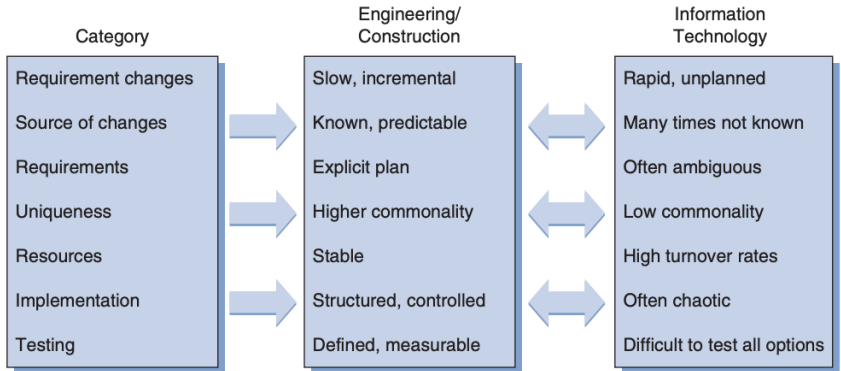| Category	Engineering/Construction	Information Technology
Requirement changes	Slow, incremental	Rapid, unplanned
Source of changes	Known, predictable	Many times not known
Requirements	Explicit plan	Often ambiguous
Uniqueness	Higher commonality	Low commonality
Resources	Stable	High turnover rates
Implementation	Structured, controlled	Often chaotic
Testing	Defined, measurable	Difficult to test all options

Figure: Differences between management of various project types [2]

Information Technology Infrastructure Library

When a project's output is a IT service $\rightarrow$ **ITIL**

- ITIL provides best practices and structured approach for IT services management
- it alligns IT services with the needs of bussiness and value co-creation for customers

Five lifecycle stages according to ITIL:

1. **Service Strategy**
2. **Service Design**
3. **Service Transition**
4. **Service Operation**
5. **Continual Service Improvement**

Information Technology Infrastructure Library

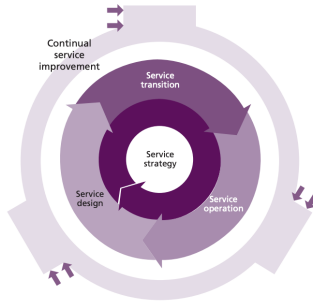Lifecycle stages according to ITIL can be visualized as:

Figure: Five lifecycle stages of ITIL. [7]

Information Technology Infrastructure Library

Service Strategy

It focuses on understanding the needs of the business and defining the strategy for IT services to meet those needs.

Service Design

In this stage, IT services are designed based on the requirements identified in the service strategy.

Service Transition

It involves the planning and management of changes to IT services, ensuring smooth introduction to the operational environment.

Service Operation

This stage is focused on the day-to-day management of IT services, ensuring meeting bussiness requirement.

Continual Service Improvement

It highlights the continuing IT service enhancement based on user feedback and performance information.

IT project types

1. **Software development** → most common one
   - building new interactive web application
   - implementing a new feature to improve customer experience in mobile app
   - developing new centralized system for GPs and pharmacies for online medication prescription
   - developing new all-around software for employees to track all necessary information (attendance, absence, learning, payslips ...)
2. **System integration**
   - third-party payment system (GoPay) integration into my e-shop web application
3. **IT procurement**
   - selecting new Virtual Machine provider (VMware) and deploying new VMs to usage for employees to provide better resources
4. **IT infrastructure**
   - migration of data from old legacy banking platform to newly developed one

Bibliography I

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[2] Jeffrey L. Brewer and Kevin C. Dittman. *Methods of IT Project Management*. 3rd ed. Purdue University Press, 2017.

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[5] Carmen Iriarte and Sussy Bayona. "IT projects success factors: a literature review". In: *International Journal of Information Systems and Project Management* 8.2 (2020), pp. 49–78.

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[9] Tom Seymour and Sara Hussei. "The History Of Project Management". In: *International Journal of Management & Information Systems* 18.4 (2014), pp. 233–240.

Thank You for Your Attention!