

Unit 1: Introduction to Software Engineering Project Management

1. Describe a number of large projects and the reasons for failure.

Projects, the catalysts of innovation and change, are the lifeblood of organisations. They are rising across industries, propelled by competitive, regulatory, environmental, and social dynamics. In developed nations, projects contribute to a staggering 30% of economic activity, underscoring their pivotal role (Wu & Misra, 2023).

As Kissflow (2020) points out, a project's success is not solely determined by meeting its requirements within the budget and time. Project managers and stakeholders hold the key to labelling a project as a success or a failure. This underscores your crucial involvement and responsibility, giving you the power to shape the project's outcome. In some cases, financial forecasts or return on investment (ROI) targets can also influence the project's outcome.

Common causes for project failure



(Kissflow, 2020)

According to Callear (N.D.), project failures are not just occasional mishaps but frequent and expensive occurrences. They often display symptoms such as schedule delays, quality issues, and budget exceeding. However, identifying the actual causes of failure can be complicated, involving many contributing factors. It requires peeling back the onion layers and critically analysing what led to the failure.

For example, according to Callear (N.D.) report, below are some of the large projects and the reasons for failure according to Callear (N.D.) report:

- Lack of organisation and planning can lead to project failures. Proper organisation is essential for adequate progress, and excessive or inappropriate controls can cause inefficiencies. The FBI Virtual case file is an example.
- Leadership and governance failures can lead to losing control over a project. Effective leadership and governance processes are crucial for project success. Example: US Census Bureau Field Data Collection Automation project.
- Complexity analysis is crucial to avoid underestimating projects. Failure to understand a project's full complexity before confirming schedule and budget commitments can lead to unrealistic expectations and project failures. The Denver baggage system is a prime example of this.
- Quality failures can cause serious issues when corners are cut or insufficient testing is completed—for instance, Her Majesty's Revenue and Customs UK.
- Projects involve risk because they involve creating the future. Failure to anticipate risks can lead to severe difficulties, even derailing the project or the organisation. An example is Fox-Meyer Drug.
- Expertise is crucial for project success. Lack of skills and knowledge can lead to lower quality and productivity and increase the risk of errors. The Vasa is an example.
- People do projects for people. Communication failures and lack of teamwork can cause a project to fail. Qantas Jetsmart is an example of this.

2. Explain the relationship between Project Management, TOGAF and the SDLC.

APM (2023) defines **project management** as applying processes, skills, knowledge, and experience to achieve project objectives within agreed parameters. It aims to deliver final results within a specific budget and timeline. A project professional requires technical and people management skills and sound business awareness.

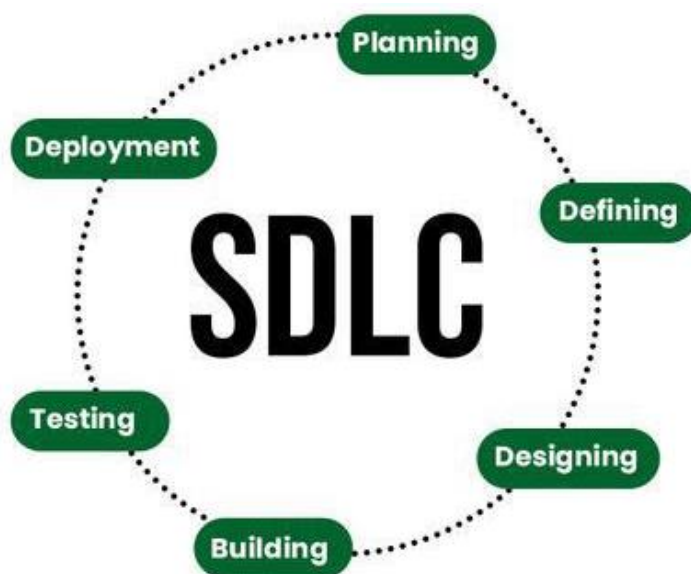
Furthermore, project management is used when an organisation wants to deliver a solution within an agreed budget and timeframe. It requires a temporary team of people to focus on specific project objectives. Effective teamwork is central to successful projects. Work management depends on scale, complexity, and objectives, expressed in outputs, outcomes, benefits, or strategic goals.

Hence, project management is initiating, planning, and controlling tasks required to deliver an end product that produces something new or altered, tangible or intangible, within a finite period. It is likely to be complex regarding the work or groups involved. Project management is necessary for projects that require managing change and risks. Effective project management has several benefits, such as ensuring the best use of resources and satisfying the project's stakeholders.

The Open Group Architecture Framework (TOGAF) is a universal framework developed by The Open Group Architecture Forum that provides best practices for Enterprise Architecture. The TOGAF Standard is accompanied by the TOGAF Series Guides and TOGAF Library, which provide detailed guidance, templates, patterns, and reference materials to help enterprises create new architectures more efficiently. The Fundamental Content and Series Guides provide core concepts and practices for

architects to deliver efficient Enterprise Architecture that supports their organisation (The Open Group, N.D.).

The systems development life cycle (SDLC) is a structured process for software development. Its goal is to deliver high-quality software that meets the user's requirements. The SDLC consists of a precise plan that describes how to develop, maintain, replace, and enhance specific software and specifies the tasks a software engineer or developer will perform at various stages (Gupta, 2020).



(Gupta, 2020).

Gillis (2019) highlights that SDLC methodologies have been developed to guide the processes involved in software development. The most common models include the Waterfall model, RAD, JAD, and Agile software development. SDLC comprises multiple steps: analysis, planning and requirements, design, development, testing, deployment, upkeep and maintenance. Other steps may include project initiation, evaluation, and end-of-life. Documentation is crucial in SDLC regardless of the type of model chosen.

PMBOK and TOGAF ADM are indispensable frameworks in their respective domains. They offer expert guidance and well-structured approaches for professionals seeking

project success and effective enterprise architecture management. To achieve the ultimate goal of driving growth and innovation, it's imperative to master the fundamental differences between these two frameworks and select the one that perfectly aligns with your organisation's needs. By leveraging the strengths of both PMBOK and TOGAF ADM, organisations can implement a comprehensive approach that ensures project success while maintaining alignment with enterprise architecture (Visual Paradigm, 2023).

The three essential domains of Project Management, TOGAF, and the SDLC are closely interrelated and play a vital role in ensuring the success of any project (Dey, 2017). By integrating architecture practices guided by TOGAF and software development processes guided by the SDLC, effective project management can be achieved, leading to desired project outcomes. In other words, properly implementing these three domains can help organisations achieve their project goals seamlessly and efficiently.

3. Describe the differences between the development of the Software Engineering and Project Management disciplines.

Software engineering is the process of developing computer applications using engineering principles and best practices. Its main goal is to improve efficiency, quality, and testing while solving real-world problems (Yasar, 2023).

Software engineers develop various systems using programming languages, platforms, and architectures. They also test, improve, and maintain software made by others. They design and maintain software systems, evaluate and test new programs, and optimise them for speed and scalability. They write and test code, consult with

clients, engineers, security specialists, and other stakeholders, and present new features to stakeholders and internal customers (Coursera, 2022).

Project management involves using established principles, procedures, and policies to guide a project from start to finish. The process starts with a project charter and a detailed plan that outlines the goals, objectives, resource requirements, stakeholders, and potential challenges. Project managers oversee people from different company parts to work together to deliver a successful project (Pratt, N.D.).

Moreover, Pratt (N.D.) points out that project management can be divided into five processes or phases: initiating, planning, executing, monitoring and controlling, and closing. Project management professionals must manage various areas in their roles and responsibilities. These areas usually include integration, scope, time, cost, quality, procurement, human resources, communications, risk, and stakeholders.

As (Jellyfish, N.D.) highlights, Software Engineering and Project Management are essential for delivering successful software projects. While Software Engineering emphasises technical expertise, software design, and coding, Project Management ensures project success, stakeholder satisfaction, and effective resource management. Therefore, it is imperative to integrate both these disciplines to guarantee a successful outcome of any software project.

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