SEN319 Software Project Management (Fall 2023)

Project Management Basics

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Agenda

- Introduction
- PMI and PMBOK
- Project, Program, Portfolio
- Phases and Deliverables
- Project Stakeholders
- Main Project Roles
- Project Management Office (PMO)
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- Challenges of Projects
- PM Knowledge Areas & Performance Domains
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- Projects Success and Failure Factors
- Unique Features of IT Projects
- Skills of a Project Manager
- Top 10 IT Skills for 2022

Introduction

- **Project management is a distinct profession**

- **Degree programs**
- **Certifications**
- **Excellent career opportunities**

The Oldest Profession

A Physician, a Civil Engineer and a Computer Scientist were arguing about what was the oldest profession in the world.

The **Physician** remarked,

"Well, in the Bible, it says that God created Eve from a rib taken out of Adam. This clearly requires surgery, and so I can rightly claim that mine is the oldest profession in the world."

The **Civil Engineer** interrupted, and said,

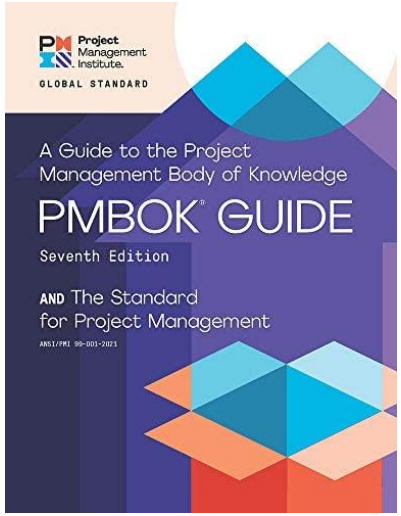
"But even earlier in the Book of Genesis, it states that God created the order of the heavens and the earth from out of the chaos. This was the first and certainly the most spectacular application of civil engineering. Therefore, fair doctor, you are wrong; mine is the oldest profession in the world. "

The **Computer Scientist** leaned back in the chair, smiled and then said confidently,

"Ah, but what do you think created the chaos?"

PMI and PMBOK

- **An international professional society for project managers founded in 1969.**
- **The world's leading project management organization with over 600,000 Global Members and over 300 Local Chapters Internationally.**



- **The Project Management Body of Knowledge (PMBOK) is a framework of standards, conventions, processes, best practices, terminologies, and guidelines that are accepted as project management industry standards.**
- **7th edition published in 2021.**

What is a Project?

- «an individual or collaborative enterprise that is carefully planned and designed to achieve a particular aim.»

The definition that we adopt:

- «a temporary endeavor undertaken to create a unique product, service or result.»

Project Management Institute.

Examples of Projects

- **Building a new house**

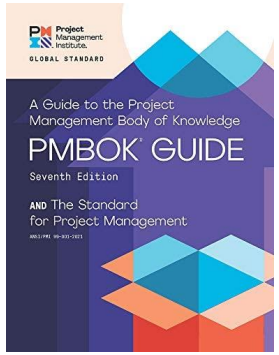
- **Developing a new software application**

- **Performing an assessment of current manufacturing processes**

- **Creating a new radio commercial**

Project Management (PM)

- **"The application of knowledge, skills, tools, and techniques to project activities to meet project requirements." (PMBOK)**

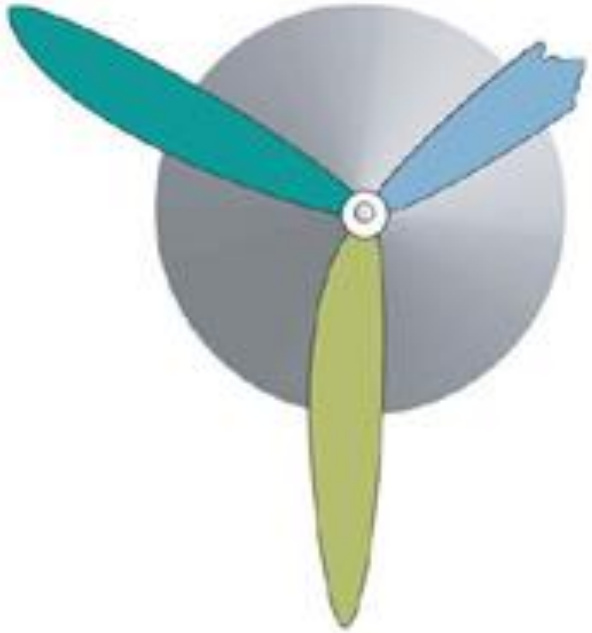


  - Estimating resources and times
  - Preparing a business case to justify the investment
  - Leading and motivating the project delivery team
  - Developing and implementing a management plan for the project
  - Managing the risks, issues, and changes on the project
  - Monitoring progress against plan
  - Closing the project in a controlled fashion when appropriate

Project Management (PM)

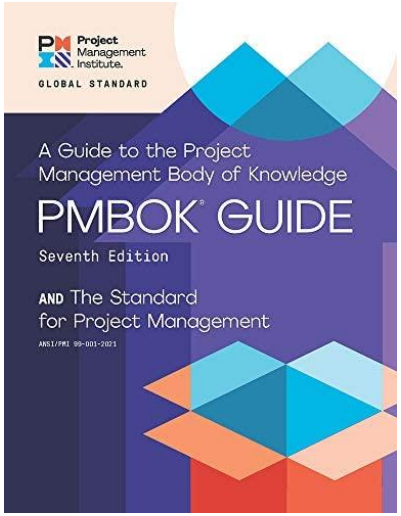
Three Components of Project Management

Three components that propel PM



All blades must be complete

What is a Program?



- **"a group of related projects, subsidiary programs, and program activities managed in a coordinated manner to obtain benefits and control not available from managing them individually."**

Examples of common programs in the IT field:

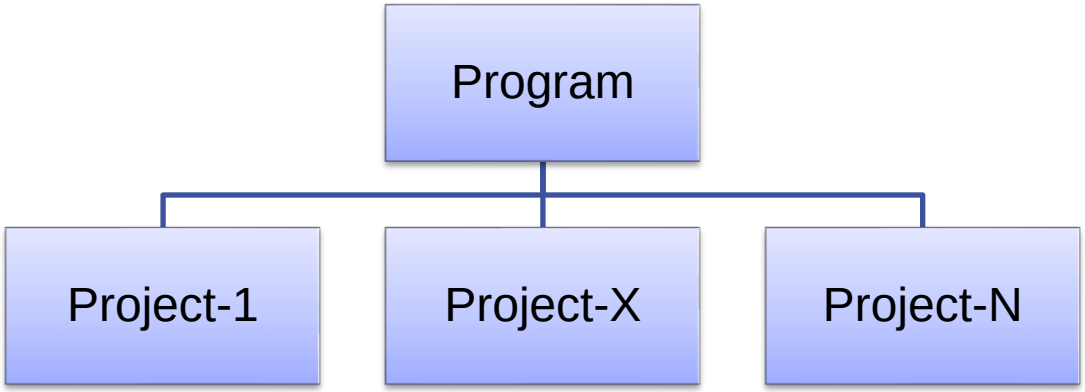
- Infrastructure

- Application Development

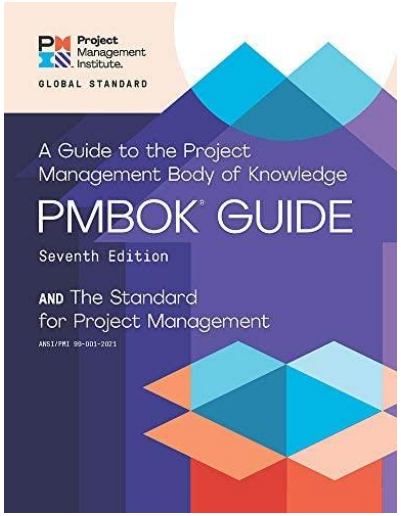
- User Support

Program Management

- There must be added value in managing projects together as a program
- A project may or may not be part of a program, but a program will always have projects
- Focuses on the project interdependencies and helps to determine the optimal approach for managing them



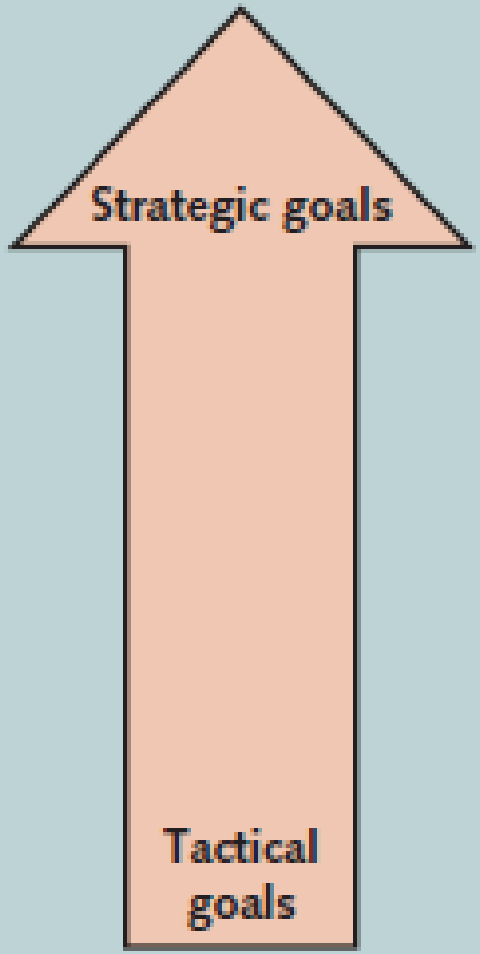
What is a Portfolio?



- **"Projects, programs, subsidiary portfolios, and operations managed as a group to achieve strategic objectives." (PMBOK)**

- **Aim of Portfolios: To contribute to the entire enterprise's success.**
- **Programs and projects in a portfolio are NOT necessarily directly related.**
- **Portfolio managers should have strong financial and analytical skills and understand how projects and programs can contribute to meeting strategic goals.**

Project Management vs Portfolio Management



Project portfolio management

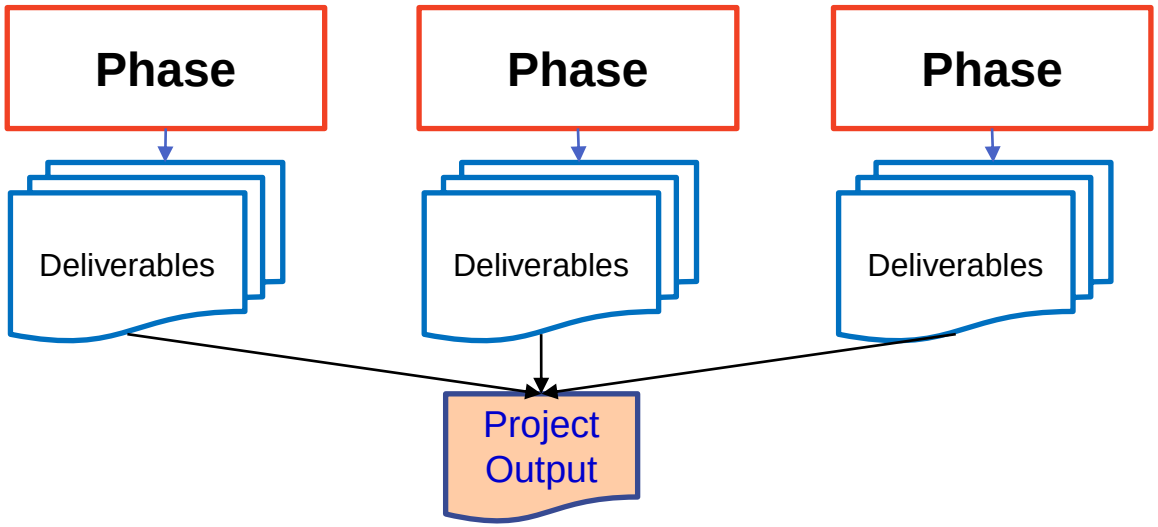
- Are we working on the right projects?
- Are we investing in the right areas?
- Do we have the right resources to be competitive?

Project management

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

Phases and Deliverables

- **A phase is a collection of logically related project activities that culminates in the completion of one or more deliverables.**
  - **The number of the phases depends on the industry type and size and the complexity of the project**
- **A deliverable is any unique and verifiable product, service or result.**
  - **May be tangible or intangible**
  - **Must be accepted by the customer or sponsor for the phase**



Project Stakeholders

- **Individuals, group, or organization that may affect, be affected, or perceive to be affected by the project.**
- **Key Stakeholders**
  - **Project Manager - manages the project**
  - **Customer - uses the project deliverable**
  - **Project team - the collection of individuals completing the project work**
  - **Project Sponsor – Provides resources and support**
  - **Functional Manager - Departmental Manager, i.e Manager of Engineering, Vice President of Marketing, Director of IT. Generally, controls resources.**

Main Project Roles

Project Manager

- Empowered to lead the project
- Authorized to make decisions
- Responsible for the success or failure of the project

Project Coordinator

- Weaker than the project manager
- May be authorized to make decisions

Project Expeditor

- Weakest role of the PM world
- Very limited decision ability

Project Management Office (PMO)

- **Organizational structure that standardizes the processes and facilitates sharing of resources, methodologies, tools, and techniques.**
- **Types:**
  - **Supportive: Supports the project manager, such as providing templates, training, or lessons learned form other projects.**
  - **Controlling: Determines the framework or methodology and use of specific forms.**
  - **Directive: Controls the project. PM will be assigned and report to the PMO.**

Importance of PM

- Provides understanding objectives and project deliverables.
- Satisfies the needs of project stakeholders.
- Increases the likelihood of achieving the desired result.
- Enables effective use of resources.
- Enables strategic alignment.
- Ensures focus and direction.
- Ensures proper planning.

Importance of PM

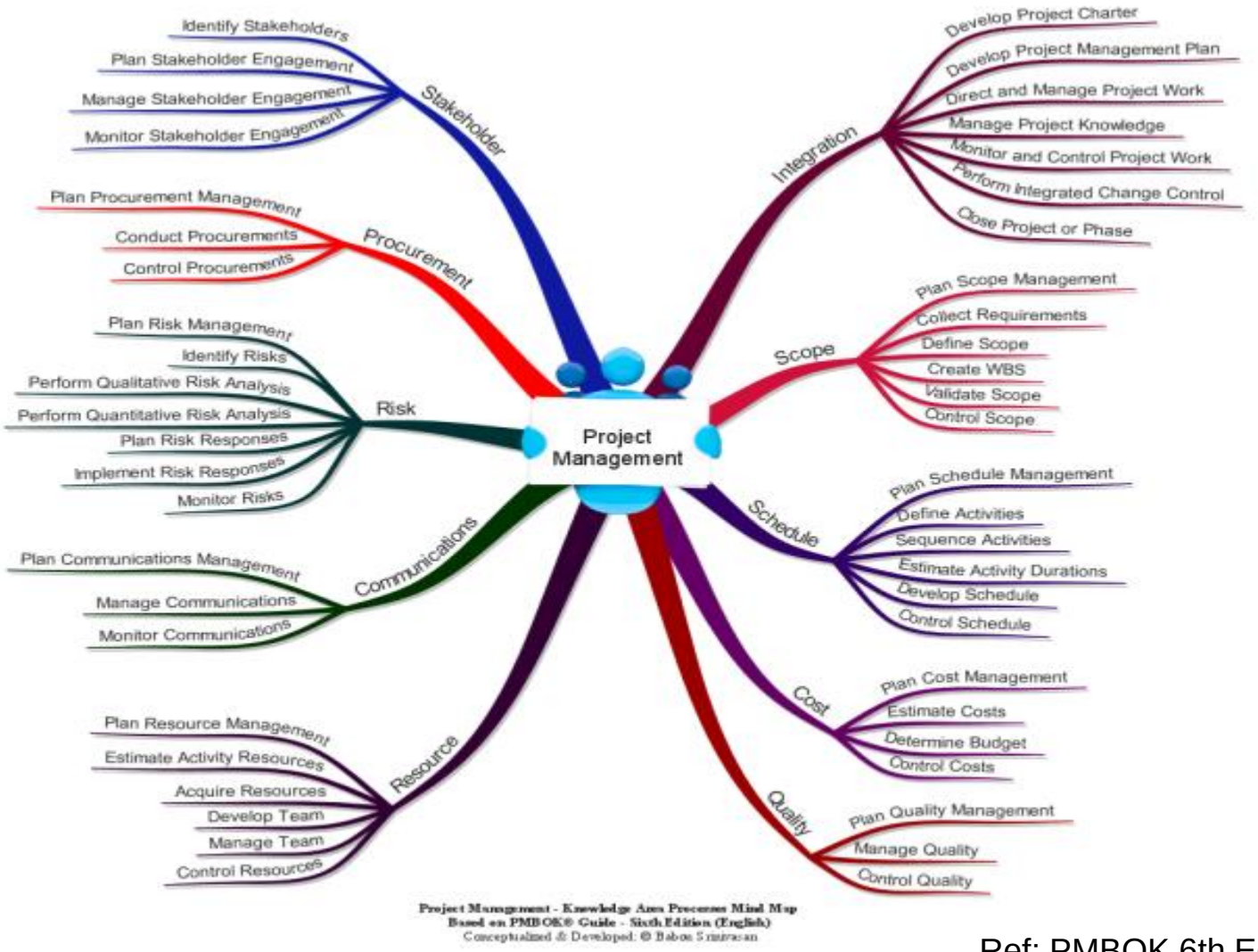
The following statistics demonstrate the significance of PM, especially for projects involving information technology (IT):

- **Over half of the projects fail! Only 2.5% of corporations consistently meet their targets for scope, time, and cost goals for all types of projects (Source: PWC).**
- **Worldwide IT spending was $3.5 trillion in 2017, a 2.4 percent increase from 2016 spending.**
- **By 2027, employers will need 87.7 million individuals working in project management–oriented roles (10 million gap).**
- **The unemployment rate for IT professionals is generally half the rate of the overall labor market in the United States. The rate to be only 2%, and PM is one of the 10 hottest tech skills.**
- **Organizations waste $97 million for every $1 billion spent on projects.**

Challenges of Projects

- Uncharted territory
- Multiple expectations
- Communication obstacles
- Balancing the competing demands
- Cutting edge
- Organizational impacts
- Collaboration
- Estimating the work

PM Knowledge Areas



Ref: PMBOK 6th Ed.

Advantages of Using Project Management Techniques

- 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

Project Attributes

- A project has a unique purpose.
- A project is temporary.
- A project drives change and enables value creation.
- A project is developed using progressive elaboration.
- A project requires resources, often from various areas.
- A project should have a primary customer or sponsor.
- A project involves uncertainty.

Project Constraints

Main Constraints:

- Scope
- Time (schedule)
- Cost

Additional Constraints:

- Quality
- Resources
- Risk

Common Criteria for Project Success

- **The project met scope, time, and cost goals.**

- **The project satisfied the customer:** ***Many organizations implement a customer satisfaction rating system to measure project success instead of tracking only scope, time, and cost performance.***

- **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.**

Factors that Affect the Project Success

#	Factor of Success	Points
1	Executive sponsorship	15
2	Emotional maturity	15
3	User involvement	15
4	Optimization	15
5	Skilled resources	10
6	Agile process	7
7	Modest execution	6
8	Project management expertise	5
9	Clear business objectives	4

Ref: The Standish Group, "CHAOS Manifesto 2015"

US Gov. Report

1. Adequate funding
2. Staff expertise
3. Engagement from all stakeholders

Significant Best Practices for Factors of Success

- Use an integrated toolbox.

- Grow project leaders.

- Develop a streamlined project delivery process

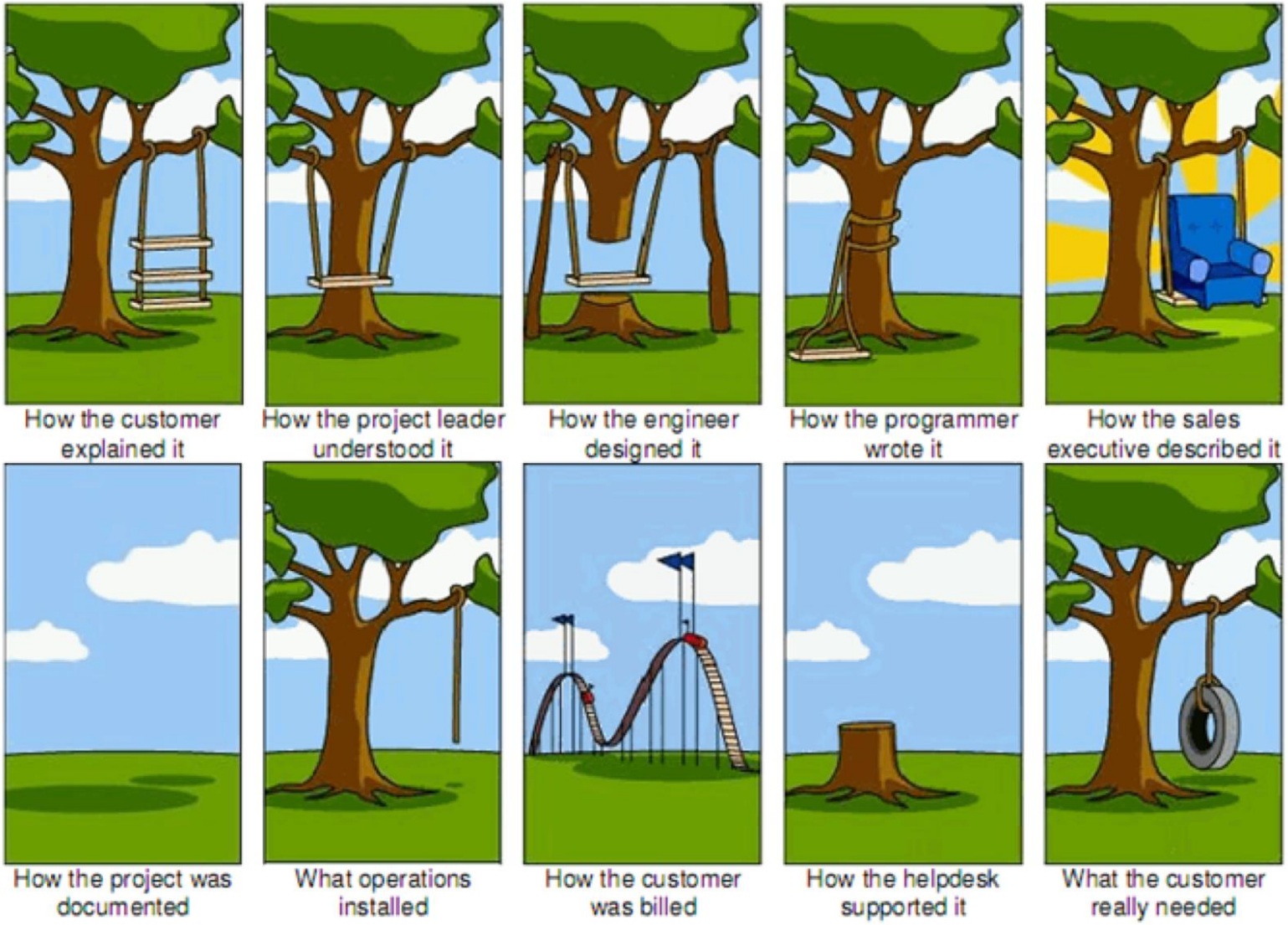
- Measure project health using metrics.

Project Failure Statistics

- **Only 19% of organizations deliver successful projects, at least most of the time.**
- **Only 30% of organizations deliver on time.**
- **Only 36% deliver projects on budget.**
- **Only 44% deliver projects that meet original goal and business intent**
- **Only 46% of projects delivered receive stakeholder satisfaction.**

Ref: KPMG, AIPM, and IPMA global survey 2019

Project Failure



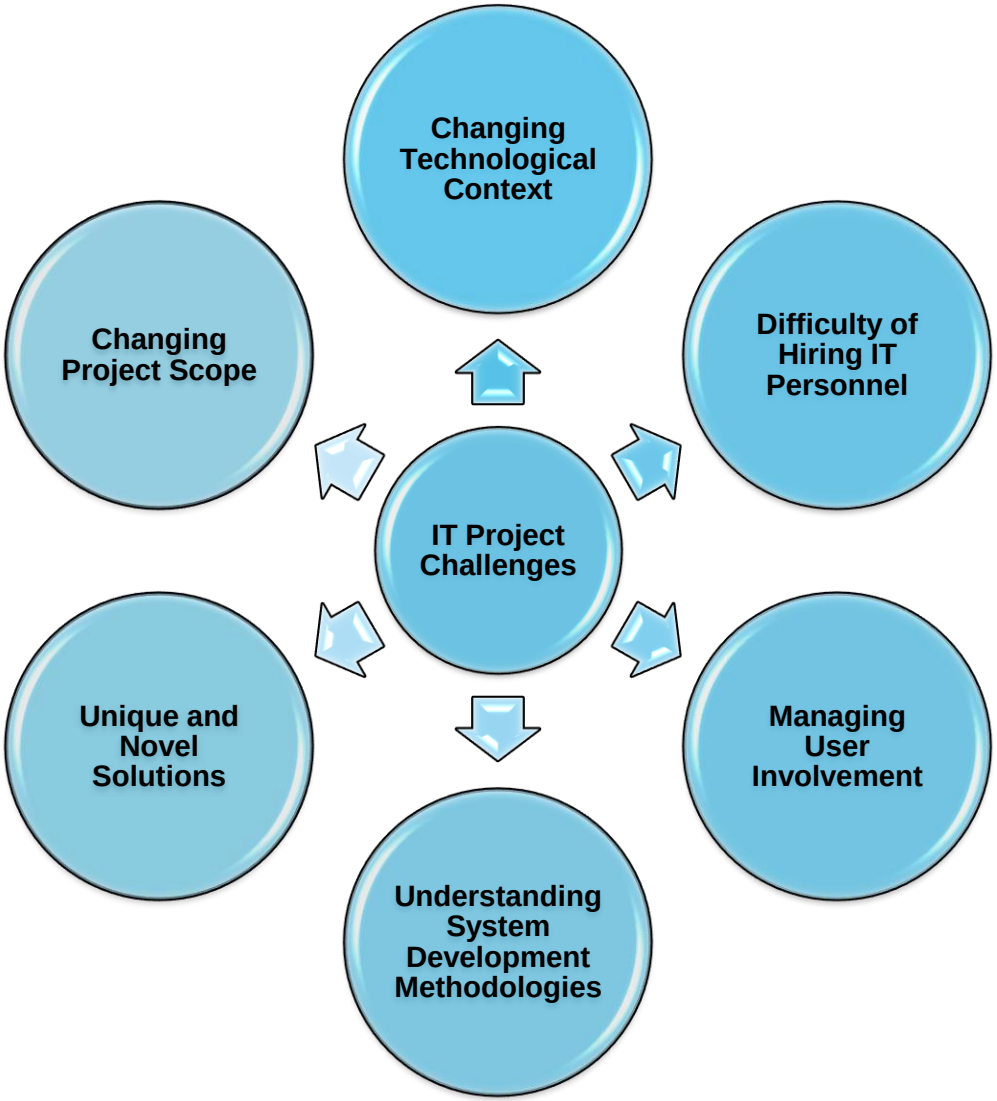
Common Reasons of IT Project Failure

- Incomplete requirements
- Lack of user involvement
- Lack of resources
- Unrealistic expectations
- Lack of management support
- Cost-cutting approaches
- Lack of proper planning
- Selection of technologies
- Failure to manage scope creep
- Overly-optimistic project schedule
- Overstaffing of projects
- Poor communication
- Data migration by unskilled resources
- Little testing or skipping the testing phase

Examples of IT Projects

- Hospital patient information system.
- Smartphone application to sell goods online.
- Driverless car.
- Technology infrastructure to provide wireless Internet access across the university campus.
- Customer relationship management application.
- A system to allow viewers to vote for contestants and provide other feedback on programs via social media sites.
- Banking system.
- Monitoring system for pollutants in air and water.
- Information system to support a jet aircraft.

Unique Features of IT Projects



Unique Features of IT Projects

Changing Technological Context

Emerging Technologies

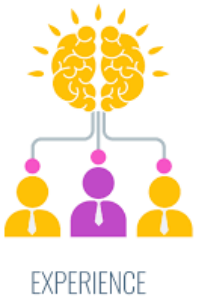
- Artificial Intelligence (AI)
- 5G
- Internet of Things (IoT)
- Serverless Computing
- Biometrics
- Augmented Reality/Virtual Reality
- Blockchain
- Robotics
- Natural Language Processing (NLP)
- Quantum Computing

Ref: TechRepublic

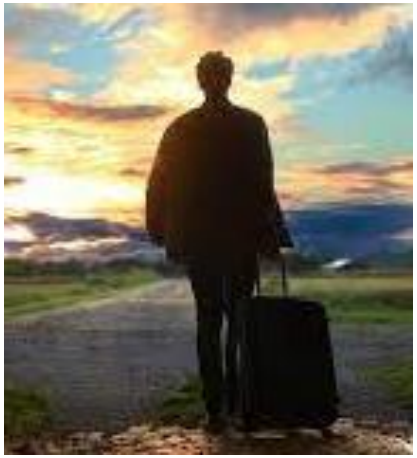
Unique Features of IT Projects

Difficulty of Hiring IT Personnel

- **Difficult to find and recruit experienced people.**



- **There is turnover as valued employees seek new opportunities.**



Unique Features of IT Projects

Managing User Involvement

- An information system is likely to be used by people with very different levels of technical proficiency.
- Many different types of users need to be involved in the development process to ensure system success.
- Systems designers must ensure that the system's end users are involved throughout the project -not only during planning but also during both implementation and maintenance.

Case Study: Qantas Airways

Unique Features of IT Projects

Understanding System Development Methodologies

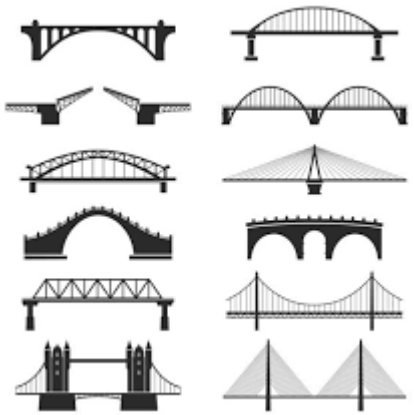
- A PM methodology establishes clear guidelines and methods to ensure that projects are being conducted in a consistent manner.
- Commonly used methodologies include:
  - PRINCE2 (PRojects IN Controlled Environments)
  - Waterfall
  - Agile
- Understanding how these methodologies relate to the standard project management techniques is a unique aspect of managing IS-related development efforts.

Unique Features of IT Projects

Unique and Novel Solutions

- **Attempted solutions may have never been tried before.**

House



Bridge

VS

Information System

Unique Features of IT Projects

Changing Project Scope

- **Scope: Planned definition and size of a project.**
- **Likely to change in many projects; but commonplace in IT projects.**
- **The end product has never been developed before.**
- **Users may naively believe that software projects are easily modified even after they have begun.**

Skills of a Project Manager

Leadership

Strategic Thinking
Communication
Motivation
Positivity
Creativity
Productivity
Trustworthiness
Honesty

Strategic and Business Management Skills

- Finance and accounting
- Purchasing
- Marketing
- Contracts
- Laws and regulations
- Manufacturing
- Logistics and supply chain
- Operational planning
- Organizational structure and behavior
- Health and safety practices
- Information technology

Technical Project Management Skills

- Processes
- Tools
- Techniques

Top 10 Information Technologies in 2022

- Cybersecurity
- Artificial Intelligence (AI)
- Software Development
- Cloud Computing
- Data Management
- Quantum Computing
- Augmented Reality (AR) and Virtual Reality (VR)
- Autonomic Systems
- Blockchain
- Internet of Things

Thank you…

Hasan ÇİFCİ