



PMBOK 7th Edition

“Over the years, business has changed considerably, but projects remain critical drivers of business success.”

Sep 2021

www.stepwiseengineering.com

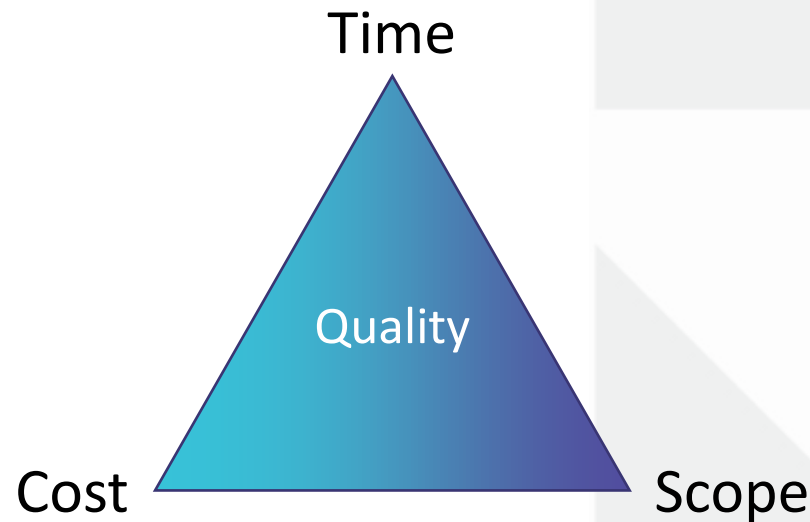
Project Management

A Project is a temporary endeavor undertaken to create a unique result.



From the beginning and throughout the project, 3 constraints need to be balanced to achieve the desired goals.

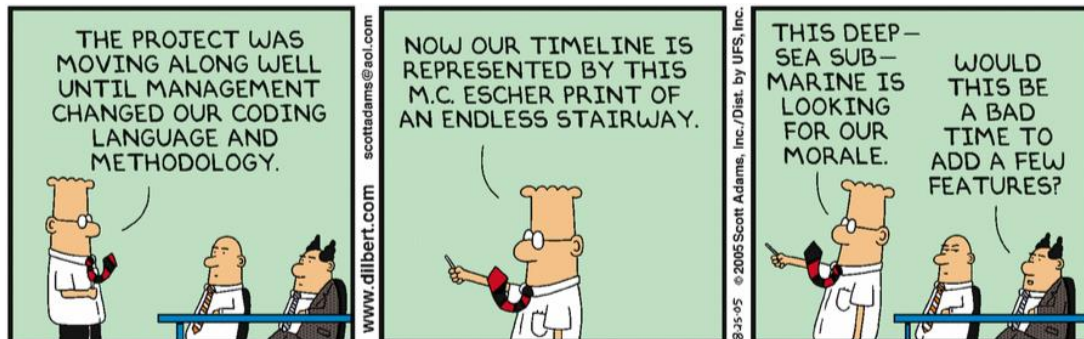
The **Triple Constrain** or **Iron Triangle**, was presented by Atkinson in 1999 and is still widely studied.



Why do Projects Fail?

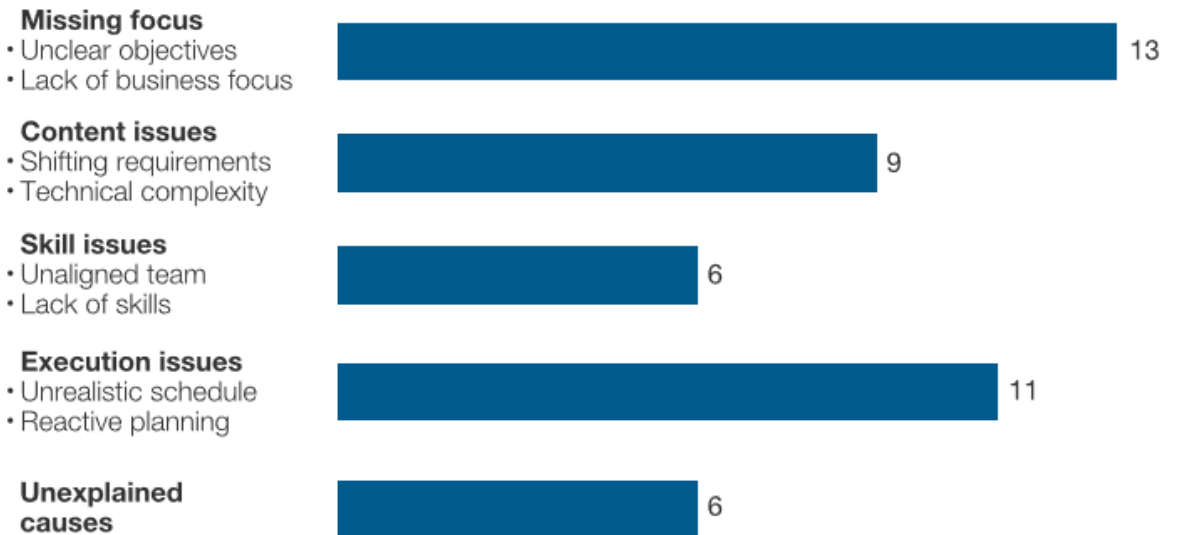
Projects running **late**, **over budget** and not meeting the desired **performance** unfortunately are not uncommon.

If the typical reasons beyond failure are understood, then the Project Team would know what mistakes to avoid.



IT executives identify 4 groups of issues that cause most project failures.

Rough distribution by cause of the 45% of IT projects that experience cost overruns (for those with budgets >\$15 million in 2010 dollars), %



IT projects with budgets >\$15 million

Cost overrun, 45% Schedule overrun, 7% Benefits shortfall, -56%

Source: McKinsey-Oxford study on reference-class forecasting for IT projects

<https://celedonpartners.com/blog/projects-gone-wild-why-do-projects-fail-managing-change/>

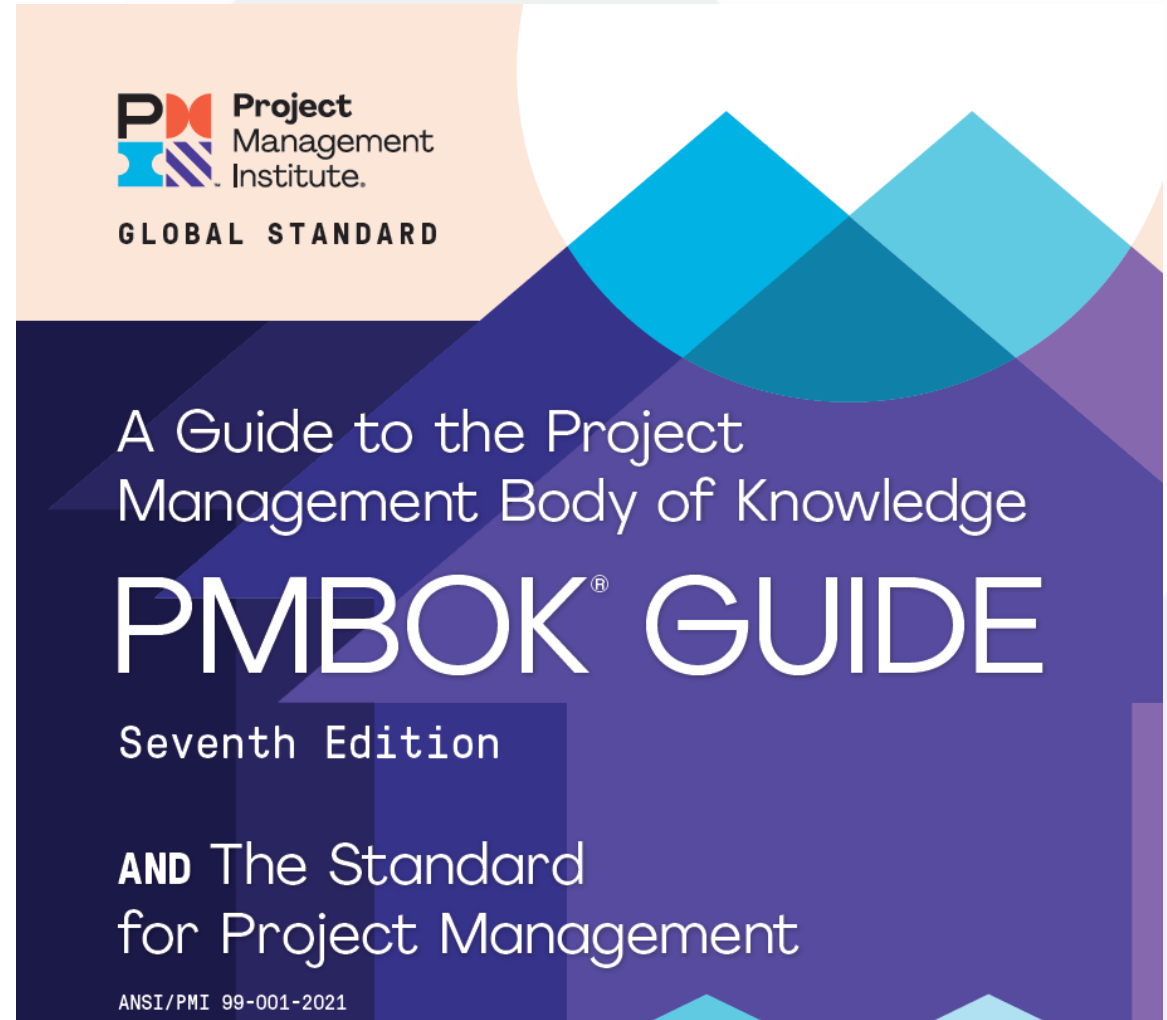
«Over the past few years, emerging technology, new approaches and rapid market changes have changed the world of work, driving the Project Management to evolve. A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Seventh Edition has been updated to meet these challenges, better align to how people work today and help you be more proactive, innovative and nimble.

This edition of the PMBOK® Guide:

- Reflects the **full range of development approaches** (predictive, traditional, adaptive, agile, hybrid, etc.)
- Provides an entire section devoted to **tailoring the development approach and processes**
- Expands the list of tools and techniques in a new section, “Models, Methods, and Artifacts”
- Focuses on **project outcomes** in addition to deliverables»

(<https://www.pmi.org/>)

PMBOK 7th Edition



PMBOK 7th Edition Guide and Standard

What is new?

Past Editions:

Focused on **Processes** to:

- Document
- Measure performance
- Improvements to maximize efficiency and minimize threats

Prescriptive by nature

Highlights **deliverables**


REVOLUTION

7th Edition:

Focused on **Principles**

- Objectives of Project Management
- Core functions
- Broad parameters options

Adaptative

Highlights **outcomes**

Processes from past PMBOK editions **remain relevant** when applicable

A System for Value Delivery

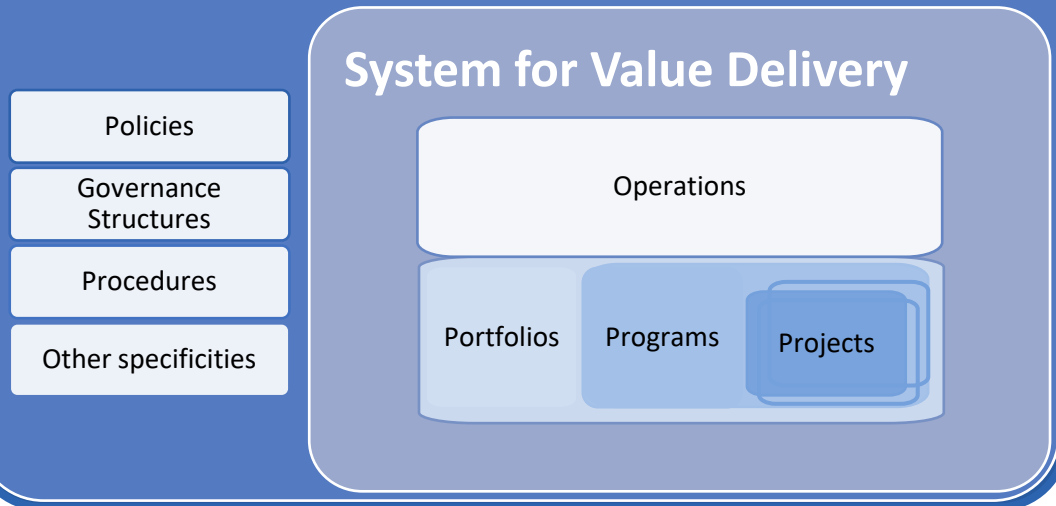
Projects' Context:

Organizations create value for stakeholders. Projects are one of the components of the system value delivery.

External Environment

Organization

Internal Environment



Examples of ways the project produces value:

1. Creating a new product, service, or result;
2. Creating positive social or environmental contributions;
3. Improving efficiency, productivity, effectiveness, or responsiveness;
4. Enabling the changes needed to facilitate organizational transition
5. Sustaining benefits enabled by previous programs, projects, or business operations.

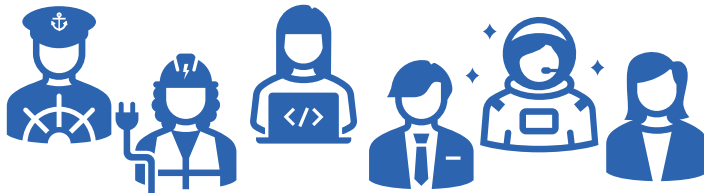


The Project Team

Project Teams are Adjusted to the Project Needs:

- Size and roles of team members
- Coordination type
- Industry specific
- Organization context


People drive project delivery.




Examples of Functions Associated with Project Teams:


- Provide Oversight and Coordination
- Present Objectives and Feedback
- Facilitate and Support
- Perform Work and Contribute Insights
- Apply Expertise
- Provide Business Direction and Insights
- Provide Resources and Direction
- Maintain Governance

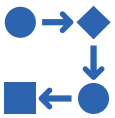
Principles of Project Management

 **Stewardship:** Be diligent, respectful and caring steward


Team: Create a collaborative team environment 


 **Stakeholders:** Effectively engage with stakeholders


Value: Focus on value 


 **Systems Thinking:** Recognize, evaluate and respond to system interactions


 **Leadership:** Demonstrate leadership behaviors


Tailoring: Tailor based on context 

Quality: Build quality into processes and deliverables 

Complexity: Navigate complexity 

Risk: Optimize risk response 

Adaptability and Resiliency: Embrace adaptability and resiliency 

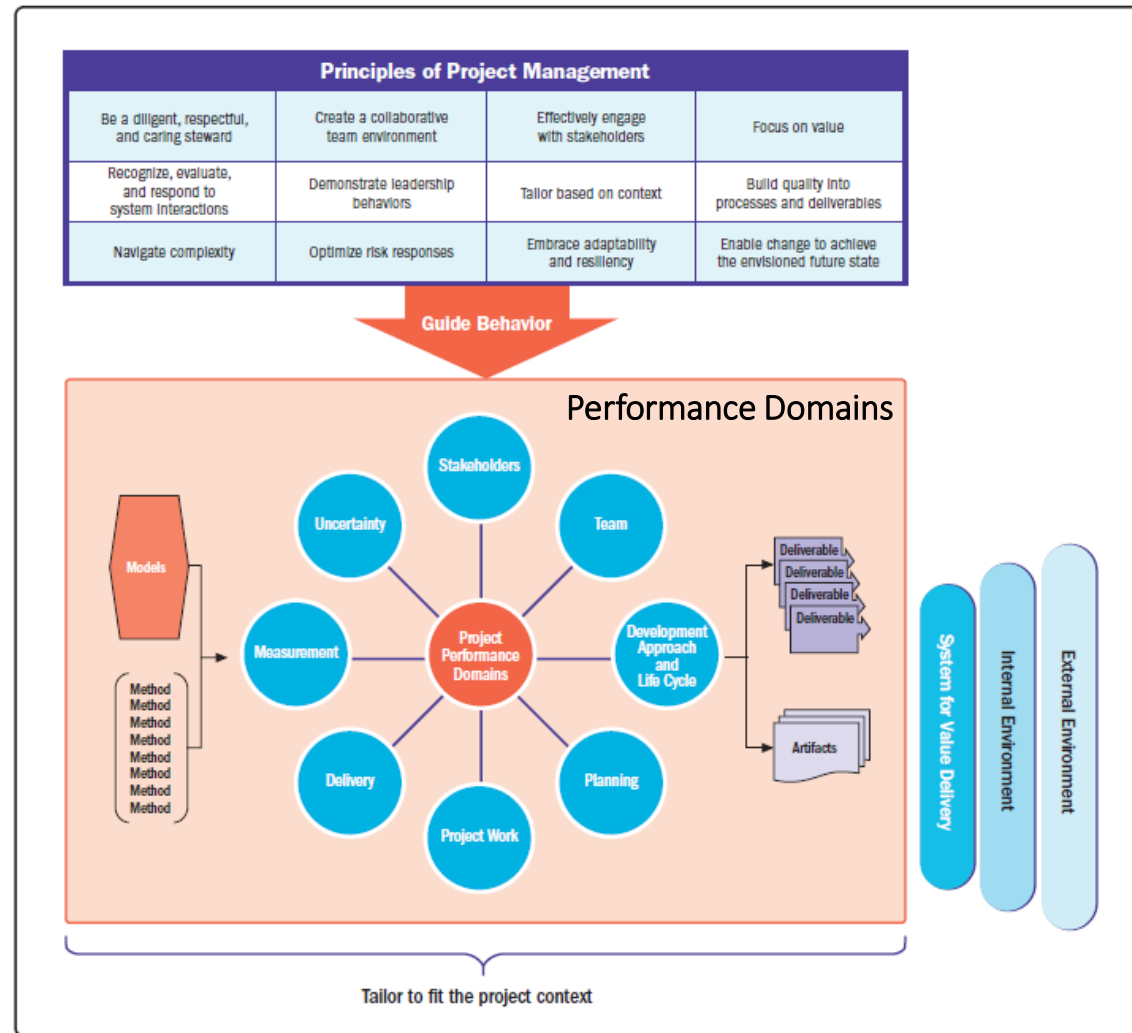
Change: Enable change to achieve the envisioned future state 

PMBOK Standard and PMBOK Guide

PMBOK Standard

PMBOK Guide

Practice Standards, Practice Guides & PMIStandards+ Guides for specific Domain Areas



Principles:

- Guidelines for strategy, decision making, and problem solving
- In alignment and complementary with the *PMI Code of Ethics and Professional Conduct*
- Equally important and not sequential

Performance Domains:

- Interactive, interrelated and interdependent
- Integrated system
- Equally important and not sequential

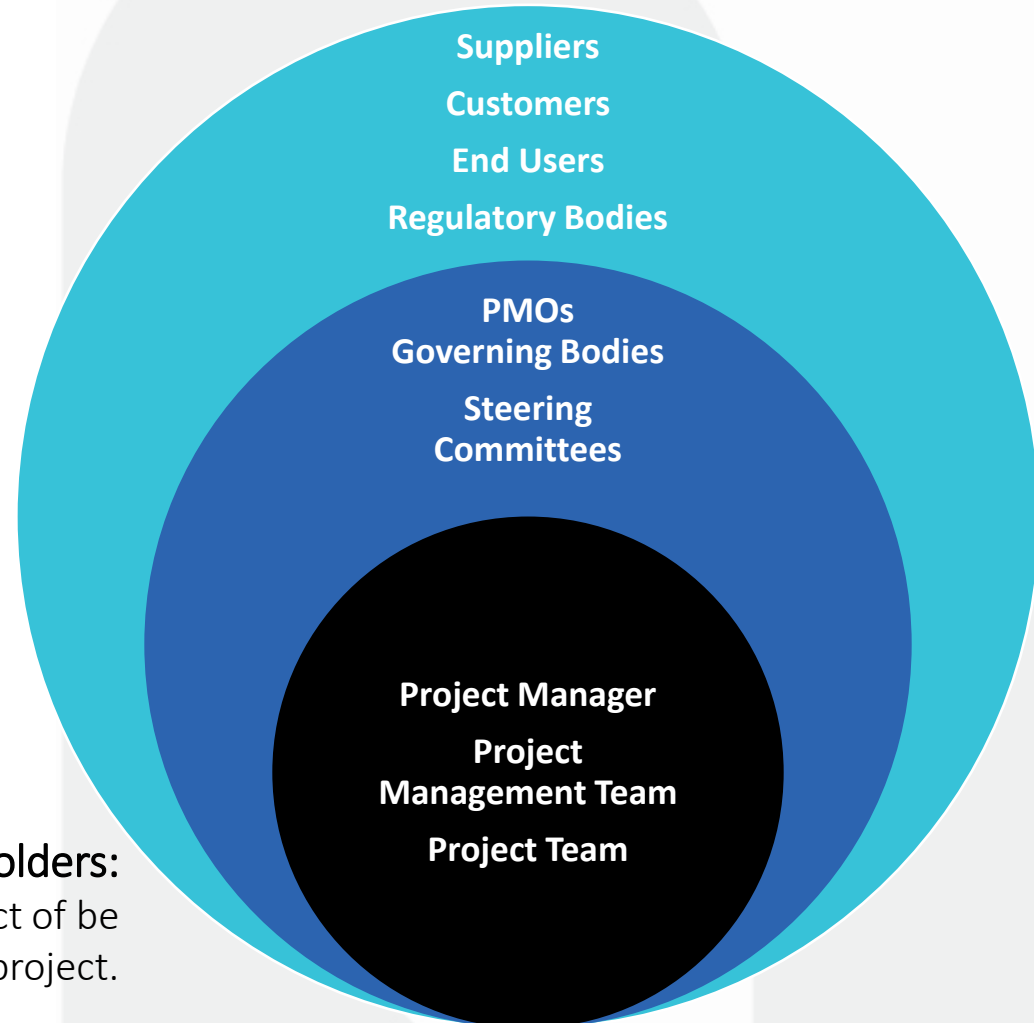
Tailoring to Fit the Project Context and Environment [PMBOK 7th Edition]

Performance Domain: Stakeholders

Desired Outcomes:

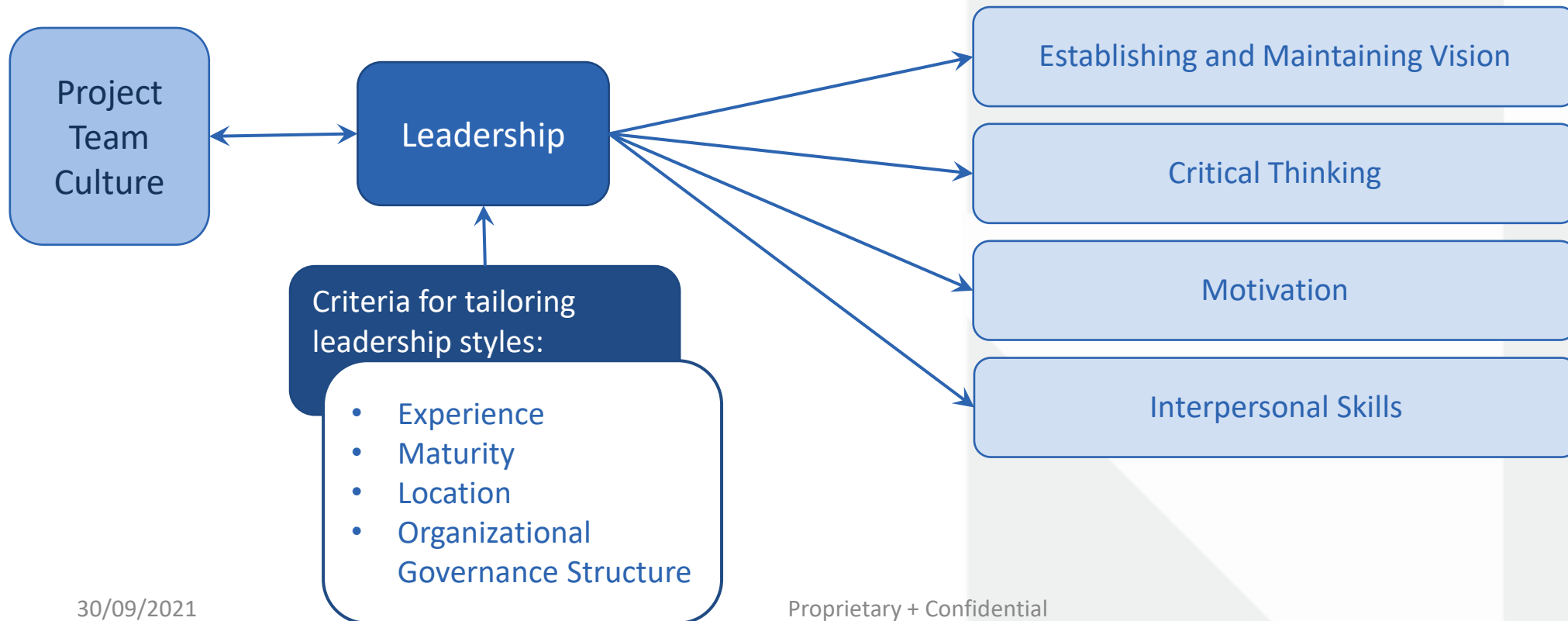
- Maintain, throughout the project, a productive working relationship with the stakeholders
- Stakeholders' agreement and alignment with project objectives
- Beneficiaries are supportive and satisfied
- Opponents to the projects or its deliverables will not negatively impact its outcomes

Examples of **Project Stakeholders**:
Individuals, group, or organization that may affect or be affected by a decision, activity or outcome of a project.



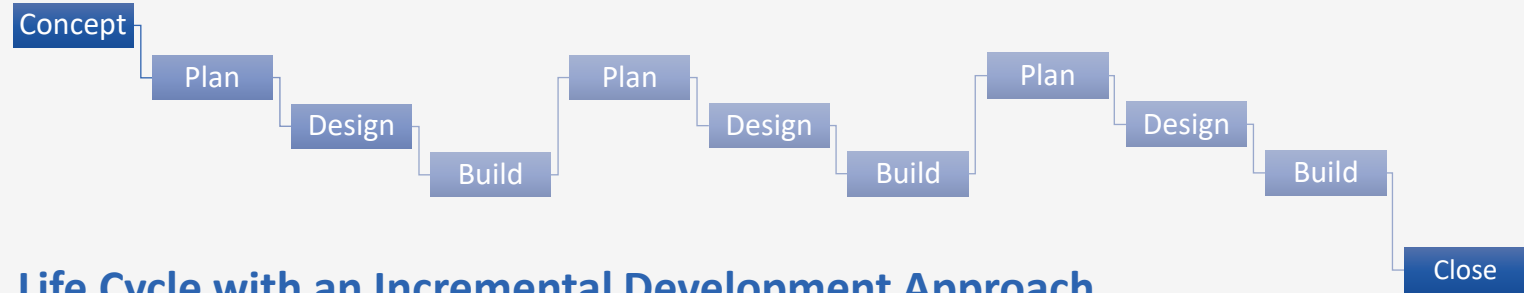
Performance Domain: Team

*“Establishing the culture and environment that enables **a collection** of diverse individuals to evolve into a high-performing **project team**.”*

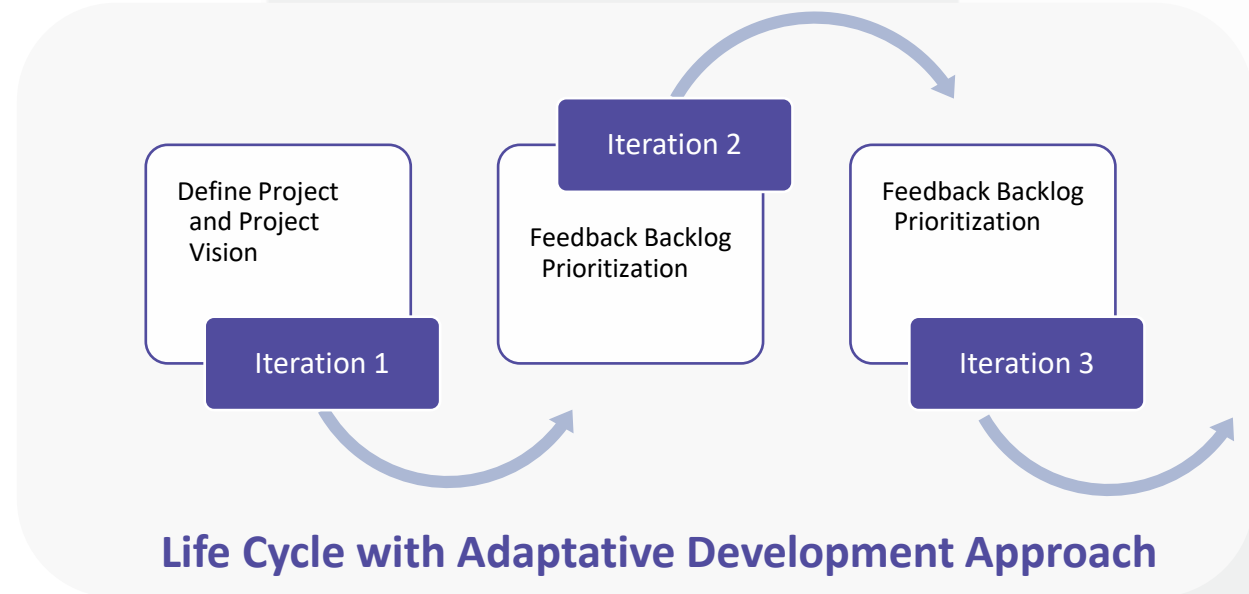
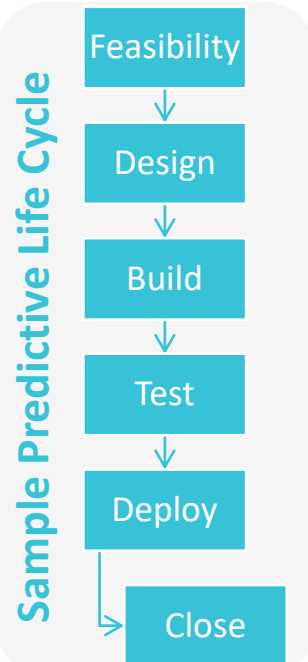


Performance Domain: Development Approach and Life Cycle

Different Examples of Types of Life Cycle



Life Cycle with an Incremental Development Approach



Life Cycle with Adaptive Development Approach

Proprietary + Confidential

The **type of project deliverable** determines how the project will be developed, *i. e.*, the method used to achieve the project goal.

The method used and the number of deliverables determine the **project life cycle** and its phases.

Examples of **factors to consider** when selecting the development approach:

- Degree of innovation
- Scope stability
- Risk
- Regulations
- Schedule constrains
- Project team size and location

Performance Domain: Planning

Planning addresses activities that take place on the **initial phase** of the project, when **choosing** the tools required to define the **coordinated path** to achieve the desired outcomes.

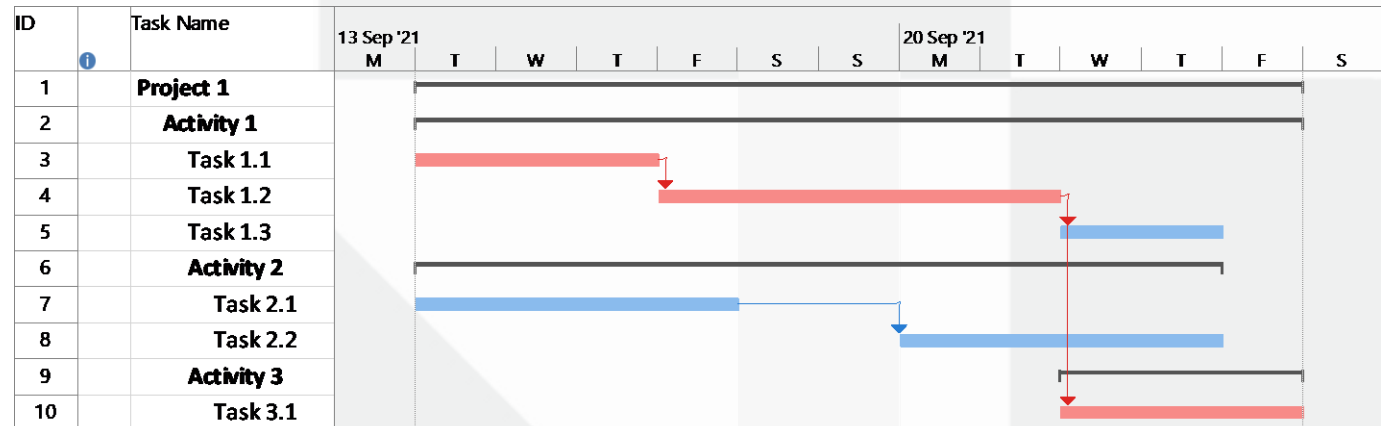
Planning Areas

- Delivery
- Schedule
- Budget
- Project Team composition and structure
- Physical Resources
- Procurement
- Metrics
- Change

Planning Variables

- Development approach
- Project deliverables
- Organization requirements
- Market conditions
- Legal or regulatory restrictions

Project Schedule Example for a Predictive Life-Cycle Approach



Performance Domain: Project Work

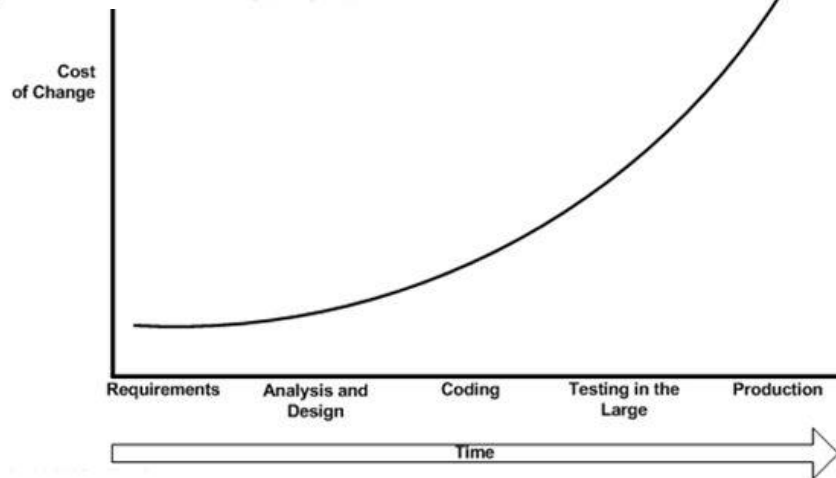
Project Work Activities

- Managing the flow of existing work, new work and changes to work
- Keeping the team focused
- Establishing efficient project systems and processes
- Communicating with stakeholders
- Managing material, equipment, supplies and logistics
- Working with contracting professionals and vendors to plan and manage procurement and contracts
- Monitoring changes that can affect the project
- Enabling projects learning and knowledge transfer





"Is it too late to add four floors?"



Performance Domain: Delivery

Projects delivery focus on:

- **Meeting requirements**
 1. Requirement's elicitation
 2. Evolving and discovering requirements
 3. Managing requirements
- **Define scope**
 1. Scope decomposition
 2. Establish criteria for completion of deliverables
- **Required Quality Levels**
 1. Cost of Quality
 2. Cost of Change

Example of a Project Dashboard with different KPI
(<https://www.clicdata.com/examples/project-management/>)



30/09/2021

Performance Domain: Measurement

Key Performance Indicators

Established at the beginning of the project to evaluate the progress and success

Effective Metrics

Specific
Meaningful
Achievable
Relevant
Timely

What to measure?

Deliverable metrics
Delivery
Baseline performance
Resources
Business value
Forecasts

Proprietary + Confidential

Performance Domain: Uncertainty

Desired Outcomes:

- Awareness of the environment in which the project occur
- Proactively exploring and responding to uncertainty
- Awareness of the interdependence of multiple variables on the project
- Anticipate threats and opportunities and understand the consequences of issues
- Project delivery with little or no negative impact from unforeseen events or conditions
- Opportunities are realized to improve project performance and outcomes
- Cost and schedule reserves are utilized effectively to maintain alignment with project objectives



Performance Domain: Tailoring

“Tailoring is the deliberate adaptation of the project management approach, governance, and process to make them more suitable for the given environment and the work at hand.”

Balance competing demands:

- Delivering as quickly as possible
- Minimizing project costs
- Optimizing the value delivered
- Creating high-quality deliverables and outcomes
- Providing compliance with regulatory standards
- Satisfying diverse stakeholder expectations
- Adapting to change

What to Tailor?

- Life cycle and development approach selection
- Processes
- Engagement
- Tools
- Methods and artifacts



Project Management: Models, Methods and Artifacts

Models

Leadership

Communication

Motivation

Change

Complexity

Project Team Development

Other Models

Methods

Data Gathering

Estimating

Meetings and Events

Other Methods

Artifacts

Strategy

Logs and Registers

Plans

Hierarchy Charts

Baselines

Visual Data and Information

Reports

Agreements and Contracts

Other Artifacts

“Regardless of the project methodology used, supportive leadership models and meaningful, continuous engagement between project team and stakeholders underpin successful outcomes.”

Project Management in Pharma and Engineering

Example: Set-up a new Pharmaceutical Production Plant

The different phases that are part of setting up a new production plan have different requirements and constrains. Tailoring the Project Management approach according to each phase needs promotes efficient planning and control.

Deliverable	Delivery Cadence	Development Approach	Key Stakeholders	Other Characteristics
Engineering Design, Licensing and Construction	Few deliverables per stage	Predictive	Local Governance, Community, Project Sponsor, Engineering Team, Suppliers, Construction Team	Large investment, Multiple Teams with Complex Interdependences
Commissioning, Qualification and Validation (CQV)	Multiple deliverables	Iterative	Regulatory Authorities, Project Team, Suppliers, Construction Team	Large investment, Complex Interdependences between different Suppliers, Smaller Team
Quality Management System	Periodic deliverables	Adaptive	Regulatory Authorities, Operational Team, Quality Team	Small Team, Regular Revision Required
Process Qualification & Validation	Multiple deliverables	Incremental	Regulatory Authorities, Validation Team, Quality Team, Regulatory Team, Patients, Market	Multidisciplinary Team, Change frequent

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Stepwise Pharma & Engineering differentiates from other engineering companies by tailoring its services specifically for the highly GMP-regulated pharmaceutical and life sciences industries.

The entire pharmaceutical and life science industries manufacturing lifecycle is supported by us helping to set direction, assessing benefits of strategic investments and optimizing manufacturing and business processes.

We assist our customers from Research and Development (R&D) to Commercial manufacturing.

Our goal is to help our customers to achieve and maintain GMP manufacturing excellence and assist them in the route to market.

The Author:



Ana Teresa Pereira
Project Manager



About the Author:

- More than 8 years of experience as Project Manager, including 4 in the Pharmaceutical Industry;
- PMP Certification, by the Project Management Institute, since January 2016
- Post-graduation on Management of Programs and Projects at ISCTE
- PhD in Biotechnology at Instituto Superior Técnico