

Software Project Management

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1-Introduction to SPM

1. What is a project ? <https://www.youtube.com/watch?v=dQKlrT5WRo>
2. How is Software project different from other projects?
3. What is project management? <https://www.youtube.com/watch?v=Jk-JwtScIlw>
4. What is Software Project Management?
5. Why is project management important?

<https://www.youtube.com/watch?v=0YBMfTorE6A>

Components of a Project

- Goal
- Timeline
- Budget
- Stakeholders
- Project manager

Constraints on a Project



How is **Software Project** different from other projects?

1. Invisibility
2. Complexity
3. **Conformity** – Conformation is the degree of adherence to preset expectations. The degree to which a product meets its prespecified criteria is termed as conformance in the context of **software engineering**. Brooks argues that there are no guiding principles that cause software engineers to conform (stylistically, representationally, etc). Therefore, they will spend some cycles dealing with “arbitrary complexity.” Fair point.
4. Flexibility https://www.sebokwiki.org/wiki/The_Nature_of_Software

Project Management

1. Meet customer requirements
2. On time completion
3. Within the budget



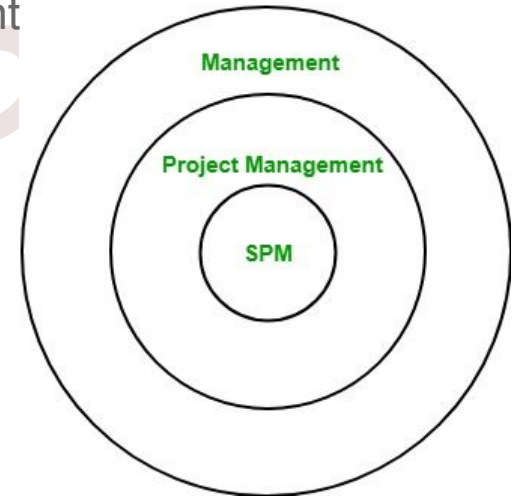
Importance of Project Management

1. Realistic Project Planning
2. Clear focus and objectives
3. Align project with the business strategy
4. Managed process : help right people to do right task in right time
5. Quality control
6. Reduced cost

Software Project Management

Software project management is a branch of project management dedicated to the

- Planning
- Scheduling
- Resource allocation
- Execution
- Tracking
- Delivery of software products or services



Project management in software engineering is distinct from traditional project management in that software projects have a unique lifecycle process that requires multiple rounds of testing, updating, and customer feedback.

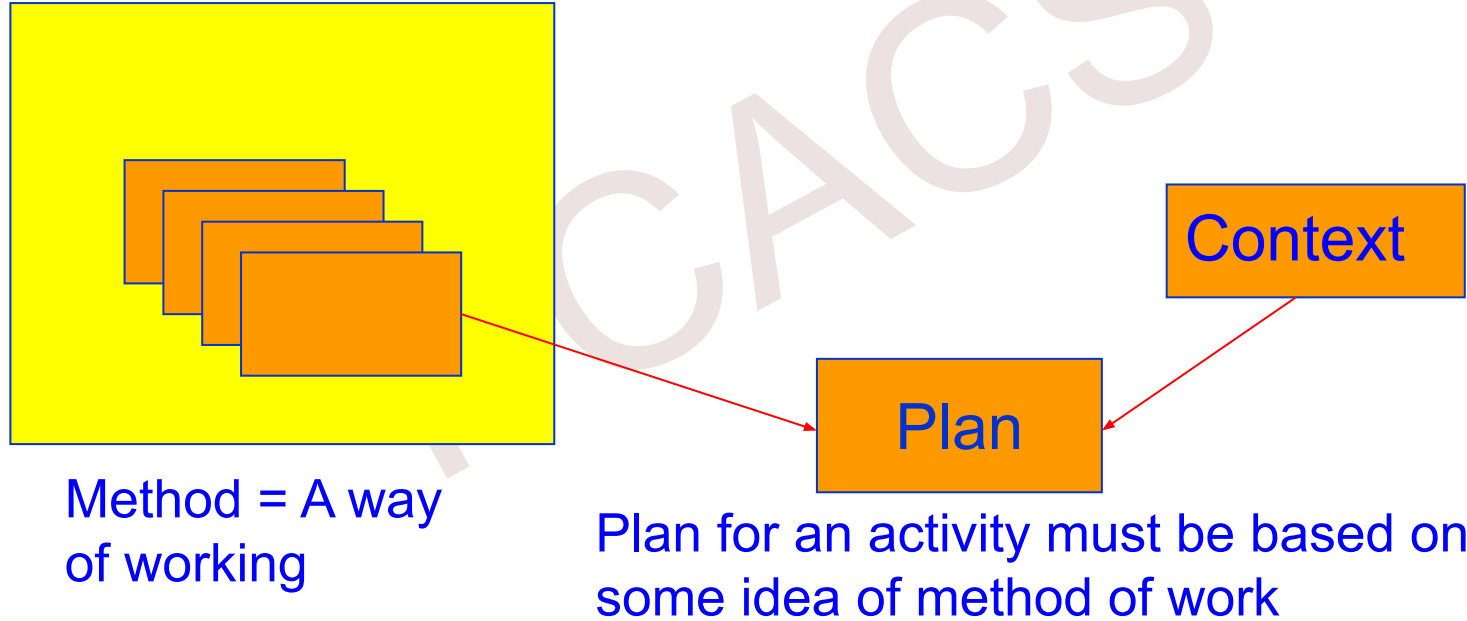
Contract Management & Technical Project Management

Projects can be:

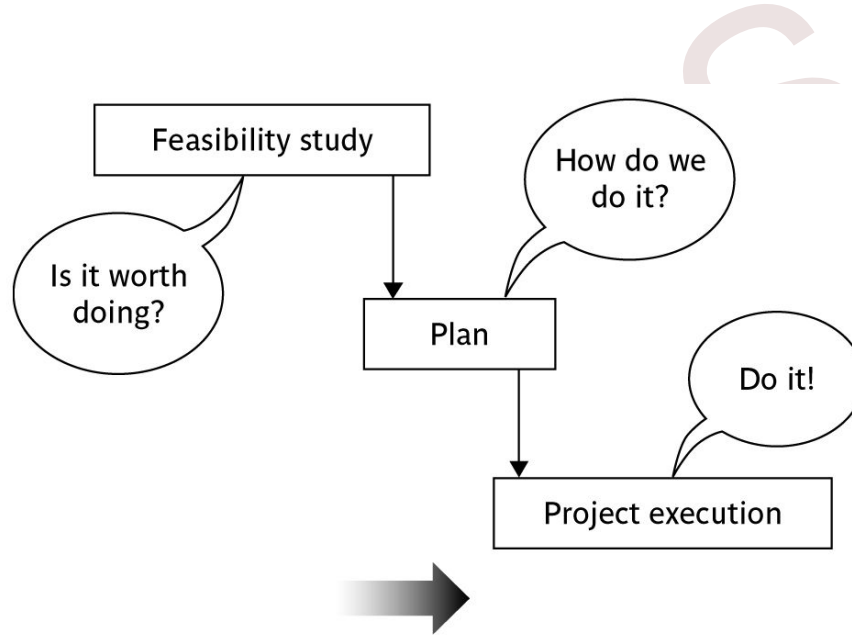
- **In-house:** clients and developers are employed by the same organization
- **Outsourced:** clients and developers employed by different organizations
- 'Project manager' could be:
 - a 'contract manager' in the client organization
 - a technical project manager in the supplier/services organization

Method, Methodology & Plan

Methodology = a set of methods

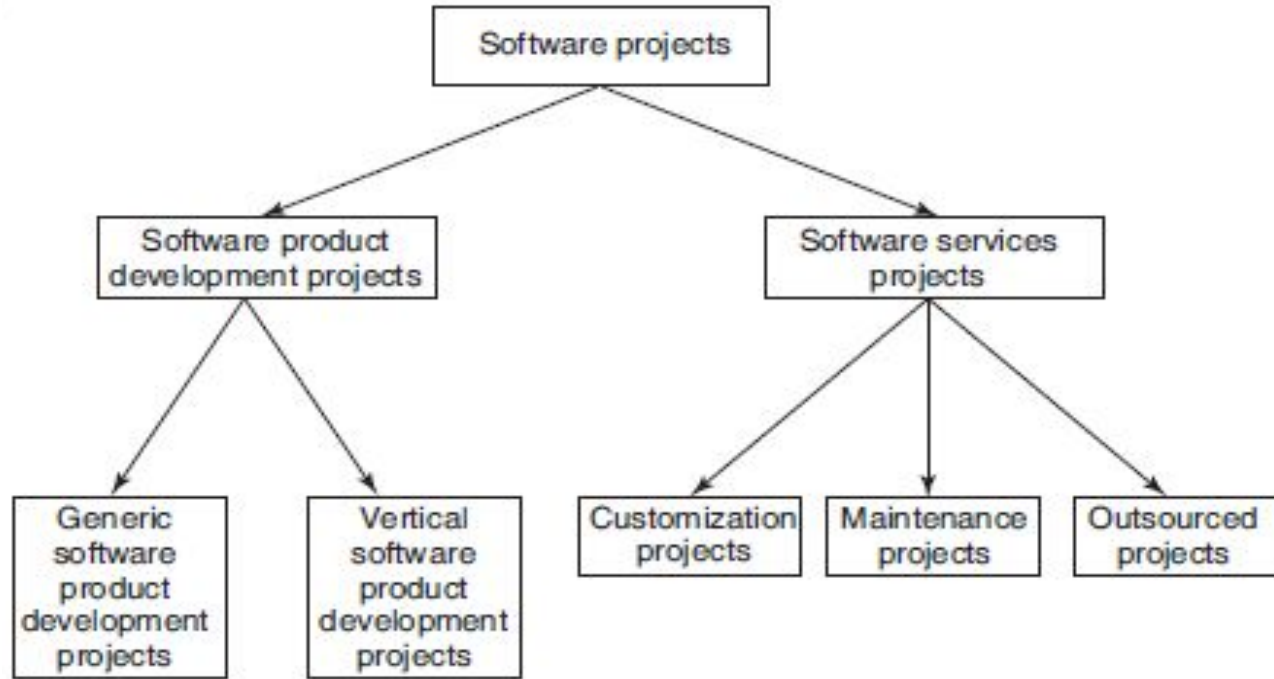


Activities Covered by Software Project Management



Categorization of Software Projects

1.



Categorisation of Software Projects

2.

Information Systems vs. Embedded Systems

An **information system** is defined as the software that helps organize and analyze data.

It is a combination of hardware and software (also known as *Firmware*). It comprises of intelligent computing devices that are surrounding us. The devices may be a smartphone, smart watches, smart home devices, medical equipment, security alarms, IoT products, etc.

Categorisation of Software Projects

3.

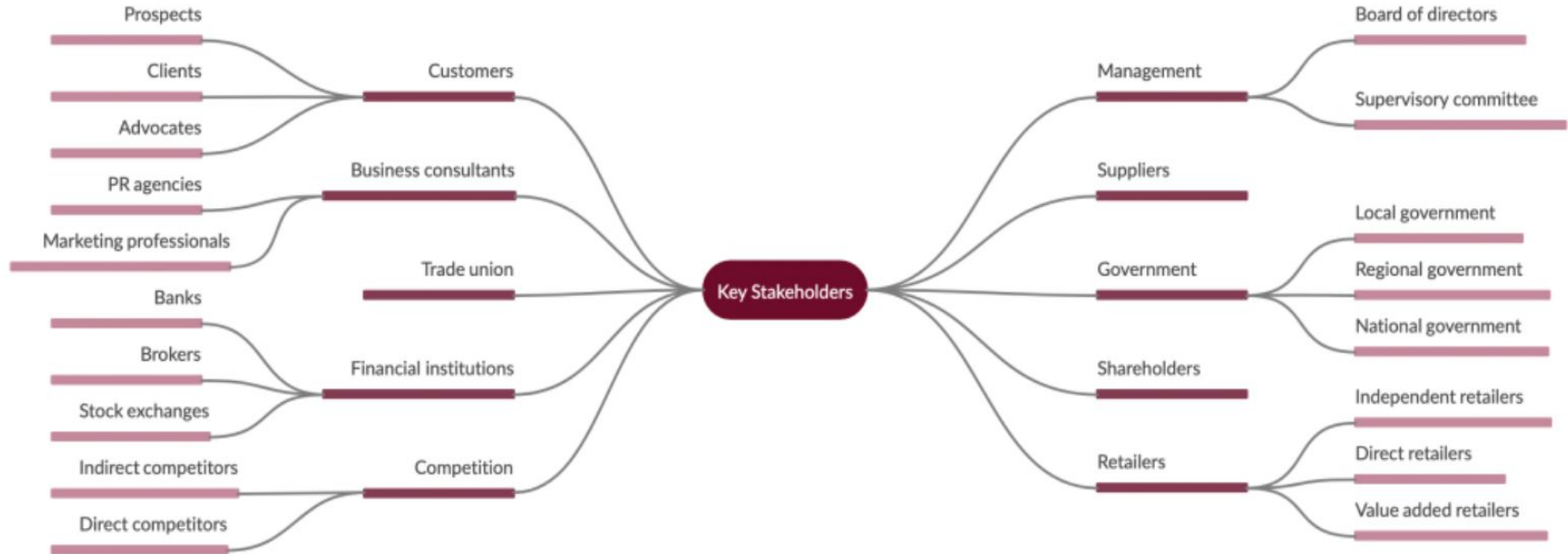
Objective based vs. Product based

These projects results in recommendation and might identify the need to develop a product

Usually the next stage of Objective based projects which results into a Software as an end result

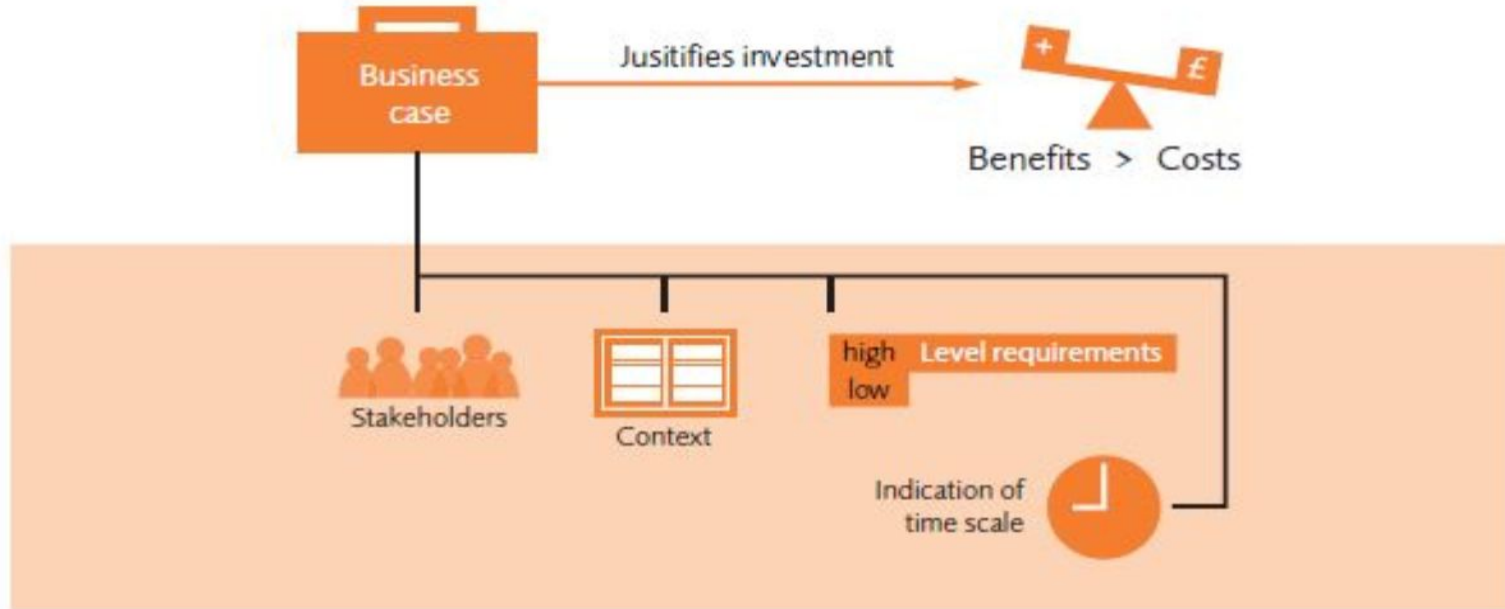
Stakeholders

Stakeholders are the individuals who have a key stake or interest in the successful completion of the project. They could be within or outside of the company and include those who fund your project as well as the team members and clients.



Business Case

- A **business case** provides justification for undertaking a project. It evaluates the benefit, cost and risk of alternative options and provides a rationale(logical basis) for the preferred solution. <https://www.youtube.com/watch?v=bDAsAbMMep0>



Project Charter

The project charter is a high-level initiation document that consists of couple of pages. It lists the project objectives, scope, vision, team, and their responsibilities and stakeholders.

<https://www.youtube.com/watch?v=MZttgdA1fg>

- Describes the purpose and the outcomes of the project
- Legally authorizes the start of a project
- Helps keep track of project deadlines
- Helps identify constraints and risks and define preventive measures
- Outlines a general overview of the budget
- Helps align the project goals with the interests of the stakeholders



https://www.youtube.com/watch?v=o_5g1ep4Qnk

Setting Objectives

Objectives : Objectives should define what the project team must achieve for project success.

Objectives focus on the desired outcomes of the project.

To achieve the Objective following (SMART) should be in place:-

S – specific

M – measurable

A – achievable

R – relevant

T – time constrained.

Goal / Sub Objective :

An Objective may have sub objectives.

Like...

Overall objective – user satisfaction with software product

Analyst goal – accurate requirements

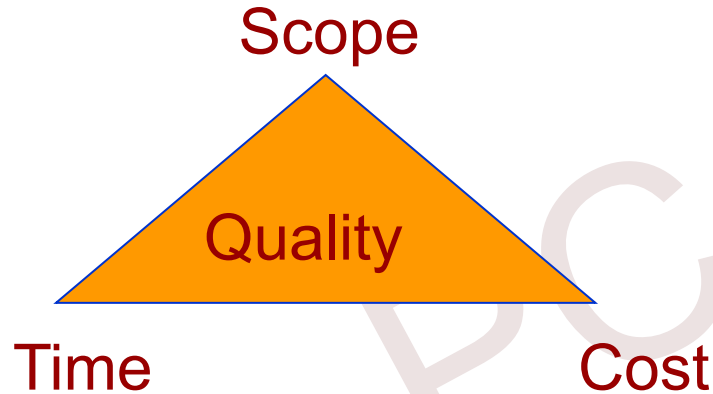
Developer goal – reliable code

Measures of Effectiveness : It gives us a way to check that objective has been met.

E.g. MTBF (mean time between failure)

Project success/failure

Degree to which **PROJECT** objectives and **BUSINESS** objectives are met

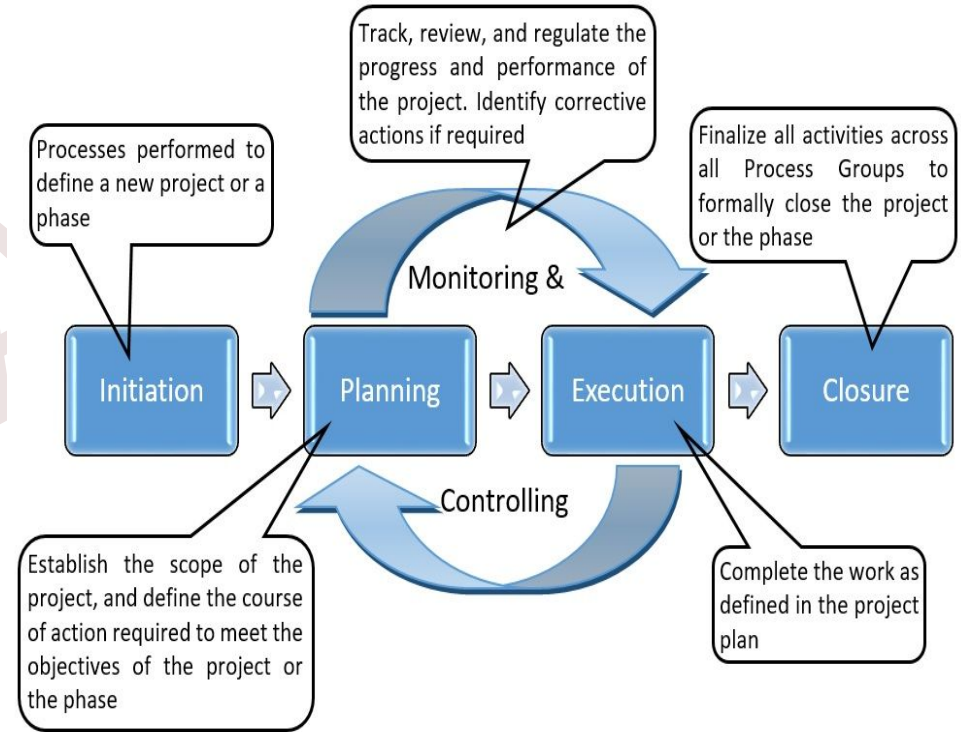


Meeting the
Business Case

In general if, for example, project is running out of time, it can be recovered by either reducing scope or increasing costs. Similarly costs and scope can be protected by adjusting other corners of the 'project triangle'. <https://www.youtube.com/watch?v=6ZGs0X920gU>

Project Management Processes

- **Initiating:** define the project
- **Planning:** chalk out a plan
- **Executing (Monitoring & Controlling):** build a project team ; develop deliverables ; Monitor and measure project progress & performance to ensure it stays on track.
- **Closing:** project is completed, lessons learned are recorded, and the charge is given to the maintenance team.



Initiation-W5HH Principle

- Why is the software being built?
- What will be done?
- When will it be done?
- Who is responsible for a function?
- Where are they organizationally located?
- How will the job be done technically and managerially?
- How much of each resource is needed?

Planning

- Project plan: Assign resources & time to tasks.
- Resource plan
- Financial plan
- Quality plan
- Risk plan: Identification of the potential risks, their prioritization and a plan for the actions that would be taken to contain the different risks.

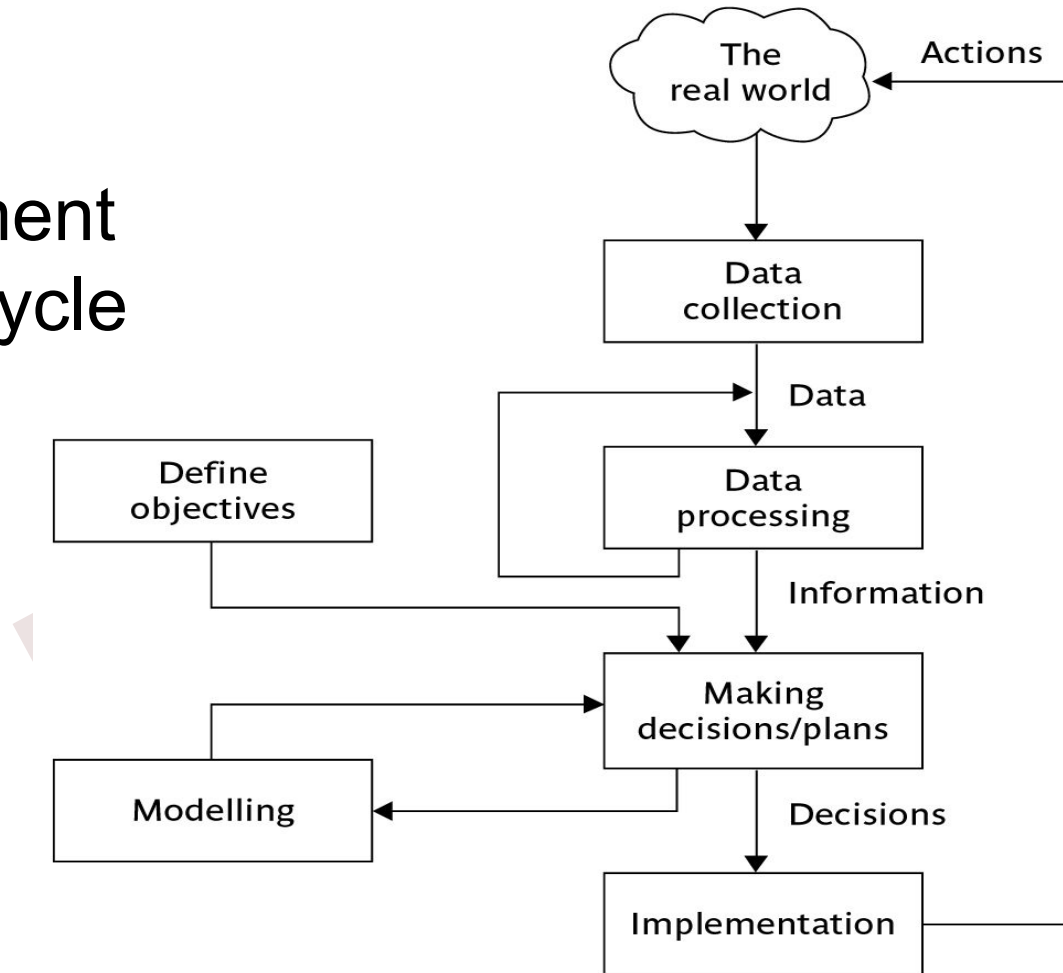
Execution

- Tasks are executed as per the project plan
- Monitoring process is executed to ensure that the tasks are executed as per plan
- Controlling Process is to initiate Corrective actions whenever any deviations from the plan are noticed.

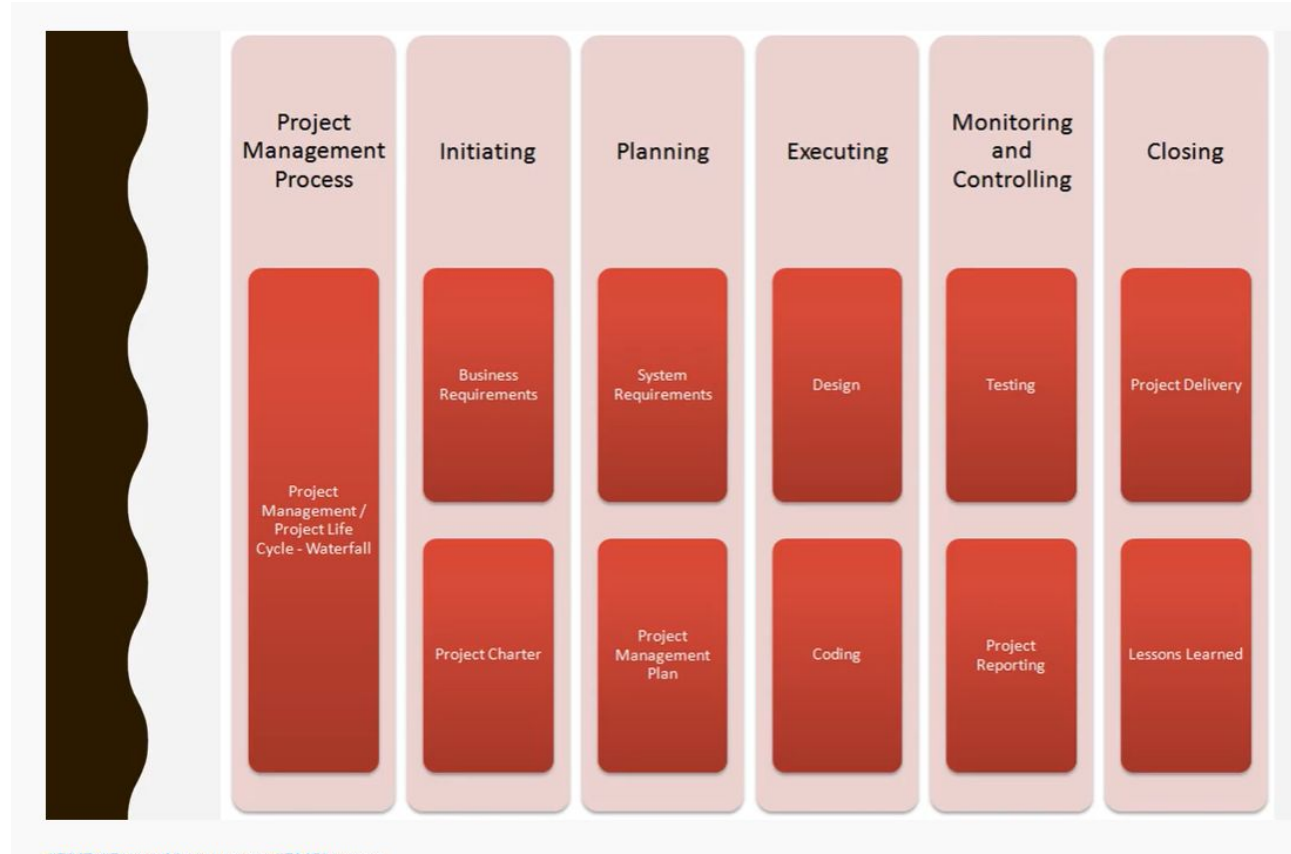
Closure

- Involves completing the release of all the required deliverables to the customer along with the necessary documentation.
- All the project resources are released
- Supply agreements with the vendors are terminated.
- A post-implementation review is undertaken to record the lessons learned.

Management Control Cycle



Project Life Cycle (stages) vs. Project Management Life Cycle(phases)



Project Life Cycle (stages) vs. Project Management Life Cycle(phases)

THE PROCESS OF A LIFE CYCLE!

- Each phase/activity of project life cycle may involve all project management processes

<https://www.youtube.com/watch?v=ISIGGE2cCb4>



Traditional Versus Modern Project Management

1. Planning incremental Delivery
2. Quality Management
3. Change Management
4. Requirement Management
5. Release Management
6. Risk Management
7. Scope Management

<https://www.youtube.com/watch?v=qTQsdJFG4SQ>

PMI - PMP Certification

https://www.linkedin.com/learning/cert-prep-project-management-professional-pmp?trk=ceu_project_management_landing_page_learning