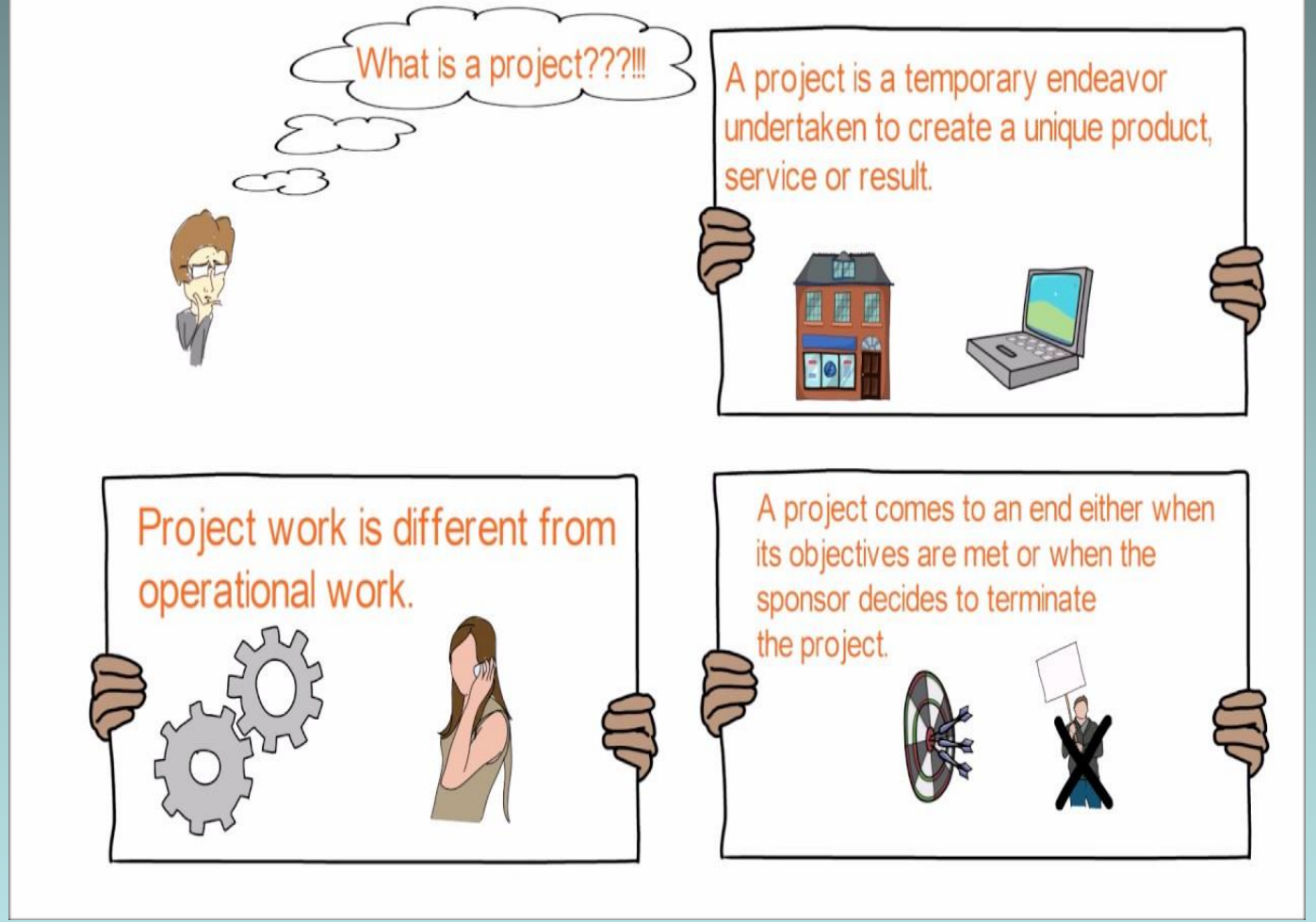
Software Project Management chapter 1

What is Project ?



Types of Project

	Type of Project	Product of Project (Examples)
1.	Administrative	installing a new accounting system
2.	Construction	a building or road
3.	Computer Software Development	a new computer program
4.	Design of Plans	architectural or engineering plans
5.	Equipment or System Installation	a telephone system or IT system
6.	Event or Relocation	Olympiads or a move into a new building
7.	Maintenance of Process Industries	petro-chemical plant or electric generating station
8.	New Product Development	a new drug or aerospace/defense product
9.	Research	a feasibility study or investigating a chemical
10.	Other	???

Project management is an application of knowledge , skills, tool and techniques to project activities to meet project requirements.

- Project management matters because it delivers success.
- Project management creates and enables happy, motivated teams who know their work matters, so do their best work.
- And that project management enabled team ensures the right stuff is delivered; stuff that delivers real return on investment, and that makes happy clients.

Why PM is Important ?

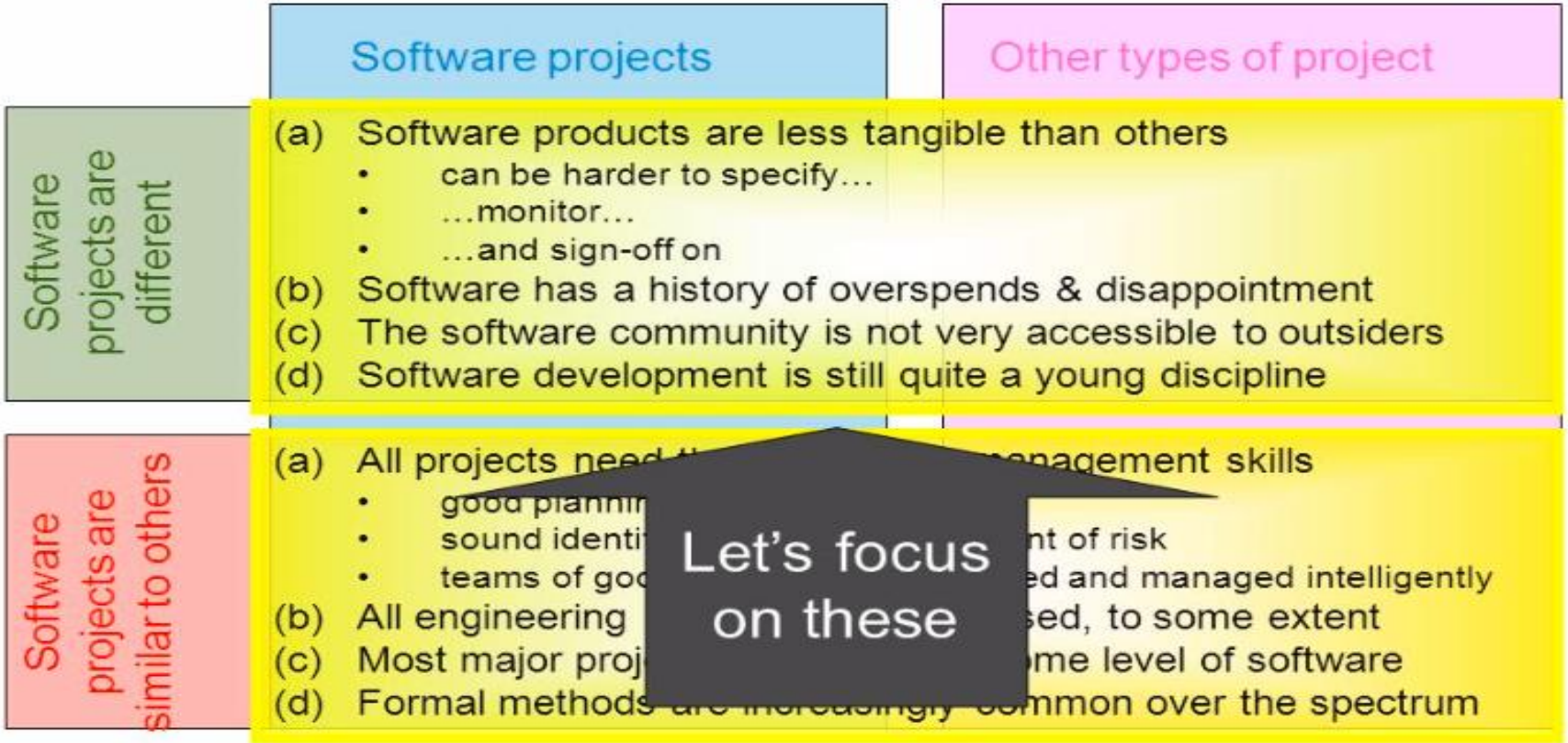
1. **Strategic Alignment**
2. **Leadership**
3. **Clear Focus & Objectives**
4. **Realistic Project Planning**
5. **Quality Control**
6. **Risk Management**
7. **Orderly Process**
8. **Continuous Oversight**
9. **Subject Matter Expertise**
10. **Managing and Learning from Success and Failure**

Without it, teams and clients are exposed to chaotic management, unclear objectives, a lack of resources, unrealistic planning, high risk, poor quality deliverables, projects going over budget and delivered late.

Points to successful project management in an organization

- ✓ Understanding client needs
- ✓ Planning
- ✓ Clear communication
- ✓ Implementing Plan
- ✓ Managing change
- ✓ Evaluation

Software & other types of projects



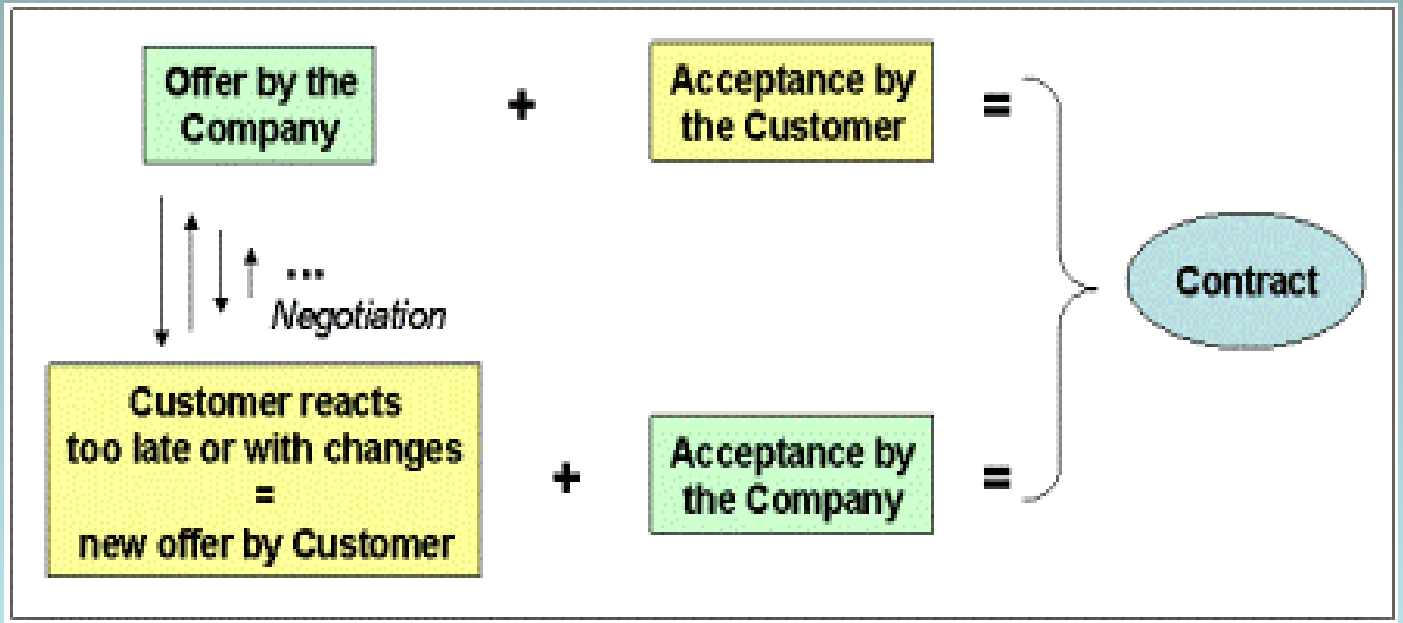
Software Project VS Other Projects

- Fred Brooks identified some characteristics of software projects which makes it difficult are
  - Invisibility
  - Complexity
  - Conformity
  - Flexibility

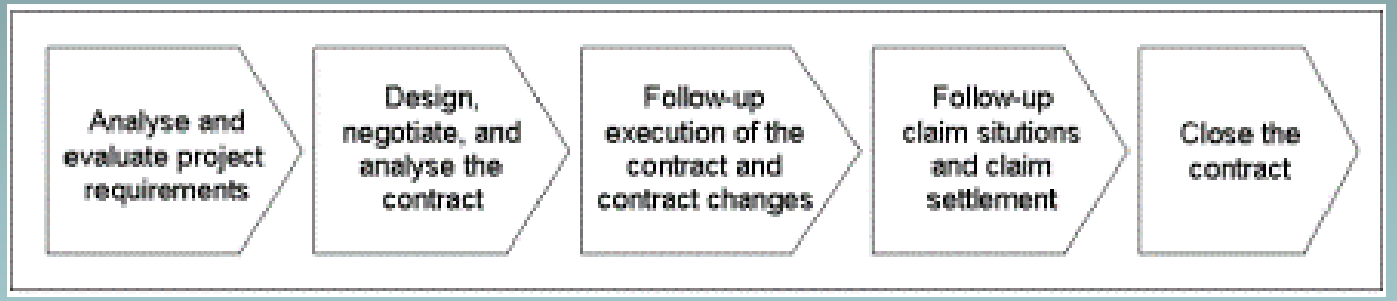
Contract Management

What is a CONTRACT ?

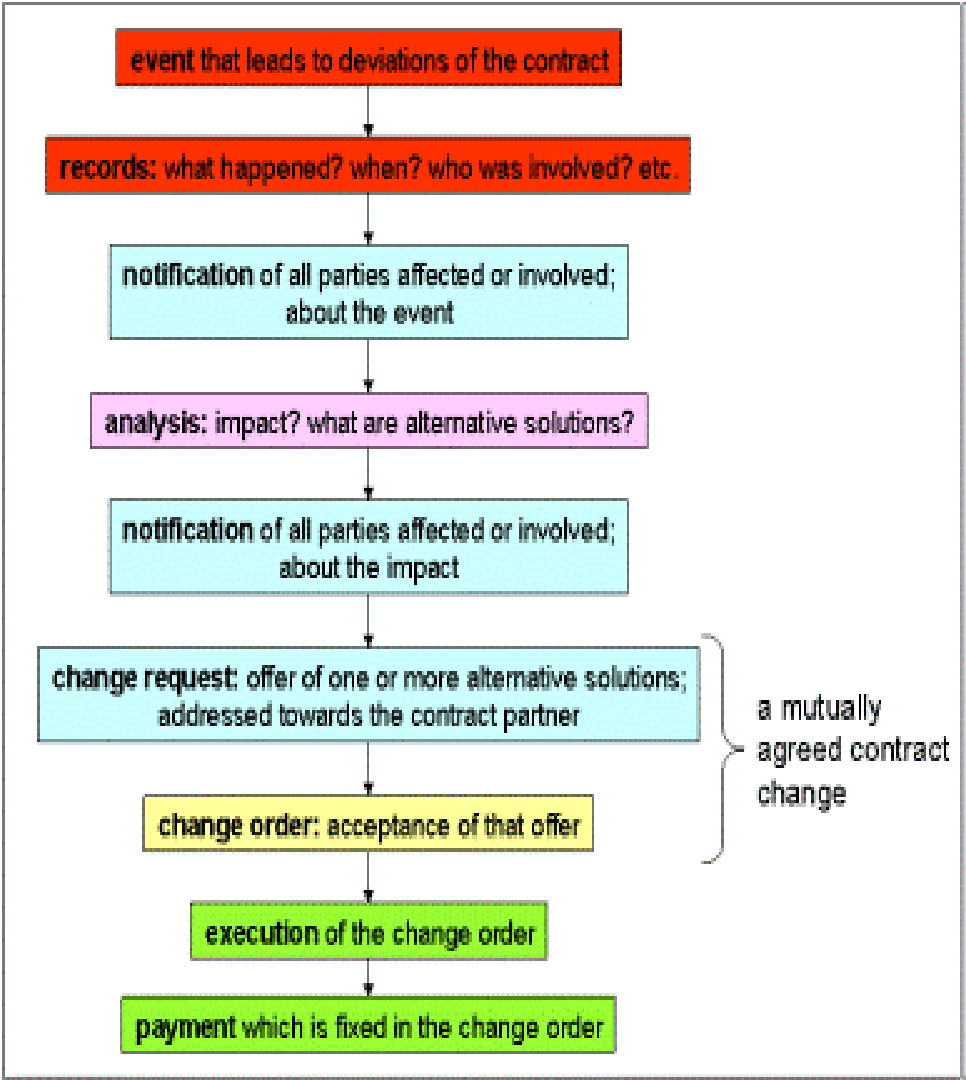
A contract is any agreement between two or more parties where one party agrees to provide certain deliveries or services, and the other party agrees to pay for those deliveries or services.

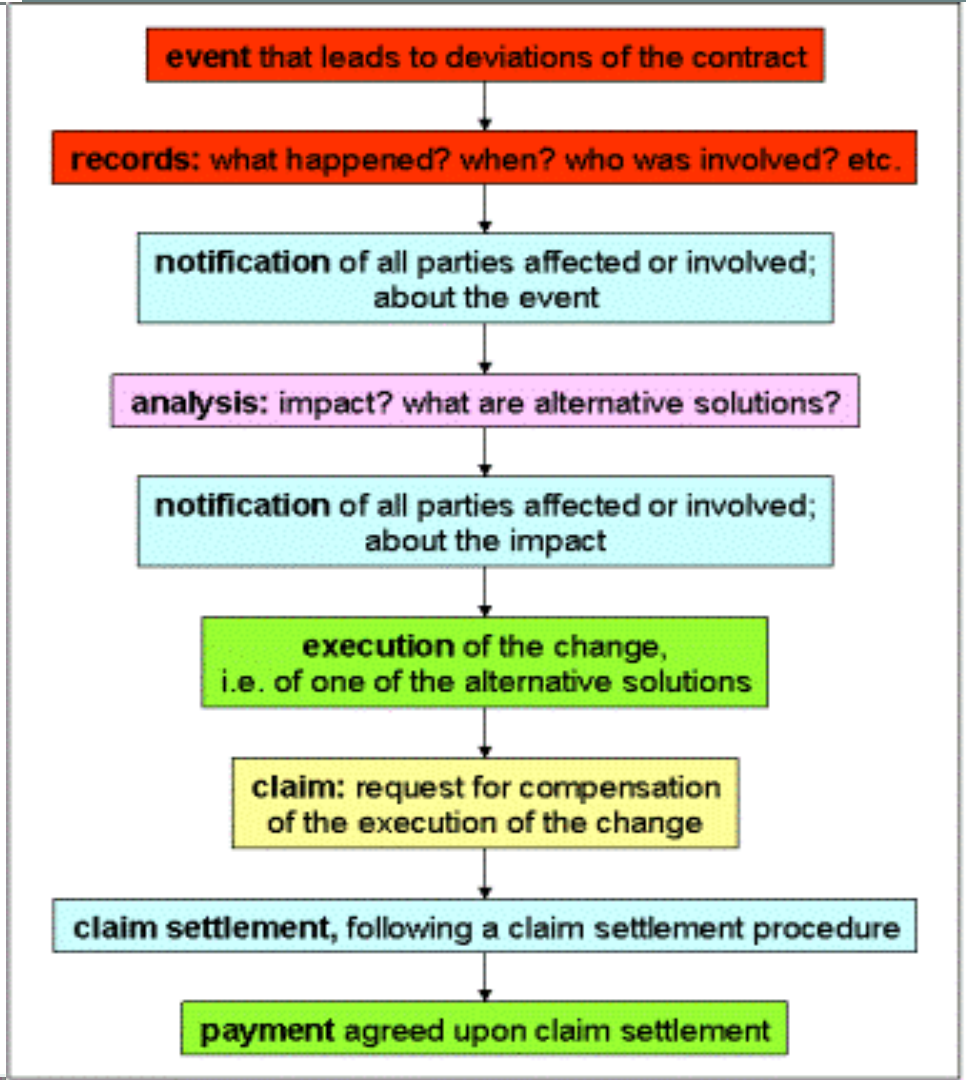


Contract management is a continuous process, starting with analysis and evaluation of the customer's inquiry, and carrying on until contract closure, upon fulfillment of all contractual obligations.



This process overview indicates that contract management activities seem to belong to the responsibilities of the **project manager** and the **whole project team**.


event that leads to deviations of the contract
records: what happened? when? who was involved? etc.
notification of all parties affected or involved; about the event
analysis: impact? what are alternative solutions?
notification of all parties affected or involved; about the impact
change request: offer of one or more alternative solutions; addressed towards the contract partner
change order: acceptance of that offer
a mutually agreed contract change
execution of the change order
payment which is fixed in the change order


event that leads to deviations of the contract
records: what happened? when? who was involved? etc.
notification of all parties affected or involved; about the event
analysis: impact? what are alternative solutions?
notification of all parties affected or involved; about the impact
execution of the change, i.e. of one of the alternative solutions
claim: request for compensation of the execution of the change
claim settlement, following a claim settlement procedure
payment agreed upon claim settlement

Technical Project Management

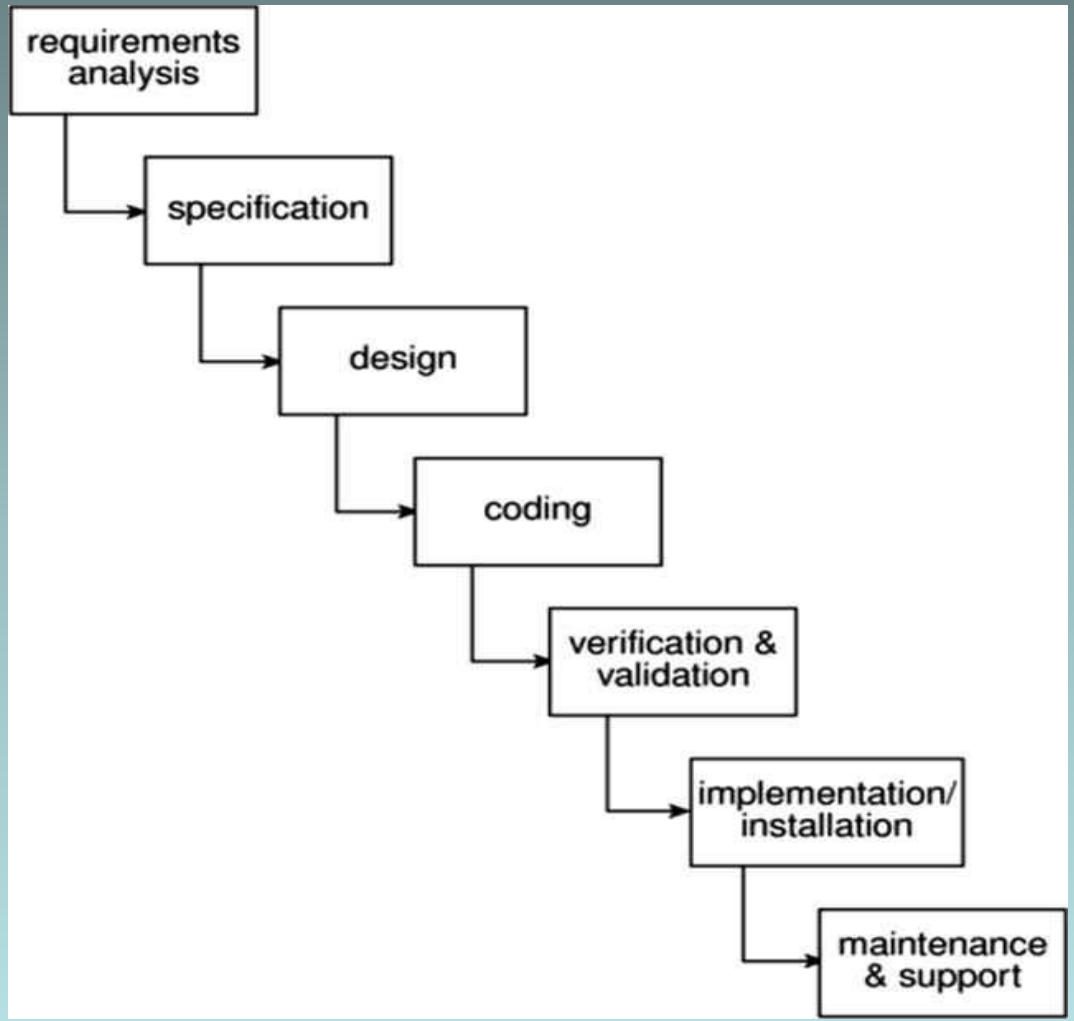
1. When we think of project management, we generally think about either software project managers .
2. we rarely talk much about the life of a **Technical Project Manager**, one of those competent people who grew up though the technical ranks and took his place as a project leader though intelligence, skill, and the ability to communicate clearly to non-technical audiences.
3. These people combine the often conflicting roles of technical manager, communicator, and quality assurance analyst.
4. They also assess technical risks, assist with technical problem solving.
5. Non-technical project managers would classify as hopeless, negative, or uncooperative.

On any given day a **TECHNICAL PROJECT MANAGER** will:

1. Write a status report
2. Compose a dozen communications emails
3. Help his team prioritize the latest set of technical issues
4. Assist his team in identifying the problem at the root of several technical issues
5. Employ one or more mitigation strategies for technical risks
6. Pull at least one IT professional out of a tempting rabbit-hole - also known as an unrelated technical problem

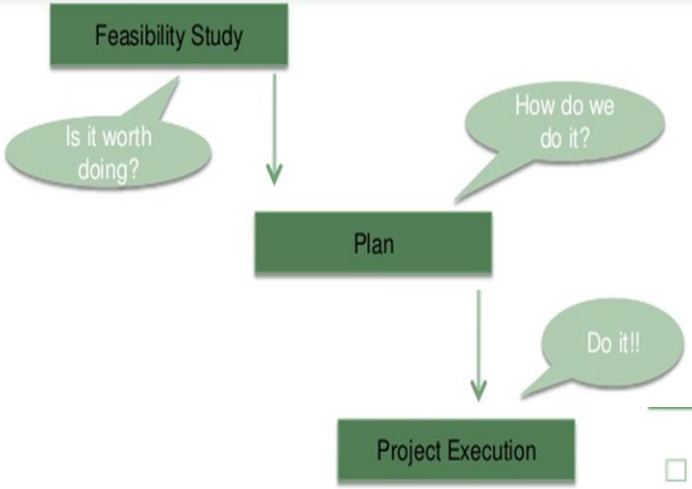
Software Project Management

Software project management comprises of a number of activities, which contains planning of project, deciding scope of software product, estimation of cost in various terms, scheduling of tasks and events, and resource management.



Project management **ACTIVITIES** may include:

1. **Feasibility Study**
2. **Project Planning**
3. **Project Execution**



- The Feasibility Study:
  - Assesses whether a project is worth starting
- Planning:
  - Outline plan for the whole project and a detailed one for the first stage
- Project Execution:
  - The execution of the project often contains design and implementation sub-phases.

Other **ACTIVITIES** of SPM

1. Project Planning

- A **project plan** is "A formal, approved document used to guide both project execution and project control. The primary uses of the project plan are to document planning assumptions and decisions, facilitate communication among stakeholders, and document approved scope, cost, and schedule baselines. A project plan may be summary or detailed."

- "a statement of how and when a project's objectives are to be achieved, by showing the major products, milestones, activities and resources required on the project".

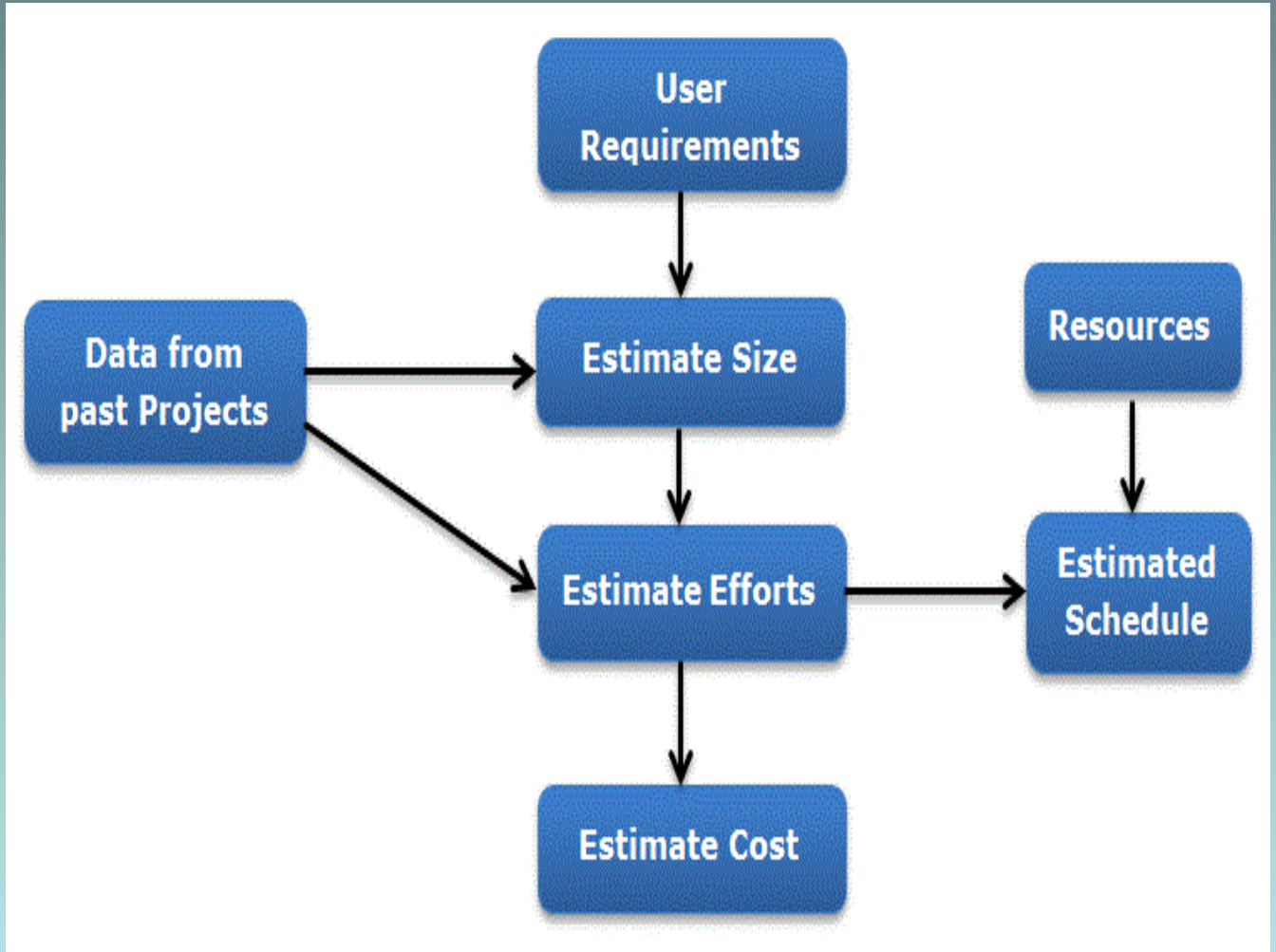
2. Scope Management

- It defines the scope of project; this includes all the activities, process need to be done in order to make a deliverable software product.
- Scope management is essential because it creates boundaries of the project by clearly defining what would be done in the project and what would not be done.

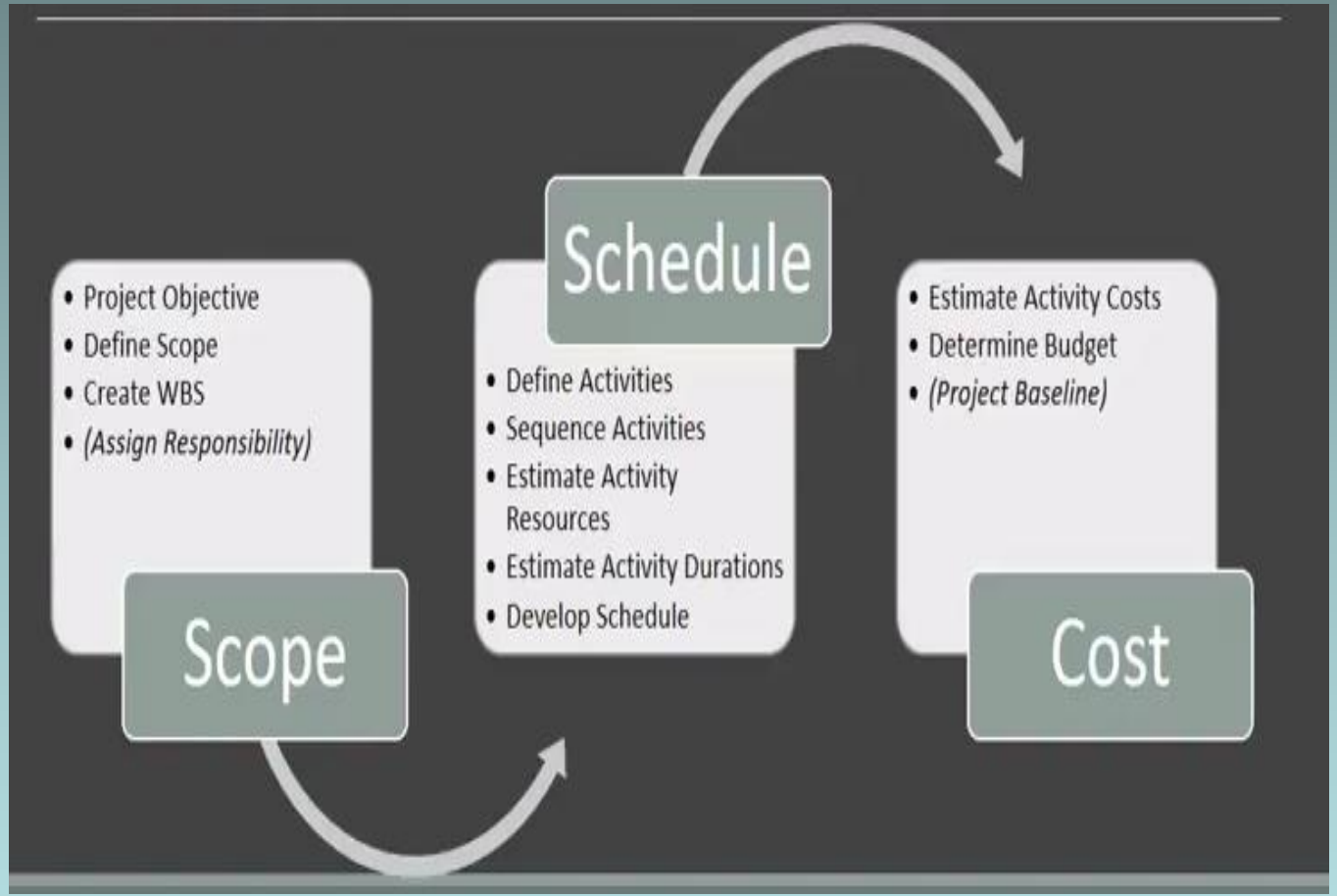
During **Project Scope management**, it is necessary to -

- Define the scope
- Decide its verification and control
- Divide the project into various smaller parts for ease of management.
- Verify the scope
- Control the scope by incorporating changes to the scope

3. Project Estimation

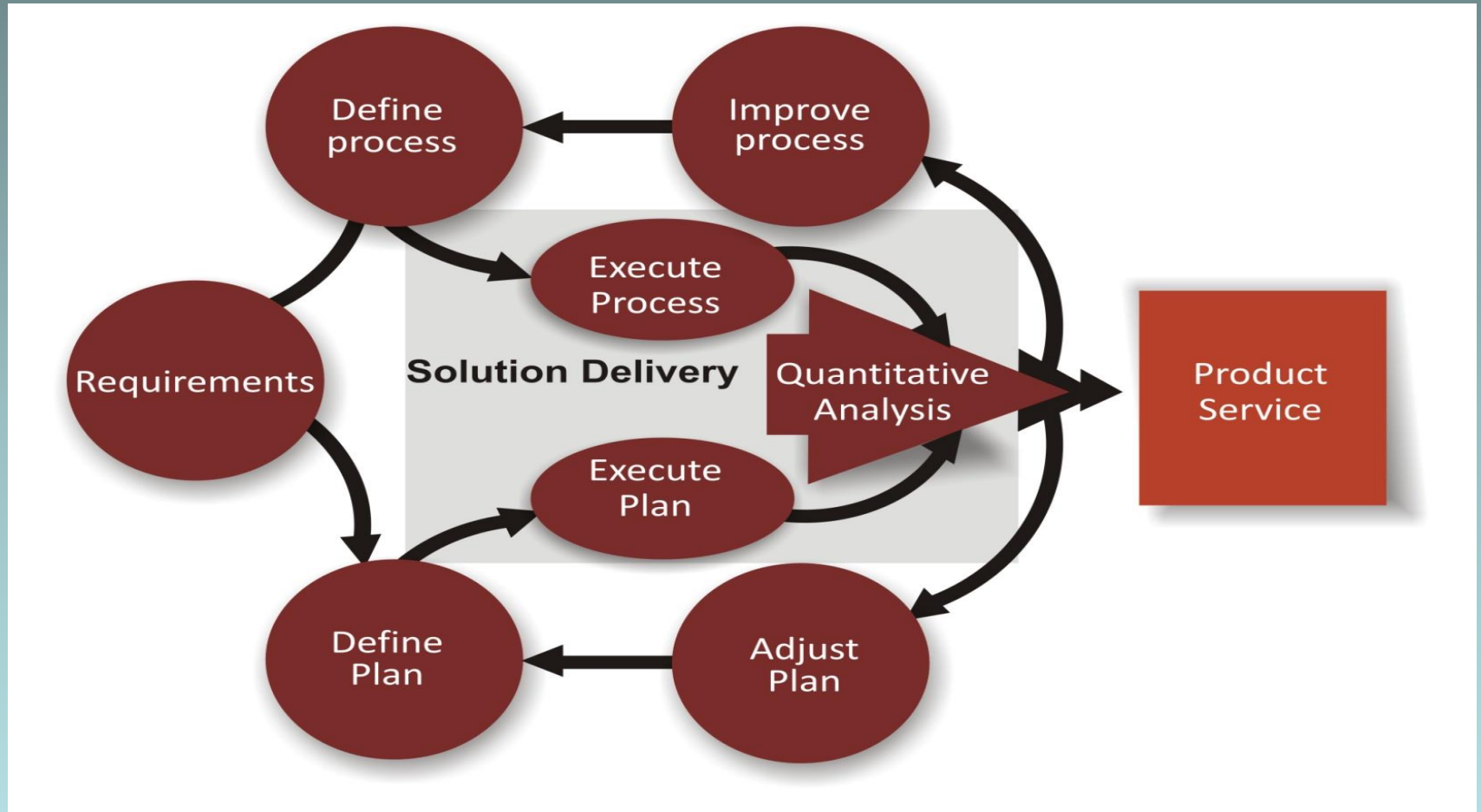


Steps in SPM


Scope
• Project Objective
• Define Scope
• Create WBS
• (Assign Responsibility)
Schedule
• Define Activities
• Sequence Activities
• Estimate Activity Resources
• Estimate Activity Durations
• Develop Schedule
Cost
• Estimate Activity Costs
• Determine Budget
• (Project Baseline)

Plan , Methods and Methodologies

- A plan for an activity must be based on some idea of a method of a work.
  - Analyze the requirements for the software
  - Devise and write test cases
  - Create test scripts
  - Compare the actual results and the expected results
- A Method relates to a type of activity in general, a plan that takes that method and converts it to real activities
  - Its start and end dates
  - who will carry out
  - What tools and materials
- The output from one method might be the input to another. Group of methods or techniques are often grouped into methodologies such as object-oriented design


Define process
Improve process
Execute Process
Requirements
Solution Delivery
Quantitative Analysis
Product Service
Execute Plan
Define Plan
Adjust Plan

Categorizing software projects

- Compulsory Versus Voluntary users
  - Eg. Moodle – Games,Google
- Information systems versus embedded systems
  - Eg. Stock Information – Air Conditioning Equipment
- Outsourced projects
  - Giving some parts of its work to other companies
- Objective- driven development
  - Identifying the need for a new software system

Ex : Would an operating system on a computer be an information system or an embedded system?

Stake holder

- Stakeholders are people who have a stake or interest in the project.
- Need to maintain adequate communication link from start of a project.
- Project leader also has to be aware that not everybody who is involved with a project has the same motivation and objectives.

Stakeholders might be internal to the project team, external to the project team but with in the same organization, or totally external to the organization.

1. **Internal to the project team**: they will under the direct managerial control of the project leader.

2. **External to the project team but within the same organization** : project leader might need the assistance of the information management group in order to add some additional data types to a database or carry out system testing.

3. **External to both the project team and organization** : external stakeholders might be customers (or users) who will benefit from the system that the project implements or contractors who will carry out work for project.

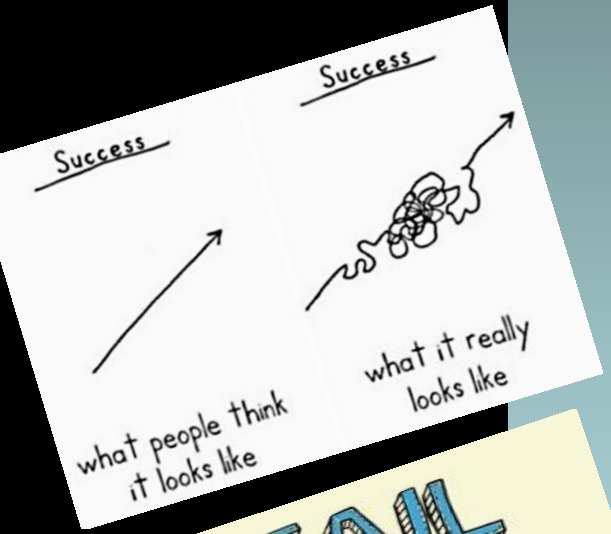
Objectives of Stake holders

- Stakeholders are those who actually own the project.
- They control the financing of the project.
- They set the objectives of the project.
- The objectives should define what the project team must achieve for project success.

Sub-Objectives of Stake holders

- A more appropriate goal or sub-objective for the software developers is to keep development costs within a certain budget.
- SMART:
  - Specific
  - Measurable
  - Achievable
  - Relevant
  - Time Constrained

Project Success and Failure



A project is "successful if it is not only met the traditional project managers" definition of success , but also met the projects sponsors , perception of success.

1. **Success** : Preserving the business case.

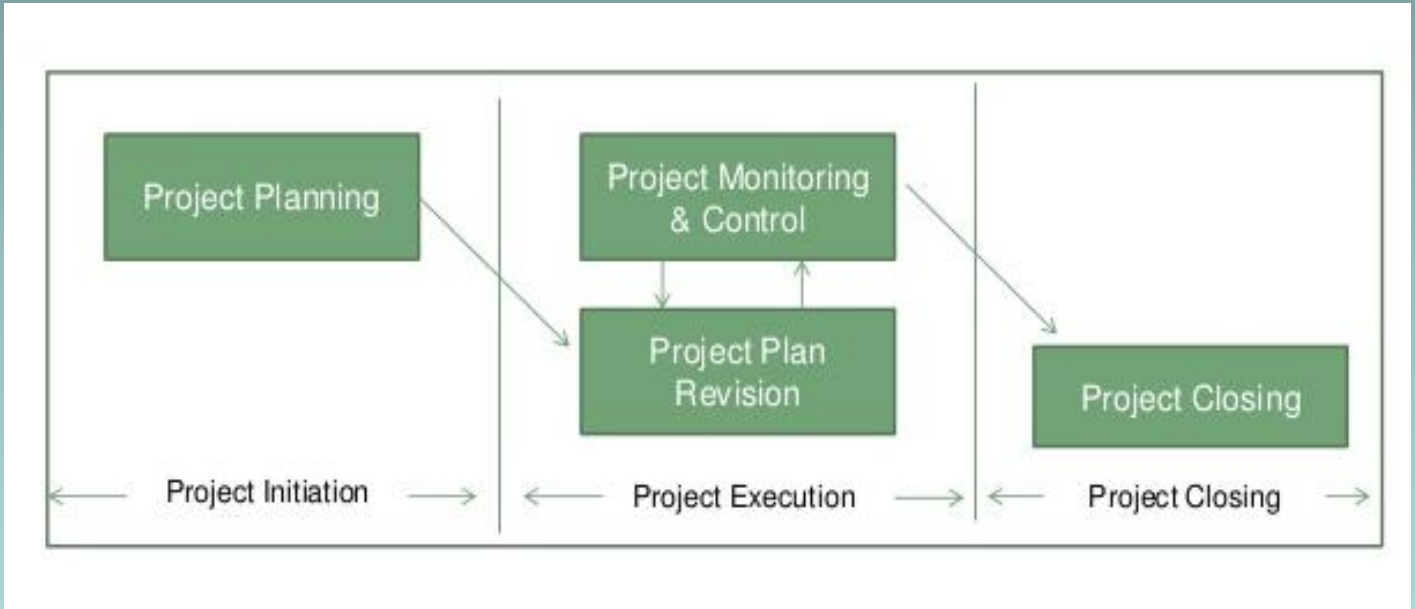
2. **Failure** : stakeholders have different interest.

What is Management ?

- **Definition:** Coordinating work activities so that they are completed **efficiently** and **effectively** with and through other people
- **Efficiency:** getting the most output from the least input
- **Effectiveness:** completing activities so that the organization's goals are attained.

-the actions used by the management to guide people, machines, and functions to attain organizational goals and objectives.

Project **MANAGEMENT ACTIVITIES**



Management Control

* Any process that directs the activities of individuals toward the achievement of organizational goals
* The Siamese twins of management
  - Planning
  - Control

Principles of **MANAGEMENT CONTROL**

1. **Principle Of Assurance Of Objectivity**
2. **Principle Of Efficiency Of Control**
3. **Principle Of Control Responsibility**
4. **Principle Of Forward Looking**
5. **Principle Of Direct Control**
6. **Principle Of Reflection Of Plans**
7. **Principle Of Organizational suitability**
8. **Principle Of Individuality Of Control**
9. **Principle Of Critical Point Controls**
10. **Principle Of Action**

Project Management Life Cycle

Traditional versus Modern Project Management Practices

Agile Project Management

Adapting changes into the core plan and still being responsive

Traditional Project Management

It requires managers control changes in the plan.

Agile Project Management

Control with teams at all levels.

Traditional Project Management

Top to bottom hierarchy for control.

Agile Project Management

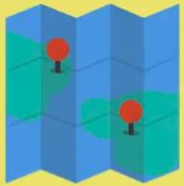
Agile processes are always heavily customizable

Traditional Project Management

Traditional processes are not so customizable

Agile Project Management

Its all about customers



Traditional Project Management

It puts adherence to plan first

Agile Project Management

The value given to the customer is the only metric

Traditional Project Management

Traditional project management have many metrics

What is Business case ?

- A description of the reasons for the project
- A justification for undertaking the project based on the estimated costs, risks and expected business benefit
- Covers the entire scope of the project and the impact of the project to the business

- Development costs should not be increased
- Features of the system should not be reduced
- Delivery date of the project should not be delayed

What is in the **BUSINESS CASE** ?

- Risks
  - The key risks and their impact if they occur
- Cost and timescale
  - Outline of costs and timescale
- Investment appraisal
  - The development, operational, maintenance and support costs against the value of benefits over time – compared with doing nothing!
- Evaluation GAP analysis
  - Are the benefits reasonable or overly optimistic?
  - What is the best case/worst case scenario?

Who creates a **BUSINESS CASE** ?

- The executive is responsible for the Business Case
- The executive may delegate the development of the Business Case to the Project Manager
- Data for the business case is provided by the experts in the business
- Is a 'live' document
- Business Case is updated in initiation phase as more information is available
- Formal Approval of the Business Case is made at the end of the *Initiating a Project* Stage

Example

Project Business Case Example

Project Name	Sales Team IVR Telephone System		
Project Sponsor	Head of Sales	Project Manager	Name of project manager
Date of Project Approval	3rd March	Last Revision Date	3rd March
Contribution to Business Strategy	Our strategy is to project best in industry customer service, and the current situation does not reflect this. The new IVR system will ensure all calls are answered in a timely manner. It will also ensure that calls are delt with efficiently. These two facts align this project to the company strategy.		
Options Considered	Options considered included: 1. Adding additional staff to sales team 2. Having a dedicated team for our best customers 3. An IVR system (selected)		
Benefits	1. Increased sales - currently extimated we lose 4% of all sales calls due to current issues. 2. Happier customers - we estimate new customer satisfaction will increase by 10%. 3. Improved LTV - lifetime value of customers will increase by 5% due to the two points above		
Timescales	Initial analysis shows that the system will take approximately 3-4 months to implement.		
Costs	IVR software = $35,000 Project Management = $30,000 Software team of 3 for 3 months = $90,000 Total estimated cost = $155,000		
Expected Return on Investment	Year 1 = $0 Year 2 = $120,000 Year 3 = $180,000 as LTV begins to be felt.		
Risks	Right now the project looks pretty straightforward but there are still some unknows surrounding implementation. There is also the risk that the project doesn't meet the sales team or customers needs. For this reason it is recommended to involve the sales team closely.		

Sl.No	Functional Requirement	Non-functional Requirement
1.	Defines all the services or functions required by the customer that must be provided by the system	Defines system properties and constraints e.g. reliability, response time and storage requirements. Constraints are I/O device capability, system representations, etc.
2.	It describes what the software should do.	It does not describe what the software will do, but how the software will do it.
3.	Related to business. For example: Calculation of order value by Sales Department or gross pay by the Payroll Department	Related to improving the performance of the business. For example: checking the level of security. An operator should be allowed to view only my name and personal identification code.
4.	Functional requirement are easy to test.	Nonfunctional requirements are difficult to test
5.	Related to the individual system features	Related to the system as a whole
6.	Failure to meet the individual functional requirement may degrade the system	Failure to meet a non-functional requirement may make the whole system unusable.

What is Project Charter ?

- Every CI (Continuous Improvement) event or project starts with a Project Charter.
- The project charter is a short document that would consist of new offering request or a request for proposal.
- This document is a part of the project management process, which is required by Initiative for Policy Dialogue (IPD) and Customer Relationship Management (CRM).

The project charter is usually a short document that is only a couple of pages long and typically contains the following:

- Overall objectives of the project and the broad items that are within the scope of the project and those that are out of scope.
- The time schedule in terms of the start date and the expected completion date of the project.
- The important stakeholders and their responsibilities towards the project.
- Overview of the resources that will be needed for the project and the overall budget.
- Major risks to the project and the broad strategies that can be adopted for overcoming those.

Project Charter

A Project Charter is a living document outlining the issues, targets and framework of a process improvement effort.

Problem Statement

The problem captured in the form of a measurement.

Business Case

The business reasons for doing the project.

Goal Statement

The target of the process measurement.

Timeline

When each project phase will be completed.

Scope

What's in and what's out of the project.

Team Members

The people who will participate in the project.