# Lecture 7, 8 & 9
# 7. Project Integration Management

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# Outline

- Introduction
- Develop Project charters
- Develop Preliminary Project Scope Statement
- Develop Project Management Plan
- Direct and Manage Project Execution
- Monitor and Control Project Work
- Integrated Change Control
- Close Project
- Project Scope Management
  - Create Work Breakdown Structure
  - Scope Verification
  - Scope Control

# Project Integration Management

- It includes the processes needed to identify, define, combine, unify and coordinate the various processes and project management activities within the Project Management Process Groups.
- Project Managers must coordinate all the knowledge areas throughout a project's life cycle.

- Integration Management Process Includes:
  - Develop Project charters
  - Develop Preliminary Project Scope Statement
  - Develop Project Management Plan
  - Direct and Manage Project Execution
  - Monitor and Control Project Work
  - Integrated Change Control
  - Close Project

# Develop Project charters

# Project Charters

- Developing Project Charter- Part of ***Project Initiation Phase***
- Project Charter authorize PM to start the project and to use organizational resources as required
- Document that formally recognizes the existence of a project and provides direction on project objectives and management

# Project Charters

- It should address following
  - Requirements that satisfy customer, sponsor and other stakeholder needs, wants and expectations
  - Business needs, high level project description or product requirements that the project is undertaken to address
  - Project purpose or justification
  - Assigned Project Manager and authority level
  - Summary Milestone schedule
  - Stakeholder Influences
  - Functional organization and their mode of participation
  - Organizational, environment and external assumptions/contraints
  - Business case justifying the project , including Return on Investment
  - Summary Budget

# Project Charters

| Develop Project Charter Overview | | |
|---|---|---|
| INPUTS | TOOLS & TECHNIQUES | OUTPUT |
| 1. Contract Agreement<br>2. Statement of Work<br>3. Enterprise Environmental Factors<br>4. Organizational Process Assets | 1. Project Selection Methods<br>2. Project Management Methodology<br>3. Project Management Information System (PMIS)<br>4. Expert Judgment | 1. Project Charter |

# The Project Charter

**Project Charter - describes**

- Project Need and Perceived Opportunity
- Key Goals and Objectives
- Basic Project Scope
- Identified tangible and intangible benefits from the project
- Specifies project evaluation criteria

# Initiating an IT Project

- Strategic Plan of an Organization (Long term business objectives)
- IT Projects should support strategic and financial business objectives
- Identifying Project Potentials and Initial Planning
  - (Feasibility Study/If available to check system architecture is well elicited)
  - Business Area Analysis
  - Project Potentials and Credibility
  - Select IT Projects and assign Resources
  - Start developing Project Charter by using all findings stated above

# Statement of Work

- A Narrative description of products or services to be supplied under contract is called statement of work.
- Statement of Work Includes:
  - Business Need (Due to Market Demand/Customer Request, Technological Advancement, Legal Requirement, Social Needs)
  - Product Description
    - Known Outline/Characteristics of Product or Services
  - Strategic Plan
    - Understand Scope, Vision and Goal
    - Logical Framework

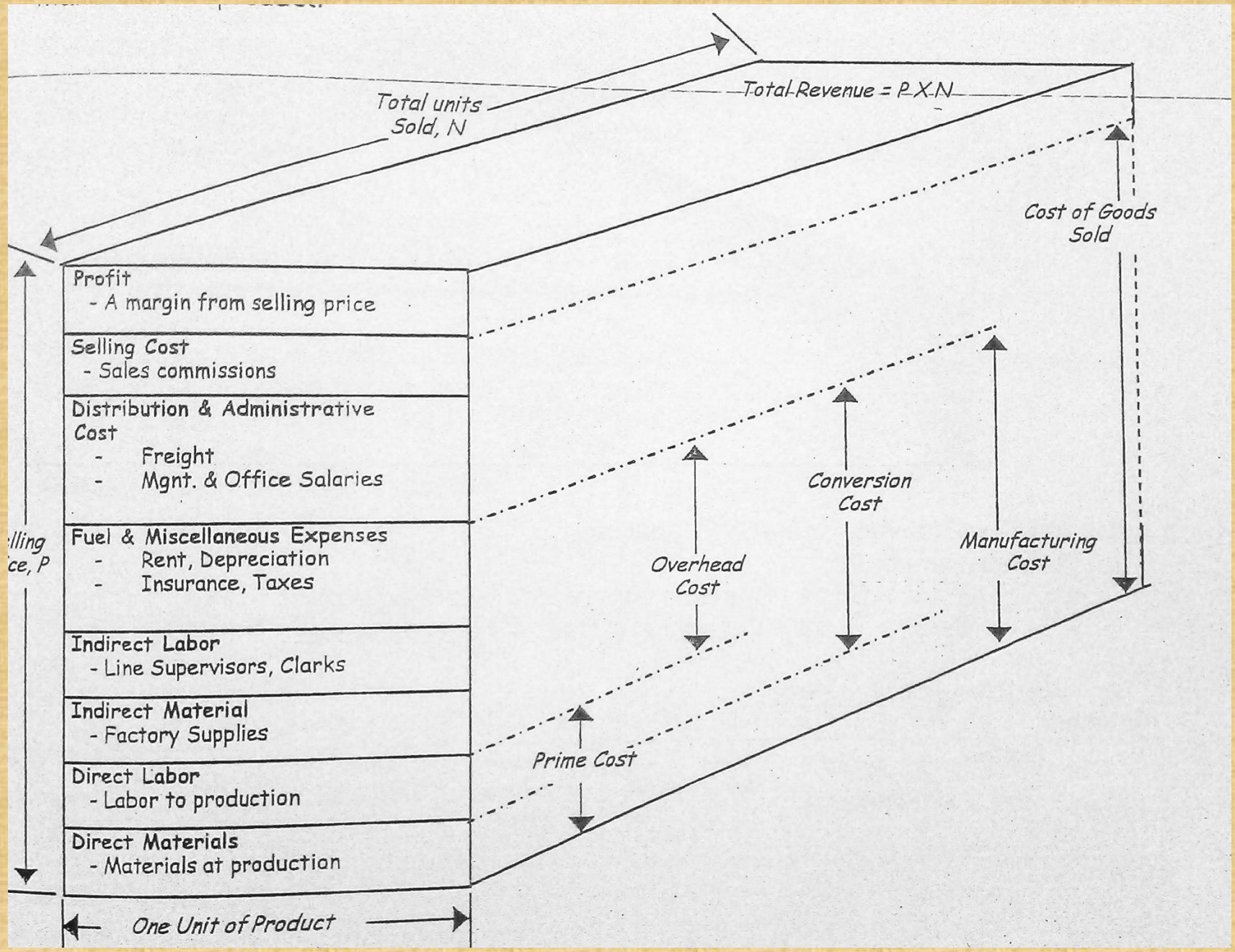
# Enterprise Environmental Factors

- Culture/Infrastructure
- Tools
- Human Resource
- Personnel Policies
- Market Place Conditions

# Organizational Process Assets

- Formal and Informal policies, procedures and guidelines that could impact how project scope is managed
- Includes policies & procedures pertaining to project scope planning & management, Historical Information of Previous project and lesson learnt
- Project Log Book (Continuous Record Keeping)
  - Project Log Book from Day 1 (Continuous logs of Date, Time, Participants/Members, Key Activities, Events, Mails, Meetings, Official Visitors etc)
  - Used in audits, inspections and post project evaluation
  - Also common source of archive data

# Profit & Cost Relationship



# Profit & Cost Relationship

- Different types of Tangible Costs
  - Capital Expenditure
  - Lease Costs
  - Professional Services
  - Sullies and Consumables
  - Support Service Cost (One-off Cost)
  - Overhead cost (Indirect Cost)
- Intangible Costs
  - Cost of Goodwill
  - Intellectual Property
  - Management Team
  - Relationship
  - Contracts

# Project Selection Methods

- Constrained Optimization Methods (Mathematical Models)
- Benefit Measurement Methods
  - Cost/Benefit Analysis
  - Weighted Scoring Model
  - Payback Period (PBP)
  - Net Present Value (NPV)
  - Profitability Index (PI)

# Project Selection Methods

- Cost Benefit Analysis
  - Estimated Benefit = Total Projected Revenue-Total Budgeted Cost
- Cost Benefit Ratio (BCR)=
  - Present Value of Benefit (PBV) **/** Initial Investment (I)
    - Accept if BCR > 1, Reject if BCR < 1, Indifferent if BCR =1
    - Present Benefit =

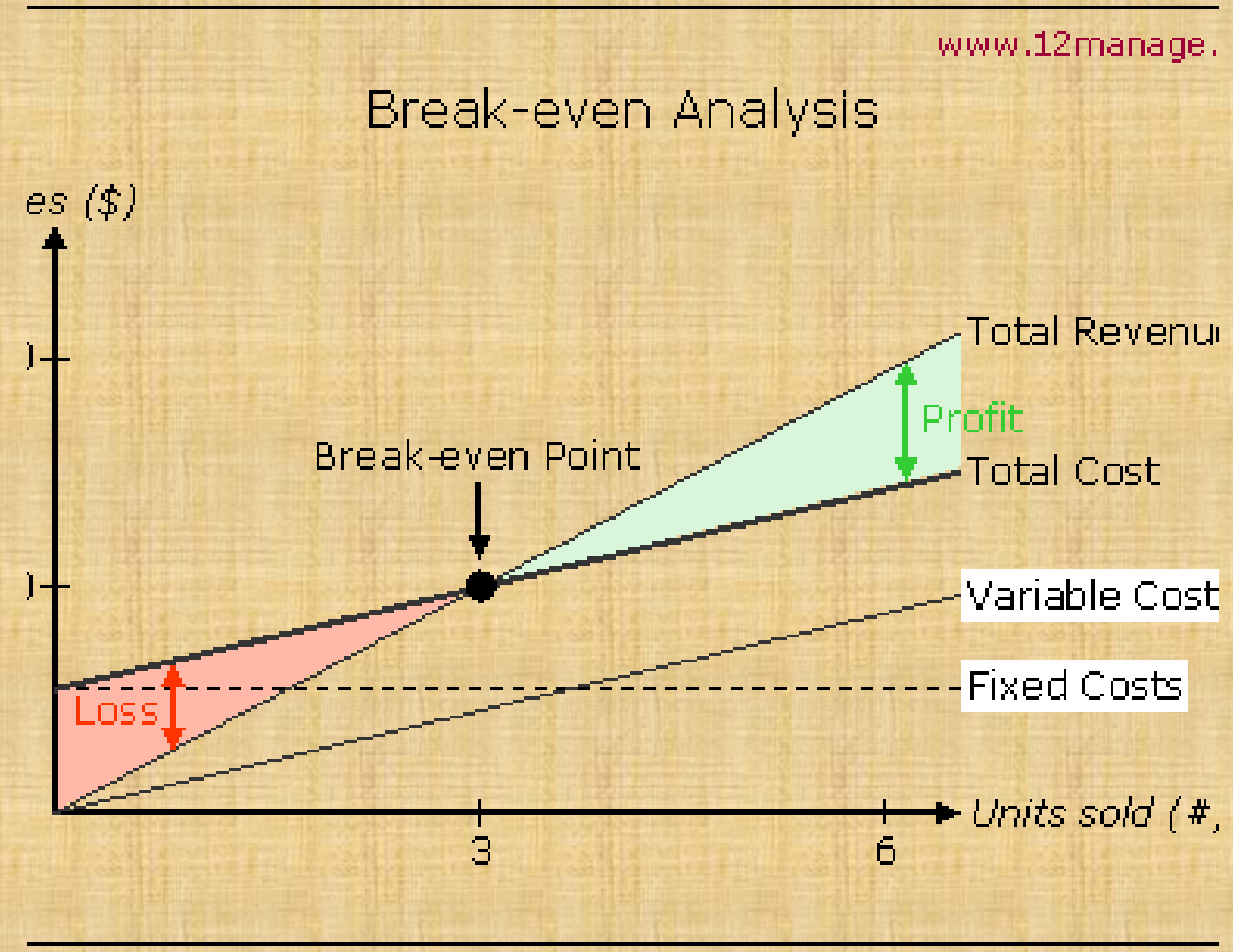
      [(***Revenue Earned with Project – Cost of the Project – Operational Cost with the Project***) – (***Revenue Earned with No Project – Operational Cost with No Project***)]

# Project Selection Methods

## At Breakeven Point

Profit = Sales – (Variable Expenses + Fixed Expenses)

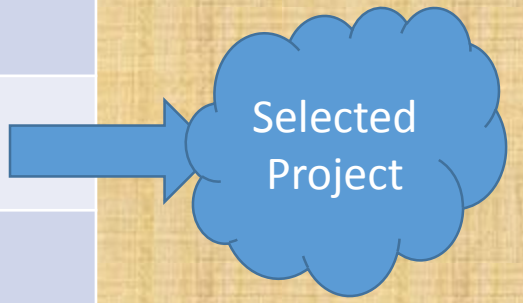
Sales= Profit + Variable expenses + Fixed Expenses



# Project Selection Methods

- Weighted Scoring Model

| Project | Weight=5 | Weight=3 | Weight=1 | Total Weighted Score |
|---|---|---|---|---|
| | Profit Potential | Marketability | Ease to Produce/Serve | |
| Project A | 5 | 4 | 4 | 41 |
| Project B | 5 | 3 | 3 | 37 |
| Project C | 3 | 4 | 2 | 29 |



# Project Selection Methods

**Payback Period**

- Estimated Length of Time to Cover the Initial Investment into the project
- Management Prefers ‘Quick Payback Time’
- Does not Consider Time Value of Money

**NET Present Value**

- NPV= Present Value of Cash Inflows – Initial Investment
  - Present Value = Future Value/(1 + rate of Interest)^Time Period
  - Selection Rule
    - If NPV > 0 Accept
    - If NPV < 0 Reject
    - If NPV = 0 Indifferent

# Project Selection Methods

- Profitability Index
  - PI= NPV/Cost
  - Projects with Higher PI will get Preference

# Project Management Methodology

- Set of Project Management Process Groups their related control functions that are consolidated and combined into a functioning unified whole
- Example: Standard Project Management Procedure for an ISO or CMMI practicing organization

# Project Management Information System

Special Software to organize resource pools and have:

- Electronic Communication
- Project Information Archive
- Project Data Analysis
- Project Data Analysis and Reporting
- Project Decision Support System
- Project Activity Issue Tracking
- Configuration/Change Management

# Expert Judgment

- Expertise from any group individual or organization to gain knowledge or training and is available from many sources like
  - Other Units in the Organization
  - Consultants
  - Stakeholders, including customer sponsors
  - Professional and Technical Associations
  - Industry Groups

# Develop Preliminary Project Scope Management

# Preliminary Project Scope Statement

| PRELIMINARY Project Scope Statement Overview | | |
|---|---|---|
| INPUTS | TOOLS AND TECHNIQUES | OUTPUT |
| 1. Project Charter<br>2. Project Statement of Work<br>3. Enterprise Environmental Factors<br>4. Organizational Process Assets | 1. Project Management Methodology<br>2. Project Management Information Systems<br>3. Expert Judgment | 1. Preliminary Project Scope Statement |

# Preliminary Project Scope Statement

- Preliminary Project Scope Statement Includes
  - Project Objectives
  - Product or Service requirement Characteristic
  - Acceptance criteria= Usefulness criteria + Correctness Criteria + Completeness Criteria
  - Project Boundaries
  - Project Deliverables
  - Project Constraints
  - Project Assumptions
  - Initial Project Organization
  - Initial Risks
  - Identified Schedule Milestones
  - Initial WBS
  - Preliminary Estimated Cost
  - Project Configuration
  - Approval Requirements

# Develop Project Management Plan

# Project Management Plan

| Project Management Plan Overview | | |
|---|---|---|
| INPUTS | TOOLS AND TECHNIQUES | OUTPUT |
| 1. Preliminary Project Scope<br>2. Project Management Processes<br>3. Enterprise Environmental Factors<br>4. Organizational Process Assets | 1. Project Management Methodology<br>2. Project Management Information Systems<br>3. Expert Judgement | 1. Project management Plan |

# Project Planning Matrix (PPM)

- Also Logical Framework  (Log Frame) is a tool used in project planning to develop a well designed, objectively described and valuation able project
- Provides summary of project design documents and explains
  - Why Project is undertaken?
  - What is project's underline rationale?
  - What is expected accomplishment if project is completed on time?
  - What specific activities need to be completed to make project successful?
- Contains Framework having
  - Vertical Logic (Project Logic) for achievements
  - Horizontal Logic (Completeness and Correctness Criteria) for built in Consistency

# Project Planning Matrix (PPM)

HORIZONTAL LOGIC →

| Narrative Summary | Objectively Verifiable Indicators (OVI) | Means of Verification (MOV) | Assumptio Risks |
|---|---|---|---|
| Goal | | | |
| Purpose | | | |
| Outputs | | | |
| Activities | | | |

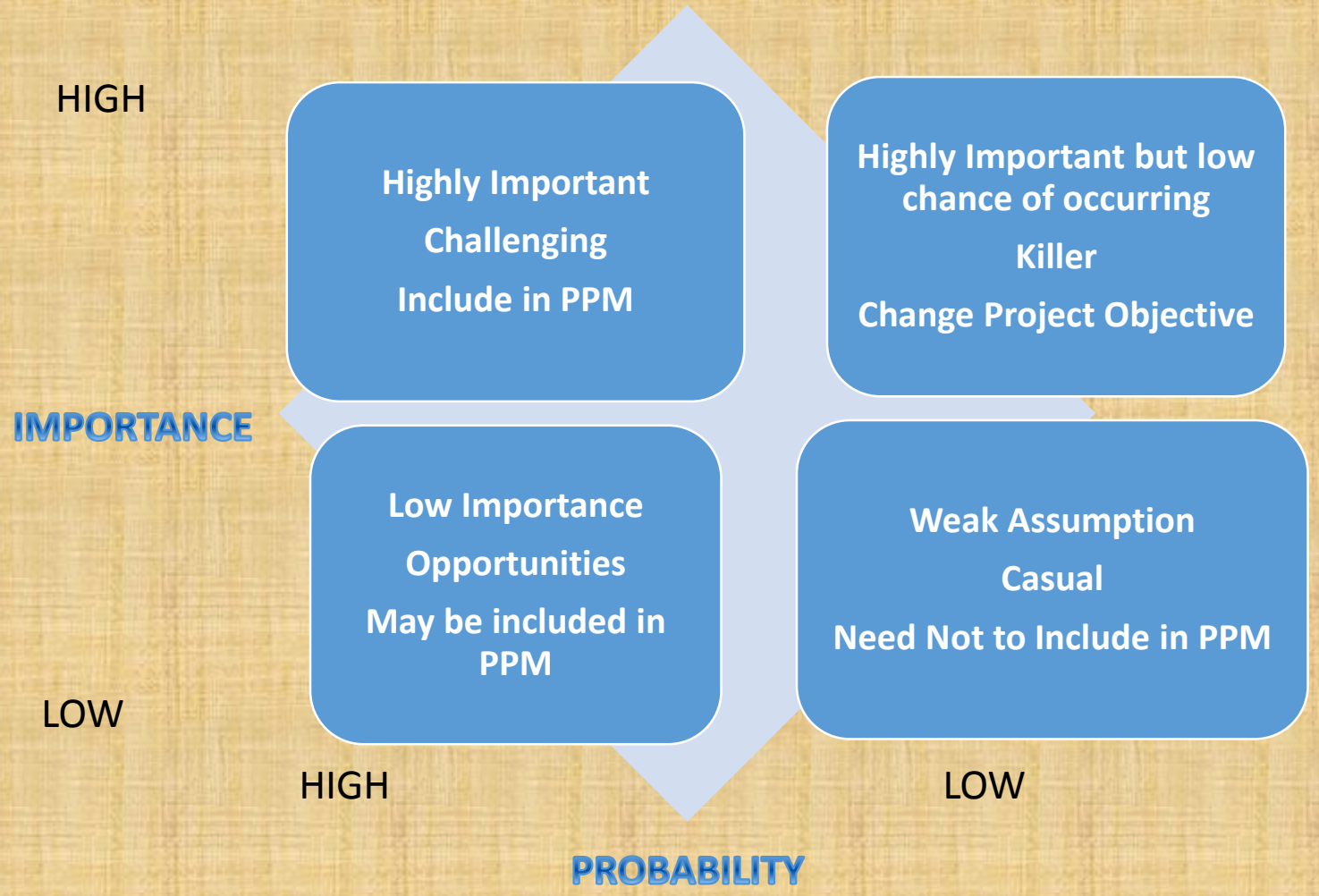
# Project Planning Matrix (PPM)

- Characteristics of PPM
  - Project Logic moves vertically from Inputs to Goals
  - Horizontal Logic moves from Narrative Summary to Important Assumptions
  - All cell items should be linked with proven relationship. This relationship cannot be casual.
  - Better cause effect linkage between cell items for better project design

# Project Planning Matrix (PPM)

- Characteristics of Good Indicators
  - Measurable and data Driven
  - Objectively Verifiable
  - Explicitly targeted in terms of quality, quantity time and locale
  - High possibility of demonstrable evidence

# IA’s should be tested for their importance



# Project Planning Matrix (PPM)

Stakeholder Analysis

- Stakeholders Names and Organizations
- Roles on the Project
- Unique facts about stakeholders
- Level of Influence and interest in the project
- Suggestions fro Managing relationships and Nature of Reports

Involving Stakeholders

- Firstly- Increases chances of success by building a self correcting feedback loop
- Secondly- builds confidence in the product and will greatly ease acceptance to target customers
- Thirdly- to identify and address any conflicting issues

# Key Project Planning Deliverables

- Key Elements of Project Plan
  - Introduction or Overview of the Project
  - Description of how the project is organized
  - Management and technical processes used on the project
  - Work to be done, schedule and budget information

# Baseline Management

- Develop Baseline Project Plan following the steps:
  - Set measures
  - Record Progress
  - Calculate the Variance
  - Take Remedial Action

- Key Elements of Baseline Project Plan
  - Scope Statement
  - WBS
  - Risk Management Plan
  - Responsibility Assignment Matrix
  - Logical Project Schedule
  - Subsidiary (supporting) Management Plan
  - Performance Measurement Baseline (Scope, Schedule and Cost)

## HR Budget

| Project Name: | | | Project Sponsor: | | | | Project Code: | | | | | Financial Year: | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Person's Name* | *Department / Group* | *Designation* | *Grade* | *Basic Pay* | *Starting Pay* | *Increment Option* | *Increment Rate* | *Pay Increase within Project Period* | *Total Pay within Project Period* | *House Rent* | *Medical Allowance* | *Transport Allowance* | *Festival Bonus* | *Dearness Allowance* | *Other Allowance / Bonus* | *Total* |
| A | B | C | d | E | f = (e * experience factor) | g | h | i = (e * h) | j = (f + i * effective duration) | k | l | m | n | o | p | q = (j + k + l + m + n + o + p) |
| | | | | | | | | | | | | | | | | |
| | | | *Total* | | | | | | | | | | | | | |

## Procurement Budget

| **Project Name:** | | | | **Project Sponsor:** | | | **Project Code:** | | **Financial Year:** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Package #* | *Lot #* | *Item Description as per Project Plan* | *Unit* | *Quantity* | *Procurement Type* | *Approving Authority* | *Source of Funds* | *Estimated Cost (Monetary Unit)* | *Indicative Date* | | | *Ref. #* |
| | | | | | | | | | *Tender Invitation* | *Contract Signing* | *Completion of Procurement* | |
| | | *Goods* | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | *Works* | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | *Total* | | | | | | | | | | |

# Direct & Manage Project Execution

# Direct and Manage Project Execution

| Direct and Manage Project Execution Overview | | |
|---|---|---|
| INPUTS | TOOLS AND TECHNIQUES | OUTPUT |
| 1. Project Management Plan<br>2. Approved Corrective Actions<br>3. Approved Preventive Actions<br>4. Approved Change Request<br>5. Approved Defect Repair<br>6. Validate Defect Repair<br>7. Admnistrative Closure Procedure | 1. Project Management Methodology<br>2. Project Management Information Systems | 1. Deliverables in Project Plan<br>2. Requested Changes<br>3. Implemented Change Request<br>4. Implemented Corrective Action<br>5. Implemented Preventive Actions<br>6. Implemented Defect Repair<br>7. Work Performance Information |

# Development Task Implementation Workflow in IT Projects

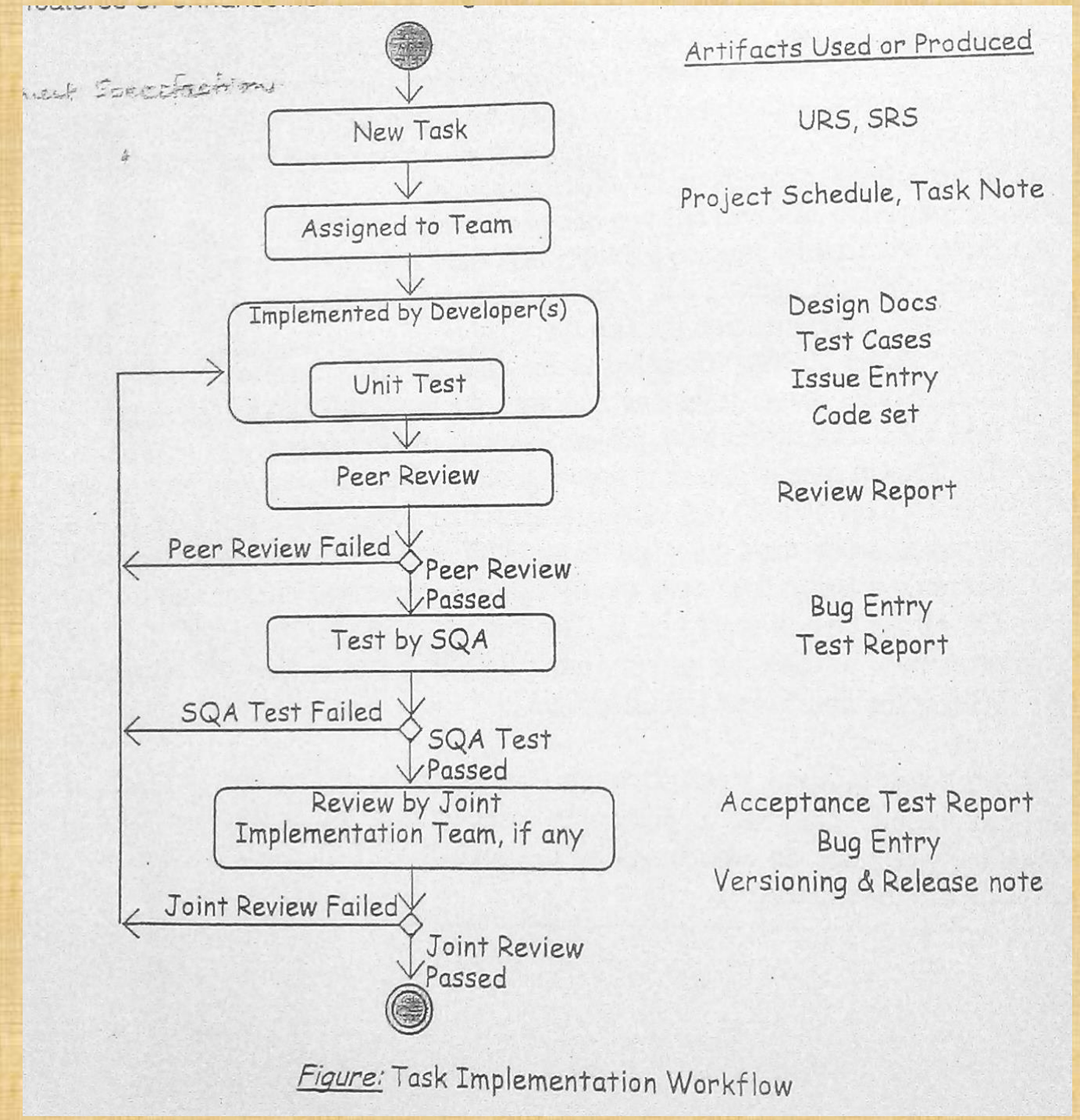



*Figure:* Task Implementation Workflow

# Work Performance Info

- It Includes:
  - Schedule Progress
  - Completed, Pending and Incomplete Deliverables
  - Extent to which quality standards are being met
  - Resource Utilization Details
  - Lessons Learnt
  - Conflicting Issues that need to be addressed
- Positive Perception (Done by PM)
  - At the end of each execution cycle
  - Special Release Note
  - Go Live Launch
  - Make a speech highlighting team spirit

# Monitor & Control Project Work

# Tracking Project Progress- PM Walk Through

- Key Tasks
  - Save a Baseline
  - Collect Actual Data
  - Update and Refresh Project Plan
  - Analyze dependencies and constraints
  - Analyze Project Plan
    - Study Variance for Actual Start, Actual Finish, Actual Work, remaining Work)
    - Filtered Delayed Tasks
    - Indentify Critical Tasks
    - Predict Risks, Costs, Resource, Work Completion
    - Take Decisions on Corrective Actions
    - Share Project Status

# Optimizing Benefit and Benefit Tracking

| *Project Benefit Tracking Chart* | | | | | | |
|---|---|---|---|---|---|---|
| *Criteria* | *Initial Estimate* | *1st Quarter* | *2nd Quarter* | *3rd Quarter* | *4th Quarter* | *Total* |
| *Financial Benefits* | | | | | | |
| % Paid Back | | | | | | |
| Profitability Index, PI | | | | | | |
| CBA | [Estimated Benefit] | [Present Benefit] | [Present Benefit] | [Present Benefit] | [Present Benefit] | [Present Benefit] |
| *Non-Financial Benefits* | | | | | | |
| Criteria 1 | | | | | | |
| Criteria 2 | | | | | | |
| *Project Deliverables* | | | | | | |
| Milestone 1 | | | | | | |
| Milestone 2 | | | | | | |

# Project Status Report

## Status Report

For

Biris

for the week ending 21 AUG 2004

1. Customer Complaints:
   A. Problem with Accounts - Petty Cash
   B. Problem with Sales& Distribution - Quota Free Product, Performance Report

Till to date 18 Bugs are remaining . . . . . Ref.: http://101.22.330.44/bugzilla/

*2. Milestones Achieved and Missed*

| Task ID | Task description | Status | Remark | Delay |
|---|---|---|---|---|
| 1 | To make the System stable to end user | Working | | |

*3. Milestones planned for Next Week*

1. Factory Distribution (including Raw Material Inventory, BOM / Batch and Journal Entry)

*4. Quality Assurance Activities*

| | | | | |
|---|---|---|---|---|
| 2 | Acceptance Test | Mr. Musfiq is working, assisted by Ms. Rumana | *Planning made to involve end user as much as possible* | |

*5. Issues*

| No | Issue | Raised By | Action By | Status |
|---|---|---|---|---|
| 1 | Lack of skilled work force (One Senior and Two Junior Developers) | PM | Senior Management | |

# Project Status Report
# Overall Risk Status with Arbitrary Data

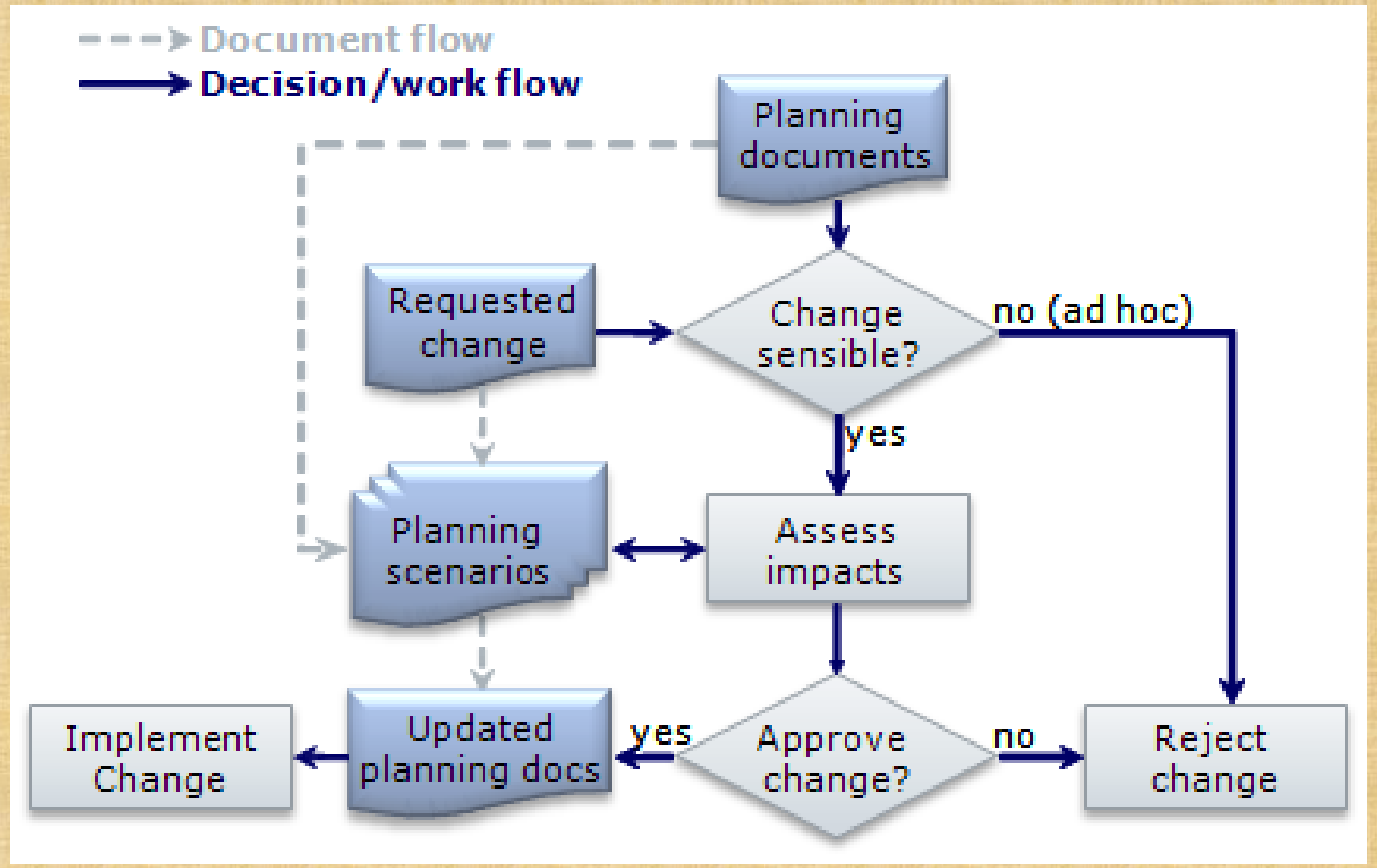
| Current Status | Mile-stone Missed This Week | Measures Taken | Total Schedule Variance (Approx %) | Risk Descp | Risk Probability | Risk Impact | Risk Exposure | Comment |
|---|---|---|---|---|---|---|---|---|
| Trying to improve the performance of XYZ Application | Module Delivery | Total team is asked to work for system stability | Unidentified | Failure in Timely Delivery | 6 | 7 | 56 | Negotiated |

# Integrated Change Control

# Integrated Change Control

| Integrated Change Management | | |
|---|---|---|
| INPUTS | TOOLS AND TECHNIQUES | OUTPUT |
| 1. Project Management Plan<br>2. Requested Changes<br>3. Work Performance Information<br>4. Recommended Corrective Actions<br>5. Recommended Preventive Actions<br>6. Recommended Defect Repair<br>7. Deliverables | 1. Project Management Methodology<br>2. Project Management Information Systems<br>3. Expert Judgment | 1. Approved Change Request<br>2. Rejected Change Request<br>3. Updated Project Management Plan<br>4. Updated Project Scope Statement<br>5. Approved Corrective Actions<br>6. Approved Defect Repair<br>7. Validated Defect Repair<br>8. Deliverables |

# Integrated Change Control Process



# Configuration Management

- Identify and document functional and physical characteristics of the item or system under consideration
- Control and changes to configuration item
- Record Report Change
- Audit Configuration Items
- Other Processes like Requirement Traceability/ Workflow Management/Technical Design/QA and Test) get information from this

# Configuration Management

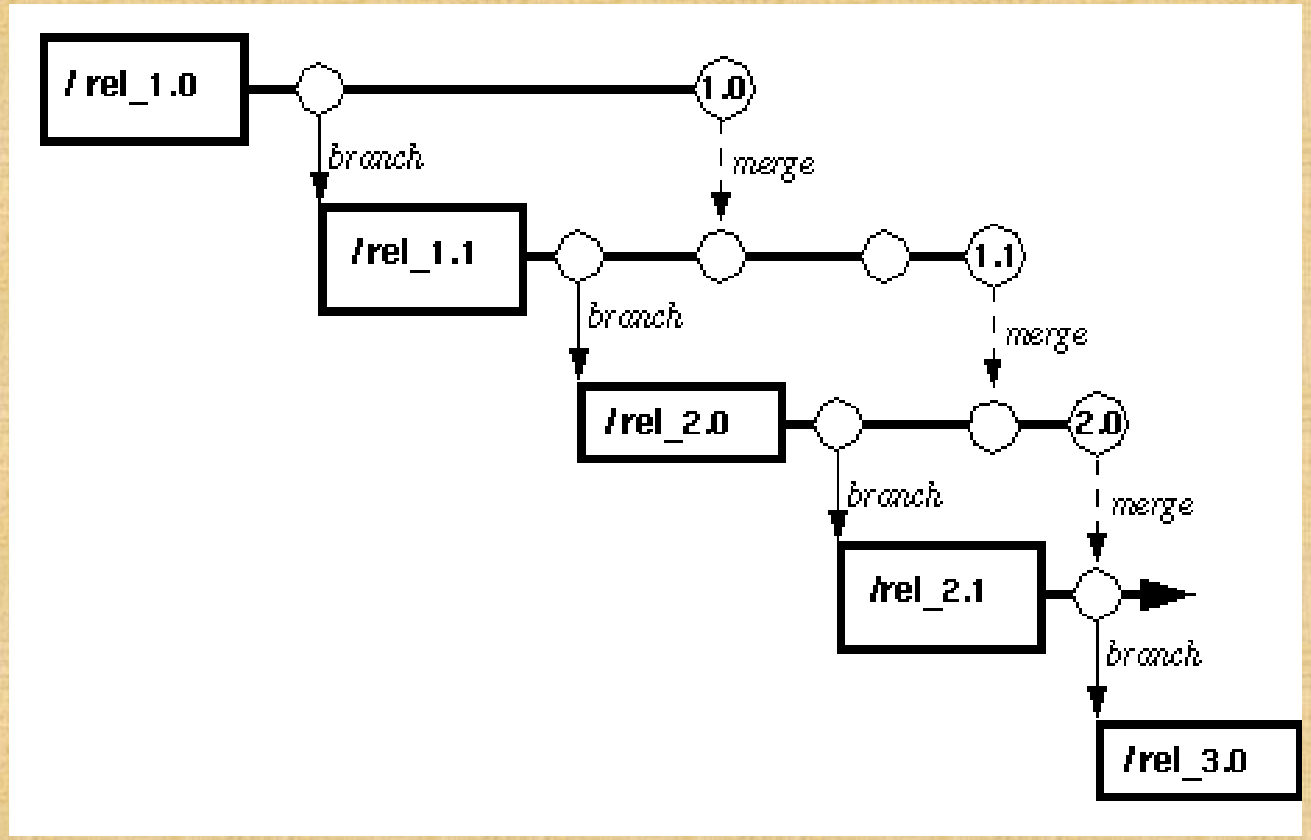
- Configurable objects
  - Key Business Requirements
  - Key Design Requirements
  - Key Interfacing Requirements

# Change Control Board

- Consisting of development manager, test lead, and a product manager
- Assess issues and approve or reject each request for change
- Each change is discussed at the weekly development meeting and course of action is decided and assigned to implementation team
- Tracking Changes

# Version Control and Build Management

- Work with Private Copies of Codes
- and Check in changes to central repository
- Also detects concurrent changes
- Maintains history and supports Rollback
- Build Management
  - PM Needs to institutionalize a check in/check out policy to ensure code quality regardless of where a software is created



# Close Project

| Close Project Overview | | |
|---|---|---|
| INPUTS | TOOLS AND TECHNIQUES | OUTPUT |
| 1. Project Management Plan<br>2. Contract Documentation<br>3. Enterprise Environmental Factors<br>4. Organizational Process Assets<br>5. Work Performance Information<br>6. Deliverables | 1. Project Management Methodology<br>2. Project Management Information Systems | 1. Administrative Closure Procedure<br>2. Contract Closure Procedure<br>3. Final Product Service or Result<br>4. Updated Organizational Process Assets |

# Phase End Activities

- Facilitate project team while changing from one phase to other
- Activities like
  - Peer review/Inspection/Audit/Test
  - Release Management
  - Review Meeting
  - Update Project Plan/or for Next Phase
  - Status Reporting
  - End User Education

# Administrative Closure Procedure

- During closing of project
  - Ensure project plan has proper budget/time for closure
  - Populate Project Archives like
    - Indexed Project Reports
    - Financial Records
    - Update Historical Databases
    - Formal Acceptance by Client
    - Recommendation Support from Sponsors/Support Organization
    - Maintenance/Upgrade
    - Trainings
    - Lesson Learnt

# Contract Closure Procedure

- Steps
  - Verification of Contract requirement
  - Formal Acceptance by Client
  - Performance Evaluation by buyer of contract
  - Performance evaluation by seller of contract
  - Procurement Audit
  - Update Project Files and historical Databases

# Updated Organizational Process Assets

- Formal Acceptance documentation
- Project Files
- Project Closure Documentation
- Archiving is the last step
- Historical Information and lesson learnt

# Project Scope Management

# Outline

- Project Scope Management
- Project Scope Planning
- Create Work Breakdown Structure
- Scope Verification
- Scope Control

# Project Scope Management

- Scope refers to all the work involved in creating the products of the project and the processes used to create them
- Project scope management includes the processes involved in defining and controlling what is or is not included in the project
- The project team and stakeholders must have the same understanding of what products will be produces as a result of a project and what processes will be used in producing them

# Project Scope and Project Scope

**Scope** – The sum of the products, services, and results to be provided as a project.

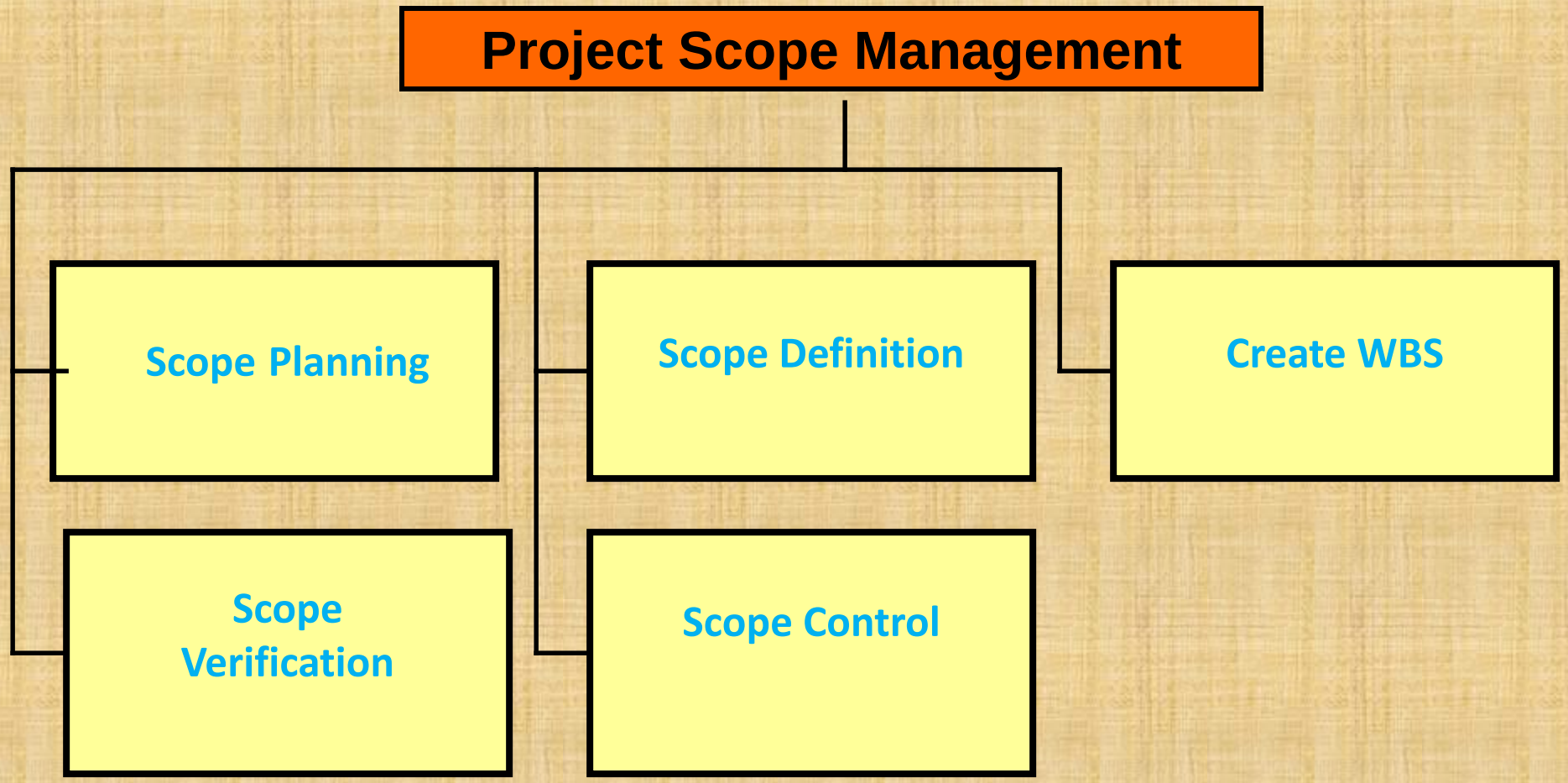
**Project Scope**

- The work that must be done in order to deliver a product, service, or result with the specified features and functions.
- Completion measured against the **project plan.**

**Product Scope**

- The features and functions that characterize a product service, or result.
- Completion is measured against the **product requirements.**

# Project Scope Management



# Project Scope Management Processes

- Initiation: beginning a project or continuing to the next phase
- Scope planning: developing documents to provide the basis for future project decisions
- Scope definition: subdividing the major project deliverables into smaller, more manageable components
- Scope verification: formalizing acceptance of the project scope
- Scope change control: controlling changes to project scope

# Sample Scope Management Plan

**Preparing the Scope Statement**

The preliminary scope statement will provide the basis for preparing more detailed scope statements. The scope statement needs to be reviewed with key stakeholders, especially the project sponsor, potential suppliers, and users of the project deliverables. Follow corporate templates when available, and be sure to have expert input in defining the scope. Since the scope statement becomes more detailed and therefore longer as the project progresses, limit the length and complexity of the scope statement by placing details in attachments, such as product descriptions, specifications, corporate standards, etc. Each version of the scope statement must be clearly labeled and dated to ensure that everyone uses the most recent version. Changes and additions will be highlighted and communicated to the appropriate personnel. The scope statement will be available on the password-protected project Web site.

**Creating the Work Breakdown Structure (WBS)**

The project team will work together to create the WBS. The project sponsor and steering committee will review the WBS to ensure that all of the work required to complete the project is included in the WBS. The project team will review WBSs of similar projects, review the company's corporate guidelines for creating WBSs, and focus on determining all of the deliverables required for the project. The project team will determine the tasks required to complete each deliverable, which will be reviewed and agreed to by the project manager, sponsor, and steering committee. These tasks should include product- and process-related tasks. A general guideline to follow for determining the level of detail is that the lowest level of the WBS should normally take no longer than two weeks to complete. The WBS can be revised as needed, and the sponsor and steering committee must approve these revisions.

**Verifying Completion of Project Deliverables**

The project manager will work with the sponsor and steering committee to develop a process for verifying successful completion of project deliverables. In general, the project sponsor will

# Project Scope Planning

- Scope Planning is the process of progressively elaborating and documenting the project work
- It identifies the project objectives and deliverables and forms basis of agreement
- Scope Planning process starts in Project Planning Phase and uses the outputs of the Initiation Process

# Project Scope Planning

| Scope Planning Overview | | |
|---|---|---|
| INPUTS | TOOLS AND TECHNIQUES | OUTPUT |
| 1. Enterprise Environmental factors<br>2. Organization Process Assets<br>3. Project Charter<br>4. Preliminary Project Scope Statement<br>5. Project Management Plan | 1. Expert Judgment<br>2. Templates, Forms, Standards | 1. Project Scope Management Plan |

# Project Scope Planning

Understanding Requirement Specifications

- Functional Requirements (day to day requirements of end users or stakeholders)
- Non functional Requirements (Performance, Usability, Reliability, Security, Financial, Legal, Operational, Specialization)
- Capturing Requirements (Interviews, Questionnaires, In-depth Observations, Domain Expert Suggestions)
- Documenting Requirements (SMART rule to MUSCOW rule)
  - MUSCOW- must have, should have, could have, would have)
  - Then System Requirement Specifications (SRS) should be prepared (will contain business cases and user cases)

# Project Scope Planning

- Organizational Process Assets
  - Formal and Informal policies procedures and guidelines that could impact how the project is managed
  - Includes, Organizational Policies, Organizational Procedures, Historical Info about previous projects)

# Project Scope Planning

**Scope Statement**

- Document Used to develop and confirm a common understanding of scope of project
  - Project Justification
  - Brief description of project's products
  - A summary of all project deliverables
  - A statement of what determines project success (Key Success Factors)

*Components of Scope Statement*

- Project Justification
  - The need for Project
  - Cost Benefit Analysis, Cash Flow Analysis
- Project Product
  - Product Specification
- Project Deliverables
  - Major Outcomes of Project
- Project Objectives
  - Must be SMART

# Project Scope Planning

Estimating IT Project Scope

- All IT PM's have to measure project scope then they can go for Time and Cost Estimation
- Aspects of Estimation
  - Smaller tasks are easier to estimate
  - Any error in estimation increases project risk
  - Estimate by team and modification by experts
  - Estimate in 'work effort required by individual' not in task duration
  - Types of Estimation
    - Scope or Size Estimation
    - Time Estimation
    - Cost Estimation

# Estimation: Function Point Technique

10 Point estimation technique

ILF (Internal Logical File)
EIF( External Logical File)
EI(External Input)
EO(External Output)
EQ(External Inquiry)

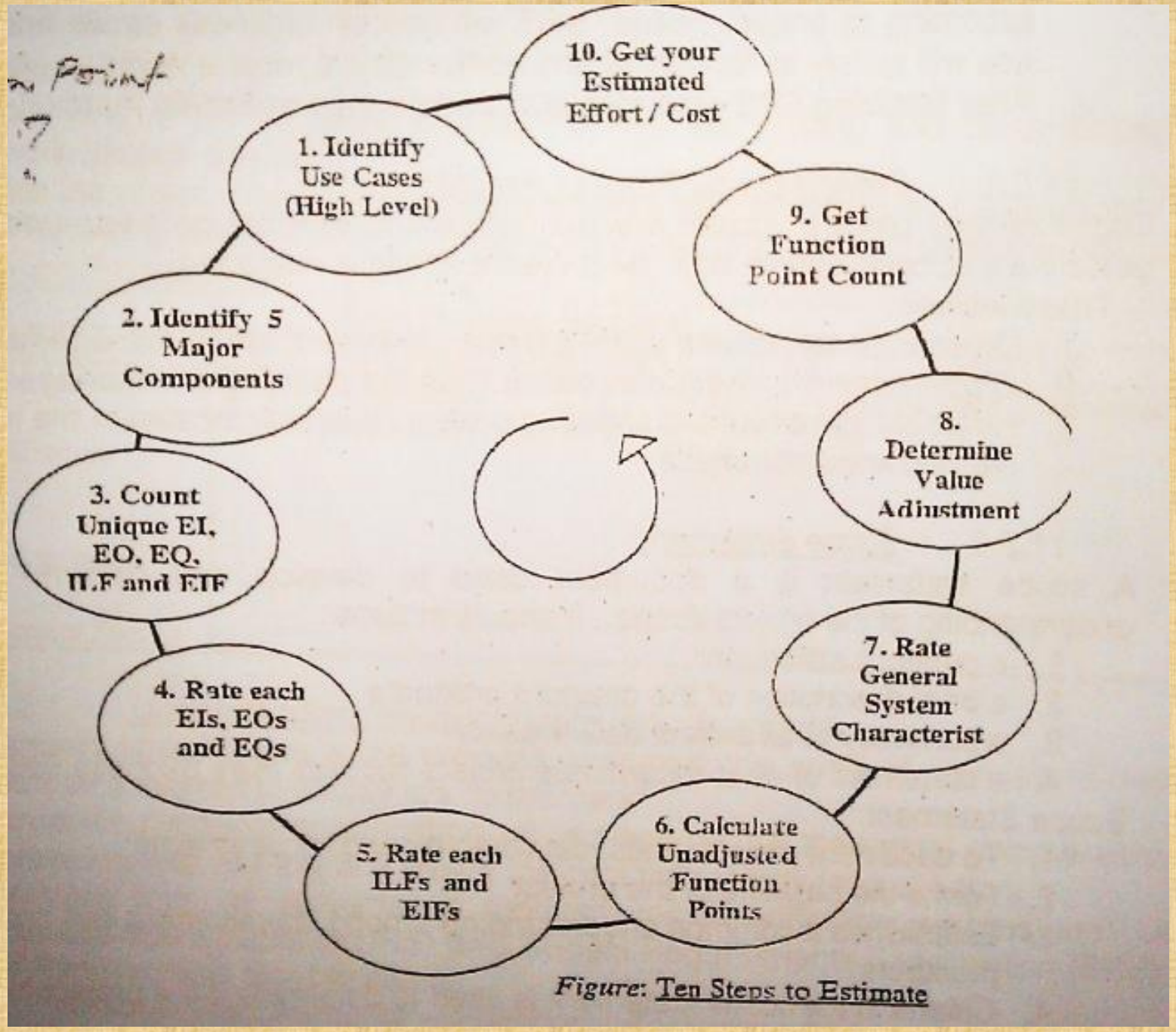



*Figure*: Ten Steps to Estimate

# Project Scope Planning

- PM can use this FP technique to realize two main tasks
  - One is concerned with productivity and can be accomplished by estimating the number of function points delivered per customer
  - Another is referred to the estimation of software development cost. This can be achieved by using function point data in cost estimation model

# Scope Definition

## Scope Definition

- Subdividing major project components into smaller ones to improve
  - accuracy of cost, time and resource estimates
  - Define a baseline for performance measurement and control
  - Facilitate clear responsibility assignments

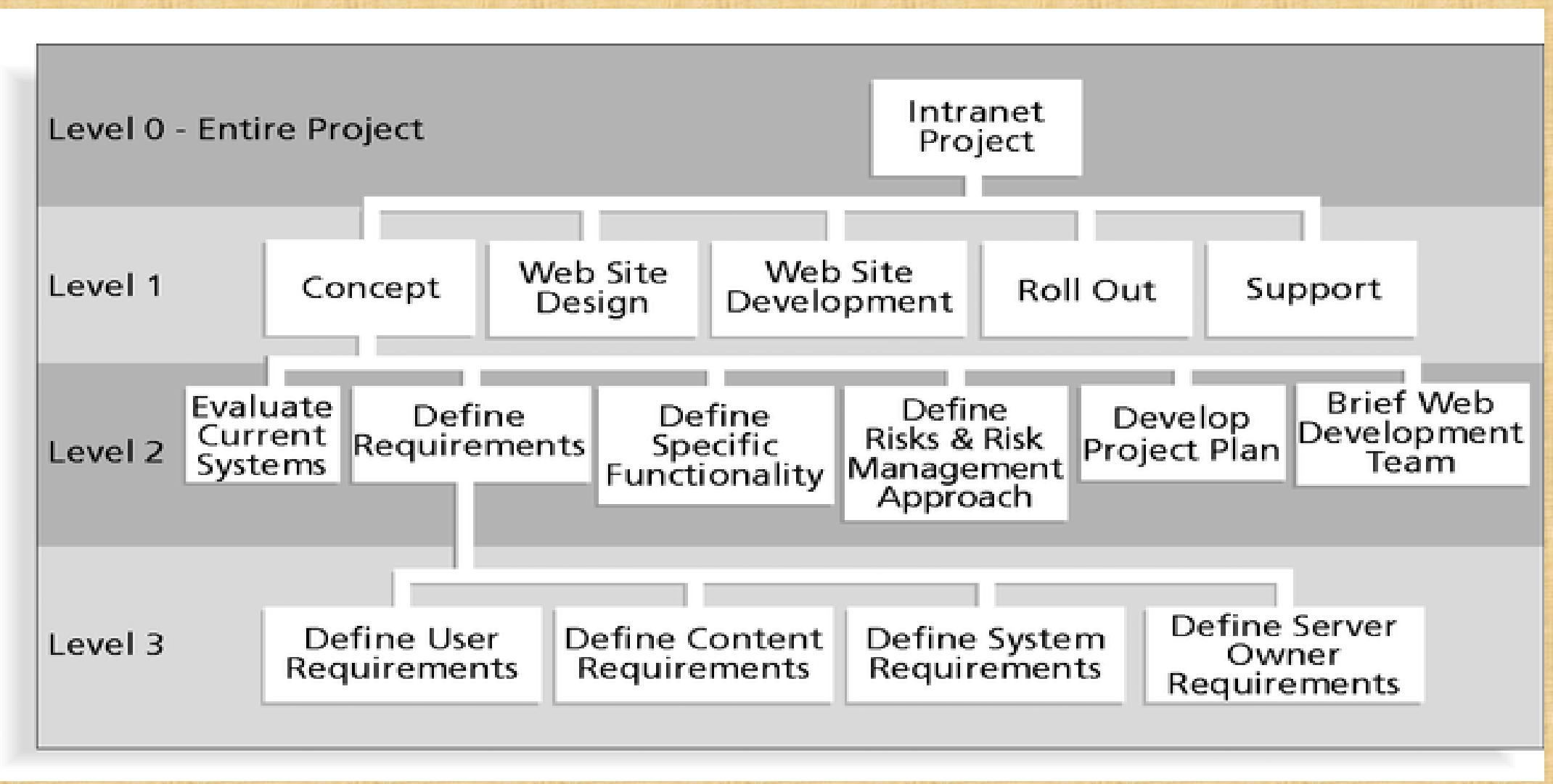
# Scope Definition

| Scope Definition Overview | | |
|---|---|---|
| INPUTS | TOOLS AND TECHNIQUES | OUTPUT |
| 1. Enterprise Environmental factors<br>2. Organization Process Assets<br>3. Project Charter<br>4. Preliminary Project Scope Statement<br>5. Project Management Plan | 1. Product Analysis<br>2. Alternative Identification<br>3. Stakeholder Analysis | 1. Project Scope Statement<br>2. Requested Changes<br>3. Updated Project Scope Management Plan |

# Work Breakdown Structure (WBS)

- A **WBS** is a deliverable-oriented grouping of the work involved in a project that defines the total scope of the project
- WBS is a foundation document that provides the basis for planning and managing project schedules, costs, resources, and changes
- **Decomposition** is subdividing project deliverables into smaller pieces
- A **work package** is a task at the lowest level of the WBS

# Sample Intranet WBS-Organized by Phase



# Approaches to Developing WBSs

- Using guidelines: some organizations, like the DOD, provide guidelines for preparing WBSs
- The **analogy approach**: review WBSs of similar projects and tailor to your project
- The **top-down approach**: start with the largest items of the project and break them down
- The **bottom-up approach**: start with the specific tasks and roll them up
- Mind-mapping approach: **mind mapping** is a technique that uses branches radiating out from a core idea to structure thoughts and ideas

# Responsibility Assignment Matrix (RACI Chart)

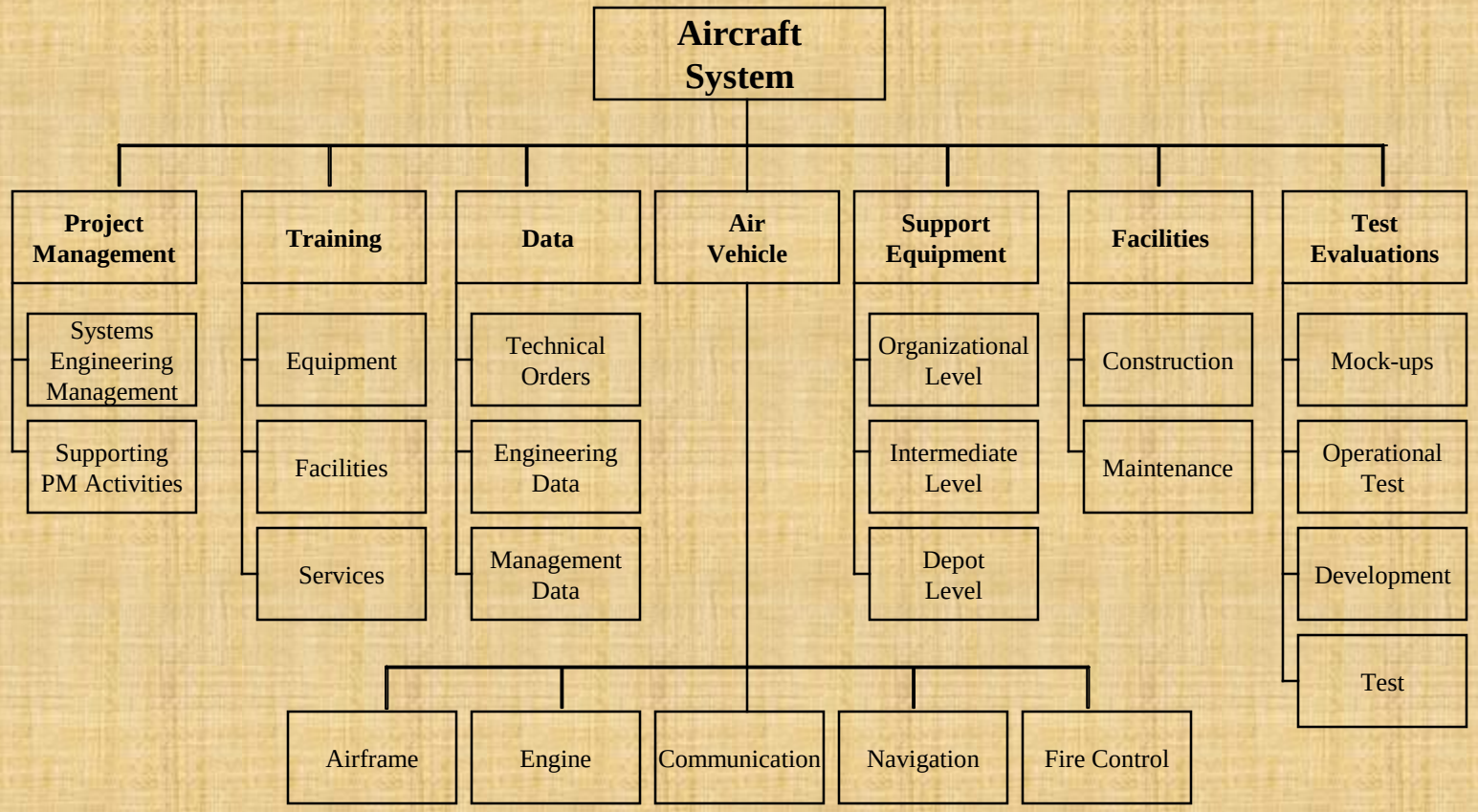
R=Responsible
A=Accountable
C=To be Consulted
I=To be Informed

| **RACI Chart** | **Person** | | | | |
|---|---|---|---|---|---|
| **Activity** | **Person 1** | **Person 2** | **Person 3** | **Person 4** | **Person 5** |
| Define | A | R | I | I,C | I |
| Design | I | A | R | C | C |
| Develop | I | A | R | C | C |
| Test | A | I,R | I | R | I |
| Implemantation | I | R | A | C | I |

# Finalizing WBS with Cost Benefit Analysis

| | WBS with Cost Benefit Analysis | | | |
|---|---|---|---|---|
| **Task** | **Duration** | **Working Team** | **Benefit** | **Cost** |
| Work Package 1 | T1 | P1 | 10M | 5M |
| Work Package 2 | T2 | P2 | 20M | 10M |
| Work Package 3 | T3 | P1 | 30M | 20M |
| **Total** | **T1,T2,T3** | **P1,P2** | **60M** | **35M** |

# Create WBS – Example




This WBS is illustrative only. It is not intended to represent the full project scope of any specific project, nor to imply that this is the only way to organize a WBS on this type of project

# Scope Verification

- Scope Verification is the process of formalizing acceptance of the completed project deliverables.
- Scope Verification includes:
  - Obtaining formal acceptance of the project scope by the stakeholders (sponsor, client, customer, etc.).
  - Reviewing deliverables and work results to ensure that all were completed correctly and satisfactorily.
  - Determining completion, especially if the project is terminated early. The scope verification process should establish and document the level and extent of completion.

# Scope Verification

| Scope Verification Overview | | |
|---|---|---|
| INPUTS | TOOLS AND TECHNIQUES | OUTPUT |
| 1. Project Scope Statement<br>2. WBS Dictionary<br>3. Project Scope Management Plan<br>4. Deliverables | 1. Inspection | 1. Accepted Deliverables<br>2. Requested Changes<br>3. Recommended Corrective Action |

# Scope Verification

Inputs

Project Scope Statement:

- Describes, in detail, the project's deliverables and the work required to create those deliverables. It also provides a common understanding of the project scope among all project stakeholders and describes the project's major objectives.

WBS Dictionary

- A document that describes each component of the WBS.

# Scope Verification

Inputs

Project Scope Management

- A document that provides guidelines on how project scope will be defined, documented, verified, managed, and controlled by the project management team.

Deliverables

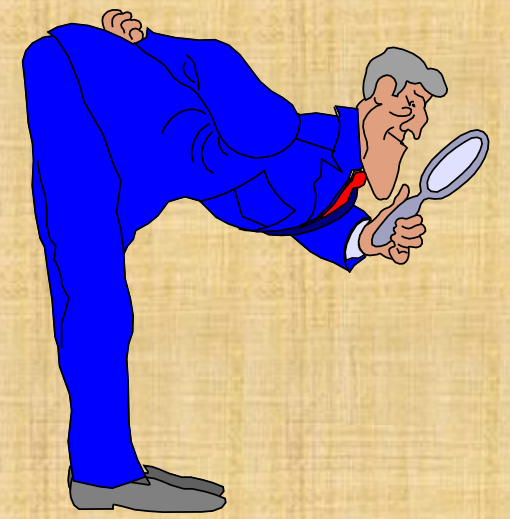
- Any unique and verifiable product, result, or capability to perform a service that must be produced to complete a process, phase, or project.

# Scope Verification

Tools and Techniques

Inspection

- Inspection includes activities such as measuring, examining and verifying that work and deliverables conform to requirements and product acceptance criteria.  Many are variously called:
  - Product reviews
  - Reviews
  - Audits
  - Walkthroughs



# Scope Verification

Outputs

Accepted Deliverables:

- Documents completed deliverables that have been accepted.

Requested Changes:

- Requested changes generated from the Scope Verification process are processed for review and disposition through the Integrated Change Control process.

Recommended Corrective Actions:

- Recommendations required to bring expected future project performance into conformance with the Project Management Plan.

# Scope Control

- Project Scope Control is concerned with influencing the factors that create project scope changes and controlling the impact of those changes.
  - Change is inevitable, thereby must have some type of change control process.
  - Scope Control assures that all requested changes are processed through the Integrated Change Control process.
  - Scope Control is proactive, rather than reactive.
  - Uncontrolled changes are often referred to as
  - **SCOPE CREEP** which incrementally may surprise the project team with budget, schedule, resource impacts
  - It must be managed by formal Change Control Process

# Scope Control

| Scope Control Overview | | |
|---|---|---|
| INPUTS | TOOLS AND TECHNIQUES | OUTPUT |
| 1. Project Scope Statement<br>2. WBS<br>3. WBS Dictionary<br>4. Project Scope Management Plan<br>5. Performance Reports<br>6. Approved Change Request<br>7. Work Performance Information | 1. Change Control System<br>2. Variance Analysis<br>3. Re-Planning<br>4. Configuration Management Systems | 1. Updated Project Scope Statement<br>2. Updated WBS/ WBS Dictionary<br>3. Updated Scope Baseline<br>4. Requested Changes<br>5. Recommended Corrective Actions<br>6. Updated Organizational Process Assets<br>7. Updated PM Plan |

# References


- Project Management: A Systems Approach to Planning, Scheduling and Controlling, Harold Kerzner, 1987, CBS Publishers, New Delhi.
- Lecture Notes of MSTIM, Pulchowk Campus by Dr. Rajendra Prasad Adhikari.
- IT Project Management, NAAS, 2009.

# Thank You

Finally, Its over.