Initiating

- Project Charter
- Stakeholder Identification

1

Project Charter

- Justification
- Measurable Objectives
- High level
  - Scope
  - Schedule
  - Cost
  - Risks
  - Assumptions
  - Dependencies
  - Key stakeholders and authorities

2

Outputs

- Stakeholder Register

Name	Designation	Department	Organisation	Role in Project	Type of Communication	Major Requirement	Expectations	Influence on project outcome	E-mail	phone
John Smith	Director	IT/IS	Client	Client Project Manager	Daily Conference Calls	Application back end	Within budget and on time delivery	Influencer		
Anna Maria	Manager	Marketing	Client	Client PM Assistant	Weekly conference call	Application front end	High quality visuals	Supporter		

3

Rolling Wave Planning

- Detailed planning for subsequent phases is done once the previous phase nears completion

4

Baselines

- During the planning processes the Baselines are developed
- The "Baseline" represents the initial planning of the project
- It includes all the information about the activities
  - Duration, Start / Finish Date)
  - Resources and assignments
  - Work &
  - Cost

5

Outputs

- Requirements Documentation
  - describes how individual requirements meet the business need for the project
  - Requirements should be clear and unambiguous
  - Should be measurable and testable
- Requirements Traceability Matrix

6

Requirements Traceability Matrix:

- GPS of your QA
  - From the:
    - Business Requirements Development (BRD) to (what is required?)
    - Functional Requirements Development (FRD) to (Define functions)
    - Requirements Traceability Matrix

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Requirements Traceability Matrix

Project Name:	
Cost Center:	
Project Description:	

ID	Associate ID	Requirements Description	Business Needs, Opportunities, Goals, Objectives	Project Objectives	WBS Deliverables	Product Design	Product Development	Test Cases
001	1.0							
	1.1							
	1.2							
	1.2.1							
002	2.0							
	2.1							
	2.1.1							
003	3.0							
	3.1							
	3.2							
004	4.0							
005	5.0							

8

Requirements Categorisation

- Business Requirements (High level needs)
- Stakeholder Requirements
- Solution Requirements
  - (Functional or non Functional)
    - Features
    - Functions
    - Characteristics
- Transition and Readiness Requirements (Capabilities required for and after the transition)
- Project Requirements (Contractual obligations, milestones, constraints)
- Quality Requirements (Test, Certifications Validations)

9

5.3 Define Scope

- Process of developing a detailed description of the project and product
- The process that defines the requirements included in the scope and the requirements excluded from the scope
- It describes the output's boundaries

10

Scope Statement

- Product Scope Description
- Deliverables
- Acceptance criteria
- Project Exclusions
- (Better expectations management can reduce Scope Creep)

11

5.4 Create the WBS

- Process of subdividing the Project Deliverables and Project work into smaller, more manageable components
- Provides a framework of what has to be delivered

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WBS

- Represents the work specified in the current approved Project Scope Statement
- Organises and defines the total scope of the project

- Hierarchical decomposition (and visual representation) of the Scope of the total scope of work

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Work Break Down Structure

- The decomposition of the project into small – manageable parts
- Structured vision of the project
  - Deliverable oriented
  - Lowest lever are the Work Packages

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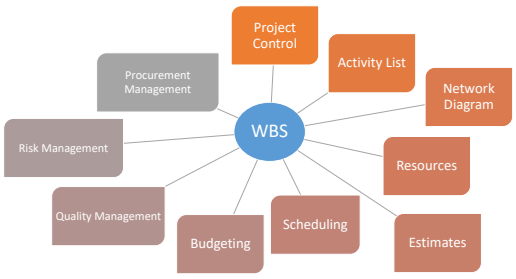
WBS



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100% Rule

- When all levels of WBS are rolled up – you should end up with the project level and no work should be left outside

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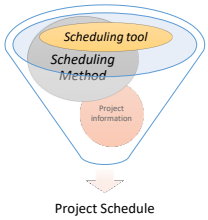
Scheduling: Scheduling Model

- The following processes objective is to create (define) the Scheduling Model



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6.2 Define Activities

- Outputs
  - Activity List
    - Activity list identifies activities and develops a detail description so that the project team can understand what needs to be done
  - Activity Attributes
    - Evolve incrementally and may include
      - Extended description, predecessors/successors, leads and lags, resources …/
  - Milestone List
    - List of mandatory (contractual) and optional milestones
  - Change Requests

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Terms to be aware of

- Milestone
- Predecessor/Successor
- Dependency
- Relationship
- Lead time
- Lag time

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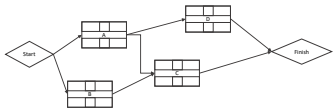
Dependency Categories

- Mandatory (Hard Logic)
- Discretionary (Soft Logic – Preferred - Preferential)
- External
- Internal



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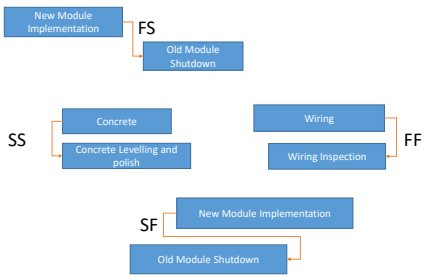
Relationship types



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Lead and Lags

- Lead: Time subtracted from the relationship to speed-up work (preform activities in parallel)
- Lag: Time added to the relationship to delay successor/s (creates a gap in the schedule between the activities)

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Estimate Duration: Ts' & Ts':

- Expert Judgment
- Analogous Estimating (Top-down)
  - Project X is similar to the last 2 projects we delivered
- One point estimates (by an expert)
  - *Watch the tendency for padding an activity*

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Parametric Estimating

- Historical records:
  - if we can install 2 VRV's per day then to install 24 VRV's we need 12 days
- Regression analysis data
  - Used as historical records

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Ts' & Ts': 3 Point Estimates

- PERT Estimates
  - Triangular distribution *(Average)*
  - Beta distribution *(Considers more the Most Likely value – Weighted Av.)*
    - Most likely (t_M)
    - Optimistic (t_O)
    - Pessimistic (t_P)

$$t_E = (tO + tM + tP)/3$$

$$t_E = (tO + 4tM + tP)/6$$

25

Deviations

- The greater the standard deviation the higher the risk

$$\sigma = \frac{P - O}{6}$$

$$V = \left[\frac{P - O}{6}\right]^2$$

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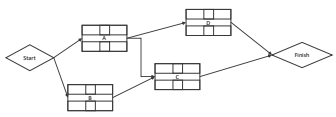
6.3 Sequence Activities

- Identify and document dependencies/relationships among the project activities
- Defines the logical sequence of work to obtain the greatest efficiency



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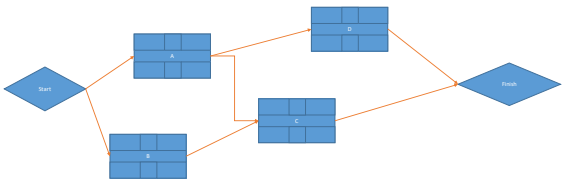
The result of sequencing is:

- Outputs:
  - Project Schedule Network Diagrams



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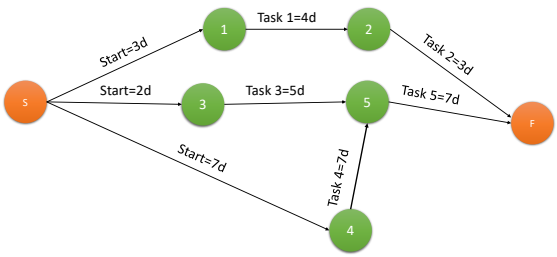

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Ts & Ts: GERT (Graphical Evaluation & Review Technique)

- Computer-aided modelling technique
- Addresses limitations of the CPM method
- Very complex modelling (e.g. Monte-Carlo Simulation)

- Can include loops (repeated activities)
- Branching &
- If/then conditions

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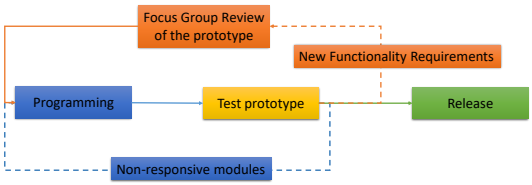
GERT snapshot



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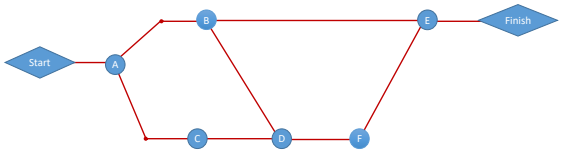
Activity-On-Arrow: Dummy Activities

- Activity B-F is Dummy activity used to represent a multiple dependency
- It has a 0 Duration
- Only finish to start relationships are used



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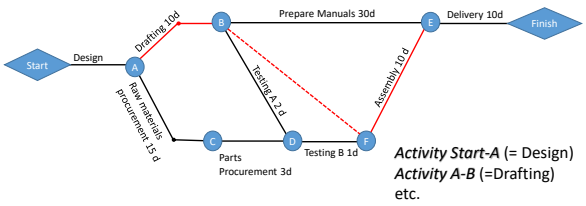
Ts & Ts: PDM – Activity-On-Arrow

- Schedule Modelling Technique
- Activities are presented on the arrows



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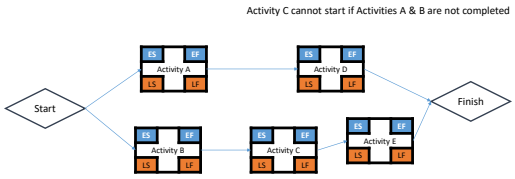
Ts & Ts: Activity-On-Node (AON)

- Often referred to as PDN or CPM
- Activities are presented on the Node (A box) and their dependencies are shown with arrows



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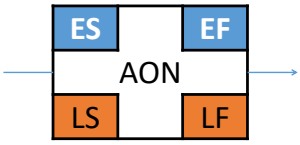
Critical Path Method

- Estimate the *minimum project duration* and determine the amount of *scheduling flexibility* on the logical network paths within the schedule model
  - Does not take into account resource limitations
    - (addressed later by levelling)



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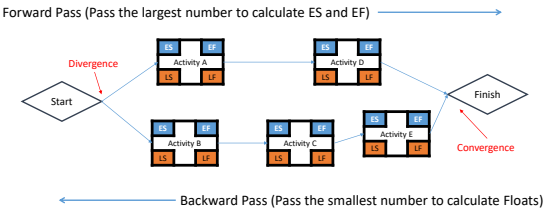
How?



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6.4 Estimate Activity Durations

- Estimate the number of work periods needed to complete individual activities with estimated resources

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Estimating Durations

- Information required:
  - Scope of work
  - Required resource types
  - Skills and knowledge
  - Effort involved
    - Fixed Duration
    - Fixed Units
    - Fixed Work

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Other factors affecting duration

- Law of diminishing returns
- Learning curve
- Motivation

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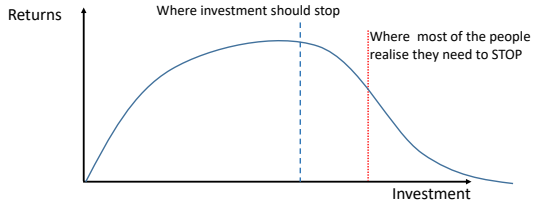
Law of Diminishing Returns

- The law states that after a certain point increasing input (e.g. adding resources) will not produce a proportional increase in benefits/yields or productivity



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Learning Curve

- The rate of a person's progress in gaining experience or new skills.

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6.5 Develop Schedule

- In simple words
  - Develop realistic, formal schedule (understand and optimise)

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Actions

- Analyse the schedule
- Find alternatives
- Optimize resources
- Compress Schedule (Crash or Fast-track where necessary)
- Talk to every stakeholder to secure buy-in and get management approval

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Schedule representations

- Network Diagrams
- Gantt Charts (Bar Charts)
- Milestone Charts

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7.1 Plan Cost Management

- Process of defining how the project costs will be
  - Estimated
  - Budgeted
  - Managed
  - Monitored and
  - Controlled

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Cost Management Plan

- Units of Measure (e.g. currency)
- Level of precision (e.g. rounding)
- Level of accuracy (e.g. Activity cost ±10%)
- Organisational procedure links (e.g. Control Accounts (Remember WBS)
- Control Thresholds (Tolerances)
- Rules of performance measurement (%Comp., Phys% Compl., Fixed Formula, weighed milestones)
- Reporting Formats

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7.2 Estimate Costs

- Developing an approximation of the monetary resources needed to complete project activities
  - It refers all sources of cost not only the cost associated with the project
    - Cost of quality efforts
    - Cost of risk efforts
- Cost estimates = A prediction that is based on the information known at a given point in time

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Types of Cost

- Fixed
  - Not affected by the changes in production level
- Variable
  - Change according to the production level
- Direct
  - Can be directly attributed to project work
- Indirect
  - Cannot be attributed directly to project work

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Types of Estimates

- ROM (Rough Order of Magnitude)
- Budget Estimate
- Definitive Estimate
- Final (if it exists!)

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7.3 Determine Budget

- Aggregating the estimated costs of individual activities or work packages to establish an authorized Cost Baseline
  - Cost estimates are aggregated by work packages in accordance with the WBS
- Determine the available, fund the organization needs to have available for the project

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Project Budget – Cost baseline

- Includes all the funds authorised to execute the project
- Cost Baseline
  - Approved version of the time-phased project budget that includes
    - Contingency Reserves
  - but excludes
    - Management Reserves

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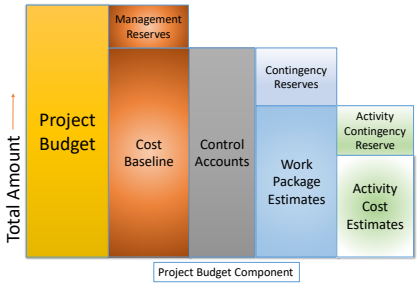
Project Budget Components



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8.1 Plan Quality Management

- Process of identifying quality requirements and/or standards for the project and its deliverables
- Process of documenting how the project will demonstrate compliance with requirements and standards

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8.1 Quality

- Quality is the degree to which a set of inherent characteristics fulfill requirements (refers to performance or result)
- "Quality is generally defined as the totality of features and inherent or assigned characteristics of a product, person, process, service and/or system that bear on its ability to show that it meets expectations or satisfies stated needs, requirements or specification"

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Grade

- It is essentially a categorization which is based on the product's functional characteristics compared to other products with the same functional characteristics but different technical specifications
  - Example:
    - White paint for exterior use (temp. 20Co to 150Co)
    - White paint for exterior use (temp. -50Co to 50Co)

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Responsibilities Regarding Quality

- Ultimate responsibility for project's product
  - Project Manager
- Ultimate responsibility for quality in the organisation
  - Senior Management
- Responsibility for project assigned work
  - Assigned Project Team Member (Before delivering the work)

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Most common results of poor Quality

- Increased Cost
- Decrease in profits
- Low moral
- Low customer satisfaction

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PMBoK® Assumes the following*

- The Project Manager:
  - Focus on meeting requirements –
    - "Gold Plating is not recommended"
  - Should make suggestions to improve:
    - organisations standards
    - policies
    - processes
  - Assumes a continuous effort for process improvement

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PMBoK® Assumes that:

- The team has knowledge on the following:
  - Prevention
  - Inspection
  - Attribute Sampling
  - Variable Sampling
  - Tolerances

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The components of Quality Management

- Quality Assurance
- Quality Control

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9.1 Plan Human Resource Management

- Process of defining how to
- estimate,
- acquire,
- manage and
- utilise
- physical and human resources
  - Includes
    - Project Roles
    - Responsibilities
    - Required Skills
    - Reporting Relationships
    - Create a Staffing Management Plan

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The ultimate purpose

- Establishes the approach and level of management effort needed for managing project resources based on the type and complexity of the project
  - Each work package to have an unambiguous owner
  - Team members have a clear understanding of their role and responsibility

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Roles and Responsibilities

- Role
  - Function assumed or assigned to a person
- Authority
  - Rights to apply project resource, make decisions, sign approvals, accept deliverables, influence others
- Responsibility
  - Assigned duties and work
- Accountability
  - Acknowledgment and assumption of responsibility for actions
- Competence
  - Skill and Capacity required to complete assigned activities within constraints

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Team Charter

- A document that records the team
  - Values
  - Agreements
  - Operating guidelines
- Establishes clear expectations regarding acceptable behaviours
- Decreases misunderstandings and increase productivity

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9.2 Estimate Activity Resources

- What do you need to perform each activity:
  - Human resources (skills and knowledge)
  - Type and quantities of material
  - Equipment, or supplies

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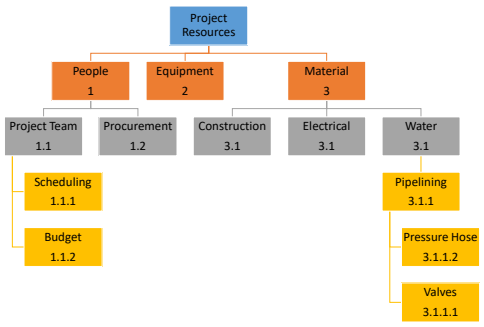
RBS



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10.1 Plan Communication

- Exchange of Information,
  - intended or
  - Involuntary
- Information can be exchanged in the form of
  - Ideas
  - Instructions
  - Emotions

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Mechanisms

- Written form
- Spoken
- Formal or Informal
- Through gestures (Voice and Body expressions)
- Through Media (Picture, actions)
- Choice of Words

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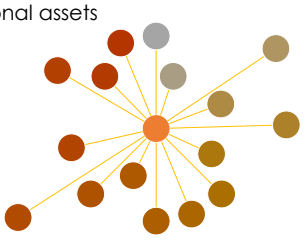
Elements of Communication in a Project

- Stakeholder's information needs and requirements
- & available organizational assets

n*(n-1)/2



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Communication Activities in a Project

- Internal
- External
- Formal
- Informal
- Hierarchical Focus
  - Upward
  - Downward
  - Horizontal
- Official
- Unofficial
- Written or Oral

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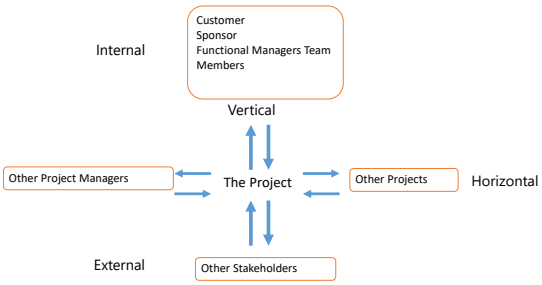
Think about information flow



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Communication Skills

- Listening Actively
- Awareness of cultural and personal differences
- Identifying, setting and managing stakeholder expectations
- Enhancement of team skills
  - Motivating
  - Coaching
  - Negotiating
  - Conflict resolution

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Types of Communication

- Formal written
- Formal verbal
- Informal written
- Informal verbal

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11.1 Plan Risk Management

Definition of Risk

Project risk is an uncertain event or condition that:

- if it occurs:
- has a positive (opportunity) or negative (threat) effect on one or more project objectives (i.e. scope schedule cost or quality)

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Risk Categories – Risk Categorisation

- Overall Project Risk
- The effect of uncertainty on the project as a whole
  - (It represents the exposure of stakeholders to the implications of variations in project outcome)
- Individual Risks
  - Have 1 or more causes and 1 or more impacts on project constraints

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Risk Attitude Factors categorisation into Themes

- Risk Appetite (Willingness Vs. Rewards)-(Aggressiveness)
- Risk Tolerance (Volume of risk Vs. Withstand)-(Endurance)
- Risk Threshold (measures along the level of uncertainty or the level of impact at which a stakeholder may have a specific interest)

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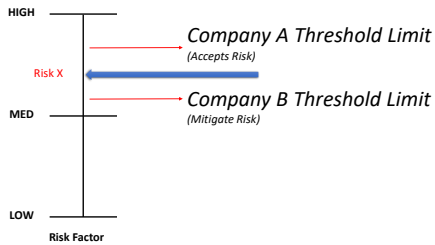
Risk Thresholds



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Risk Types

- Business Risks (Gain or Loss)
- Pure Risks (Rain or Shine)

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Risk Categories

- External
- Internal
- Technical (Technological)
- Primary
- Residual
- Secondary
- Unforeseeable (approx. 10% of overall risks)

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Probability & Impact

- Risk probability assessment investigates the likelihood
- Risk impact investigates the potential effect on a project objective
  - Schedule
  - Cost
  - Quality
  - Performance

$$Probability = \frac{event/s}{number\ of\ outcomes}$$

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Probability & Impact

Probability						
	0.9	0.09	0.27	0.45	0.63	0.81
	0.7	0.07	0.21	0.35	0.49	0.63
	0.5	0.05	0.15	0.25	0.35	0.45
	0.3	0.03	0.09	0.15	0.21	0.27
	0.1	0.01	0.03	0.05	0.07	0.09
Impact		0.1	0.3	0.5	0.7	0.9

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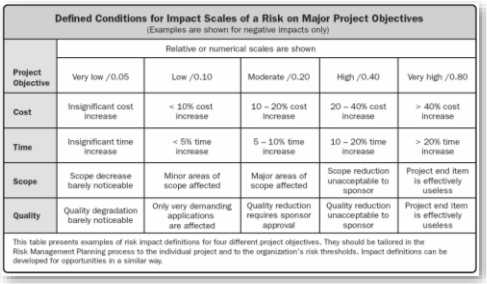
Definitions of risk probability & impact



Defined Conditions for Impact Scales of a Risk on Major Project Objectives
(Examples are shown for negative impacts only)

Project Objective	Relative or numerical scales are shown				
	Very low /0.05	Low /0.10	Moderate /0.20	High /0.40	Very high /0.80
Cost	Insignificant cost increase	< 10% cost increase	10 – 20% cost increase	20 – 40% cost increase	> 40% cost increase
Time	Insignificant time increase	< 5% time increase	5 – 10% time increase	10 – 20% time increase	> 20% time increase
Scope	Scope decrease barely noticeable	Minor areas of scope affected	Major areas of scope affected	Scope reduction unacceptable to sponsor	Project end item is effectively useless
Quality	Quality degradation barely noticeable	Only very demanding applications are affected	Quality reduction requires sponsor approval	Quality reduction unacceptable to sponsor	Project end item is effectively useless

This table presents examples of risk impact definitions for four different project objectives. They should be tailored in the Risk Management Planning process to the individual project and to the organization's risk thresholds. Impact definitions can be developed for opportunities in a similar way.

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11.2 Identify Risks

- Identify and Determine which risks may affect the project
- Identify the source (or cause)
- Documentation of their characteristics

- Up to 90% of the risks identified during Risk Identification process can be eliminated

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Benefits of the process

- All team members and stakeholders should participate
- Helps maintain a sense of ownership and responsibility

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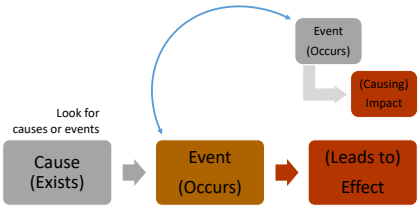
How risks are identified?



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11.3 Perform Qualitative Risk Analysis

- Investigates the likelihood
- Prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact
- Time frame of occurrence (response)

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Key benefit of the process

- Reduces the uncertainty for the Project Manager & the team
- Allows to focus on high-priority risks
- Preparation for quantitative risk analysis

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11.4 Perform Quantitative Risk Analysis

- Numerical analysis of the combined effect of prioritized risks (by the Perform Qualitative Risk Analysis process)
- We need to know the aggregate effect of all risks that will impact the project
- Supports risk response planning

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11.5 Plan Risk Responses

- The process of
  - developing options
  - Selecting Strategies
  - agreeing on actions
- to enhance opportunities and to reduce threats to project objectives

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Contingency Plans (Fall back plans)

- Developed in case the selected strategy is not effective or if an accepted risk occurs
- Usually allocated to Time and Cost
- Identification of conditions that trigger its use.

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Contingency Plans (Fall-back plans)

- Detailed plans to risk events that will be used when predefined triggers occur
- Triggers refer to indications that a risk has occurred or is about to occur
- May also be called:
  - risk symptoms or
  - warning signs

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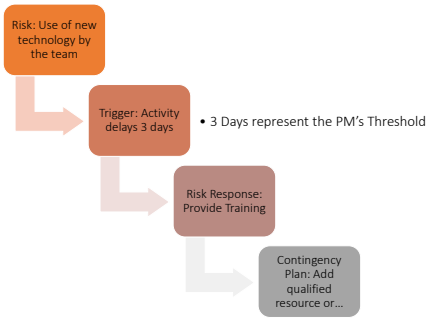

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12.1 Plan Procurement Management

- Management of contracts form either
  - The Buyer's position or
  - The Seller's position

A contract might begin and/or end at any given time within the life cycle of a project

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Legally bounding documents

- A project team might be managing at any given time:
  - Multiple contacts
  - Sub-contracts
  - Purchase agreements
    - &
  - Buyers-Sellers relationships

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Who is the key stakeholder?

- The buyer

95

Purpose of the process

- Documenting
  - Project Procurement decisions e.g.:
    - Make or buy
    - Buy or Lease
  - Specifying approach
  - Identify potential sellers

96

Procurement Statement of Work

- It is developed from the project scope baseline and defines only that portion of the project scope that is to be included within the related contract
- Clear, complete, and concise
  - Performance Reporting
  - Post-project operational support
- It is incorporated into a signed agreement/contract

97

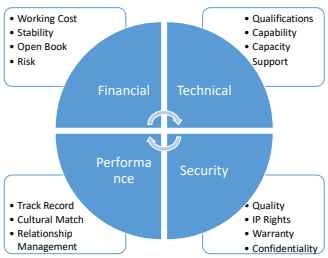
Independent estimates

- The organisations own estimating figures (estimation could be outsourced as well) for comparison purposes with those of the seller and in general to serve as a benchmark on proposed responses

98

Source Selection Criteria

- Developed and used to rate or score seller proposals
  - Objective or
  - Subjective



99

13.2 Plan Stakeholder Engagement

- It is a:
  - Clear
  - Detailed
  - Actionable plan
- to interact with project stakeholders
  - It contains the management strategies to effectively engage stakeholders throughout the project life cycle, based on the analysis of:
    - their needs
    - interests
    - potential impact (influence) on project success

100

Stakeholder Management

- It is all about creation and maintenance of relationships between the project team & stakeholders, with the aim to satisfy their respective needs & requirements (expectations!) within project boundaries

101

Inputs & Outputs

- Project Charter
- Project management plan
- Project Documents
- Agreements
- Stakeholder register

102

Stakeholder (Engagement) Assessment Matrix

Name	Unaware	Resistant	Neutral	Supportive	Leading
Stakeholder A	C			D	
Stakeholder B			C	D	
Stakeholder C		C		D	
Stakeholder D				DC	

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4 Executing Process Group

104

4.3 Direct & Manage Project Work

- Leading and performing the work defined in the project management plan
- Implementing approved changes to achieve the project's objectives

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As a Project Manager

- You have to take:
  - Preventive action
  - (Acting before a situation becomes a source of confrontation or crisis)
  - Corrective action
  - Repair Defects
    - (Reacting to the past rather than anticipating the future

Proactive

Reactive

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4.4 Manage Project Knowledge

- The process of using existing knowledge and creating knowledge to achieve the project's objectives and contribute to organisational learning
  - Prior organisational knowledge is leveraged to produce and improve the project outcomes
  - Knowledge created by the project is available to support organisational operations and future phases or projects

107

8.2 Manage Quality

- It ensures that appropriate quality standards and operational definitions are used.
- "Process Oriented"

108

9.2 Acquire Resources

- The process of obtaining
  - the team members,
  - facilities,
  - equipment,
  - materials,
  - supplies and
  - other resources
- necessary to complete project activities

109

Ask your self:

- Do I have direct control over resources?
- Can I obtain the required resources?
  - Competencies (legally required or not)
- Can I effectively negotiate and influence others who are in a position to provide the resources

110

Resource Calendar

- Documents:
  - The time periods that each project team member is available to work on the project
- Each person's availability and schedule constraints:
  - including time zones
  - work hours
  - vacation time
  - local holidays
  - commitments to other projects

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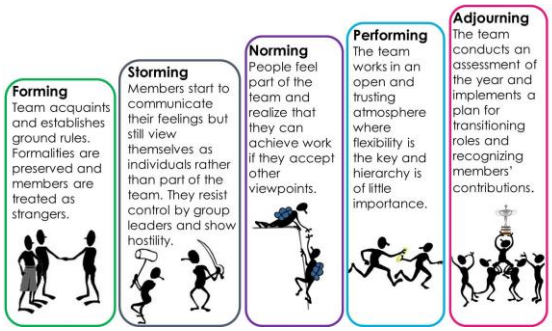
9.4 Develop (Project) Team

112



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9.4 Manage Project Team

114

9.4 Manage Project Team

- The Project Manager:
  - Influences Team Behaviour
  - Manages Conflict
  - Resolves Issues
  - Appraises Team Member Performance

115

Issue Log

- Documents & monitors who is responsible for resolving specific issues by a target date

No	Date of Entry	Entered by	Category*	Issue Description	Priority (H,M,L)	Responsible	Target Resolution Date	Status*	Action Taken
1	1/5/2014	PM	A	Determine if policy change will be implemented for email and file quotas	M	JR	21/10/2020		A policy change affecting email and file quotas will be evaluated in the future but will not be considered for phase 2

Categories Legend
N = Network, **S** = Security, **A** = Application/Server, **T** = Schedule, **M** = Miscellaneous

Status
U = Unassigned **A** = Assigned **C** = Closed

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Work Performance Information

- Related to team performance:
  - schedule control
  - cost control
  - quality control
  - scope validation

Can determine future:

- human resource requirements
- recognition and rewards
- updates to the staffing management plan

117

10.2 Manage Communication

- Create
- Collect
- Distribute
- Store
- Retrieve

- Project Information & ultimately
  - Dispose project information according to the communications management plan

118

Important Considerations (1)

- Sender-receiver model
  - Remove barriers to communication
- Choice of media
  - Written versus oral
  - Informal memo versus a formal report
  - When to communicate face to face Vs e-mail
- Writing style
  - Active Vs passive voice
  - Sentence structure
  - Word choice

119

Important Considerations (2)

- Meeting management techniques
  - Preparing an agenda & dealing with conflicts
- Presentation techniques
  - Body language & design of visual aids
- Facilitation techniques
  - Building consensus & overcoming obstacles.
- Listening techniques
  - Active Listening

120

11.6 Implement Risk responses

- The process of implementing agreed-upon response plans
- Performed throughout the project

121

12.2 Conduct Procurements

- The process of:
  - Obtaining Seller Responses
  - Selecting a Seller
  - Awarding Contract/s
  - Periodically performed

122

13.3 Manage Stakeholder Engagement

- Communicate and work with stakeholders to
  - Meet their needs/expectations,
  - address issues as they occur, and
  - foster appropriate stakeholder involvment
- Aim the appropriate stakeholder engagement in project activities throughout the project life cycle

123

Change Log

ID	Current Status	Priority	Change Request Description	Assigned To Owner	Expected Resolution Date	Escalation Required (Y/N)?	Action Steps
	Open	Critical	Request for product functionality increase			Yes	Analyse impact of requested change and then meet with the change control board (CCB) to present findings for final decision on the requested change

Impact Summary	Change Request Type	Date Identified	Assoc ID	Entered By	Actual Resolution Date	Final Resolution & Rationale
Project scope, schedule, resources, and potentially budget may all be impacted	Product	01/01/14	Workpackage / Activity	PM		The CCB has approved the change

124

4.6 Perform Integrated Change Control

- Process of:
  - Review
  - Approve
  - Manage changes to deliverable, project documents and/or project management plan
  - Communicate the decisions made
- Ultimate Responsibility
  - Project Manager

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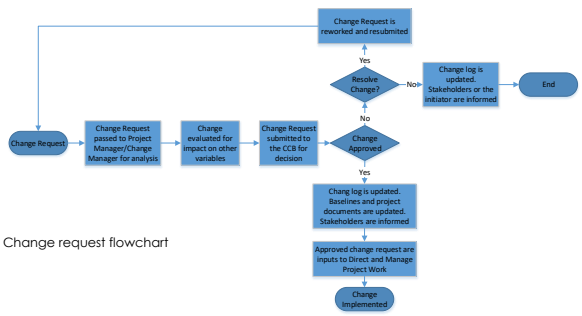

Change request flowchart

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5.5 Validate Scope

- The process by which completed project deliverables are checked against customer requirements
  - Formalises acceptance of completed project deliverables
- By validating each deliverable the success probability of the project final output increases dramatically

127

5.6 Control Scope

- Monitor the status of the project and product scope
- Managing changes to the scope baseline

128

Scope Creep

- It is the uncontrolled expansion (increase) to product or project scope without adjustments (increase) to time, cost & resources

129

Gold plating

- Give customer more than what was required
- Adds no value to the project
- Waste of time and money

130

6.6 Control Schedule

- Monitor the status of project activities to
  - update project progress and
  - manage changes to the schedule baseline to achieve the plan
- Overall aim is to identify deviations from the schedule

131

Fast Tracking

- A schedule compression technique in which activities or phases normally done in sequence are performed in parallel for at least a portion of their duration

132

Crashing

- A technique used to shorten the schedule duration for the least incremental cost by adding resources

133

7.4 Control Costs

- Monitor the status of the project to update the project costs
- Manage changes to the cost baseline
- Recognize variance from the plan in order to take corrective action and minimize risk

134

EVM Forecasting

$$ETC(atyp.) = EAC(atyp.) - AC$$
$$ETC(atyp.) = BAC - EV$$

$$ETC(typ.) = EAC(typ.) - AC$$
$$ETC(typ.) = \left(\frac{BAC - EV}{CPI}\right)$$

$$EAC = AC + (BAC - EV)$$ (Atypical)

$$EAC = AC + \left(\frac{BAC - EV}{CPI}\right)$$ (Typical)

$$TCPI = \left(\frac{BAC - EV}{BAC - AC}\right)$$ (If BAC is still achievable)

$$TCPI = \left(\frac{BAC - EV}{EAC - AC}\right)$$ (If BAC is not achievable)

135

EVM Variance Analysis

$$VAC = BAC - EAC$$

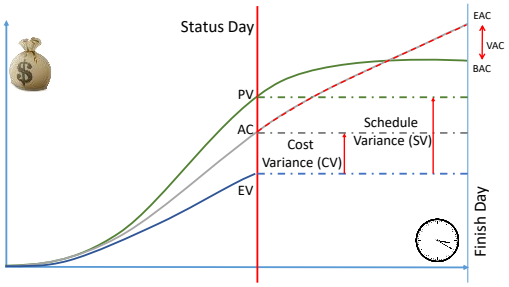
$$\%\ spent = AC \div BAC$$

$$\%\ shedule = PV \div BAC$$

$$\%\ complete = EV \div BAC$$

136

Cumulative Cost Curve



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8.3 Control Quality

- Identify the causes of poor process or product quality
  - Recommend and/or take action to eliminate them
- Validating that project deliverables and work meet the requirements specified by key stakeholders necessary for final acceptance

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Quality Control Vs Quality Assurance

- Quality assurance should be used during the project's planning and executing phases to provide confidence that the stakeholder's requirements will be met
- Quality control should be used during the project executing and closing phases to formally demonstrate, with reliable data, that the sponsor and/or customer's acceptance criteria have been met

139

Prevention Vs Inspection

- Prevention = Keep errors out of the process
- Inspection = keeping errors out of the hands of the customer

140

Attribute Sampling & Variable Sampling

- Attribute Sampling: Is the internal control operating as designed?
  - The results of an attribute sampling test are compared to the tolerable error rate established for that test
  - e.g. Are all products' verifications signed by an authorised person
  - Answer = Yes or No (the result either conforms or does not conform)
- Variable Sampling = the result is rated on a continuous scale that measures the degree of conformity (distance from the mean)
  - "how much" or "how bad" or "how good"
    - Requires smaller sample than attribute sampling

141

Tolerances Vs Control Limits

- Tolerances = specified range of acceptable results
- Control Limits = that identify the boundaries of common variation in a statistically stable process or process performance

142

Quality Checklists

- Checklists are structured lists that help to verify that the work of the project and its deliverables fulfill a set of requirements.

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Work Performance Data

- Planned vs. actual technical performance
- Planned vs. actual schedule performance
- Planned vs. actual cost performance

144

9.6 Control Resources

- Ensure that the physical resources assigned and allocated to the project are available as planned
- Monitor the planned vs actual utilisation and take corrective action if necessary

145

Performance Usage to date

- Monitor Recourses' assignments and expenditure
- Identify and deal with resources shortage/surplus in a timely manner
- Ensuring that resources are used and released according to the plan and project needs
- Informing appropriate stakeholders if any issues arise with relevant resources
- Influencing factors that can create resource utilization change and
- Managing the actual changes as they occur

146

10.3 Monitor Communications

- Ensure that the information needs of the project stakeholders are met
  - Ensures an optimal information flow among all communication participants at any moment in time
    - PMBoK suggests
      - right format,
      - at the right time,
      - to the right audience, and
      - with the right impact
    - "Use your RACI Matrix"

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Key objective

- Try to understand if the planned communications artifact and activities have had the desired effect of increasing or maintaining the stakeholders support

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11.7 Monitor Risks

- Monitoring
  - The implementation of agreed-upon response plans
  - Tracking identified risks
  - Identifying and analysing new risks
  - Evaluating risk process effectivens
  - Happens throughout the project life cycle

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Monitoring Risks

- Improves efficiency of the risk approach throughout the project life cycle
  - &
- Helps continuously optimize risk responses

150

12.3 Control Procurements

- Manage procurement relationships
- Monitor contract performance
- Make changes and corrections to contracts as appropriate
- Closing out the contracts

- The process ensures that both the seller's and buyer's performance meet procurement requirements according to the terms of the legal agreement

151

Important:

- Control procurement involves process application:
  - Direct and Manage Project Work.
  - Control Quality
  - Perform Integrated Change Control
  - Control Risks

152

13.4 Monitor Stakeholder Engagement

- Monitor overall project stakeholder relationships
- Tailoring (Adjust) strategies* (though modification of engagement strategies and plans)

153

The project manager's task:

- Maintain or increase* the efficiency and effectiveness of stakeholder engagement activities

154

3.5 Closing Process Group

- The Closing Process Group consists of those processes performed
  - to conclude all activities across all Project Management Process Groups
  - to formally complete the contractual obligations, phase or project

155

Closing process actions

- Administrative work to be completed (paperwork)
- Technical work to confirm that the product is completed and it is acceptable
- Complete the work required to transfer the final product to the users
- Document feedback from customers or users
- Update Organisational Process Assets
- Party!!

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4.6 Close Project or Phase

- Finalise all activities across all of the Project Management Process Groups to formally complete the project or phase or close a contract

- Project or Phase information is archived
- The planned work is completed
- Organisational resousces are released

157

Project Manager's responsibility:

- Reviews all prior information from the previous phase closures to:
  - Ensure that all project work is completed
  - The project has met its objectives

158

Failed Projects

- Close Project or Phase process establishes the procedures to investigate and document the reasons for actions taken if a project is terminated before completion

159

Administrative Closure

- Work has been:
  - Verified
  - Delivered
  - Accepted
    - by the customer

160

- Project documents updates
- Final product, service, or result transition
- Final Report
- OPA updates
  - Project Documents
  - Operational and support documents
  - Project or Phase closure documents
  - Lessons learned repository

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