Project Management for SIAE

An Aerospace Industry Training Course

2019

ABA
AIR BUSINESS
ACADEMY

Objectives of the Course

To develop a common approach to Project Management within SIAE Group.

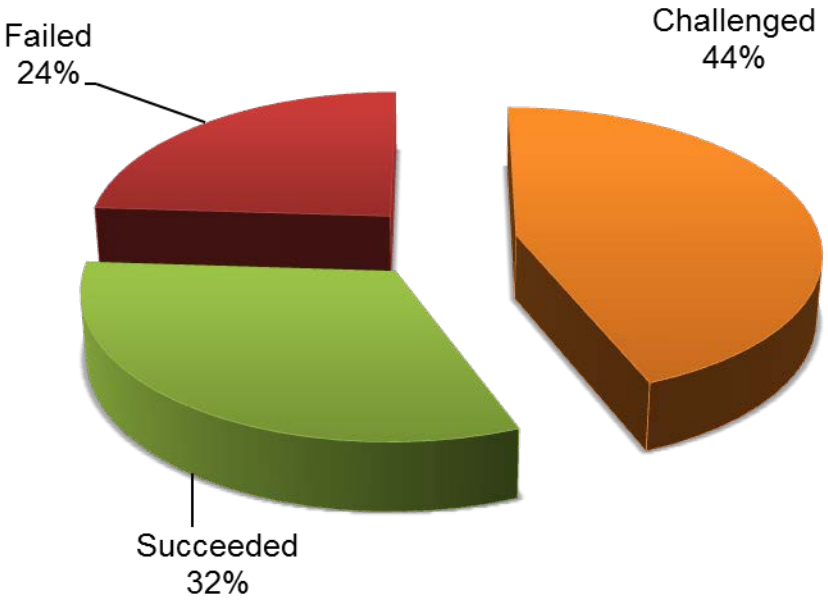
To be able to implement the basic Project Management processes and methods.

To better apply the PM culture and behaviour for project success.

AGENDA

- Project Management Overview
- Initiating a Project
- Planning a Project
- Managing the Scope of a Project
- Managing the Communication
- Managing the Schedule
- Managing Risks and Opportunities
- Managing Costs
- Monitoring and Control
- Closing Project

Project Success Factors



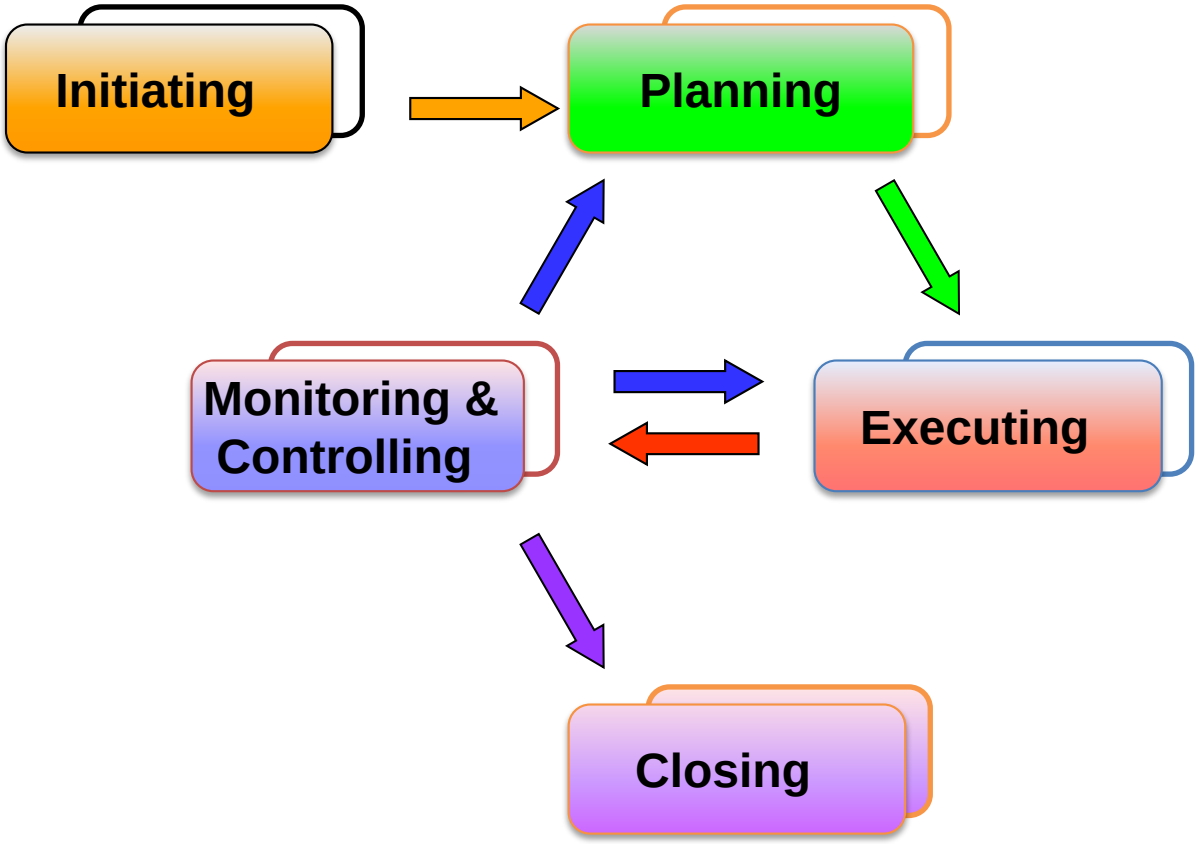
Source: The Standish Group, 2008

5 Major Project Success Factors:

1. Executive Support (18)
2. User Involvement (16)
3. Experienced Project Manager (14)
4. Clear Business Objectives (12)
5. Minimized Scope (10)

Project Management Ten Knowledge Areas

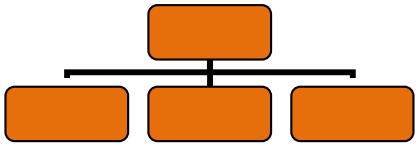
The 5 Project Management Process Groups

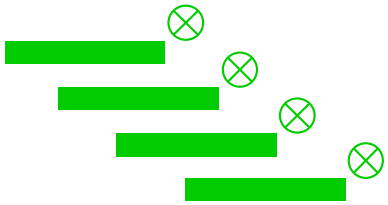


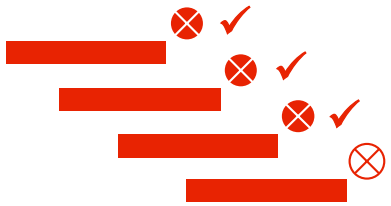
- All 5 process groups occur in each project.
- The process groups are not project phases.
- In large and complex projects all 5 process groups are normally repeated in each phase of the project life cycle.

Project Documents Life Cycle

Assign responsibility and authority to manage the project







Project Charter

Project Identification Document

Project Requirements Document

Work Breakdown Structure

Responsibility for Work Packages

Project Plan

Schedule
Milestones
Deliverables
Budget

Communication Plan
Quality Plan
Risk Management Plan
Change Management Plan
Issues, Problems, Changes

Tested Deliverables

Forecasts

Acceptance

Project Phases Life Cycle

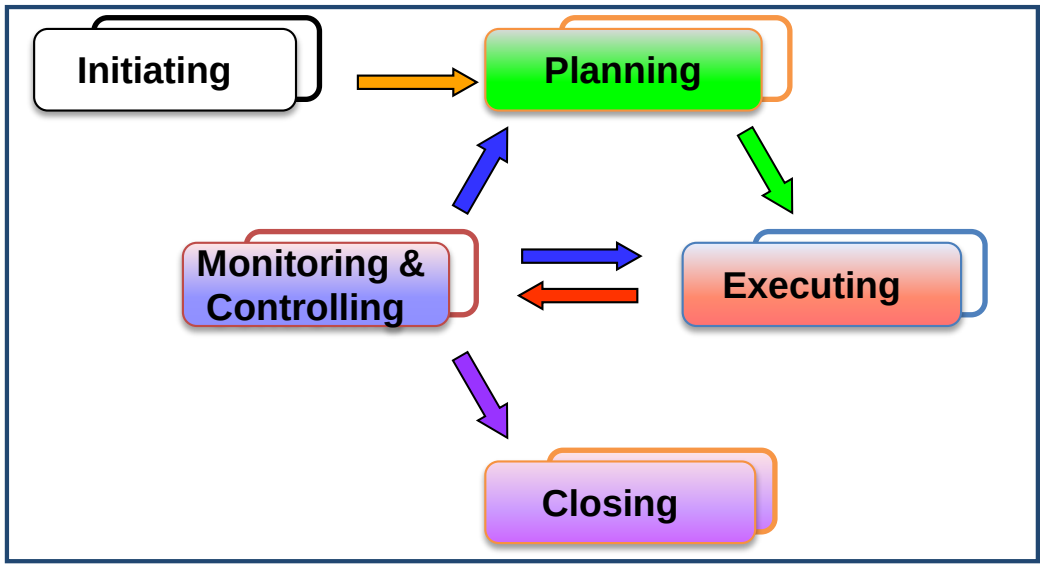
Opportunity → **Feasibility** → **Execution** → **Close-out**

Implementation

Initiation	***Planning***	***Execution***	***Monitoring***	***Close-out***
▪ Gather data ▪ Identify need ▪ Establish Goals, objectives Ethics, legality External & market issues Organizational factors Critical success factors Economic feasibility Stakeholders Potential team Outline strategy, scenarios ▪ Identify alternatives ▪ Explore options ▪ Analyze risks ▪ Produce rough estimate ▪ Evaluate benefits ▪ Write and agree protocol	▪ Design study ▪ Select sites ▪ Develop scope Work breakdown structure End products Quality baseline Overall management approach ▪ Agree project baseline plan Tasks, resources, costs Schedule master plan Communication plan Data management plan Risk management plan Quality management plan Change management plan Procurement management plan	▪ Implement Organization Communications Management Database ▪ Motivate team ▪ Detail requirements ▪ Procure services ▪ Recruit patients ▪ Execute work packages ▪ Conduct study	▪ Direct and monitor Scope Quality Time Cost ▪ Forecast end of project ▪ Resolve problems ▪ Measure results ▪ Manage corrective actions ▪ Manage risks	▪ Finalize results ▪ Review and accept ▪ Evaluate project ▪ Document results ▪ Transfer responsibility ▪ Release and redirect resources ▪ Reassign project team

Initiating a Project

- Integration Management
- Cost Management
- Time Management
- Quality Management
- Scope Management
- Risk Management
- Human Resource Management
- Communications Management
- Procurement Management
- Stakeholder Management



Project Initiating

- **Purpose of project initiating**
  - Begin to define the overall parameters of the project
  - Establish the appropriate project management and quality environment. This includes
    - Assignment / confirmation of the project manager,
    - Securing budget and / or resources,
    - Project Kick-off Meeting and
    - Developing an initial project schedule.

- **Major Output**
  - Project Charter

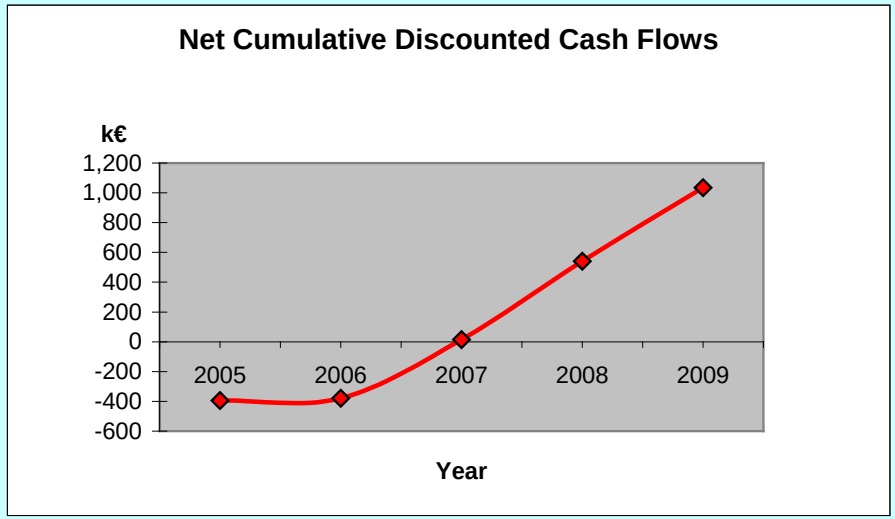
Business Case - Purpose

- A business case is a tool for planning and decision support that shows the probable financial (and other) consequences of a decision or an action.
- Contrary to the common understanding in many organizations, a business case is NOT a simple list of costs and benefits. Normally, a cash flow statement is part of a business case.
- A business case is used by decision-makers to:
    - Comparing several projects
    - Selecting / approving a project or letting a project proceed at gates within the bid phases
    - Getting an agreed baseline enabling the continuous assessment of project objectives

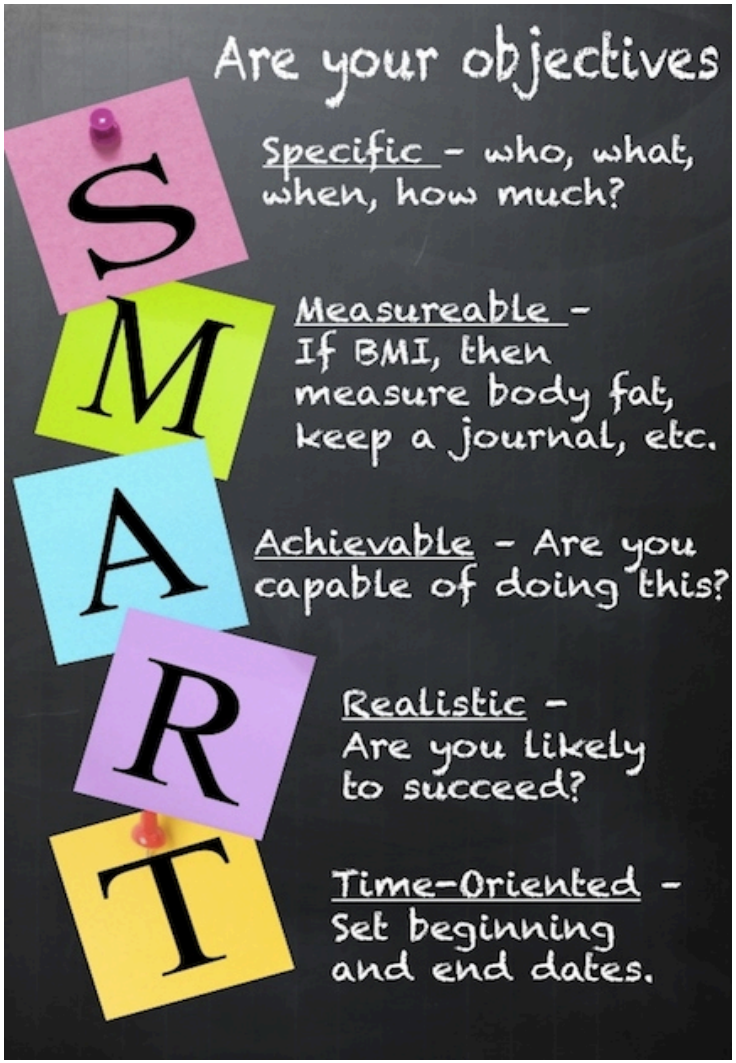
Business Case Template - Example

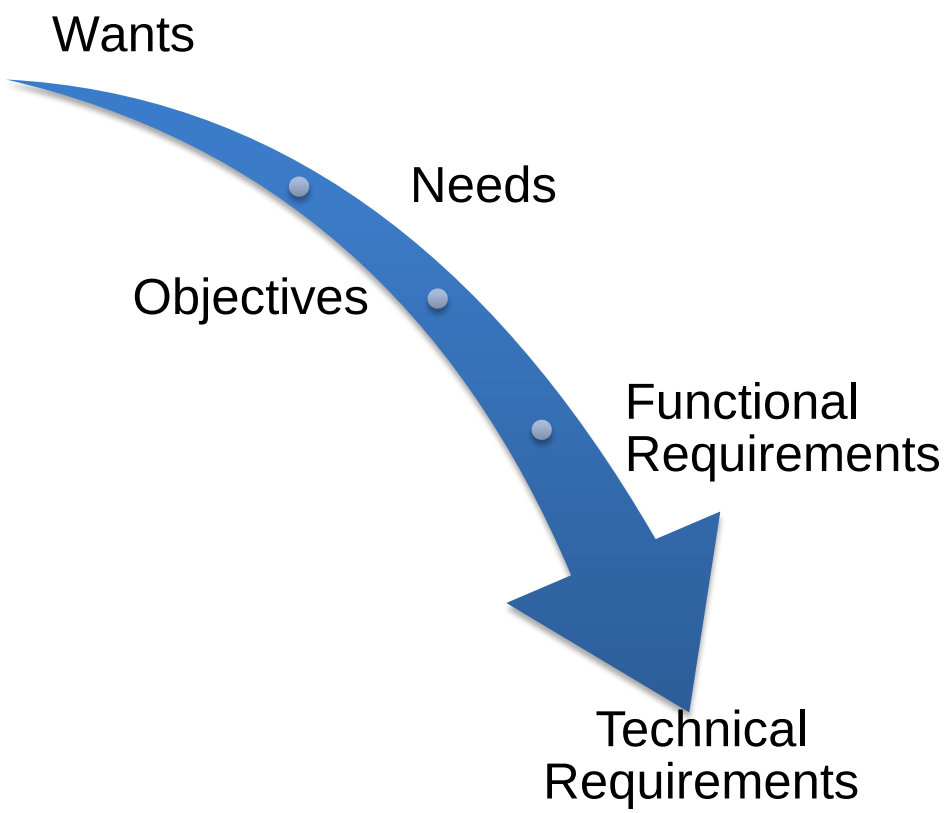
- The summary section provides the key Business Case information:
- Graph of Net Cumulative Discounted Cash Flows (DCF)
- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Payback Time
- Peak Exposure

Discount Rate	12.50%	
NPV	**1,035**	**k$**
IRR	75.35%	
Payback time	**2.0**	years
	after first year of project start	
Peak Exposure	**-395**	**k$**



Defining SMART Objectives





The Project Charter

The Project Charter is the pivotal starting point for the project. It serves as the foundation for all future project efforts and should be accepted by stakeholders as well as committed by all project team members.

A PROJECT CHARTER DEFINES …	
• Project purpose • Project background • Project objectives • Business case • Business / client requirements • Project scope (incl. what is out of scope) • Solution alternatives • High-level deliverables and acceptance criteria • High-level Work Breakdown Structure (WBS)	• Critical success factors • Assumptions • Constraints • Important stakeholders • Major roles & responsibilities (esp. project manager, project sponsor and authority level) • Functional organizations including their participation • Summary milestone schedule • High-level budget • Initial defined risks & opportunities

Project Kick-off Meeting

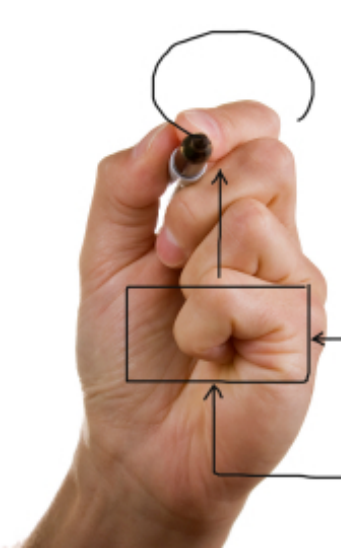
- **Ideal point in time:**
  - When initial project team has been defined
  - At the major phases / milestones of the project

•Attendance:

All initial project team members or a selection of team members with project responsibilities from different functional areas. Kick-off meetings should be conducted also at sub-project level..

- **Purpose:**
  - Create a shared vision and common understanding of the project
  - Start the team building process.
  - Make sure that the team will have the same level of information
  - Clarify the contribution of each person
  - Build the modus operandi of the team
  - Get the commitment to the decisions made and first planning elements

Project Planning



- Integration Management
- Cost Management
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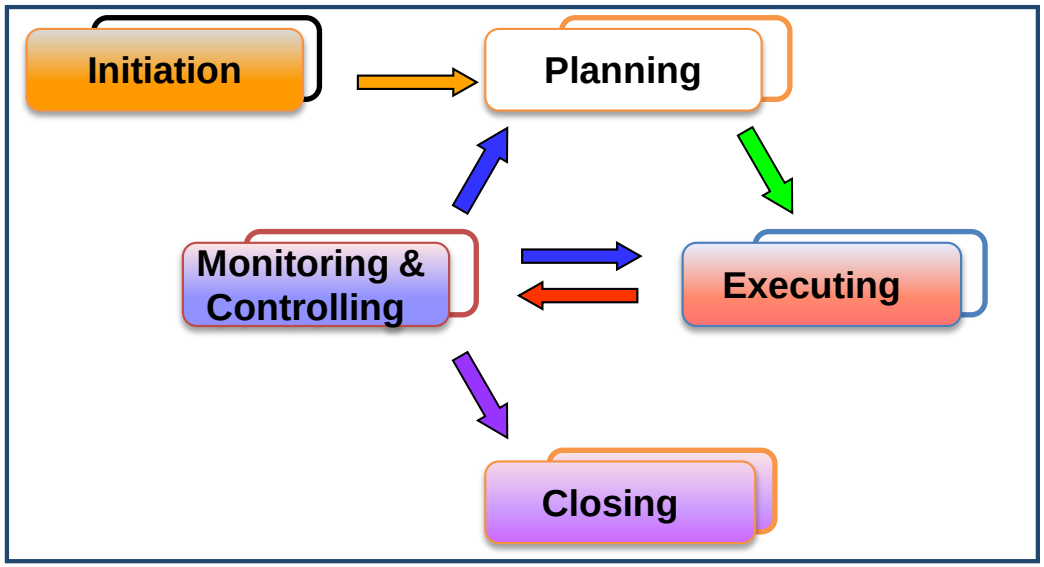
- Stakeholder Management



Inputs for Planning

Organizational Process Assets

- **PROCESSES AND PROCEDURES**
- Organizational standard processes
- Procedures and Policies
- Standardized guidelines
- Templates
- Communication requirements

CORPORATE KNOWLEDGE BASE

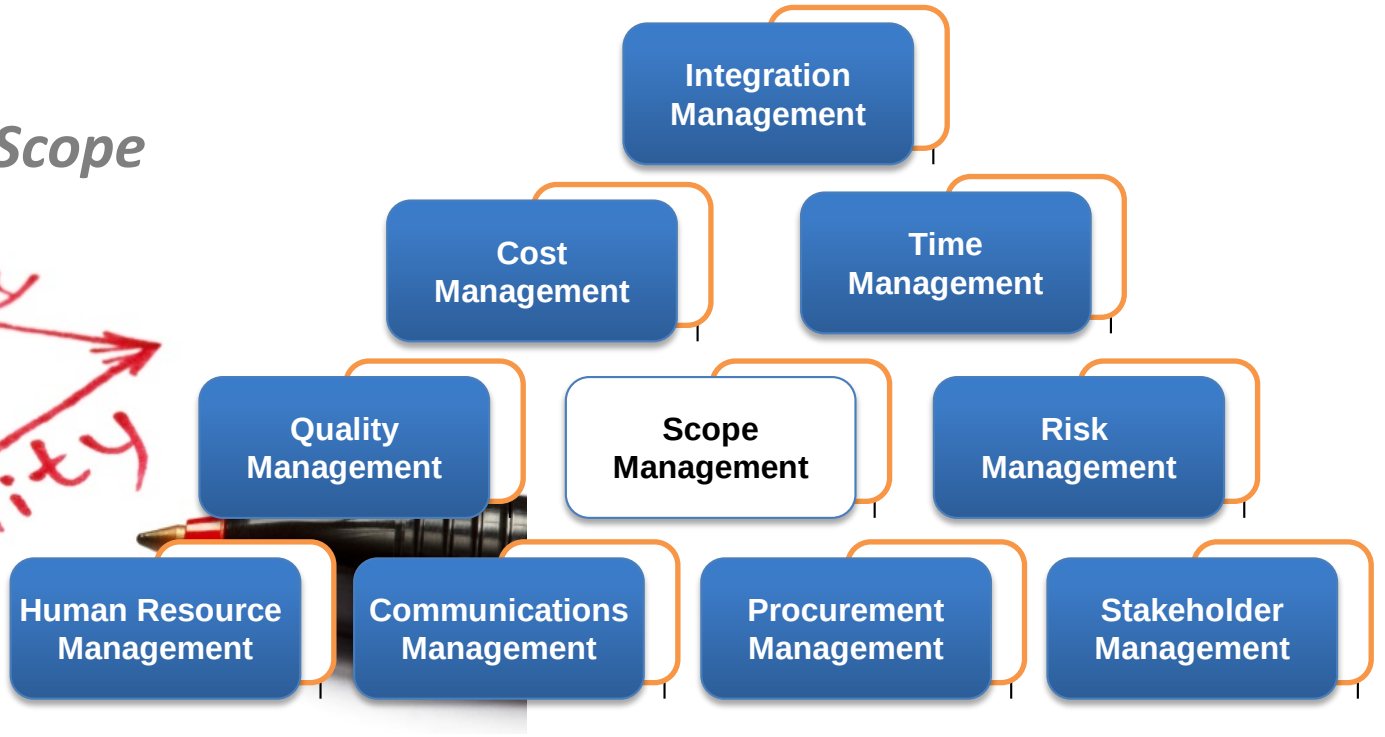
- **Project Files**
- **Historical information and lessons learned**
- **Issue and defect management**
- **Configuration Management**
- **Financial Databases**

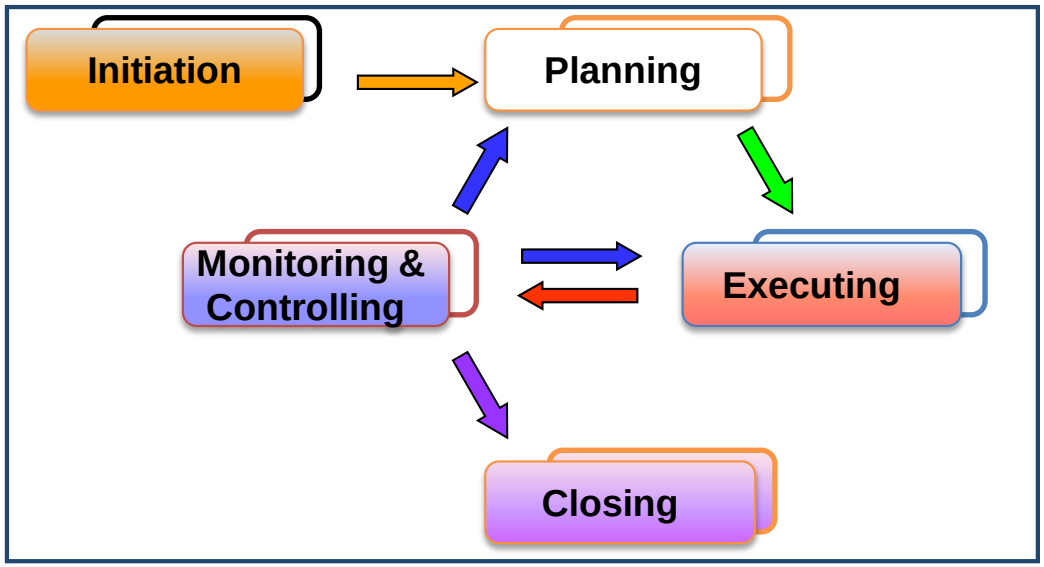
Enterprise Environmental Factors

Project Management Plan

- **Contains:**
  - The **management plans**: e.g. Risk Management Plan, Change Management Plan, Scope Management Plan, etc.
  - The **project baselines** that will be used to measure the progress and status of the project.
- **Management Plans**
  - Defining the strategy for managing the project: **How to plan, manage, and monitor** scope, time, costs, quality, sub-contractors, communications, client relationship etc.
  - Describe **roles & responsibilities, processes, templates, tools** for the project.
- *A Project Management Plan is not a schedule and not a Gantt chart!! (though the schedule baseline is an element of the Project Management Plan).*

Managing the Scope

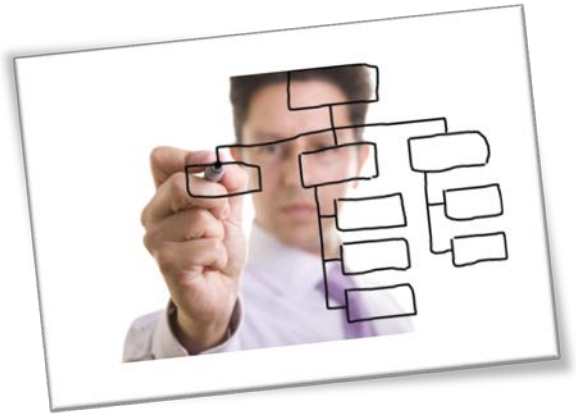




Developing a Work Breakdown Structure (WBS)

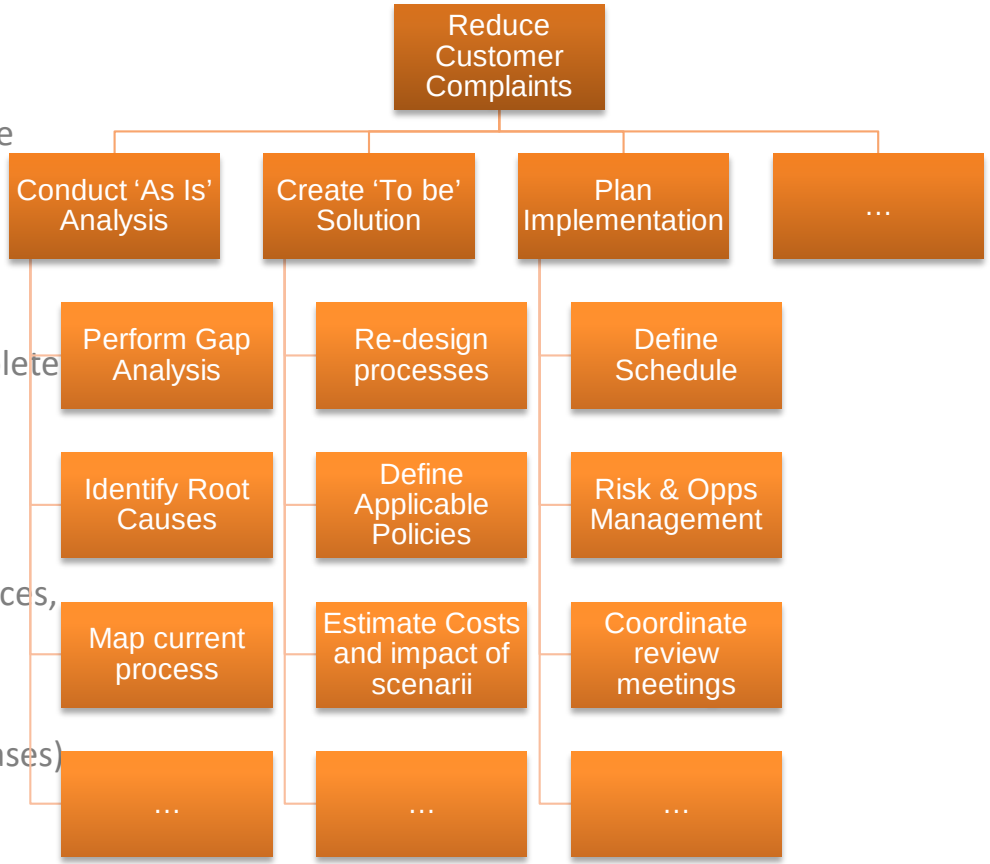
- *A WBS is a "deliverable-oriented hierarchical decomposition of the project work".*

- **Steps to create a Work Breakdown Structure**
  - ✓ Identify the final products of the project
  - ✓ Define the project's major deliverables (incl. interim deliverables)
  - ✓ Decompose major deliverables to a level of detail needed for management and control (Work Packages)
  - ✓ Review / agree on the WBS with all major stakeholders

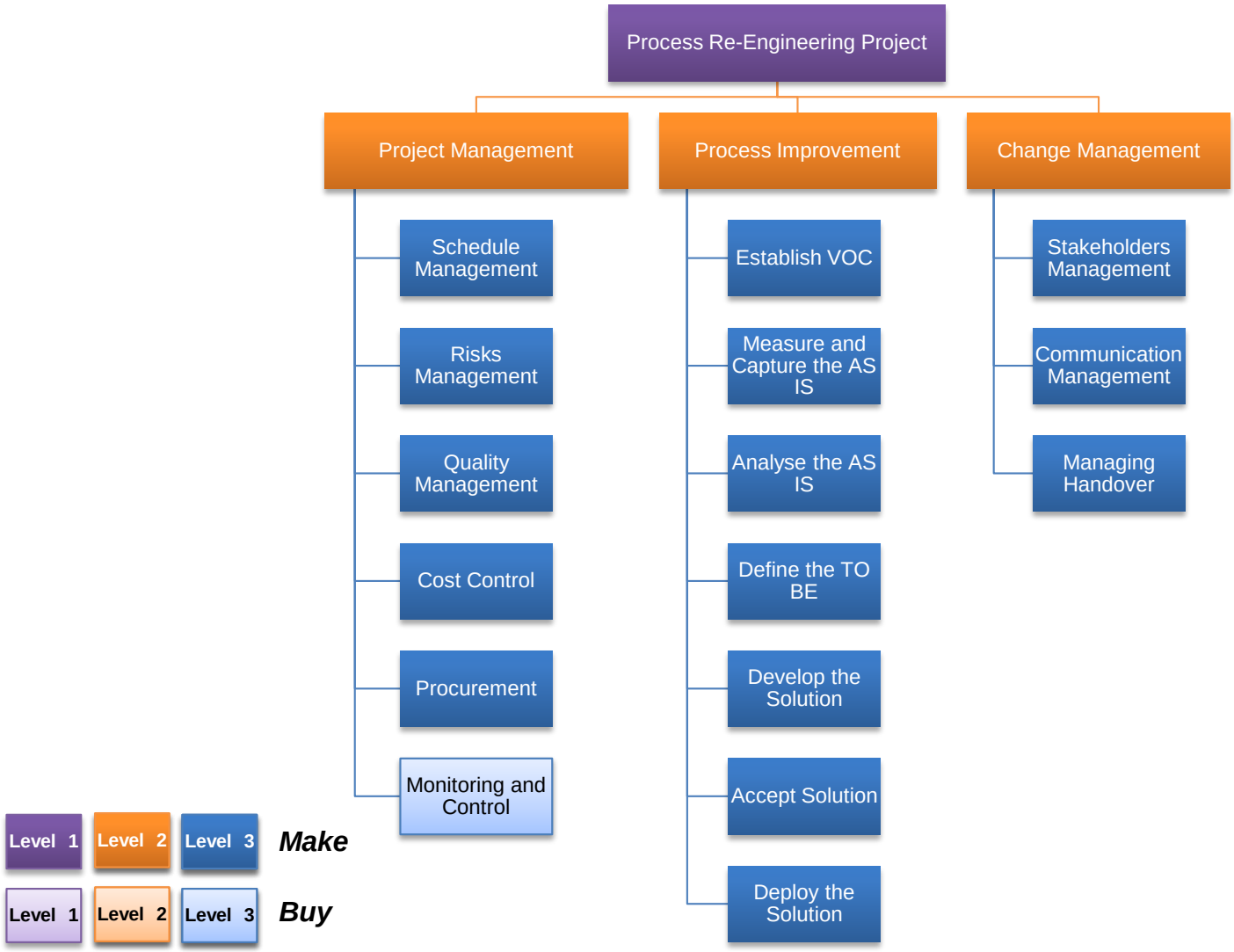


Work Breakdown Structure

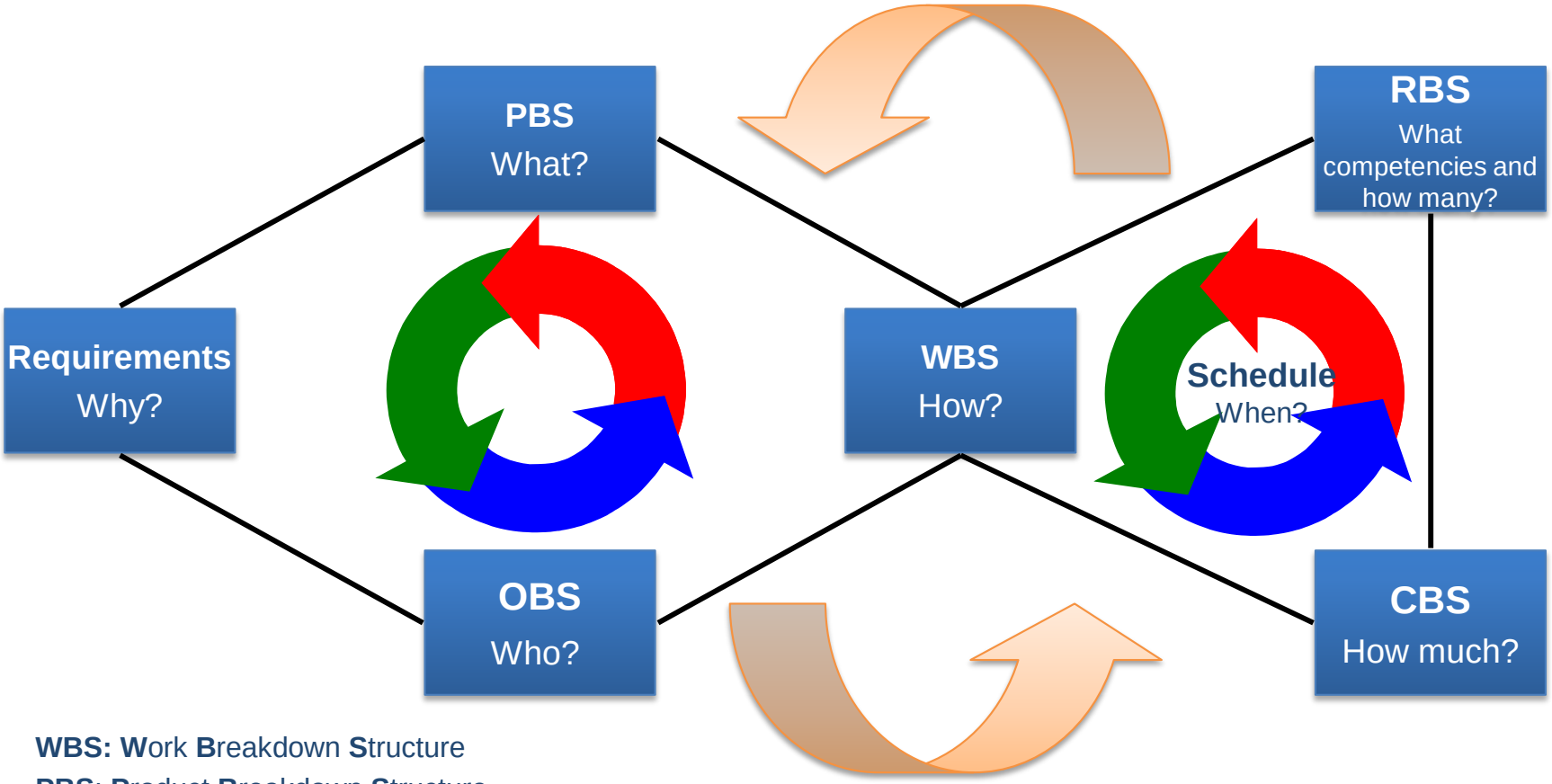
- The highest level of the WBS is the project.
- The next level is often structured to reflect the project phases.
- Subsequent levels should include all key deliverables and associated activities to complete the level above.
- Each element of the WBS should have an associated description with objectives, resources, activities, interdependencies etc.
- Elements not yet fully defined (e.g. future phases) can be developed later.



Example of WBS



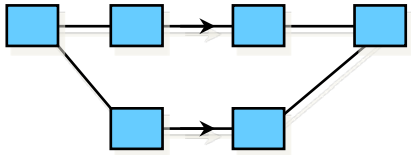
Project Structuring - General Rationale

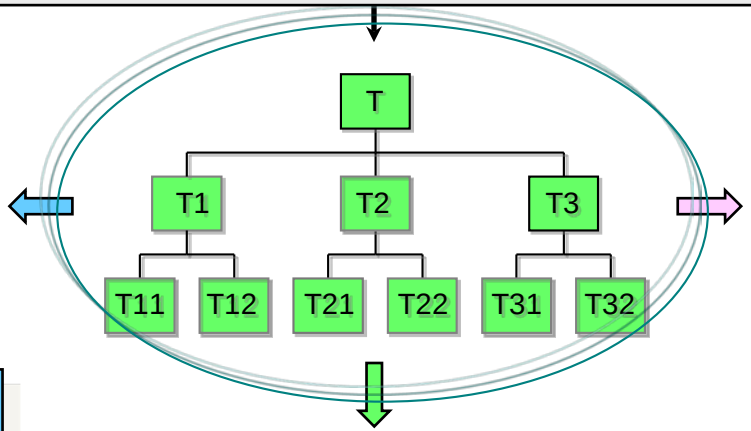


WBS: Work **B**reakdown **S**tructure
PBS: **P**roduct **B**reakdown **S**tructure
OBS: Organisation **B**reakdown **S**tructure
CBS: Cost **B**reakdown **S**tructure
RBS: Resource **B**reakdown **S**tructure

Centrality of the Work Breakdown Structure

Business Needs
Must, Should, Could





Project Estimates

Work Package Cost

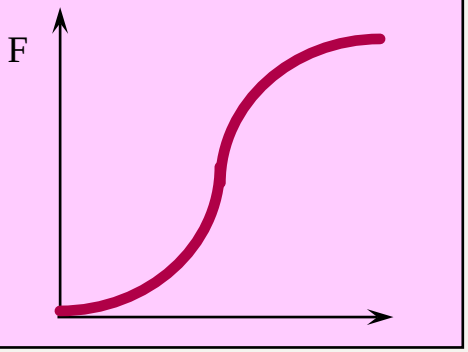
Activity 1
Activity 2

Etc. Totals

Activity

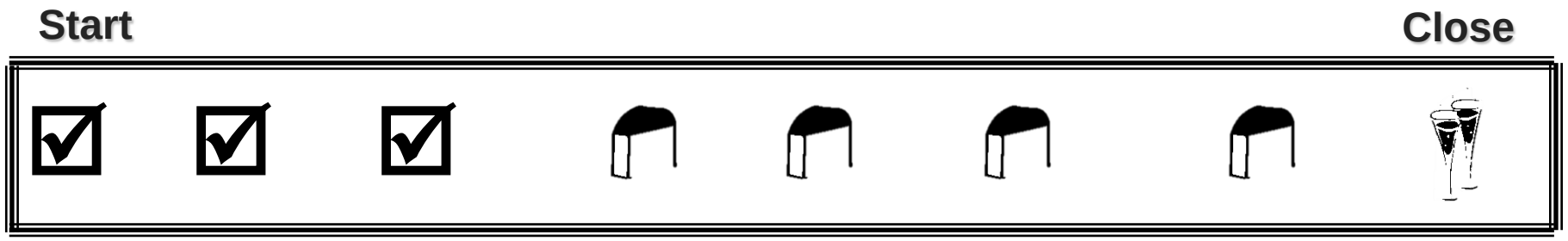
Inputs
Outputs
Cost
Schedule
Resources

Performance
Functionality
Reliability
Profitability



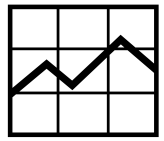
Schedule ***Product Configuration*** ***Costs***

Requirements Management



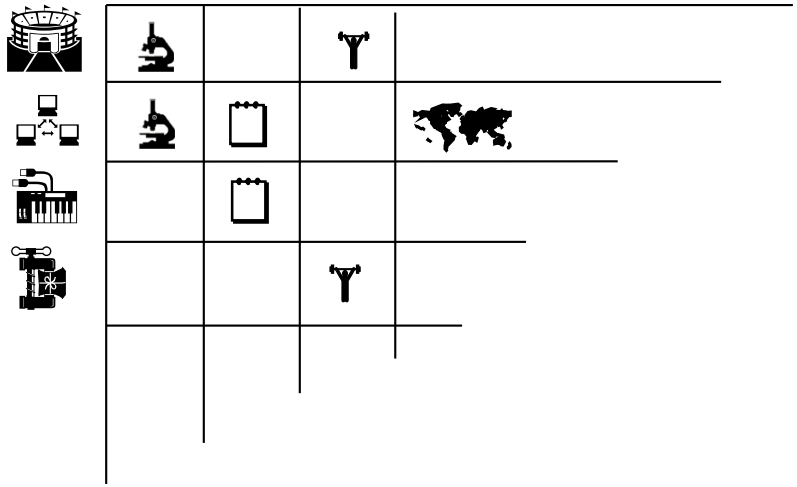
Milestones

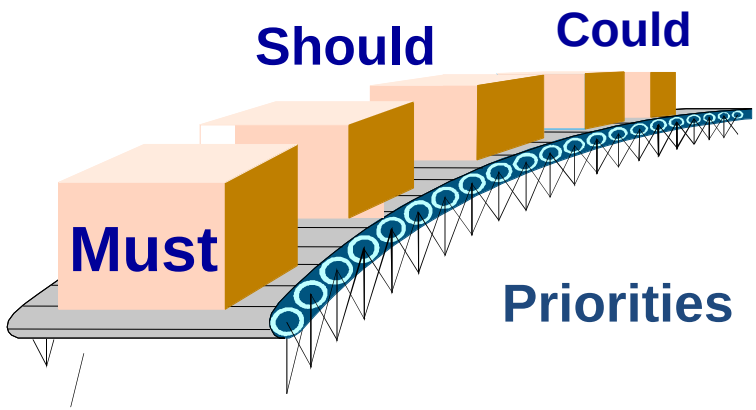
Quality Measures



Tests

Requirements





Time Management

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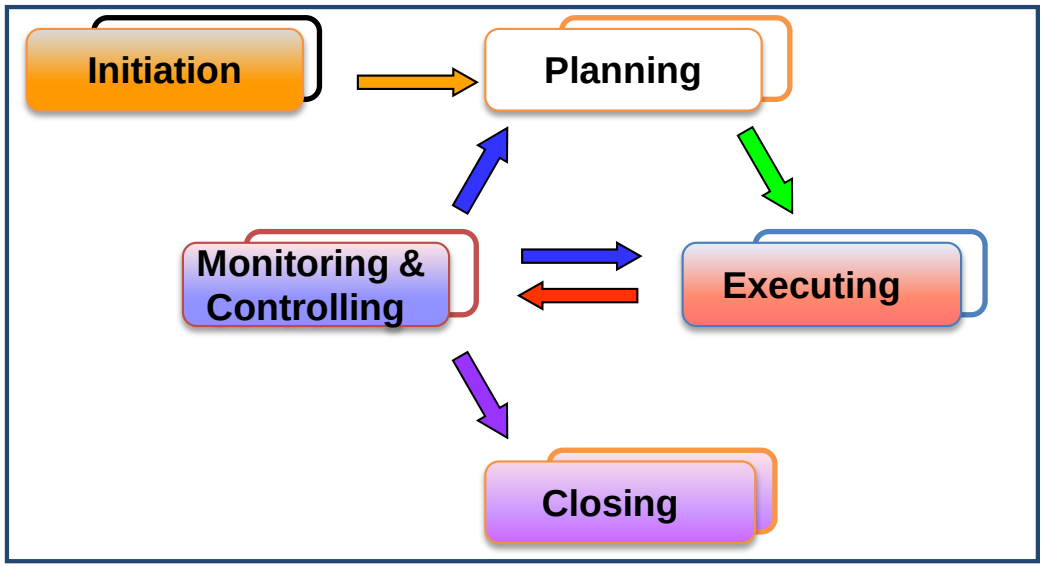
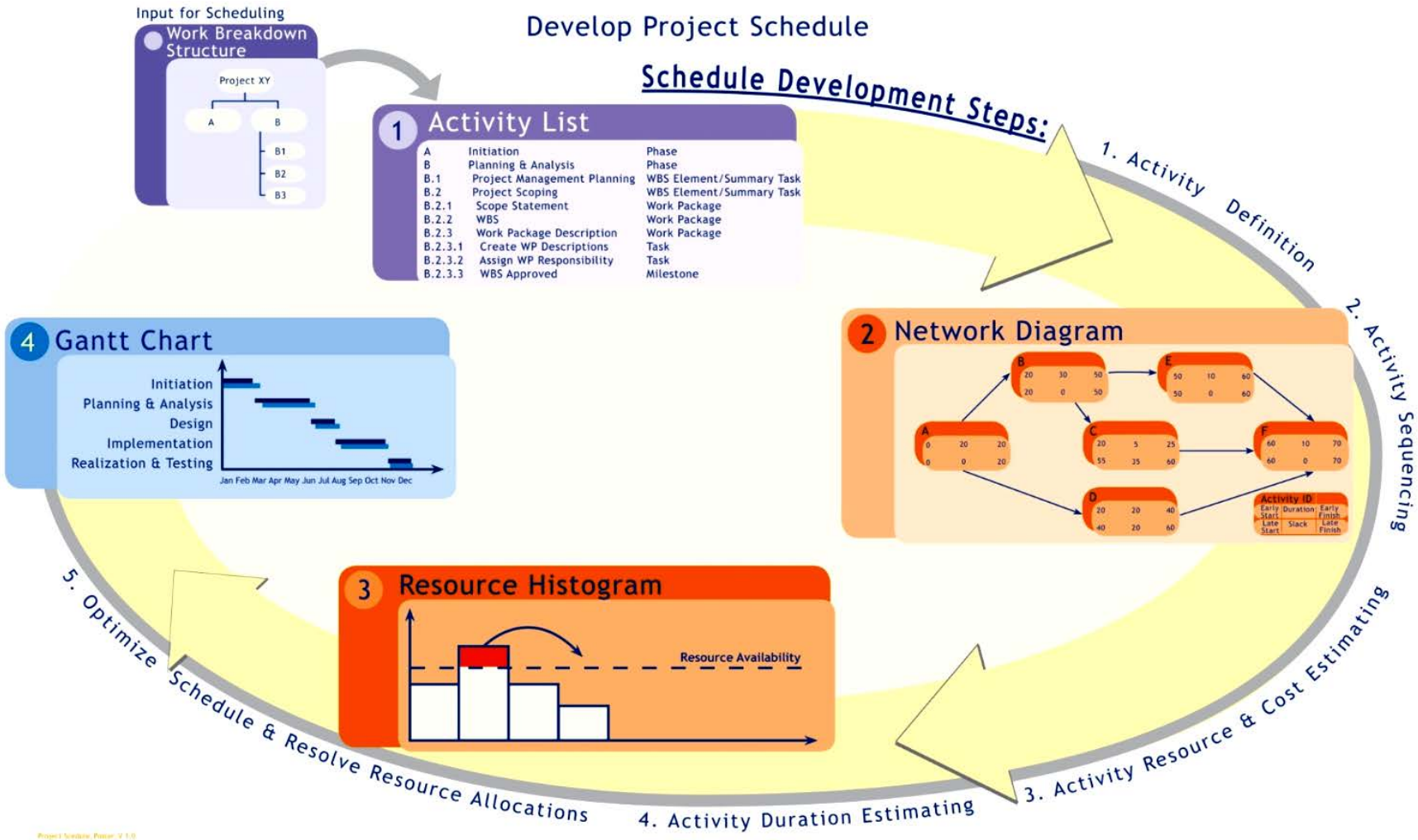
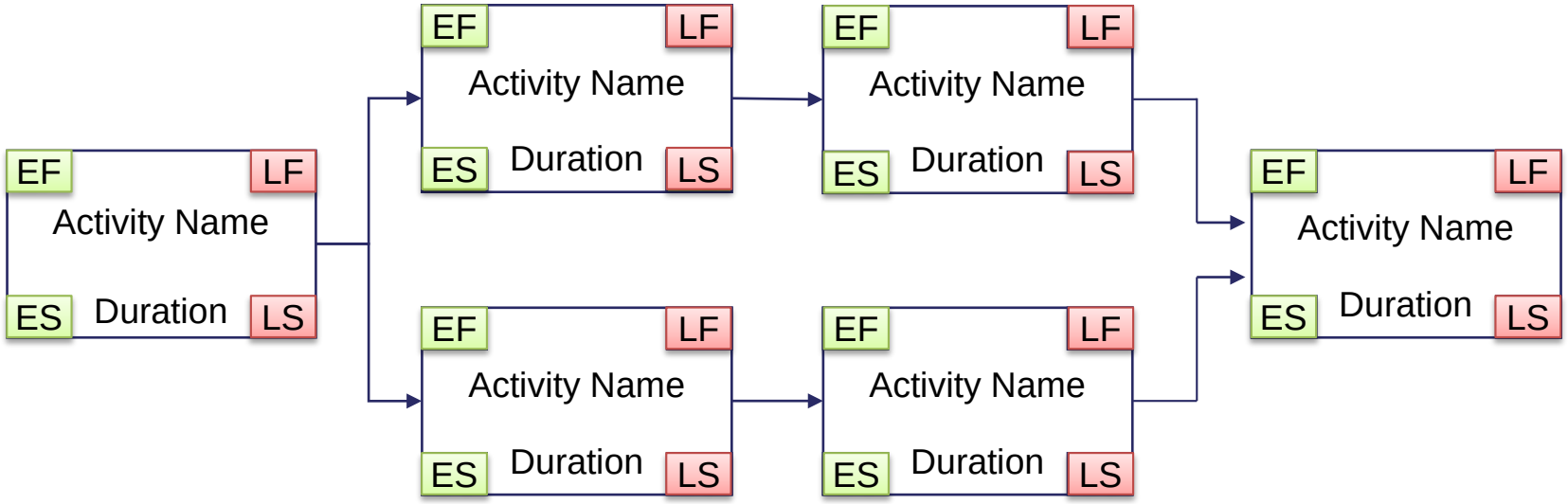


Project Time Planning



Activity Sequencing

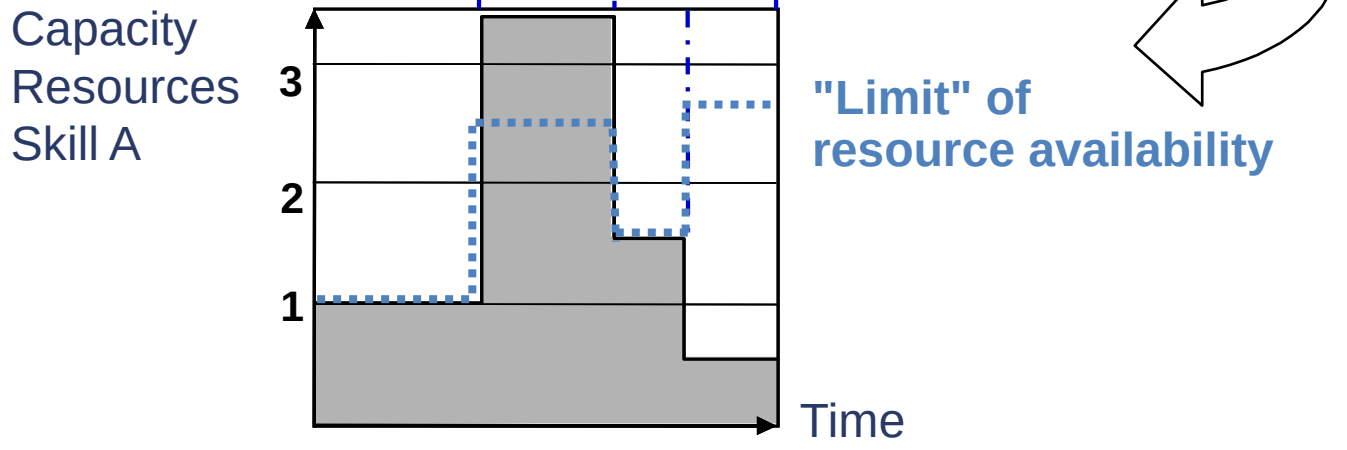
- Activity sequencing requires identifying and documenting the logical relationships among schedule activities.
- The network diagram shows the workflow of the project, lists beginning and end dates as well as buffer / slack.



ES = Earliest Start, **EF** = Earliest Finish; **LS** = Latest Start, **LF** = Latest Finish

Allocation of Resources

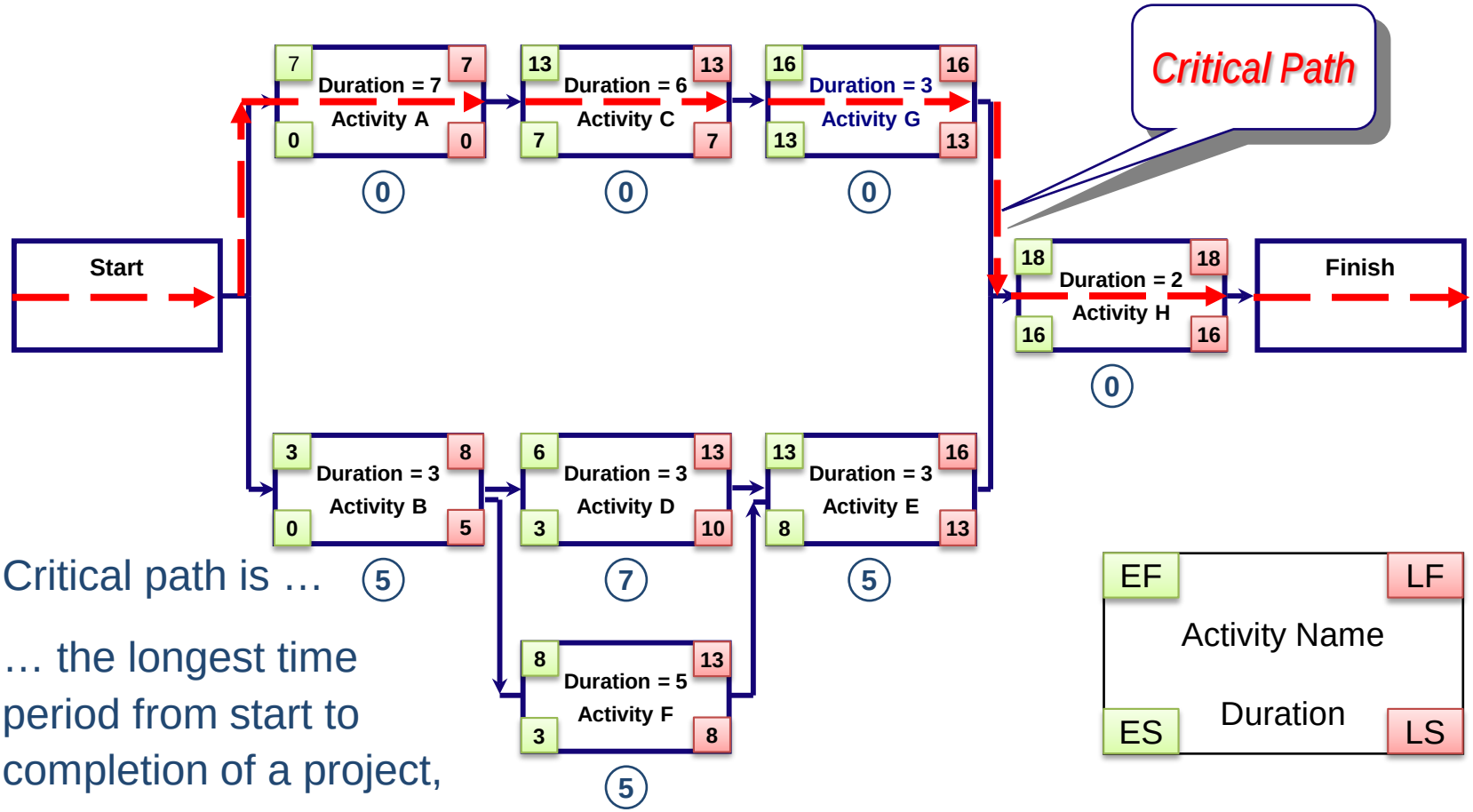
Schedule			
Activities	**Resources**	**Capacity**	**Time**
Activity 1	**A**	**1**	
Activity 2	B		
Activity 3	**A**	**0.5**	
Activity 4	**A**	**2**	
Activity 5	C		



Estimating Effort and Duration

- Effort is the amount of work required to complete an activity (person hours or days) – used to estimate cost of resources.
- Duration is the time that elapses between the start and end of the activity – used to estimate timeframe.
- Effort estimates are needed to be able to assign resources.
- Depending on the availability of resources, leads and lags as well as dependencies between activities durations are calculated / estimated.
- Estimates should not include unreasonably high buffers / slack as the total amount of slack in the schedule is difficult to estimate in this case.
- The estimating approach should be coordinated in the project and similar approaches should applied by the project team members involved in estimating. Estimating methods and assumptions should be documented.

Critical Path



Critical path is …

… the longest time period from start to completion of a project,

… also the shortest total length of the project.

Any delay on the critical path will delay the final date of the project.

Integration Management

Cost Management

Time Management

Quality Management

Scope Management

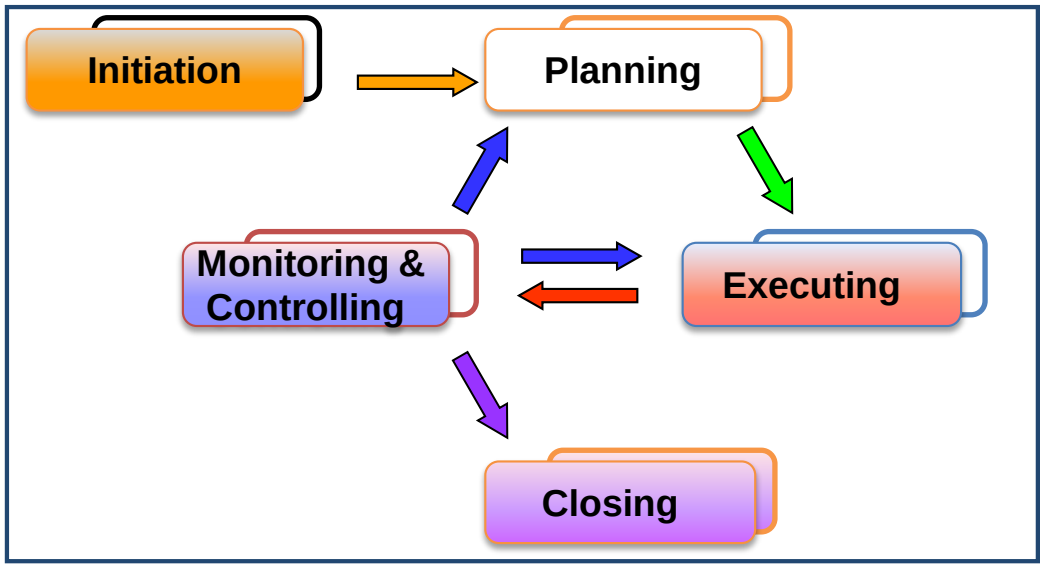
Risk Management

Human Resource Management

Communications Management

Procurement Management

Stakeholder Management



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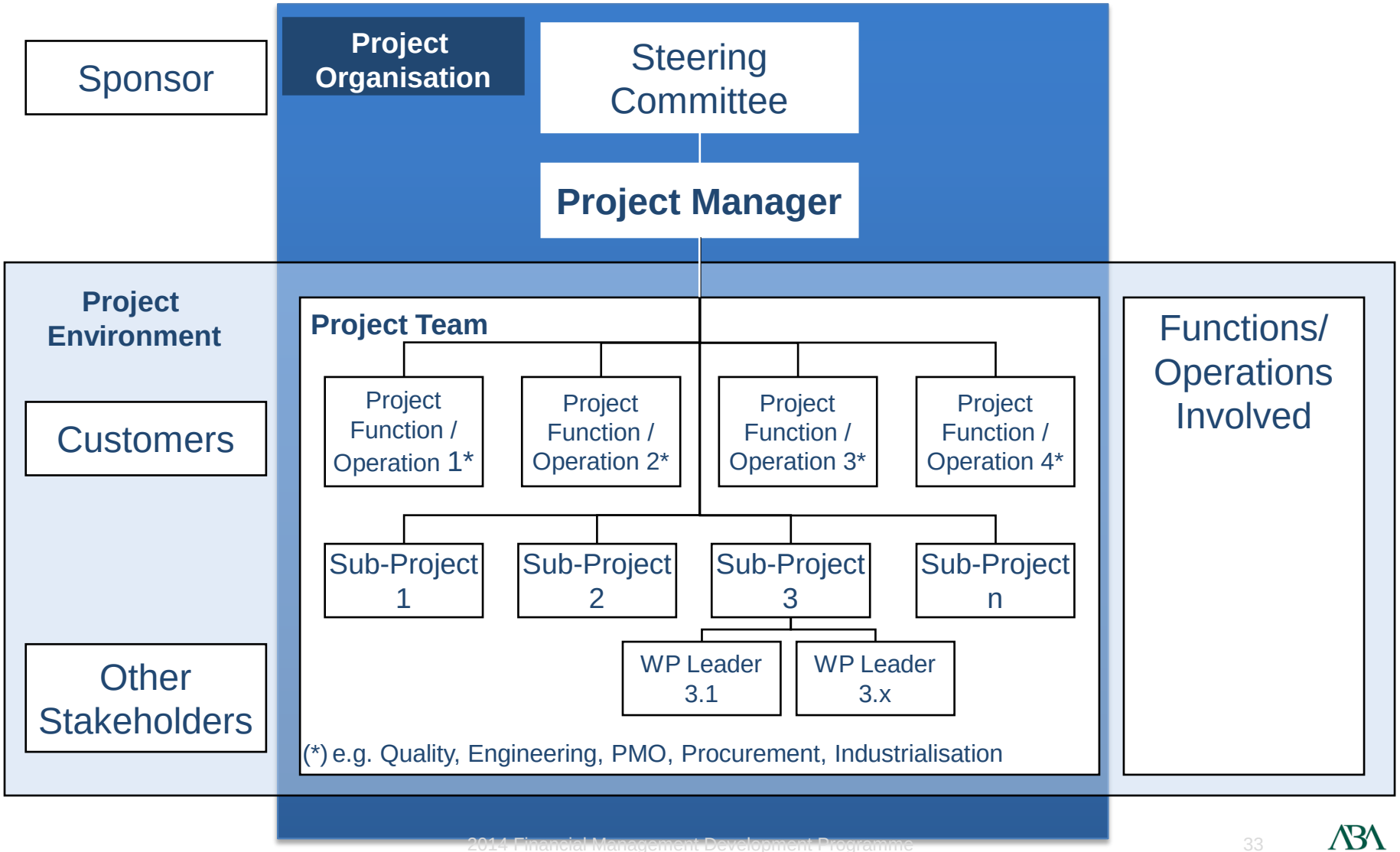
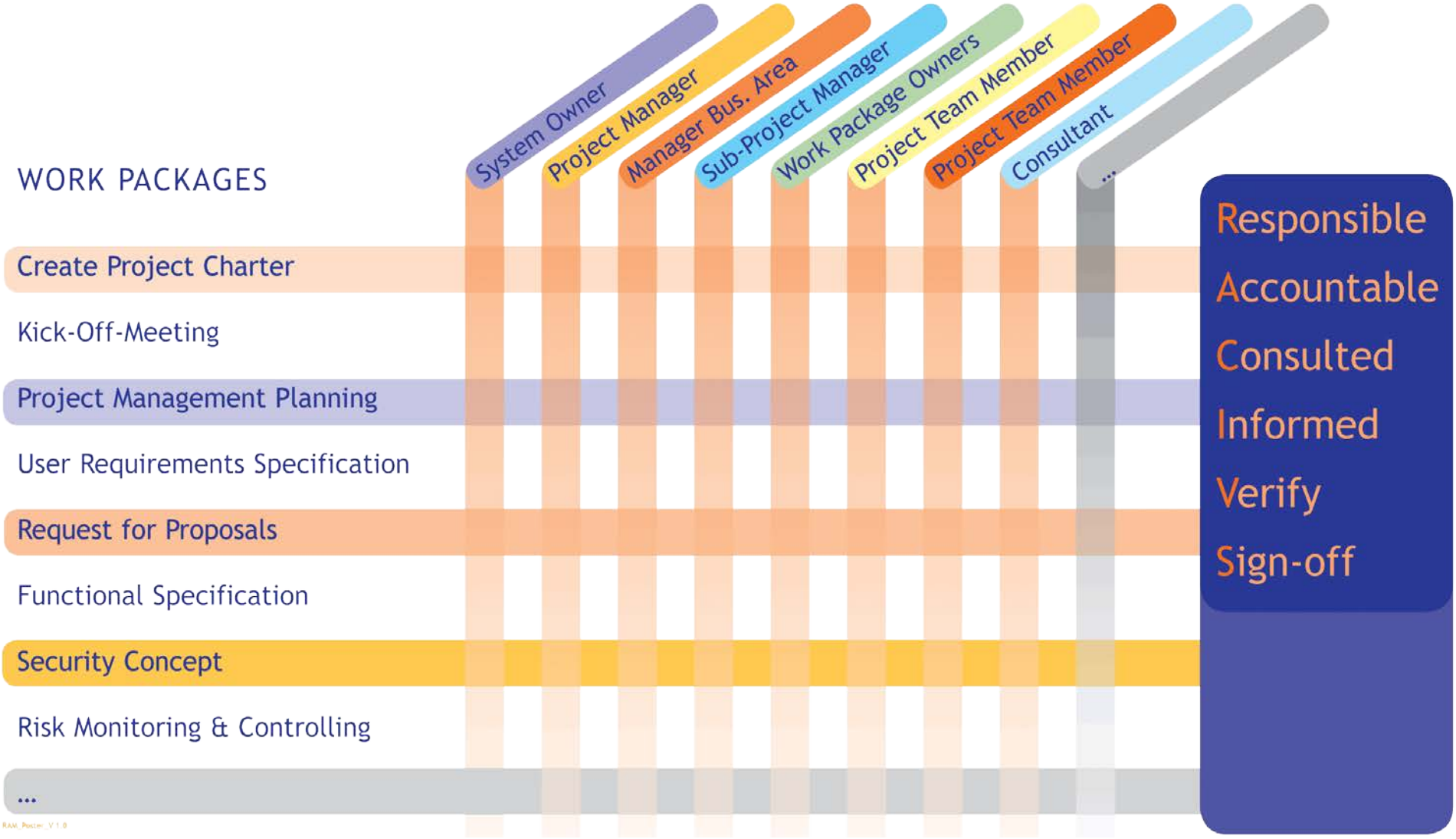
Typical Project Organization Structure



Role Description Project Manager

- The project manager is accountable for the achievement of project objectives.
- The project manager is empowered to manage the project i.e. make all the required decisions within the scope of the objectives and constraints assigned He is the main interface of the customer and has authority to define other interfaces.
- He is accountable for all aspects of PM, even if they delegate some activities.
- He is the leader of the project management team.
- He manages the risks and opportunities of the project (risk / opportunity capture, analysis, containment and exploitation respectively).
- He leads the execution of the Project Management Plan, reports on work progress, on risks and opportunities status evolution.
- He must report to the Sponsor and Steering Committee any current or potential deviation from the objectives as soon as possible.

Responsibility Assignment Matrix (RAM)



Managing Communication

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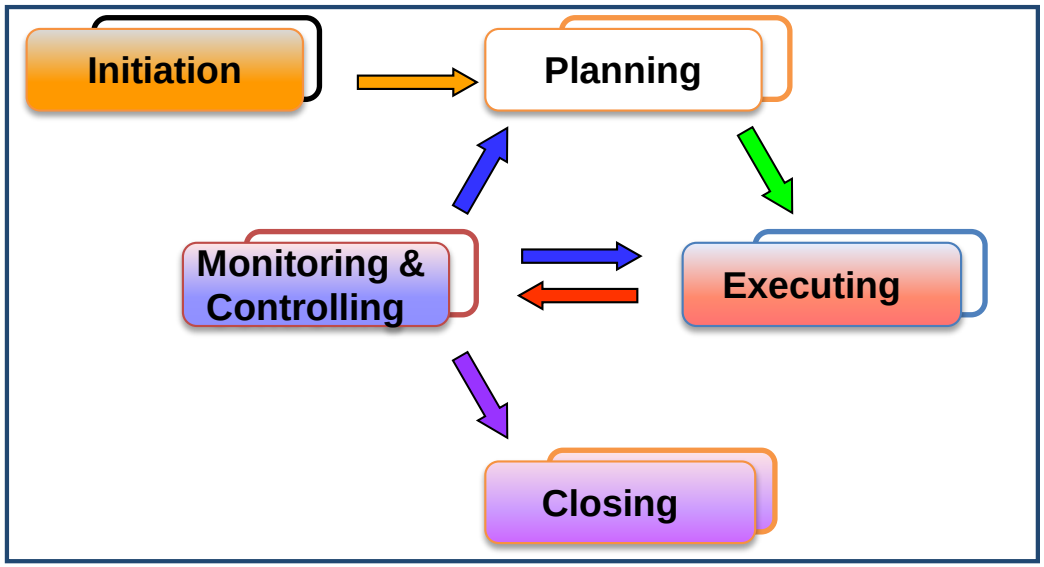
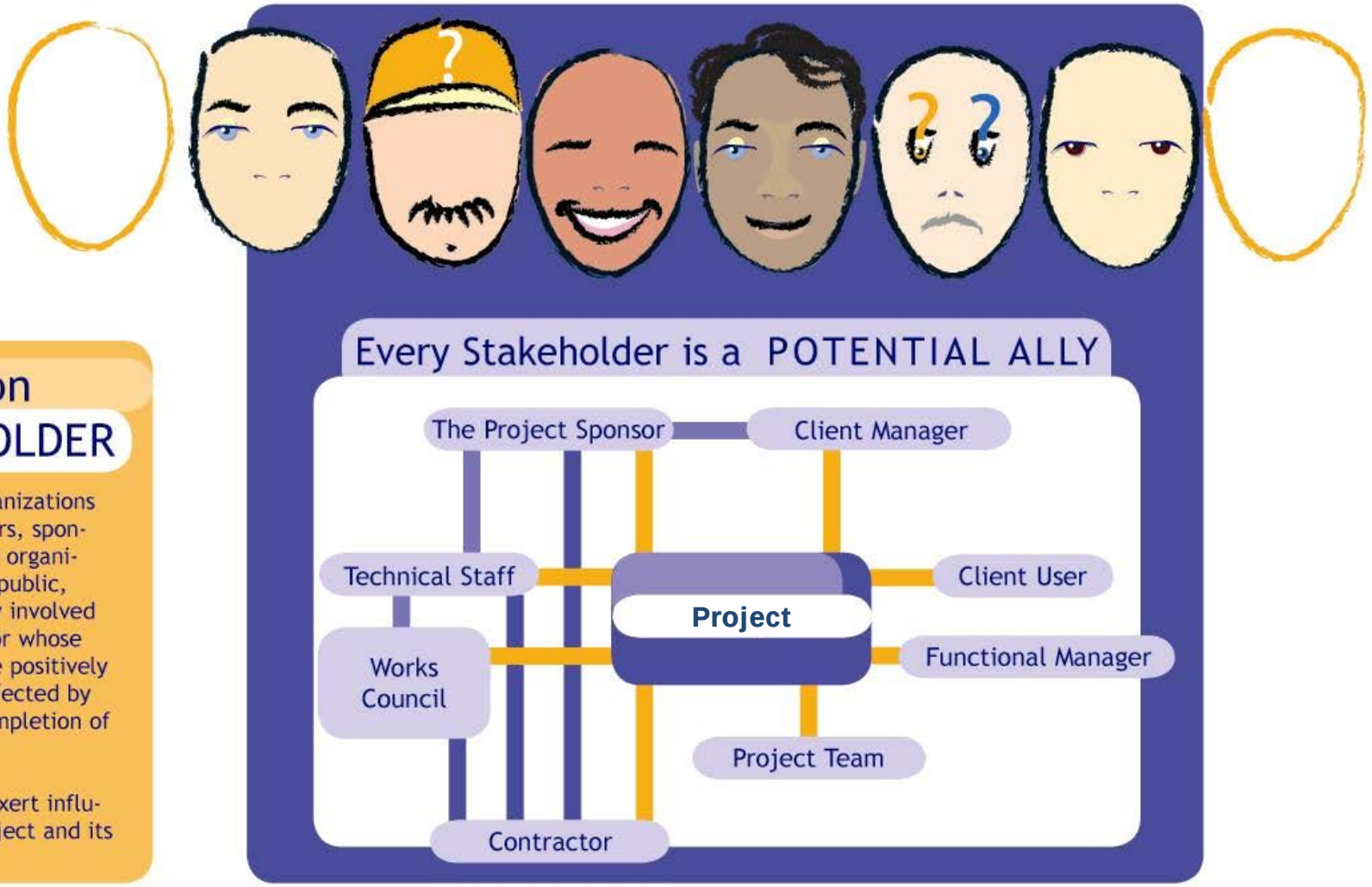


Stakeholder Identification

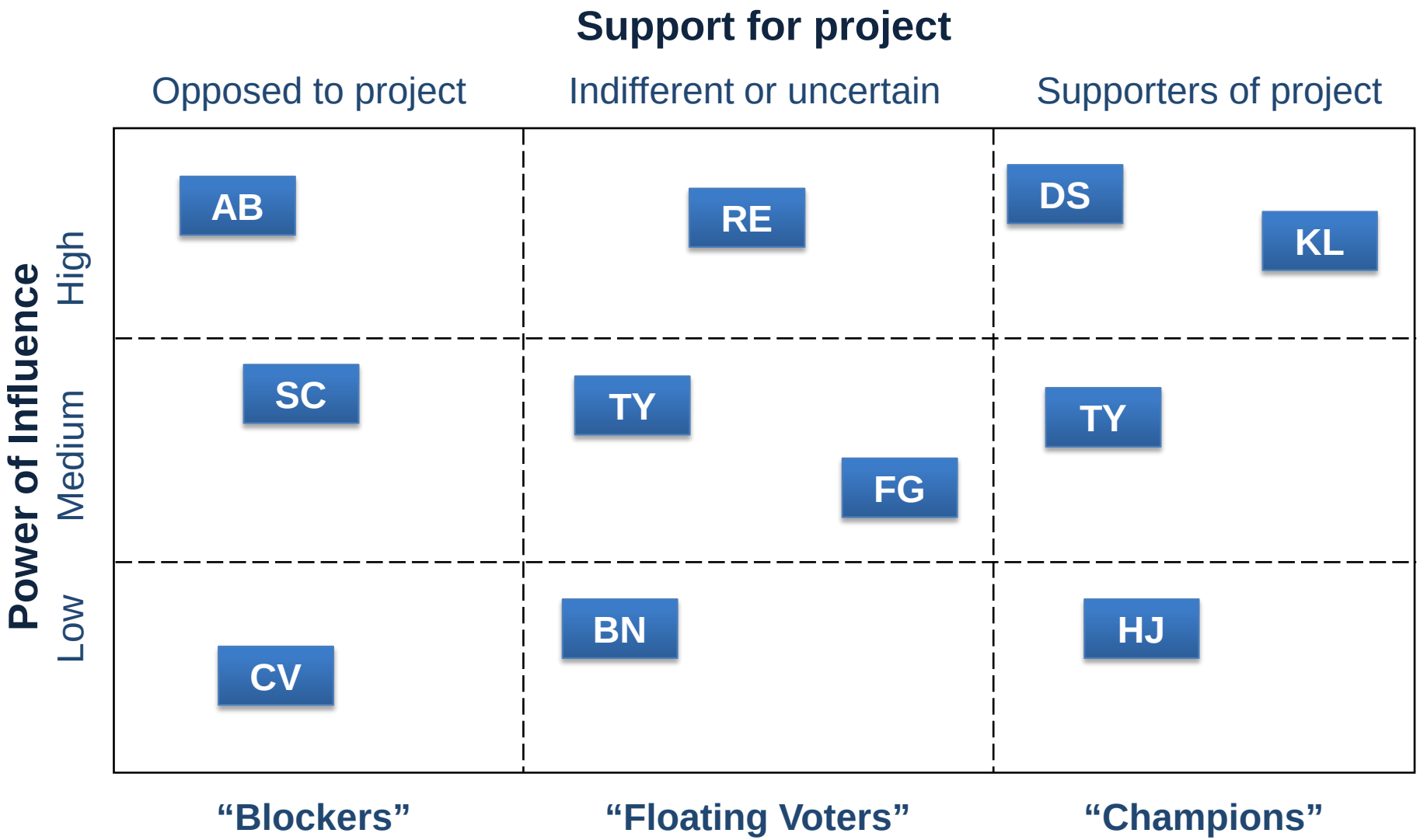


Definition
STAKEHOLDER

Persons and organizations such as customers, sponsors, performing organizations and the public, that are actively involved in the project, or whose interests may be positively or negatively affected by execution or completion of the project.

They may also exert influence on the project and its deliverables.

Stakeholder Mapping



Impact Analysis

Purpose

- Identify populations impacted by the project
- Analyse those impacts per population
- Identify positions that impacted populations may adopt when facing with the change implied by the project

Impacted populations	Vol. (1)	Criticality (2)	Positive change due to the project for this pop.	Negative change due to the project for this pop.	Level of knowledge about the project	Attitude concerning the change	Actions already set up	Prioritising change measures (3)
Managers	12	+	Time saved	Impression of a loss of power	Very weak (they only know the name of the tool)	Resistant	One general presentation	+
Team members	35	++	Strengthening their role		High (information sessions + active participation)	Resistant but shows interes	Each member had a 2-day training	++

Impact Table Example

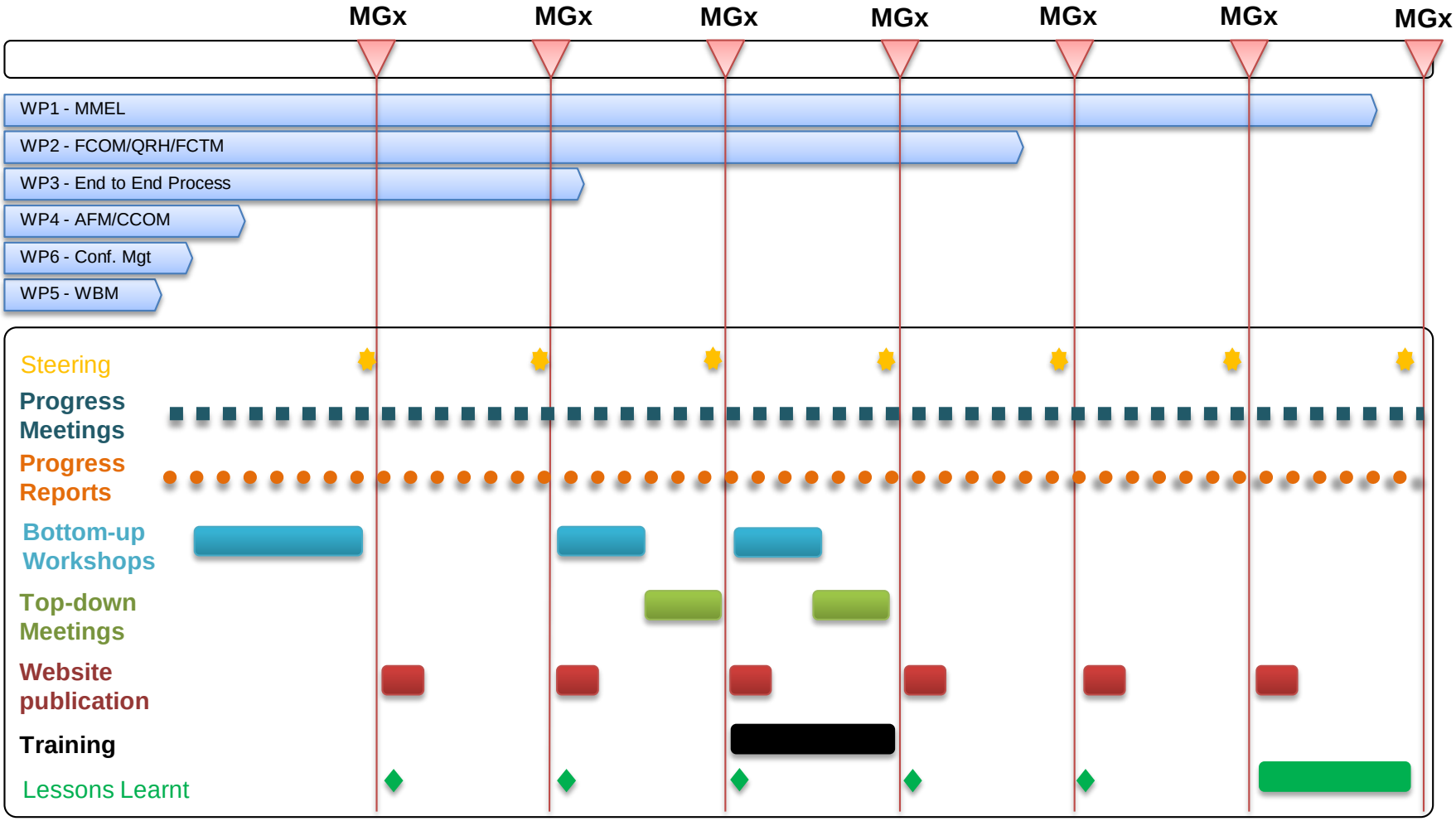
1 . Numerical importance of the population impacted

2 . Mix between: (++, +, ¬, --)

- importance of the change for the population,
- and impact of the change for this population on the overall resu lt

3 . How critical is this fur us to act towards this population (++ , +, 0)

Communication Management Plan

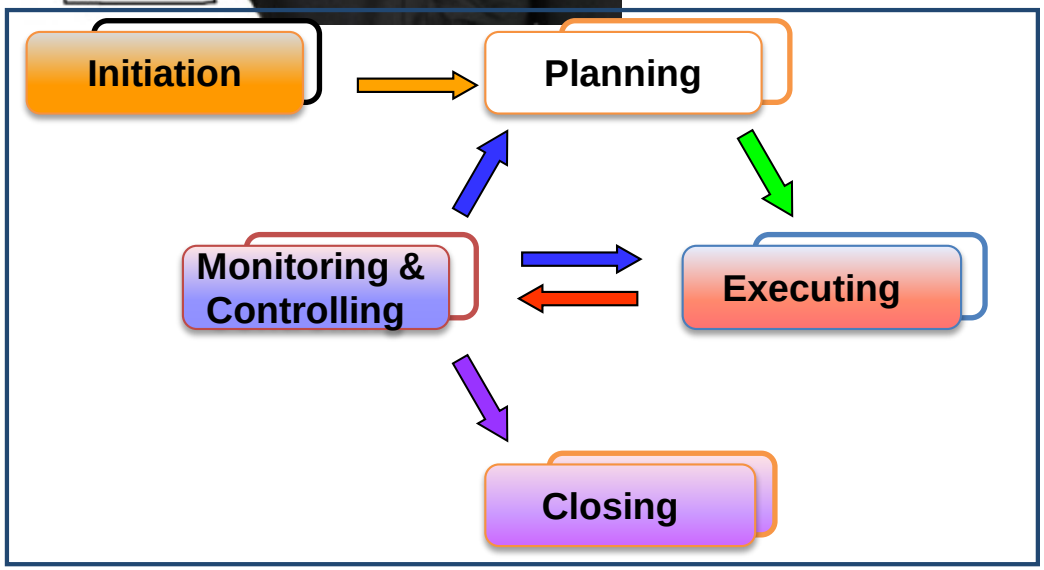


Communication Management Plan

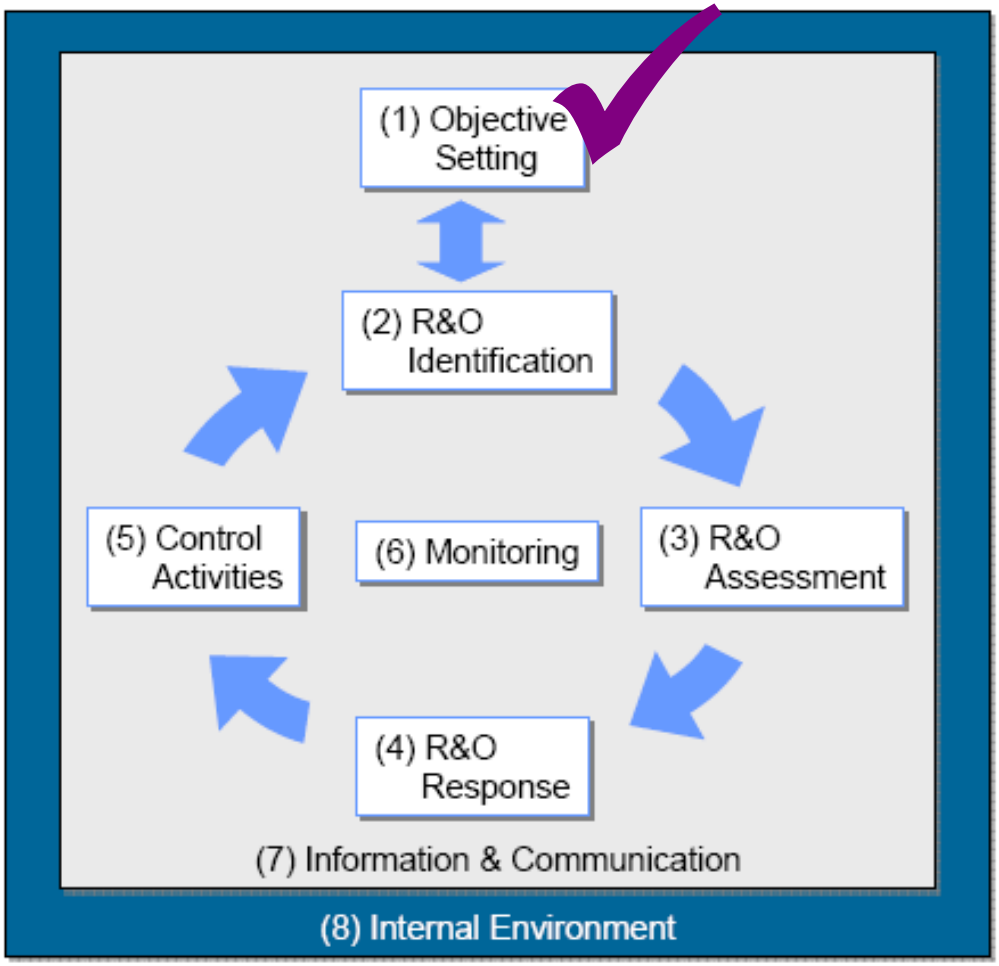
Activity	Purpose	Target Population	Occurrence
Steering	Meeting to validate the contents to pass key Milestone	Sponsors	Adhoc basis
Progress Meetings	Meeting to decide/validate actions, and identify/assess Risks for each deliverable	Process Owner	Weekly
Progress Reports	4 box report for each deliverable	All	Weekly
Bottom-up Workshops	Collaborative workshops to capture Operational needs & requirements and design new processes	Focal Points	Adhoc basis
Top-down Meetings	Feedback meetings on project progress & deliverables.	Focal Points End Users	Adhoc basis
Website Publication	Update of the website content with project outputs. (Deliverables, Project information, etc...)	All	Adhoc basis
Training	Training on new processes/tools	Focal Points End Users	Before G6
Lessons Learned	Lessons learnt capture activity	Process Owner Focal Points End Users	After G8

Risk Management

- Integration Management
- Cost Management
- Time Management
- Quality Management
- Scope Management
- **Risk Management**
- Human Resource Management
- Communications Management
- Procurement Management
- Stakeholder Management



The R&O Management Process



Identify risks & opportunities

Definite fact about the project or its environment

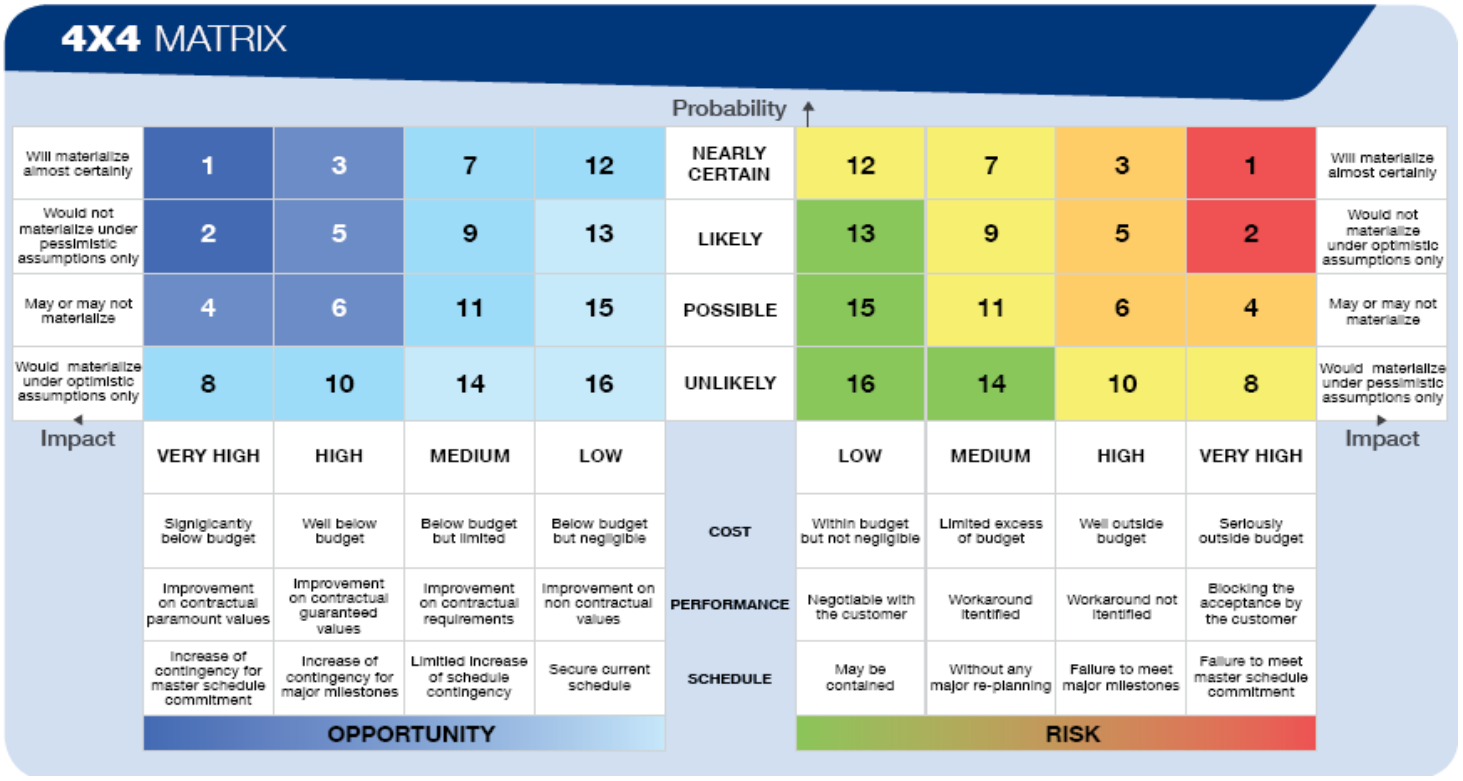
Uncertainty that could affect the project if it occurs

Contingent effect of risk / opportunity on one or more project objectives

Risk	Opportunity
"The client doesn't know what he wants"	"Technical architecture is still undefined"
"Design assumptions may not meet client expectations"	"Reuse of existing modules may be possible"
"Problems during the acceptance phase"	"Reduced development time and cost"

As a result of <cause>, an <event> may occur, with an <effect on objectives>

Risk and Opportunity Assessment Matrix



Risk Response Strategies and Actions

	Strategy	Actions
Avoid	• seeks to eliminate the uncertainty by reducing the risk's probability of occurrence to zero • not possible to avoid all risks	• stop activity, divestment of operations, change of objective, change of scope and scale of activities
Transfer	• transferring the liability or owner-ship of risk impacts to third parties • transfer of risks incurs a risk premium paid due to the third party involved	• insurance; outsourcing; diversify investments; warranties • negotiating liquidated damages / compliance costs
Mitigate	• limiting the probability of occurrence and/or impact of a risk • specific to each risk and to the related business activities	• improve processes; negotiation • ensure adequate skills & level of morale • continuity and fall-back plan
Accept	• when all possible response actions are undertaken • crucial to monitor the "accepted" risks and regularly re-assess those	• decision against action • residual risk • monitoring important

Opportunity Response Strategies and Actions

	Strategy	Actions
Exploit	• eliminate uncertainty by making the opportunity happen, raising the probability of occurrence to 100% • reserved to “golden opportunities”	• include an opportunity in the project scope • removing the uncertainty over whether or not it might be achieved
Transfer	• allocate ownership to other parties who can more effectively deal with the opportunity	• contractual measures • partnerships • Joint ventures
Improve	• increase impact or probability of occurrence • increase your influence on an opportunity • strengthen the cause, identify and trigger key drivers	• opportunity specific • business specific • safeguard Intellectual Property Rights (IPR)
Accept	• residual opportunities are accepted	• do nothing

Control Activities & Monitoring

Control activities

Two kind of interlinked control activities are considered:

Controls which are process risk responses. They can be manual, automated, preventive or detective and are embedded throughout the organisation encompassing a range of different activities like approvals, authorisations, verifications, operational performance reviews, segregation of duties etc.

Controls are established and implemented to help ensure the risk responses are effectively carried out e.g. risk and action reviews.

Monitoring

Management shall monitor the ERM system regarding the R&O situation and its effectiveness by ongoing monitoring and separate assessments.

Ongoing monitoring occurs in the normal course of management activities e.g. management reviews, risk discussions, progress of action plans.

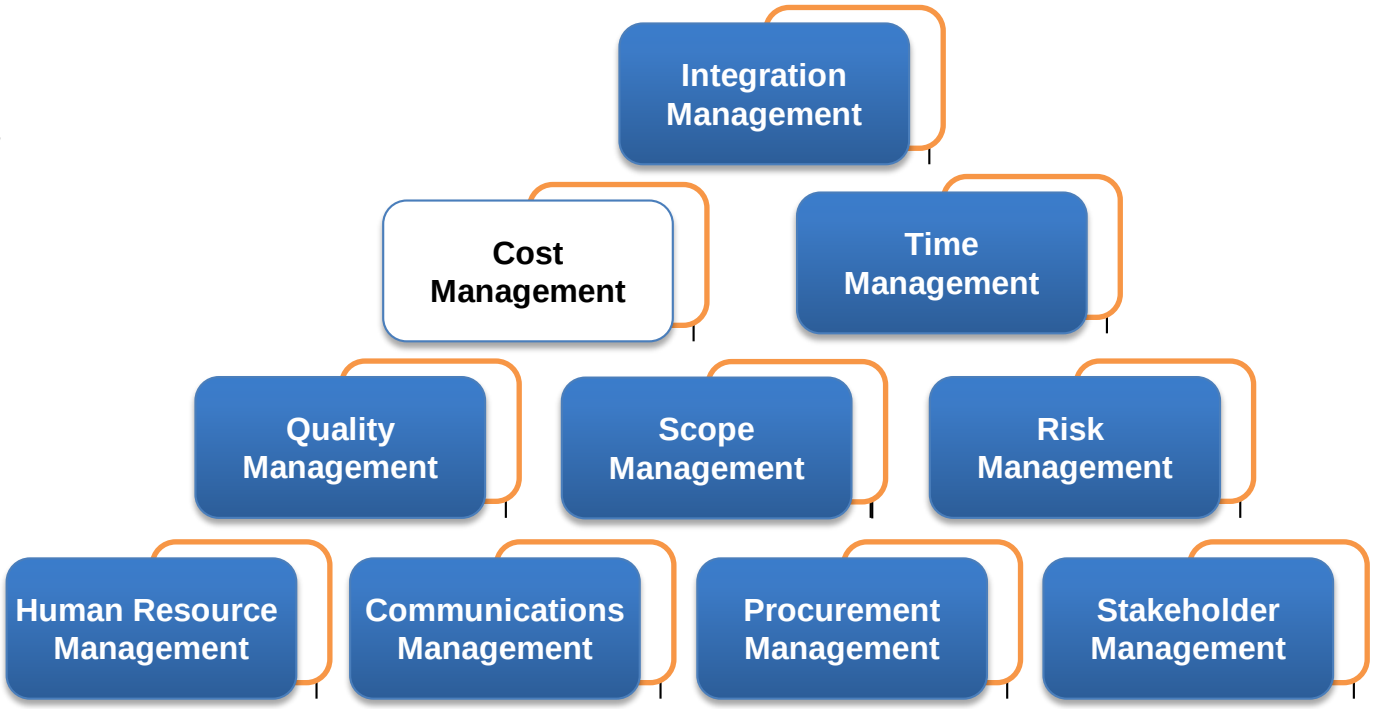
Separate assessments are performed through regular ERM meetings (bilateral or risk review boards) with the respective business areas to assess the ERM system effectiveness and the R&O situation, including new/improving/deteriorating R&O.
R&O registers have to be reviewed at least quarterly!

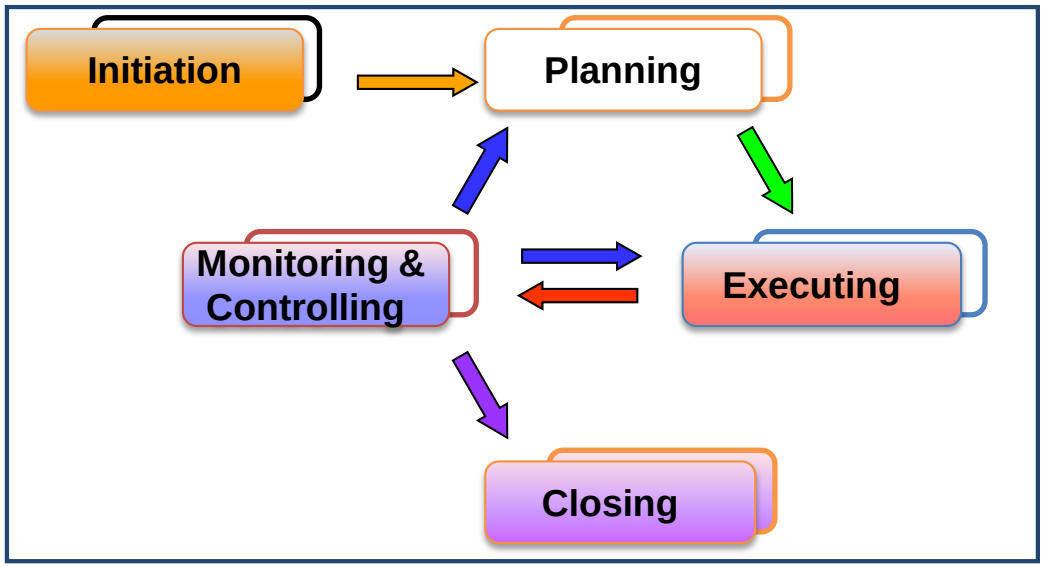
Perform R&O Reviews with stakeholders

Regular R&O reviews shall be organised with relevant stakeholders of a business area (minimum every 3 months).

They can be part of a Management Meeting, but the topic should then be dealt with high priority at the beginning of the session. Such reviews have to be organised and well prepared by the Head of Risk Management, chaired by the Head of Programme / Function.

Managing Cost





Cost Estimating Accuracy

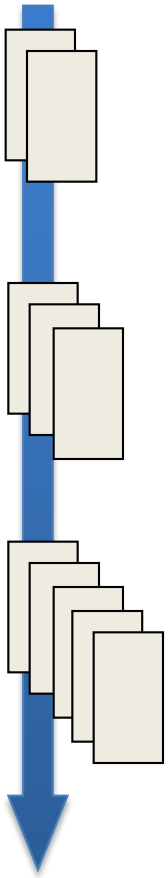
Project Progress

Feasibility / Bid Phase Phase

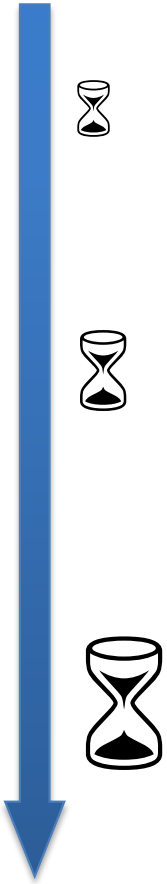
Planning Phase

Execution Phases

Detailed Information for Estimating



Effort



Accuracy

- 25% → + 75%
order of magnitude

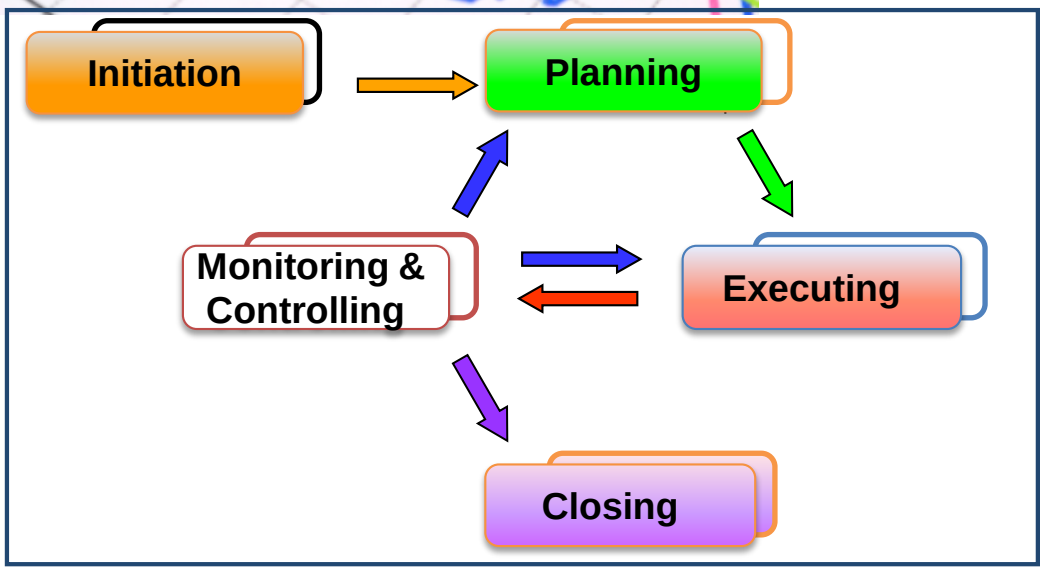
- 10% → + 25%
budget estimate

- 5% → + 10%
definitive estimate

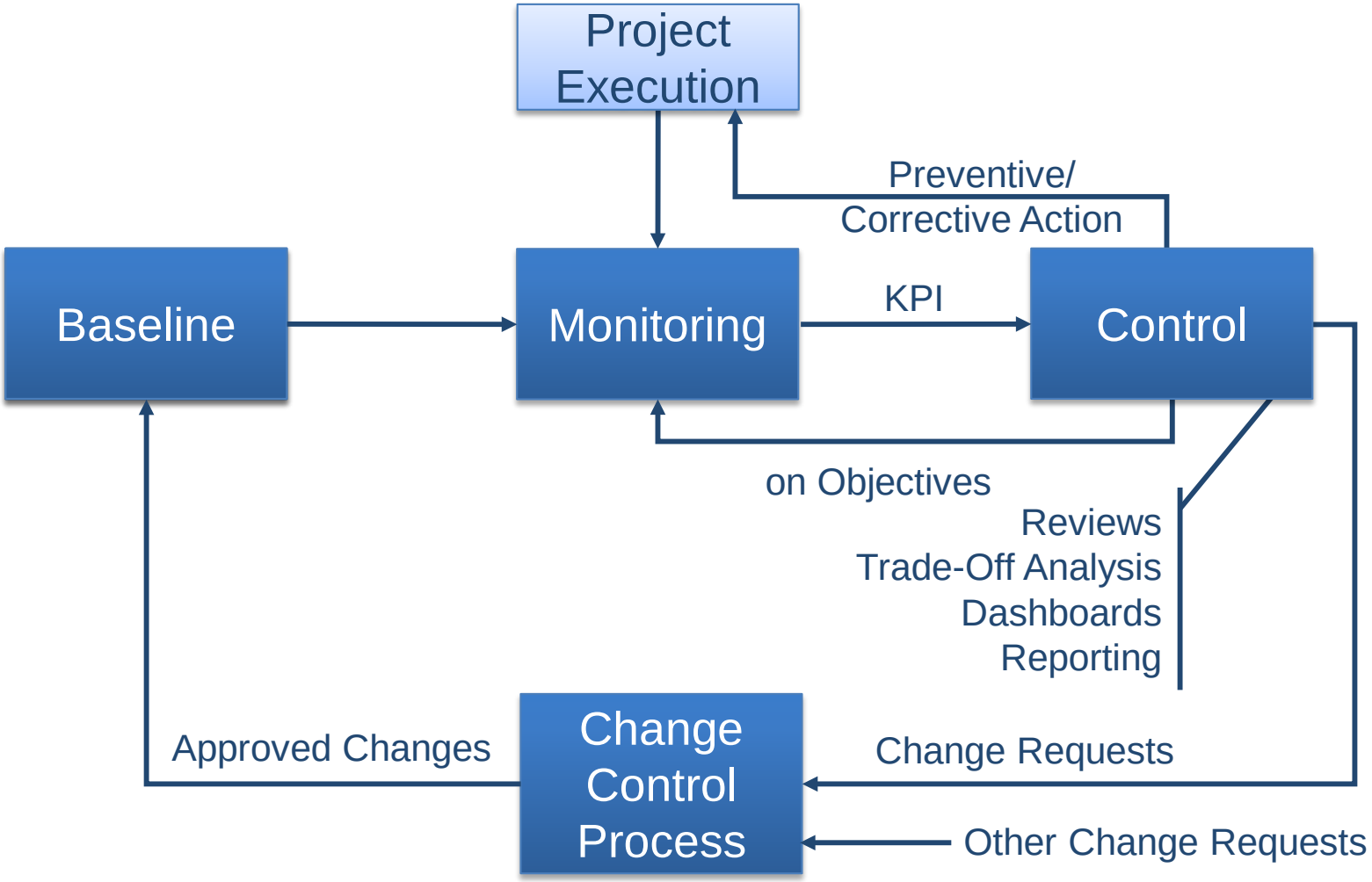
± 5 %

Monitoring & Controlling Projects

- Integration Management
- Cost Management
- Time Management
- Quality Management
- Scope Management
- Risk Management
- Human Resource Management
- Communications Management
- Procurement Management
- Stakeholder Management



Monitoring and Control Overview



Action / Issue Management

- Issues identified and action decided during the life of the project must be managed:
  - Actions / issues raised during the various meetings and reviews (including corrective actions).
  - Work to be done for which the level of detail is too low to be included in the project schedules.
  - Actions defined to mitigate risks (if not recorded in R&O register).

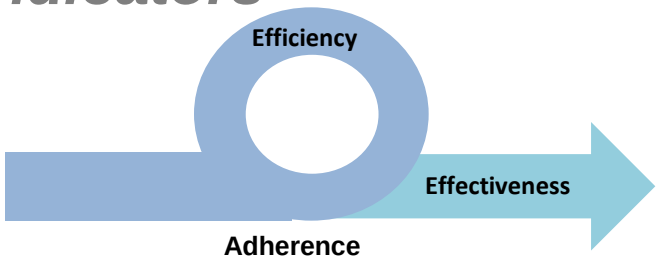
Action Log

Last update : **13-Feb-14**

Progress		
100,00%	0	Action closed
75,00%	0	Action in progress
50,00%	0	Owner identified
25,00%	0	Action identified
0,00%	0	Action to be planned
	0	Workload remaining (man-days)

ID	Theme	Action	Who	Remaining Workload (man-days)	Due Date	Progress	Comment
1							
2							
3							

Key Performance Indicators

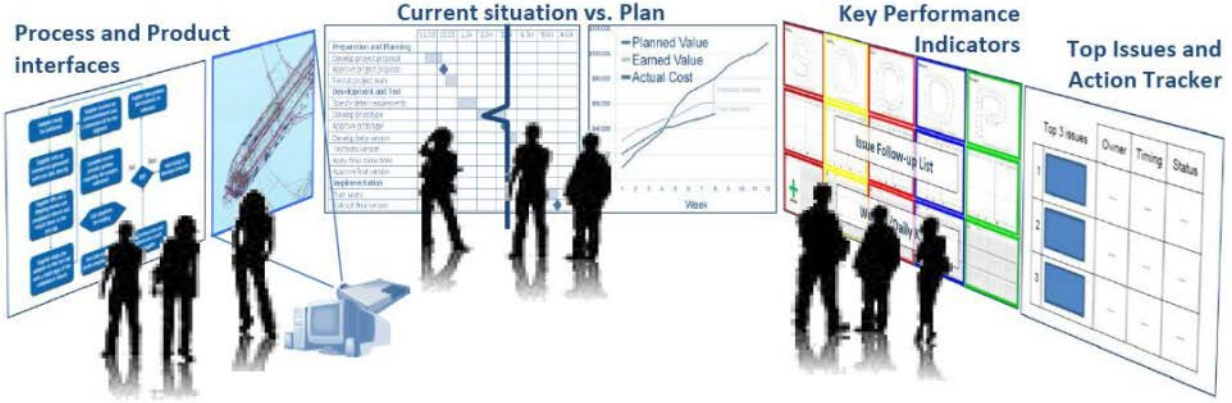


Project Effectiveness KPIs	Project Efficiency KPIs	Project Adherence KPIs
•**The degree to which objectives are achieved** and the extend to which targeted problems are solved. •In contract to efficiency, effectiveness is determined without reference to cost and, whereas efficiency means « doing the thing right », **effectiveness means « doing the right thing ».**	•**The comparison of what is actually produced or performed with what can be achieved** with the same consumption of resources (money, time labour, etc.). •Whereas effectiveness means « doing the right thing, **Efficiency means « doing the thing right ».**	•**Focused on providing confidence that the planned requirements are fulfilled by the actors of the process.**
Extend to which planned activities are realised and planned results achieved.	**The relationship between the result achieved and the resources used.**	
The project delivareble is predictable.	**The project adherence to baseline.**	**The project is operated as defined.**

Content of a Visual Control Room

A Visual Control Room is dynamic, and should be **adapted** to the context of the project or operations.

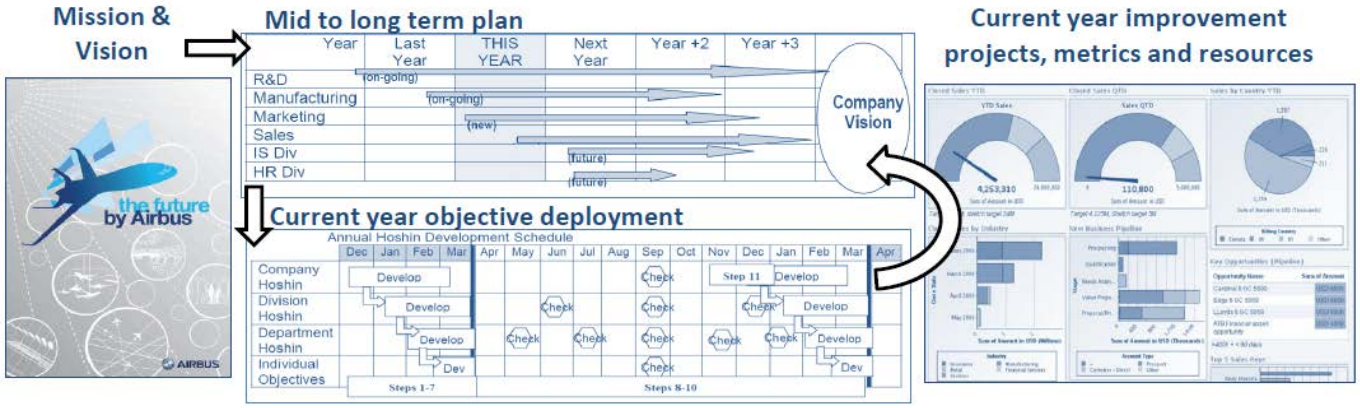
Example of Visual Control Room for Project Management



Content should:

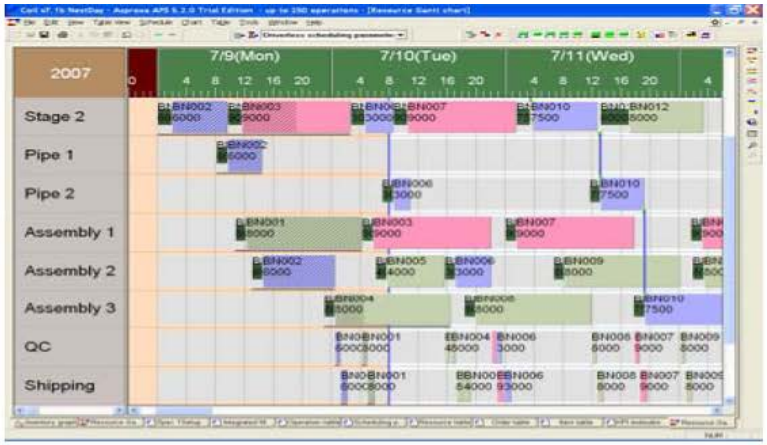
- Help **decision making**
- Be **actionable**
- Highlight **current** and **potential problems**
- Clarify **priorities**

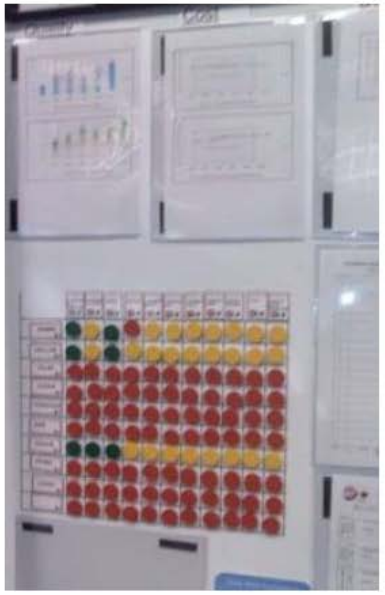
Examples of additional elements for Executive Management



AIR BUSINESS ACADEMY

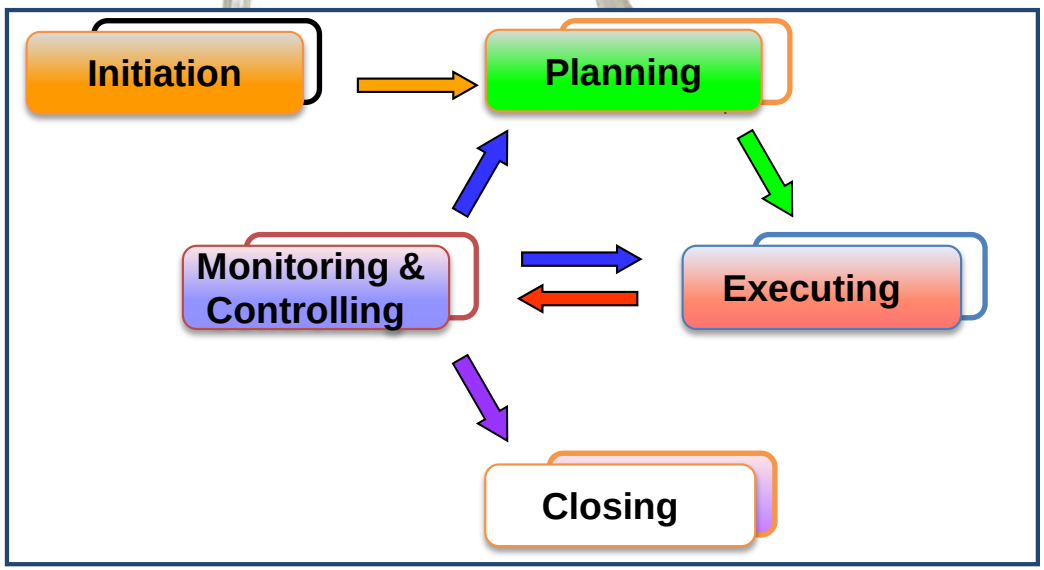
Displaying Progress Status





Closing a Project

- Integration Management
- Cost Management
- Time Management
- Quality Management
- Scope Management
- Risk Management
- Human Resource Management
- Communications Management
- Procurement Management
- Stakeholder Management



Project Closure

- **Objective**: Execute a controlled close to a project phase or the project (either at its end or at a premature close)
- **Activities**:
  - Closure of contracts with suppliers / contractors
  - Conduct final status meeting(s)
  - Formal acceptance of the system / product / project results
  - Financial closure
  - Conduct project closure audits (e.g. configuration or procurement audit)
  - Conduct lessons learnt (should be conducted regularly during the project life cycle, e.g. at the end of major phases)
  - Prepare and review project closure report
  - Archive project information
  - Recognize and celebrate the project success
  - Release resources from the project

Lessons Learned

- **Frequent problem:**
  - Projects create new knowledge – Most of the time this knowledge is not captured in a structured and targeted manner.
  - Projects need knowledge from past projects in order to avoid the same mistakes.
  - However, it is not clear whether / where the knowledge exists within the organization.
- **Solution:**
  - Lessons learnt workshop with team members, major stakeholders and clients of the Lessons Learnt.
  - Meet or recruit people who have worked on similar projects.
  - Include external experts / experienced people within the reviews or meet them to tackle specific subjects and problems.
  - Process to capture, review, archive and maintain Lessons Learnt.
  - Coaching of projects in utilizing lessons learnt.