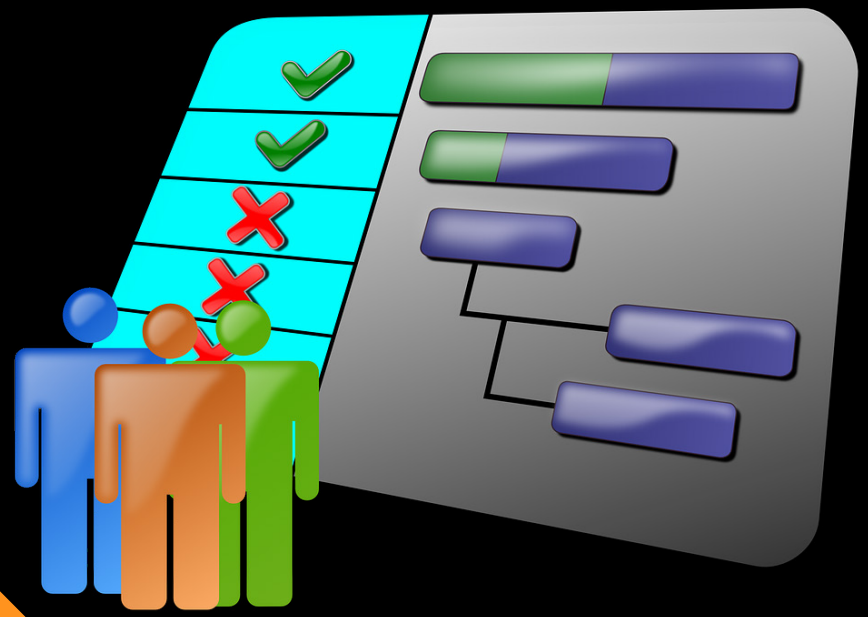
RAILHOW

Project Management

The challenges for the Public Sector



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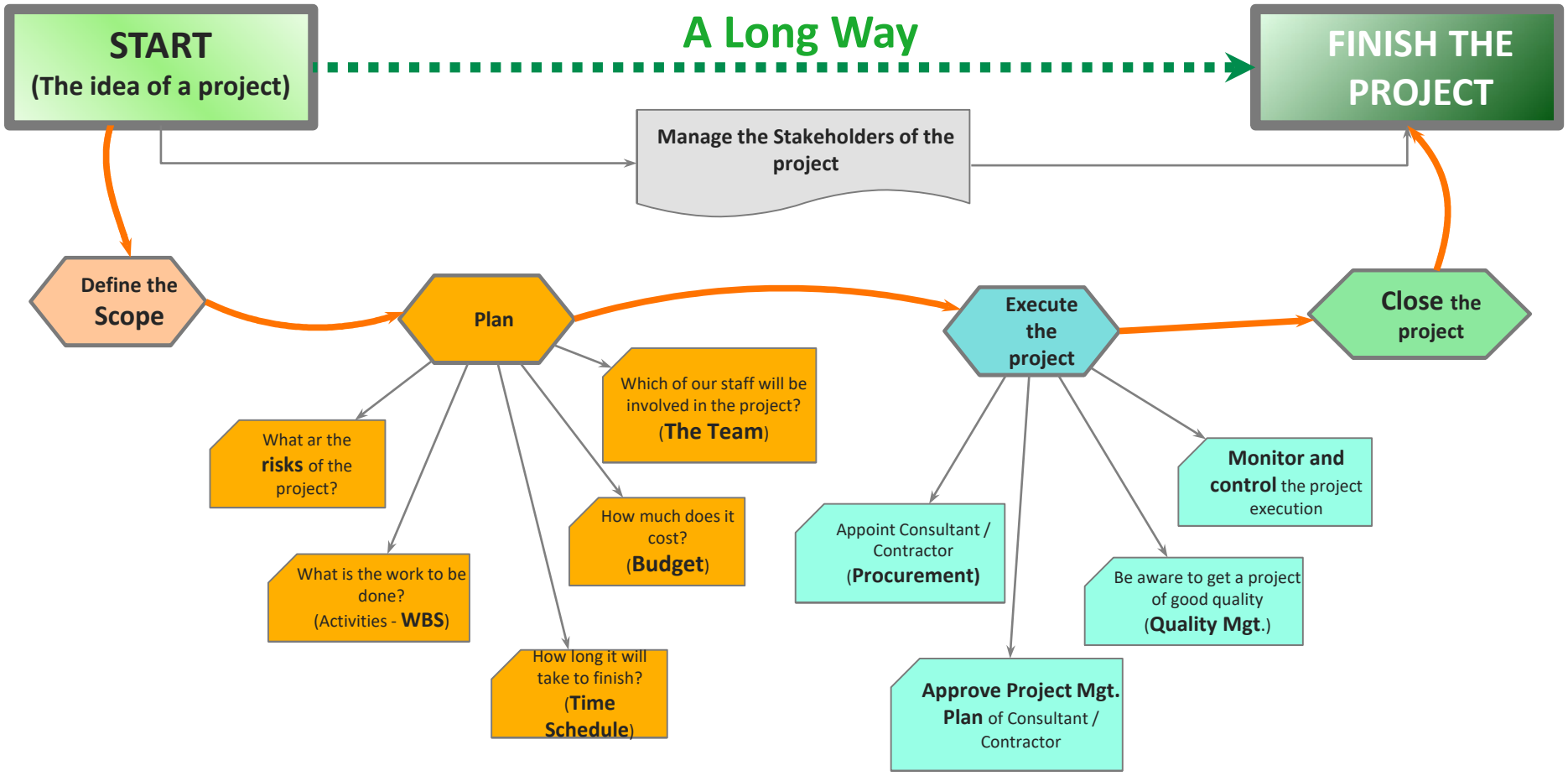
2019

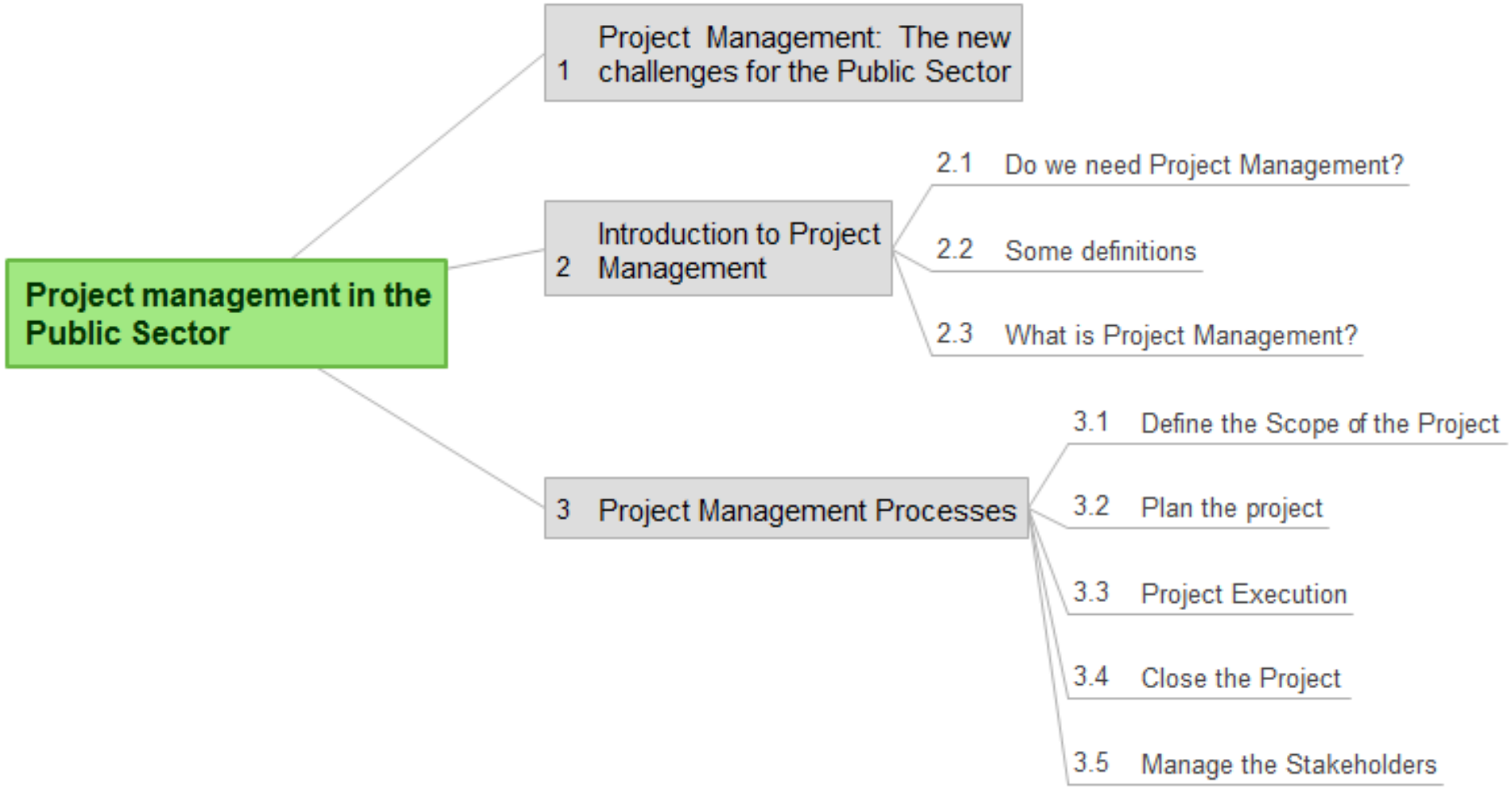
Foreword

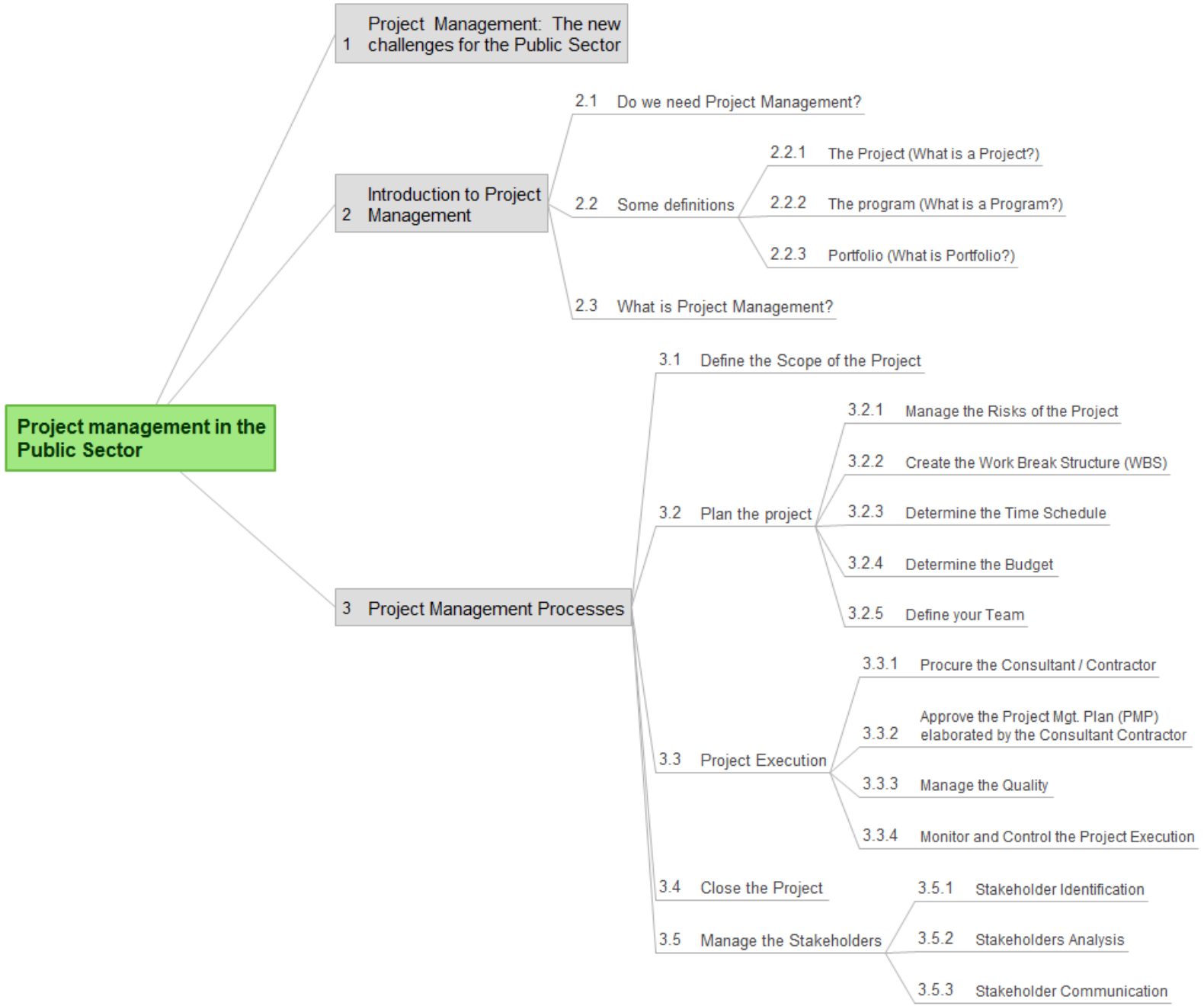
- Today we will focus on **Project Management for the Public Sector**. The Ministries in charge are executing many new projects and also projects to maintain the current infrastructure.
- **Do we need to apply project management?** There are challenges to building effective project management capabilities as we will discuss today.
- Organizations like the **Project Management Institute (PMI)** and the **(British) Office of Government Commerce (OGC)** have developed practice standards that serve to encourage and guide the adoption of project management (PM) practices. But these standards apply more for the private sector.
- Today we will elaborate on the PMI's Project Management Body of Knowledge® (PMBOK®) developed by the PMI. The processes described here have been modified as to fit better to the needs of the staff of the Public Sector, dealing with project management.

The basic concept of managing a project



Workshop Structure




Project management in the Public Sector
1 Project Management: The new challenges for the Public Sector
2 Introduction to Project Management
2.1 Do we need Project Management?
2.2 Some definitions
2.2.1 The Project (What is a Project?)
2.2.2 The program (What is a Program?)
2.2.3 Portfolio (What is Portfolio?)
2.3 What is Project Management?
3 Project Management Processes
3.1 Define the Scope of the Project
3.2 Plan the project
3.2.1 Manage the Risks of the Project
3.2.2 Create the Work Break Structure (WBS)
3.2.3 Determine the Time Schedule
3.2.4 Determine the Budget
3.2.5 Define your Team
3.3 Project Execution
3.3.1 Procure the Consultant / Contractor
3.3.2 Approve the Project Mgt. Plan (PMP) elaborated by the Consultant Contractor
3.3.3 Manage the Quality
3.3.4 Monitor and Control the Project Execution
3.4 Close the Project
3.5 Manage the Stakeholders
3.5.1 Stakeholder Identification
3.5.2 Stakeholders Analysis
3.5.3 Stakeholder Communication

Learning Objectives

- To provide participants with:
  - An awareness of the importance of **applying Project Management** in projects of any size.
  - An understanding of **essential elements and processes of project management**, including Project Planning, Risk Management and Stakeholder Engagement.

1. PROJECT MANAGEMENT: THE NEW CHALLENGES FOR THE PUBLIC SECTOR

The new challenges for the Public Sector

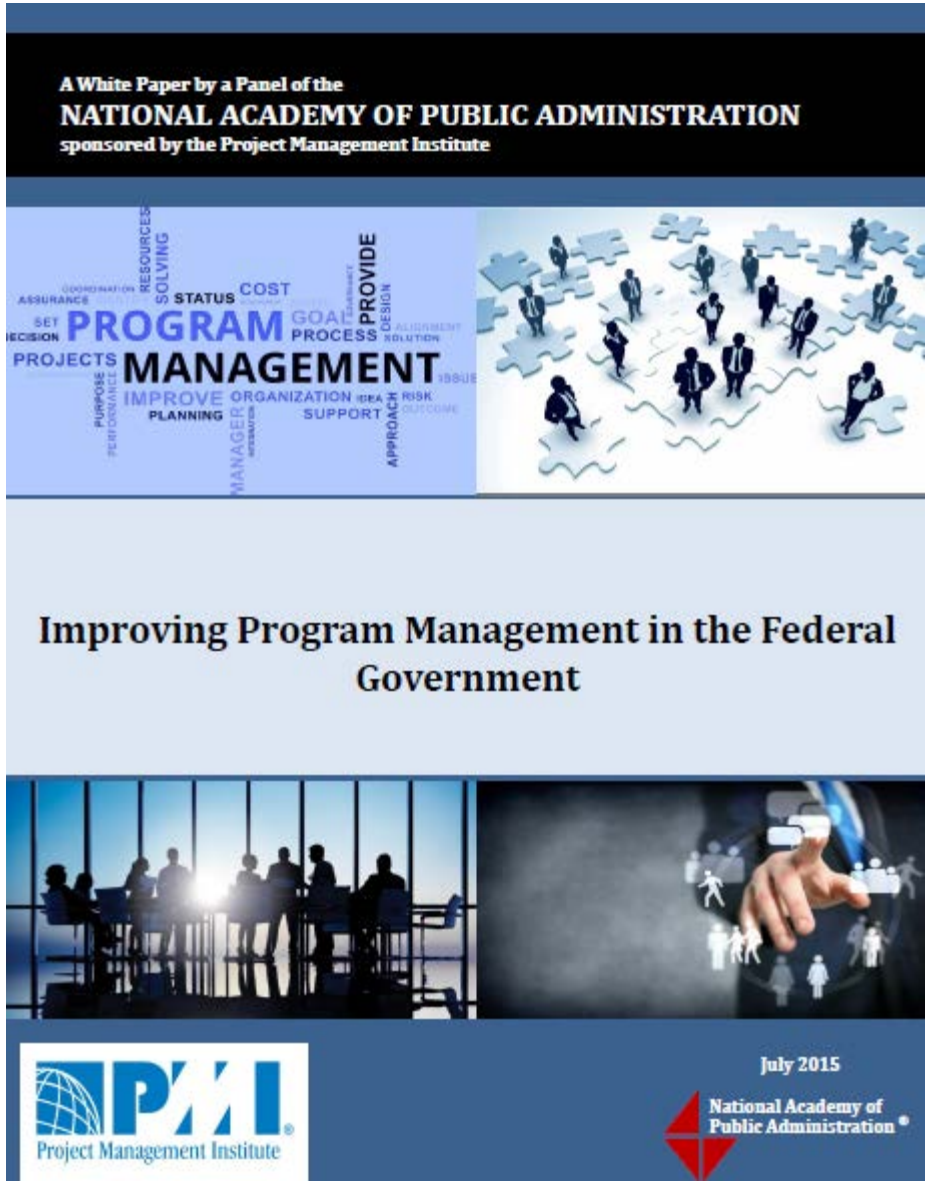
- Increasingly, Governments are called upon not only to manage the routine operations of ongoing project programs, but also to undertake **large, complex new projects and services** and to **adapt and improve ongoing projects** in a **rapidly changing environment**. This has proven to be a challenge.
- The public sector is under more pressure than ever to make responsible, reasonable decisions around the right investments.
- Fortunately, a management discipline—project management—has evolved over the past few decades to address the challenges of managing large, complex change initiatives.
- Project management has been embraced by the private sector with demonstrated success across a range of industries. However, the adoption of project management in Governments has been uneven. With some exceptions, project management capabilities in the public sector are generally weak.

- The growing scope and complexity of programs funded by the Government have made the need for Project Management more important than ever.
- While **Government plans to spend billions** on operational investments, they've had difficulty providing **adequate oversight of these investments**.
- Managers of the Government are required to **do more with fewer resources and must continuously justify the funds** they request for both new and existing investments.

CASE STUDY:
The USA Case - Suggestions to catch the challenges

The Case in USA

- As part of a study (see figure), legislation has been proposed "*HR 2144—The Program Management Improvement and Accountability Act of 2015*"—which directs the following actions:
    1. Create a formal job series and career path for program managers in the federal government.
    2. Develop a **standards-based model for program management** consistent throughout the federal government.
    3. Designate a **senior executive in each agency** to be responsible for program management policy and strategy.
    4. Establish an **interagency council on program management** to align agency approaches across the government.



Obstacles for development of project management capabilities

Obstacles for development of project management capabilities across the Government:

1. **Laws and policies have been developed over time to address specific problems and do not holistically address the challenges of program management.**
2. **Project management is not consistently recognized as a management discipline that is essential to government performance, success, and results.**
   - Perhaps the most important barrier to the development of project management capabilities in the government is the simple failure of many senior government leaders to recognize its value and champion its development.
   - Project management is considered an administrative or technical specialty concerned with implementation rather than an integral part of accomplishing the agency's mission.
   - Furthermore, project management it is not always seen as a promising career by those who wish to rise in the agency. This hinders the development of a strong and valued project management capability within agencies.

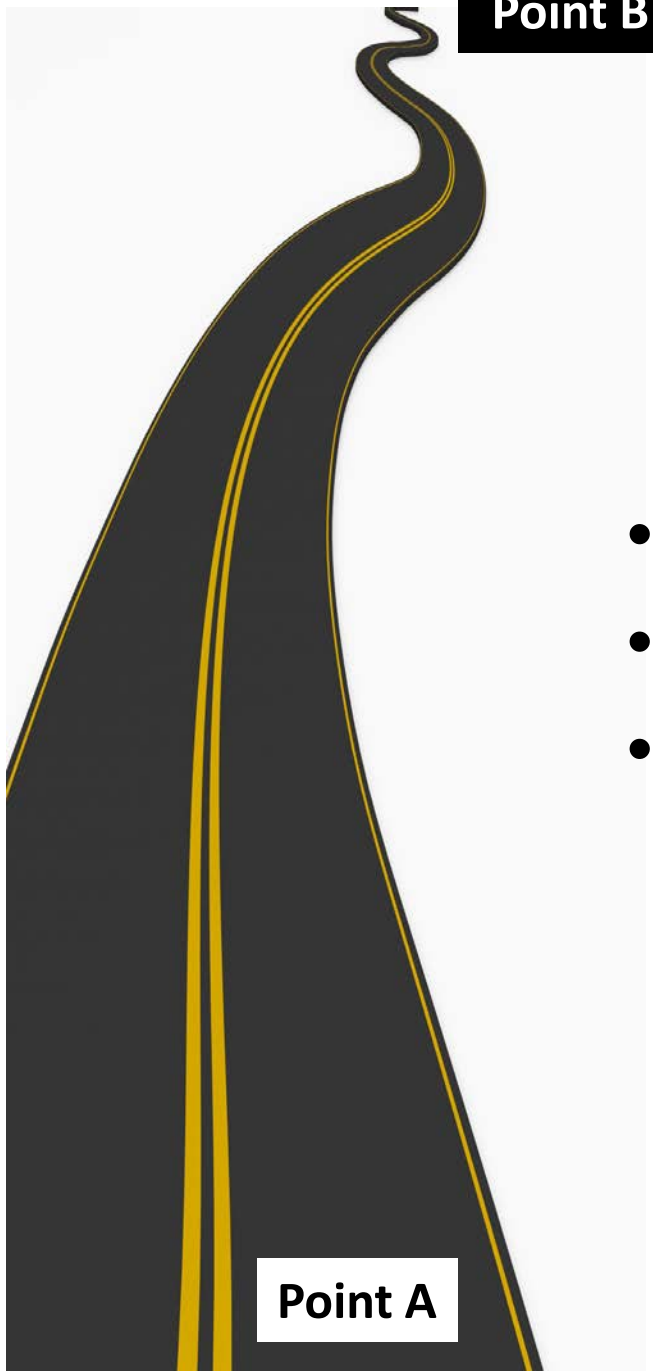
Source: USA, National Academy of Public Administration, "***Improving Program Management in the Federal Government***", July 2015

3. **Government executives and stakeholders do not clearly understand their roles and responsibilities.**
    - Currently, agencies often do not provide clear guidance on the roles and responsibilities of agency executives and stakeholders within project management processes. For instance, executives sitting on major investment boards often have little or no training in their role and responsibility.
4. **There is no consistency across the government in the training and development of project managers.**
    - Research has shown that an experienced project manager is one of the most important determinants of a successful program.
    - Most agencies have not developed a systematic approach to the training and development of project managers. It is largely up to individuals to seek out such certification and it is not clear there is any assurance that this investment will pay off because agencies may not have defined jobs to require the certification.

5. **Project managers lack a professional community within the federal government that can provide support and a voice on issues affecting the development of project management.**
   - Currently, individuals performing project management roles in many agencies work in relative isolation. They are often unaware of colleagues within the government and have no ready way to connect and discuss common issues and share best practices.
   - Also, they are unable to participate as a group in discussions of policy affecting the development of project management within the government.
   - This lack of community and a collective voice hinders efforts to build and improve project management capabilities across the government.

2. INTRODUCTION TO PROJECT MANAGEMENT

2.1 Do we need Project Management?



… imagine we want to build a new road between Point A and Point B

- Do we need project management to construct the road?
- If YES why?
- If NO why?

… imagine we want to build a new road between Point A and Point B

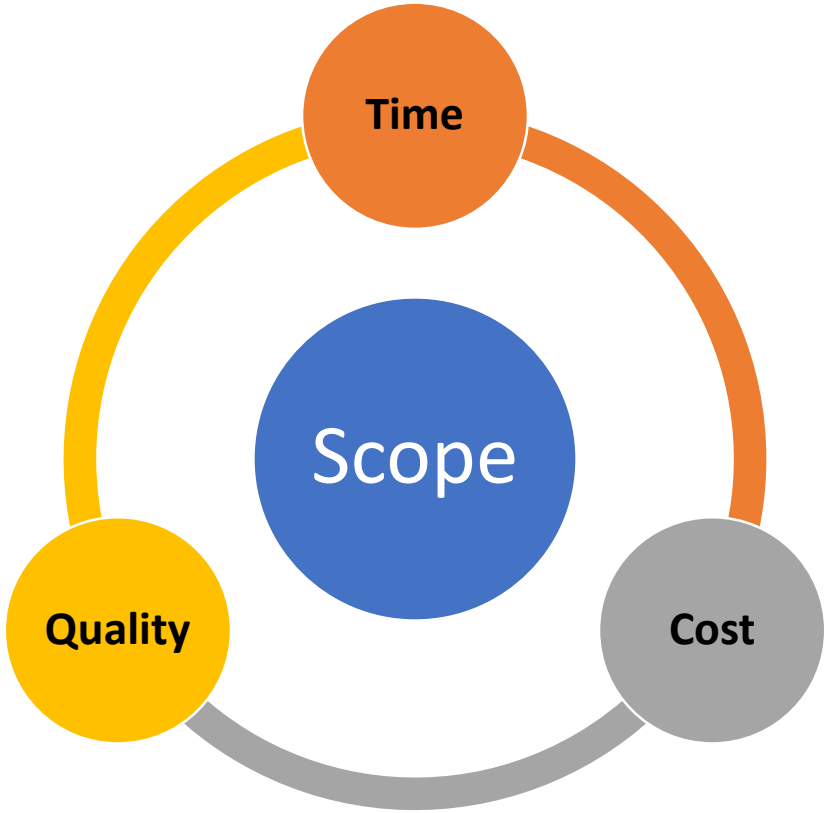
- New road from A to B. The road to be a 3 lanes motorway with 3 toll stations and 1 rest area: **SCOPE**
- The road shall be given to operation in 18 months: **TIME SCHEDULE**
- The available budget is 12 Million OMR: **BUDGET**
- We emphasize on a good quality of the road construction: **QUALITY**
- For the design, tendering and construction we need a good Team: **TEAM (HR) MANAGEMENT**
- there is always a chance for potential risks in a project no matter how well planned: **RISK MANAGEMENT**
- For the design and construction we need consultants and contractors: **PROCUREMENT MANAGEMENT**
- We have to communicate and manage the Stakeholders of our road project: **STAKEHOLDER MANAGEMENT**

2.2 Some Definitions

2.2.1 The Project (What is a Project?)

- **Project:** A temporary endeavour undertaken to create a **unique product, service, or result with a defined beginning and end** achieved either by meeting project objectives/goals or by being terminated due to objectives/goals not being met.
  - A Project is a **planned set of activities**
  - A Project has a **scope**
  - A Project has **time, cost, quality and resource constraints**
- **Project Manager:** The person assigned by the performing organization to lead the team that is responsible for achieving the project objectives.

  A project manager is a person who causes things to happen.



2.2.2 Program (What is a program?)

- **Program:** A group of related projects, subprograms, and program activities that are managed in a coordinated way to obtain benefits not available from managing them individually. All projects within a program are related by a common goal, often of strategic importance to the sponsoring organization (here: The Ministry).

  This means that **in a program you will have multiple projects which are either similar or related to each other**. For example, let's say that you have two projects: the first project is to construct a school building and the second project is to construct an office building. Since these two projects are similar in nature, you will keep them under a program.

- **Program Management:** The application of knowledge, skills, tools, and techniques to a program to **meet the program requirements** and to obtain benefits and control not available by managing projects individually.

- **Program Manager:** The person authorized by the performing organization to lead the team or teams responsible for achieving program objectives.

The Difference between Project Management and Program Management

- Summarizing:

  The following are a few differences between project management and program management:

  - In **project management** you manage one individual project while in **program management** you manage multiple similar or related projects.
  - A project can be a part of a program but a program cannot be a part of a project.

2.2.3 Portfolio (What is a portfolio?)

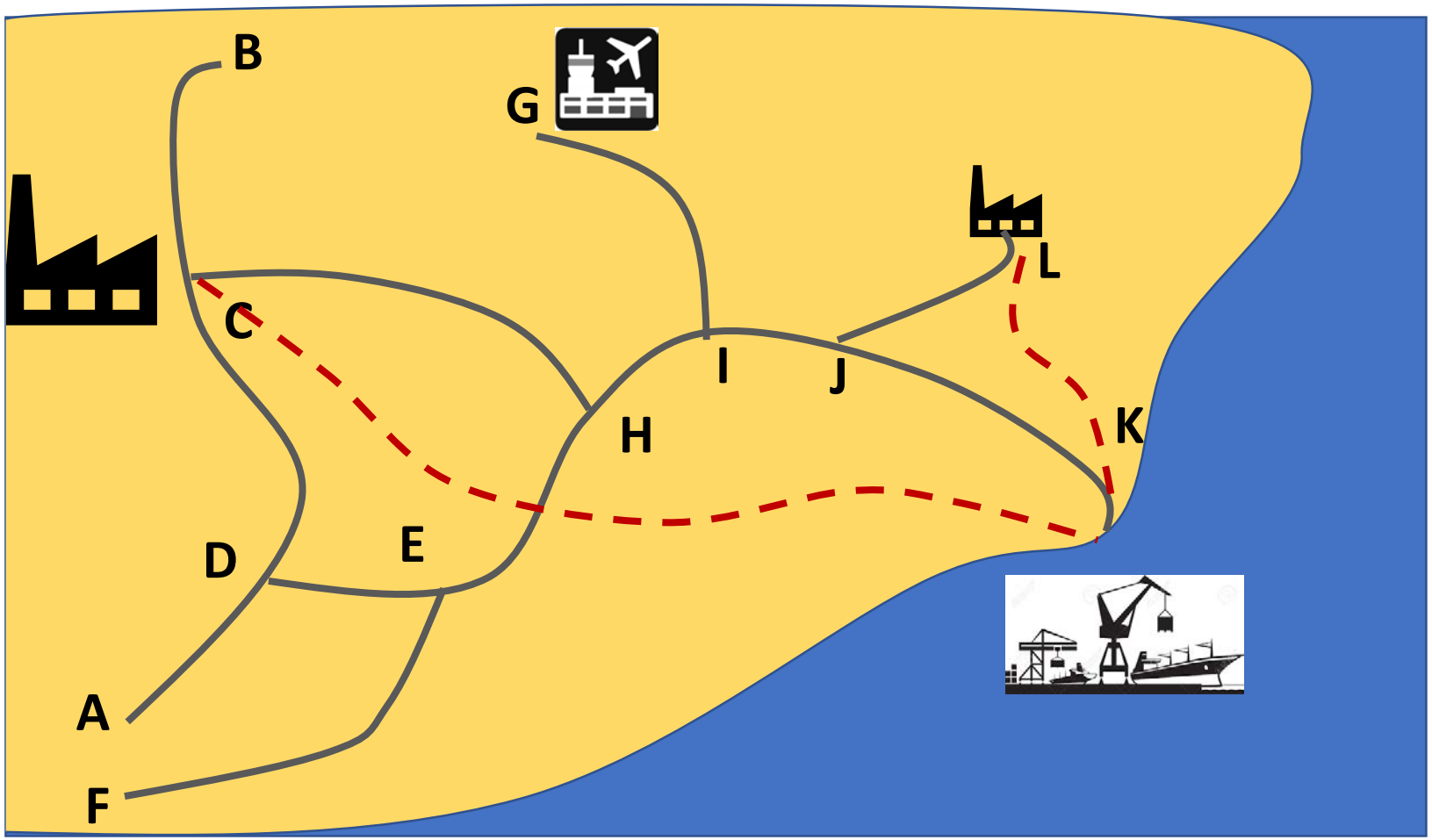
- A portfolio is a **high-level view of all the projects** an organization is running in order to meet the business's main strategic objectives. It could be every project across the entire company, a division, or a department.
- Portfolio management involves **setting priorities** based on the business leadership's agreed-on objectives, and **then choosing programs and projects** to undertake based on what will provide optimal business value, the level of risk involved, and available resources.
- Project portfolio managers look at a company's projects and evaluate whether they're are being executed well, how they could be improved, and whether the organization is experiencing the expected benefits.
- Portfolio management ensures that an organization can control its project selection and execution success. It refers to the centralized management of one or more project portfolios to **achieve strategic objectives**. **Portfolio management is a way to bridge the gap between strategy and implementation**.

- Project portfolio management help public sector organizations:
    1. Propose, prioritize, and select investments
    2. Plan, manage, and control the most-complex projects and portfolios
    3. Give complete visibility into the progress of your projects and programs, so, you can deliver on time, within budget, and in compliance.

Project management is about executing projects right,
Portfolio management is about executing the right projects.

Next figure shows many new projects planned by the Ministry.

- What are these projects?
- Give example of projects, programs and portfolio.



DISCUSSION

Remember:
Program = Group of similar projects
Portfolio = projects to achieve strategic objectives

New road

New railway line

Infra for logistics center

Port infrastructure

Airport

2.3 What is Project Management?

What is Project Management?

There are many definitions. Project management is

1. The application of **knowledge, skills, tools, and techniques** to project activities to meet the project requirements.

Knowledge

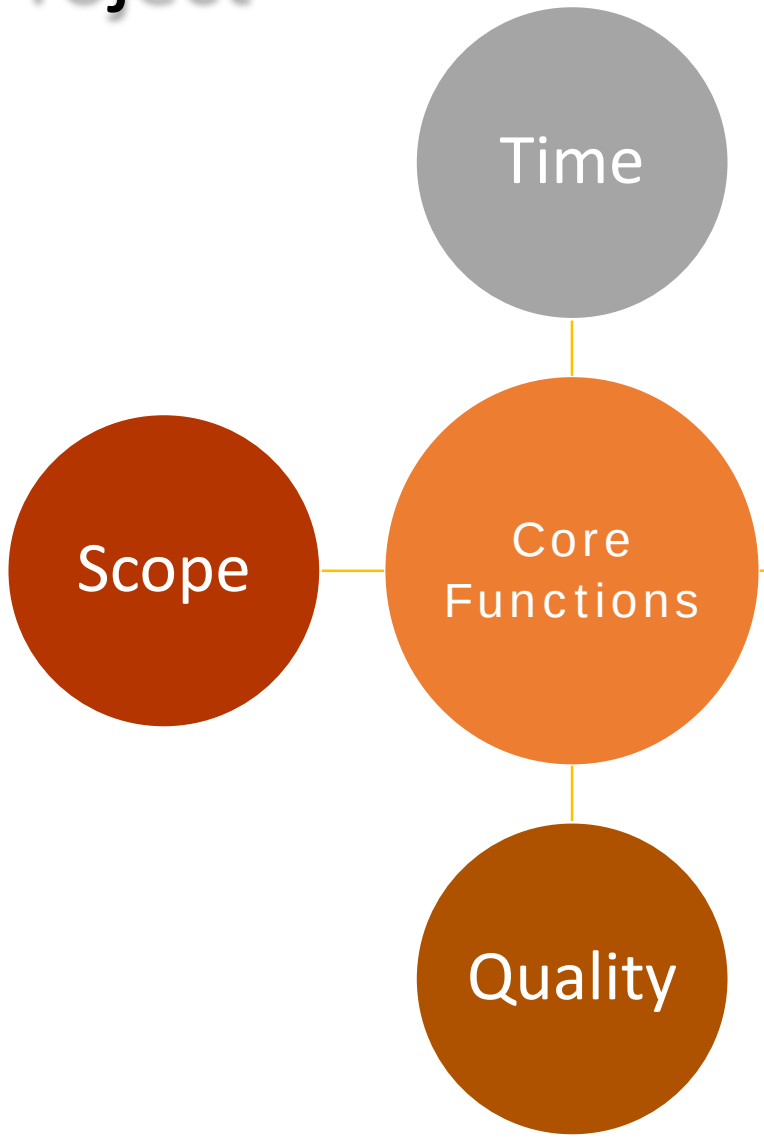
Skills

Tools

Techniques

2. A **methodical approach to planning and guiding project processes from start to finish** (PMI definition).
3. The art of **organising, leading, reporting and completing a project through people.**

Core functions of Project Management



Time: estimating how long it will take to complete the project and outlining an acceptable schedule

Scope: defining and managing all the work required to complete the project successfully

Cost: preparing and managing the budget

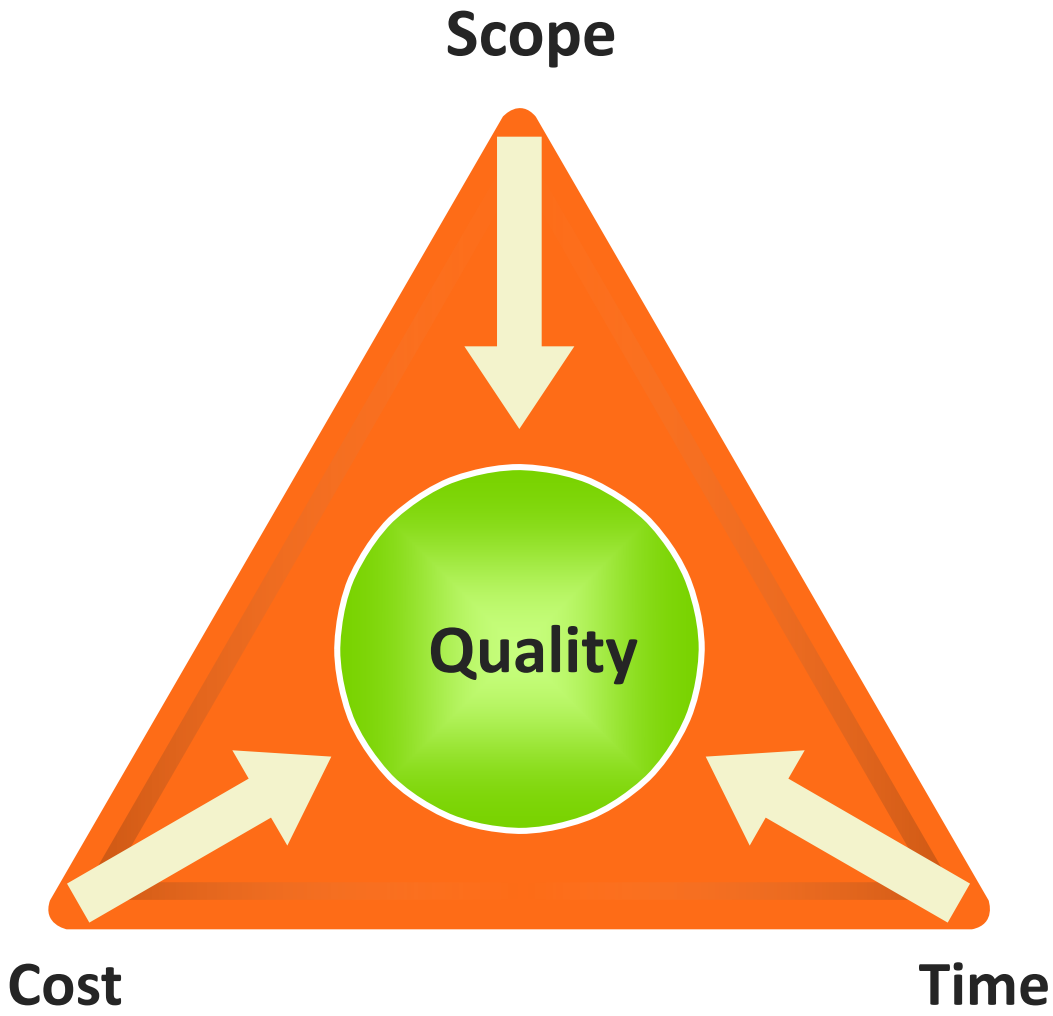
Quality Management— ensuring that the project will satisfy the stated needs for which it was undertaken

The Project Management Triangle

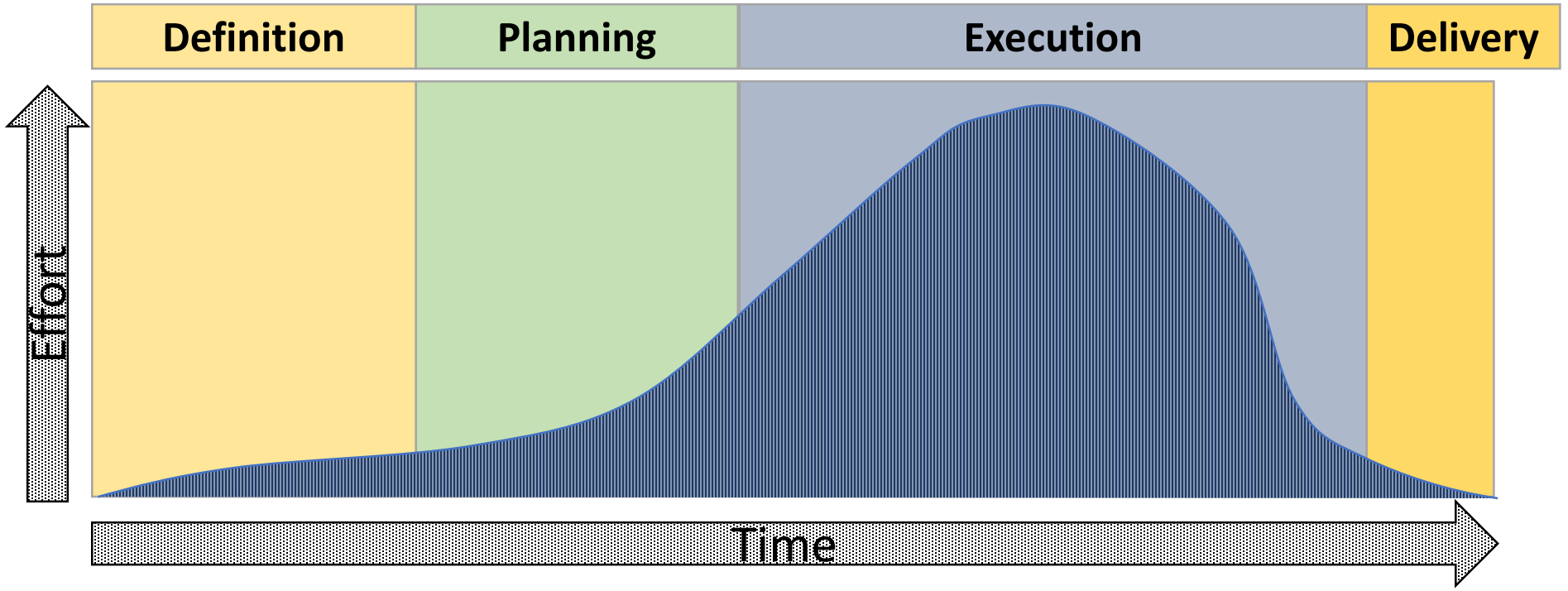
The very first thing you learn in project management is..

that **the focus of a Project Manager is always…**

Manage Time, cost and Scope or they will manage you!!!



The Project Life Cycle



Definition	Planning	Execution	Delivery
1. Goals 2. Specifications 3. Tasks 4. Responsibilities 5. Requirements	1. Schedules 2. Budgets 3. Resources 4. Risks 5. Staffing	1. Status Reports 2. Changes 3. Quality 4. Forecasts	1. Train Client 2. Transfer documents 3. Lessons learnt

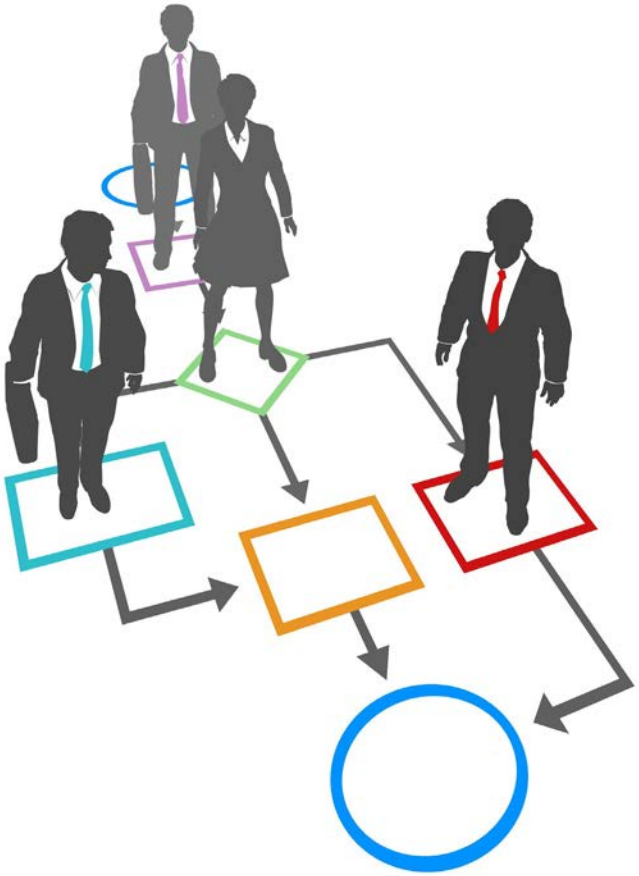
- *As mentioned in the Foreword, today we will elaborate on the PMI's Project Management Body of Knowledge® (PMBOK®) developed by the PMI. The processes described next have been modified as to fit better to the needs of the staff of Public Sector, dealing with project management.*
- *In the Annex at the end of the presentation, the project management processes as per PMI will be briefly presented.*

Main Phases and processes of Project Management

The process of directing and controlling a project from start to finish may be further divided into 4 basic phases:

1. Scope **DEFINITION:** An idea for a project will be carefully examined to determine whether or not it benefits the society. If the project is justified, the goals and main characteristics will be defined (e.g. A single carriage road between A and B to be constructed, to serve City X ad connect to future industrial zone).
2. **PLANNING:** During this phase, specifications, tasks, risk analysis, budget and time schedule, as also required resources will be defined.
3. **EXECUTION.** During this phase, the project will be monitored and controlled. Status reports will be issued, justified changes will be examined, quality will be checked, actual time and budget schedule will be compared and forecasts will be elaborated regarding new time and budget.
4. **CLOSE:** Approval of the outcome, evaluation to highlight project success, project closing and lessons learned from project history.

- **Stakeholder management** is applied during all phases.



3. PROJECT MANAGEMENT PROCESSES

3.1 Scope Definition

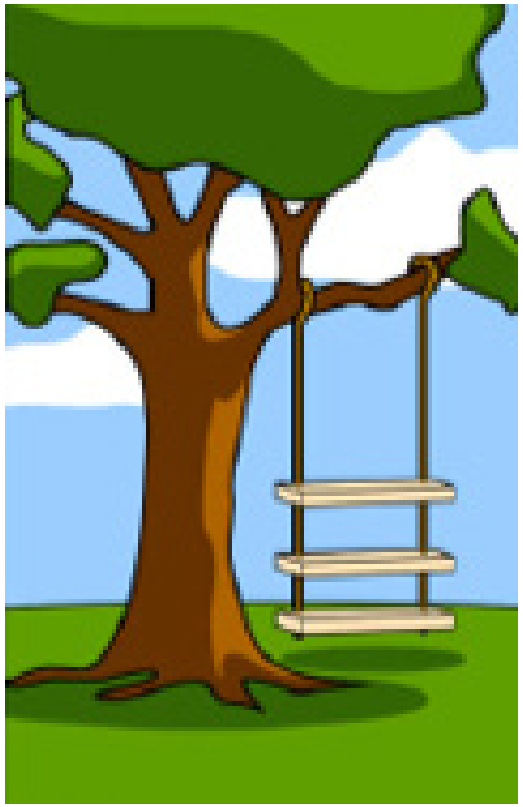
The detailed description of the project.

Project Scope

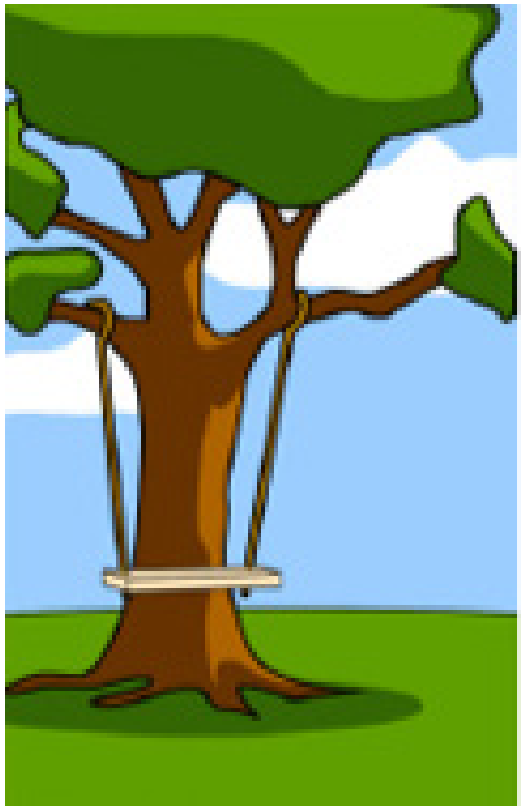
- Definition: "The work that needs to be accomplished to **deliver a project with the specified features and functions**."
- An idea for a project will be carefully examined to determine whether or not it benefits the society. If the project is justified, the goals and main characteristics will be define. Often a feasibility study justifies the necessity of the projects.
- *Example:*

  A road between A and B to be constructed, to serve City X ad connect to future industrial zone. The road to be single carriage, with maximum speed of 120 km/h. Heavy traffic (trucks) to be considered. Two weigh stations and a rest area for trucks to considered. Archaeological sites at location Y to be taken into consideration. Considerations for future modification as a dual carriage road.

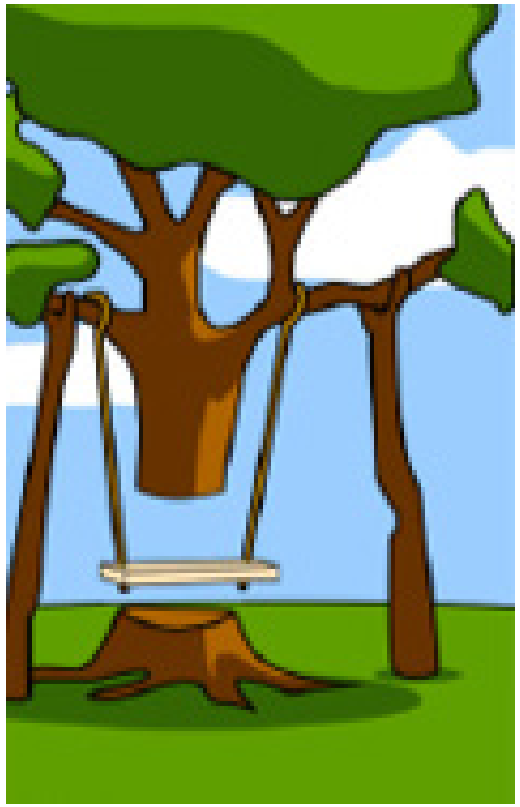
Funny, but some times true…..



How the Client explained it



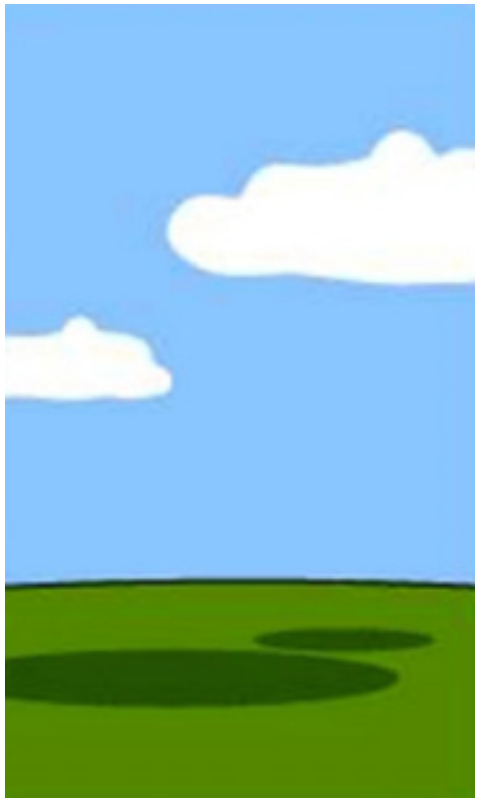
How the Design Consultant understood it



How his engineers designed it

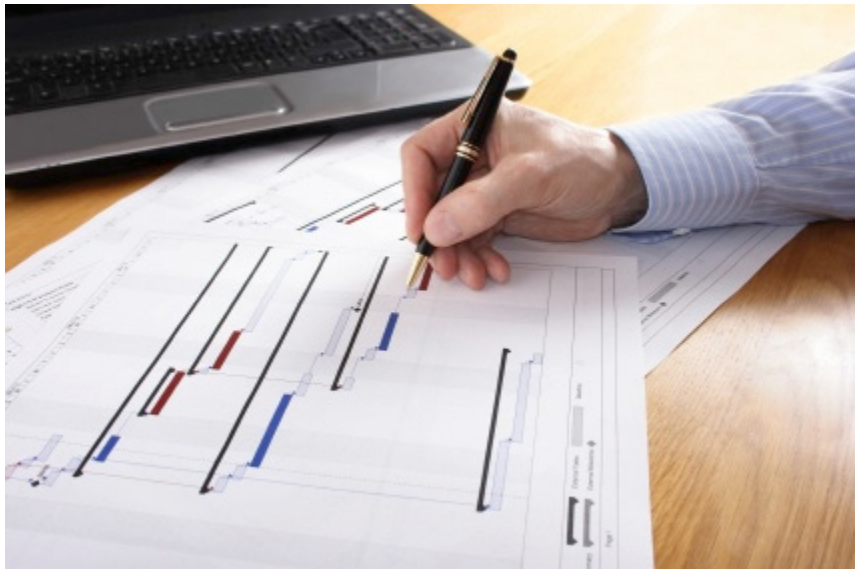
How the Contractor constructed it

How the Client
was billed



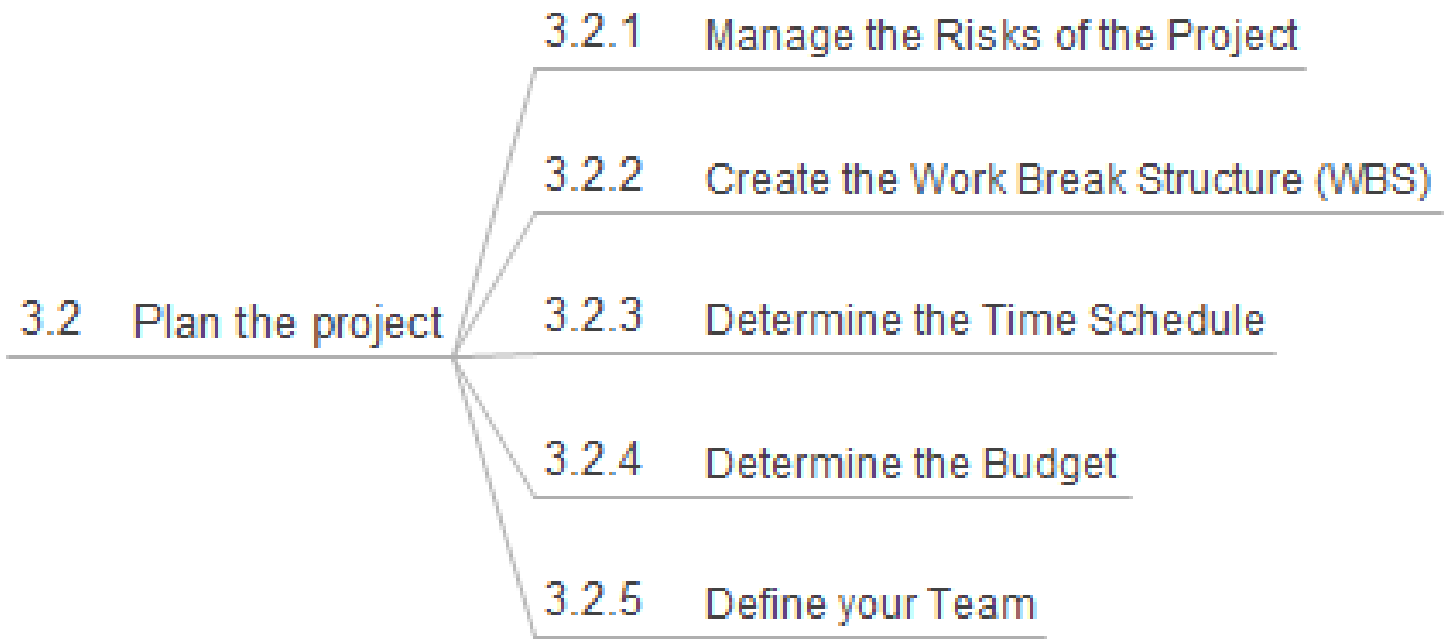
How the project
has been documented

What the Client
really needed



3.2 Project Planning

Plan the project



Inadequate planning leads to frustration towards the end of the project & poor project performance

Project Start

Project End

3.2.1 Project Risk Management

Project Risk – Definitions

- “Project risk is an **uncertain event or condition** that, if it occurs, has a positive or negative effect on a project objective”
- “A combination of the probability of a defined threat or opportunity (Likelihood) and the magnitude of the consequences of the occurrence (Impact) defines a **Risk Index**”

Risk Impact

Threat → Scope → Poor Quality Product

Threat → Schedule → Late Delivery

Threat → Cost → Overspend

- In addition there are health, safety and environmental threats that **must** be managed.

Risk Management Process

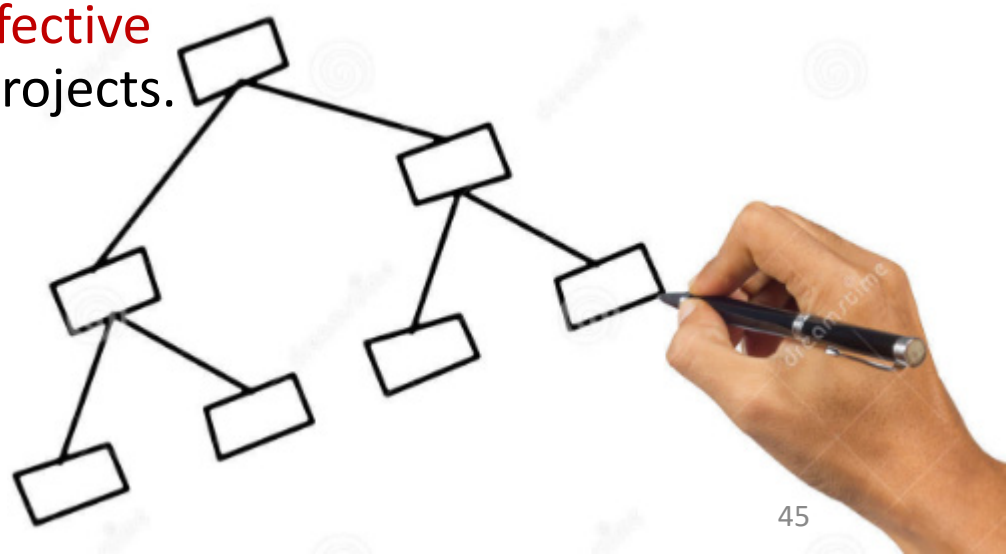
- Identify Risks
- Assess likelihood and impact
- Rank risks and prioritise
- Define risk management approach & actions
- Implement actions
- Monitor & review

3.2.2 Work Breakdown Structure (WBS)

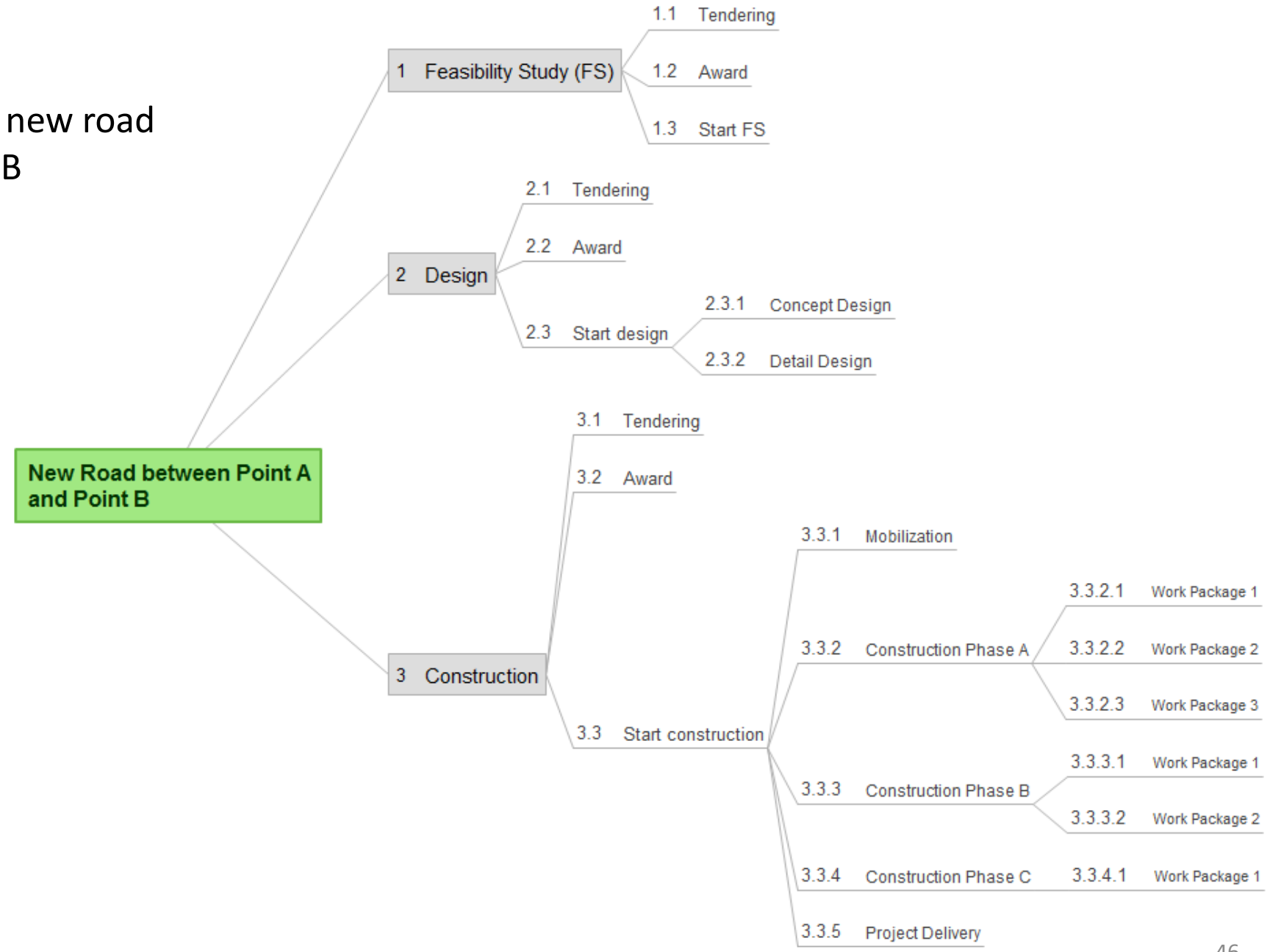
"A Work Breakdown Structure (WBS) is a **hierarchical** (from general to specific) **tree structure of deliverables and tasks** that need to be performed to complete a project."

- A Work Breakdown Structure helps in **organizing what needs to be done in small packages of activities**.

- The Work Breakdown Structure is the foundation for effective project planning, costing and the management of our projects.



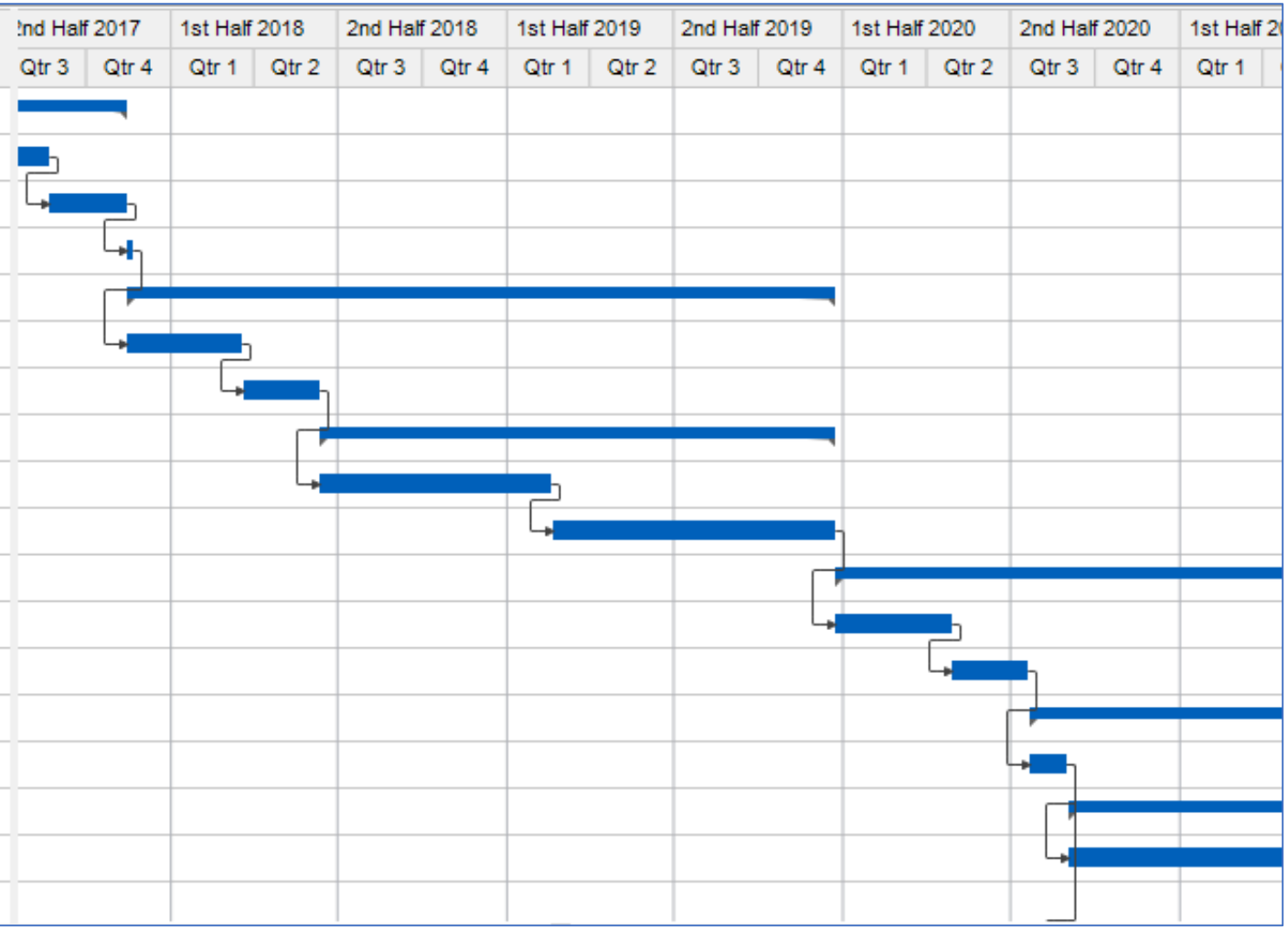
Example of a WBS for
The construction of a new road between Point A and B

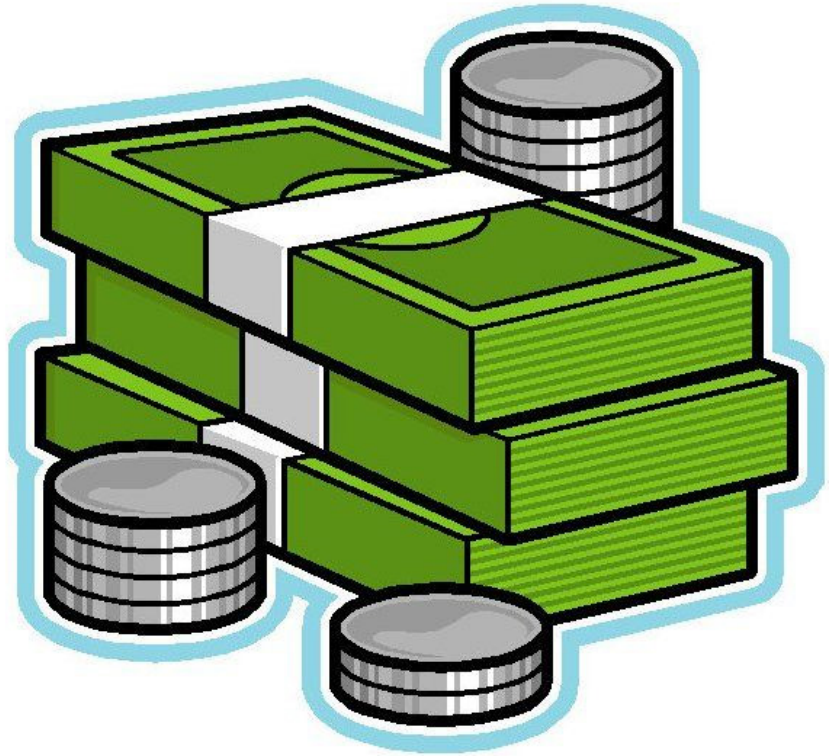


3.2.3 Scheduling

- Defining activities for a project, through their relationships we can identify the project duration

Name	Duration	Start	Finish
Feasibility Study (FS)	**150 d**	**19/04/2017**	**15/11/2017**
Tendering	90 d	19/04/2017	22/08/2017
Award	60 d	23/08/2017	14/11/2017
Start FS	0 d	15/11/2017	15/11/2017
Design	**550 d**	**15/11/2017**	**24/12/2019**
Tendering	90 d	15/11/2017	20/03/2018
Award	60 d	21/03/2018	12/06/2018
Start design	**400 d**	**13/06/2018**	**24/12/2019**
Concept Design	180 d	13/06/2018	19/02/2019
Detail Design	220 d	20/02/2019	24/12/2019
Construction	**1,160 d**	**25/12/2019**	**04/06/2024**
Tendering	90 d	25/12/2019	28/04/2020
Award	60 d	29/04/2020	21/07/2020
Start construction	**1,010 d**	**22/07/2020**	**04/06/2024**
Mobilization	30 d	22/07/2020	01/09/2020
Construction Phase A	**780 d**	**02/09/2020**	**29/08/2023**
Work Package 1	230 d	02/09/2020	20/07/2021
Work Package 2	150 d	21/07/2021	15/02/2022

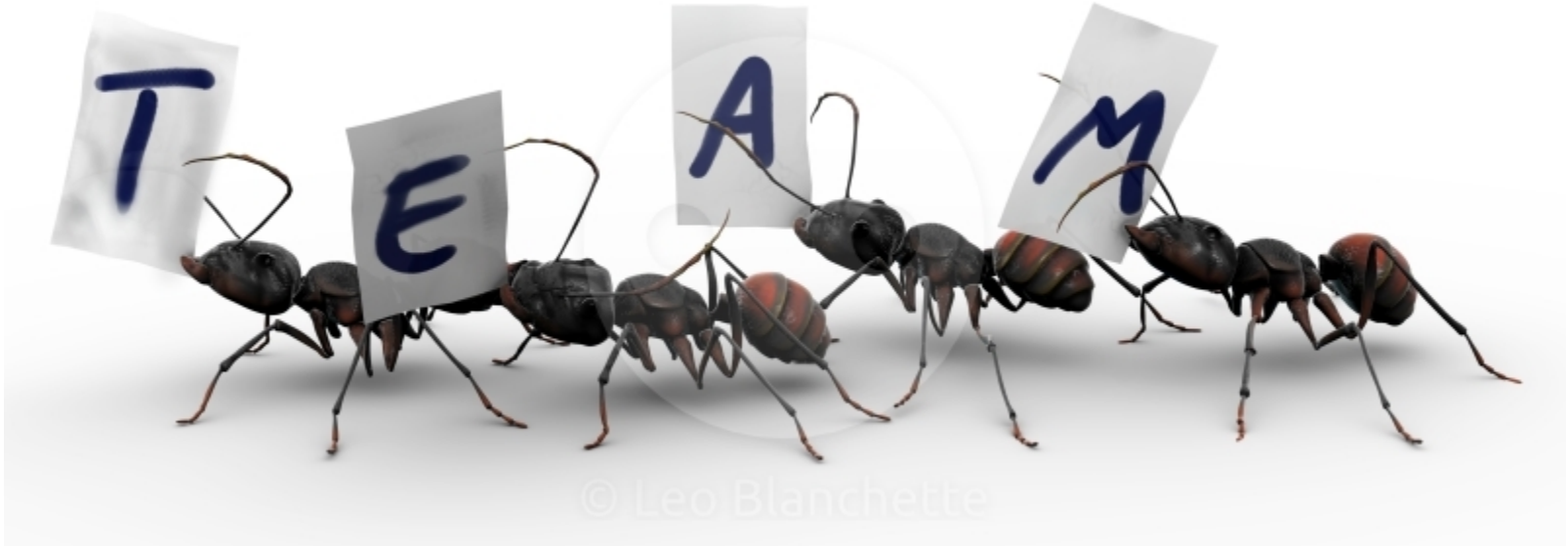




3.2.4 Budget Determination

Building the Planned Project Budget

- Project budgets, similar to resource plans, are a reflection of project work and the timing of that work. A comprehensive budget provides management with an understanding of how funds will be utilized and expended over time for projects or operations.
- The Work Breakdown Structure **(WBS) is the basis for any budget**. The WBS includes all the work necessary to create the project.
- All of the efforts used in producing the deliverable of each task can be defined in terms of cost. Labour, materials, facilities, services and overhead are examples of costs that may be expended in producing the deliverable of the task.
- **The sum of all tasks within the WBS constitutes the total budget of the project**.



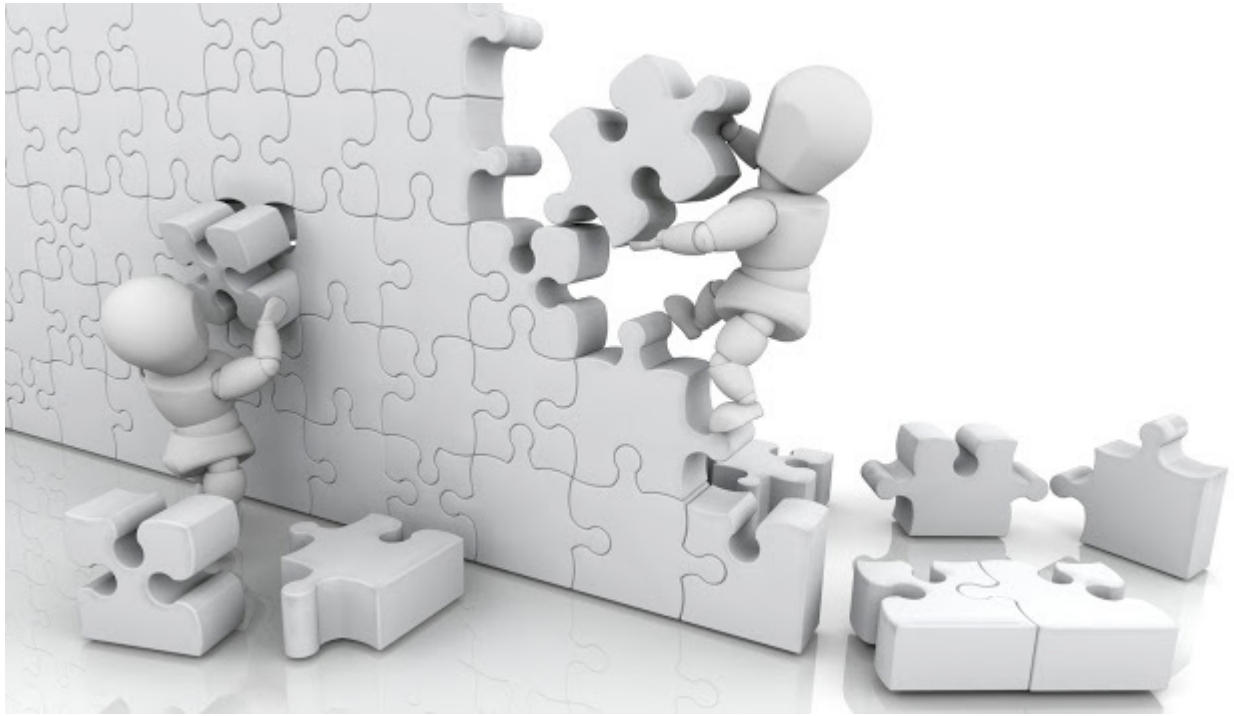
3.2.5 Team Management

- There is **nothing more important** to the success of a project **than the people** who make up the project team.
- Without good people—**who possess the knowledge, experience, and motivation to get the job done**—all of your other planning will be quickly wasted.
- Putting together a project team is one of the very first steps of setting up a new project.
- Without the people to compose a quality team, you won't be able to make very much progress at all into the work that needs to be done.

Project Planning – Key Points

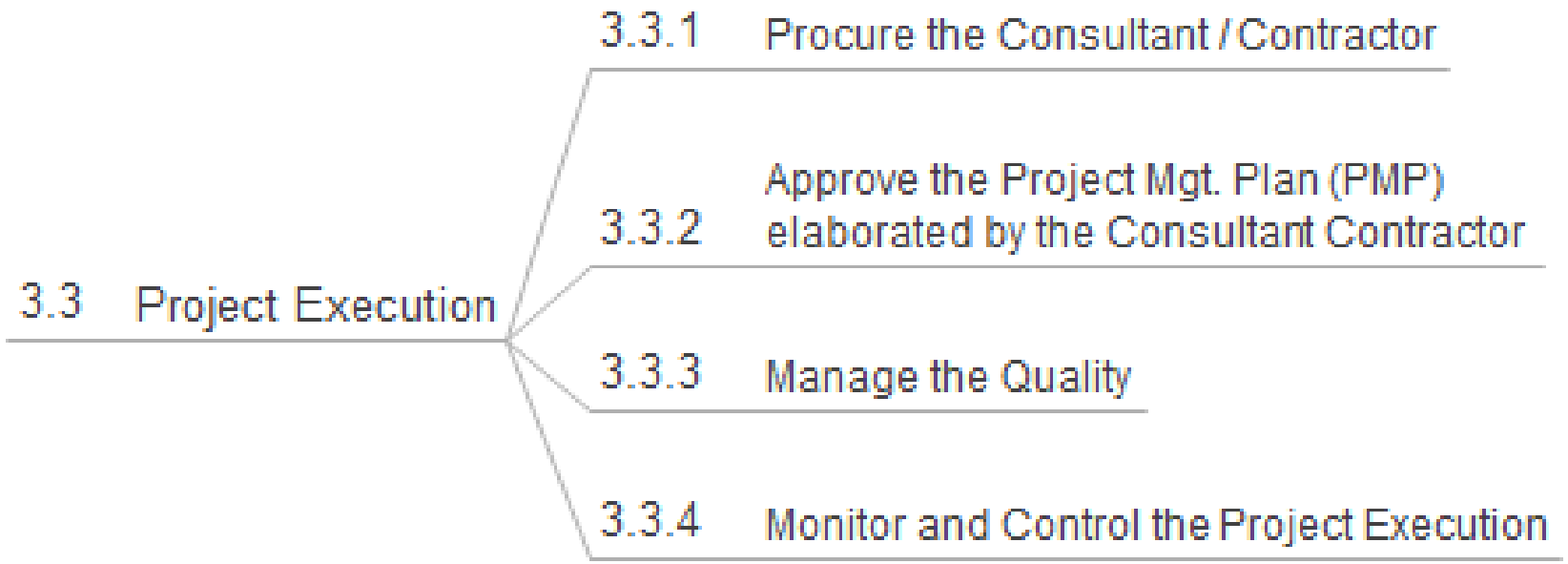
Project Planning – Key Points

- Recognise that adequate project planning is essential
- Produce a sound WBS
- Involve the right people
- Allow enough time
- Be systematic



3.3 Project Execution

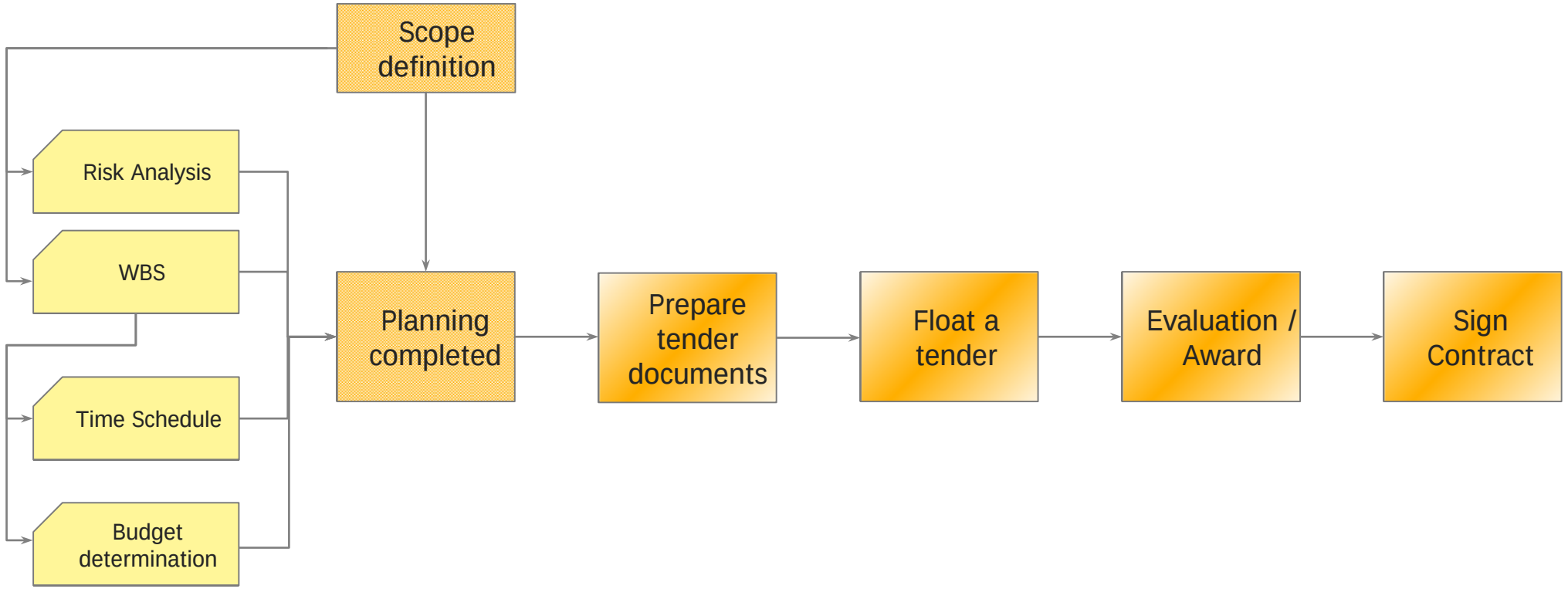
Project execution



3.3.1 Procurement Management

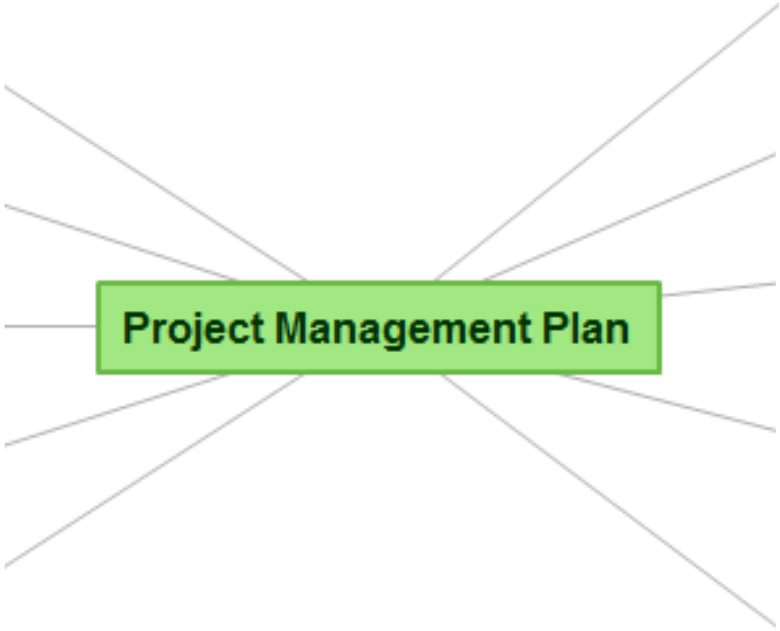
Tendering process

The Tendering Process



3.3.2 The Project Management Plan (PMP)

- The PMP is Master Document for Project and defines the following:

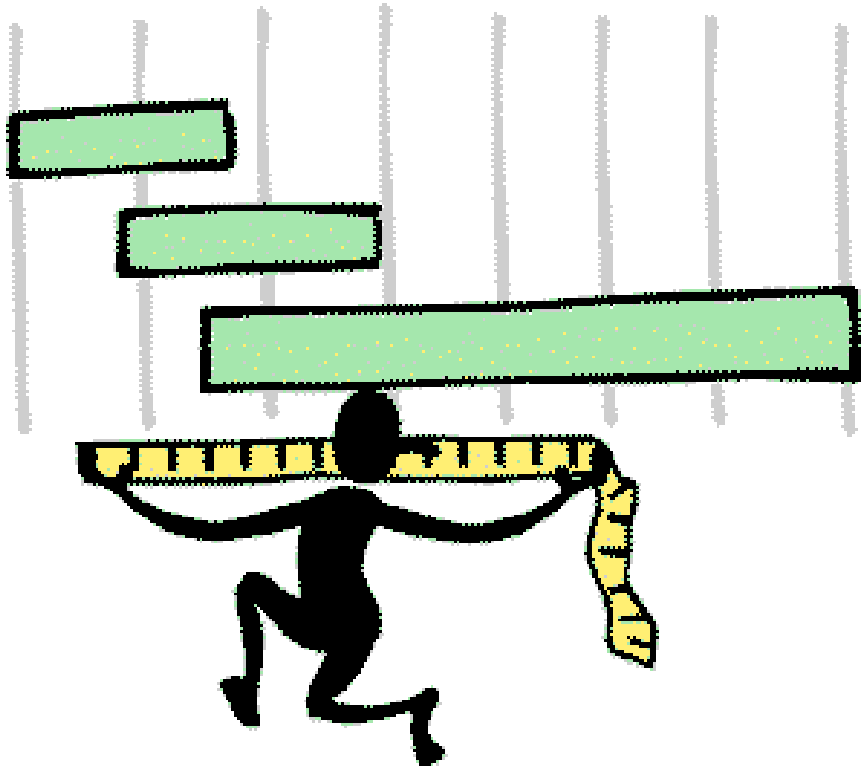


- The PMP has to be prepared by the contractor, and it has to be approved by the Public Authority.

3.3.3 Quality Management

Difference between Plan Quality Management, Perform Quality Assurance, and Control Quality

- **Quality Management** focuses on **defining quality** for the project, the product, and project management, and planning how it will be achieved.
- **Quality Assurance** is an executing process, so its **focus is on the work being** done on the project. Its purpose is to ensure the team is following organizational policies, standards, and processes as planned to produce the project's deliverables. Through this evaluation the project manager can also evaluate whether the processes need to be improved or modified.
- In contrast, **Control Quality** (a monitoring and controlling process) **examines the actual deliverables produced** on the project; its purpose is to ensure the deliverables are correct and meet the planned level of quality, and to find the source of problems and recommend ways to address them.



3.3.4 Monitor and Control Project Work

- Monitoring and Controlling Project Work involves **tracking the actual project performance** with the planned project management activities.
- It can mainly be looked as a Control function that takes place **at all stages of a project** i.e. from Initiation through Closing.
- For small projects, monitoring and control project work is comparatively an easy task. However, as you are aware, Project Management is more stringently required for large projects where the project manager requires a formal effort to monitor and control how the processes are going.
- Some of the outputs of Monitor and Control Project Work include:
  - Change Requests
  - Updates to project management plan
  - Updates to project documents

Project Monitoring and Control

- **Monitoring:** collecting, recording, and reporting information concerning project performance that project manger and others wish to know
- **Controlling:** uses data from monitor activity to bring actual performance to planned performance

  - Why do we monitor?
  - What do we monitor?
  - When to we monitor?
  - How do we monitor?

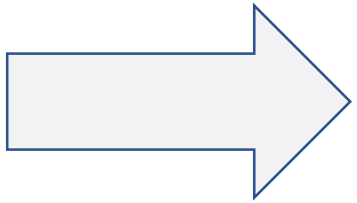
Why do we monitor?

- Simply **because we know that things don't always go according to plan** (no matter how much we prepare)
- To **detect and react appropriately to deviations and changes to plans**

What do we monitor?

Inputs

- Time
- Money
- Resources
- Material Usage
- Tasks
- Quality/Technical
- Performance



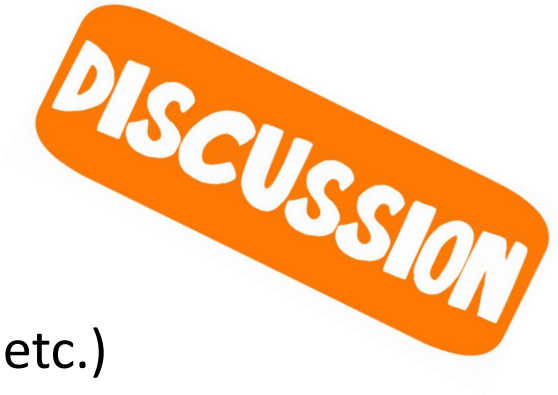
Outputs

- Progress
- Costs
- Job starts
- Job completion
- Engineering / Design changes
- Variation order (VO)

When do we monitor?

- Continuously
- Regularly
- Logically
- While there is still time to react
- As soon as possible
- At task completion
- At pre-planned decision points (milestones)

How do we monitor?



- Through meetings with parties involved in project (Contractor, supplier, etc.)
- Track schedule – Update Gantt Charts, check Milestones
- Using Earned Value Analysis (see next)
- Reports
- Tests and inspections
- PMIS (Project Management Info Sys)

Project Control

- Control: Process and activities **needed to correct deviations from plan**
- Control
  - **time** (schedule)
  - **cost** (budget, expenses, etc)
  - **performance** (specifications, testing results, etc.)

Techniques for monitoring and control: Earned Value Analysis (value completed)

Next, only what is in interest of the Project Managers of the Public Sector is presented (Cost Variance and Cost performance Index as also Critical Ration are not presented)

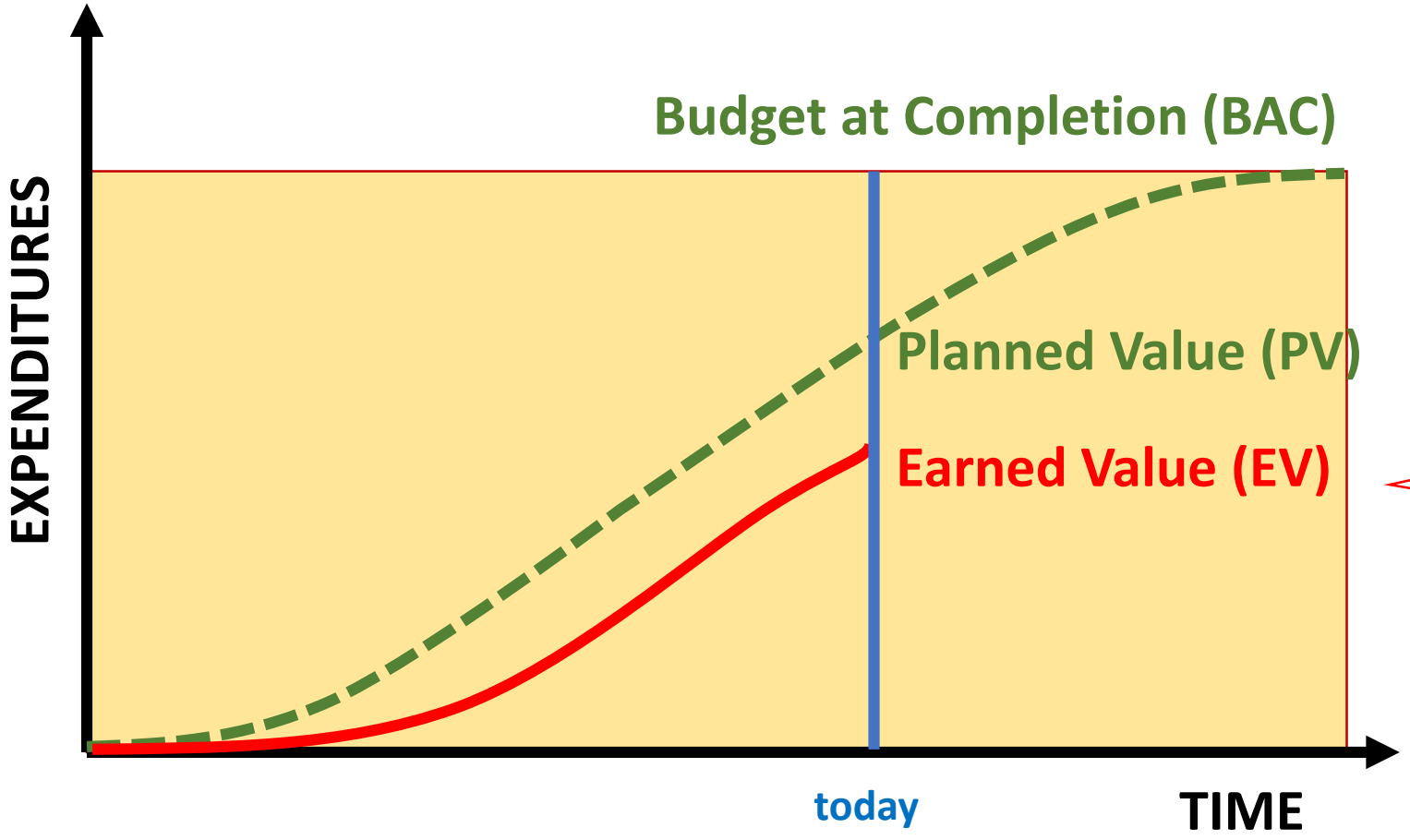
Earned Value Analysis

- A way of measuring overall performance (not individual task)
- Earned value of work performed (value completed):

$$EV = \sum Estimated\ percent\ physical\ completion\ of\ work\ for\ each\ task\ X\ Planned\ Cost\ for\ those\ tasks$$

- EV to be calculated by multiplying the estimated percent physical completion of work for each task by the planned cost for those tasks.
- The result is the amount that **should be spent** on the task so far. This can be compared with the **actual amount spent**.

Monitoring your project's performance involves determining whether you're on, ahead of, or behind schedule and on, under, or over budget.



Planned value (PV): The approved budget for the work scheduled to be completed by a specified date;

Earned value (EV): The approved budget for the work actually completed by the specified date;

Project is behind schedule

- To describe your project's schedule and cost performance with EVM, you use the following indicators:
  - **Schedule variance (SV):** The difference between the amounts budgeted for the work you actually did and for the work you planned to do. The SV shows whether and by how much your work is ahead of or behind your approved schedule.
  - **Schedule performance index (SPI):** The ratio of the approved budget for the work performed to the approved budget for the work planned. The SPI reflects the relative amount the project is ahead of or behind schedule, sometimes referred to as the project's *schedule efficiency.* You can use the SPI to date to project the schedule performance for the remainder of the task.
  - With the above formula you can conclude that:
    - If the SPI >1, this means more work has been completed than the planned work. In other words, you are ahead of schedule.
    - If the SPI <1, this means less work has been completed than the planned work. In other words, you are behind schedule.
    - If the SPI is =1, this means work is being completed at about the same rate as planned, you are on time.

Example of the Schedule Performance Index (SPI)

- We have a project with 10 tasks (activities).
- Next, an abstract of the BoQ is presented.

WBS	Task Name	Quantity	Unit Rate	Total Budgeted Cost (TBC)
1.1	Task 1	1200	2.8	**3,360**
1.2	Task 2	900	5.5	**4,950**
1.3	Task 3	3000	1.8	**5,400**
1.4	Task 4	200	27	**5,400**
1.5	Task 5	180	7.5	**1,350**
2.1	Task 6	32	2200	**70,400**
2.2	Task 7	550	4.5	**2,475**
2.3	Task 8	230	8.2	**1,886**
3.1	Task 9	1500	0.5	**750**
3.2	Task 10	2000	1.1	**2,200**
			Total Budgeted Cost:	**98,171**

RAILHOW

Planned Progress as per the time schedule

- As per the time scheduled submitted by the contractor, the progress of each one off the activities is shown next in [%]:

					Planned Progress [%]											
WBS	**Task Name**	**Quantity**	**Unit Rate**	**Total Budgeted Cost (TBC)**	**Month 1**	**Month 2**	**Month 3**	**Month 4**	**Month 5**	**Month 6**	**Month 7**	**Month 8**	**Month 9**	**Month 10**	**Month 11**	**Month 12**
1.1	Task 1	1200	2.8	**3,360**	5%	10%	10%	12%	12%	20%	20%	11%				
1.2	Task 2	900	5.5	**4,950**		8%	8%	10%	13%	23%	20%	10%	8%			
1.3	Task 3	3000	1.8	**5,400**					20%	20%	20%	20%	20%			
1.4	Task 4	200	27	**5,400**				12%	12%	12%	15%	15%	15%	10%	9%	
1.5	Task 5	180	7.5	**1,350**								20%	20%	25%	20%	15%
2.1	Task 6	32	2200	**70,400**								20%	20%	25%	20%	15%
2.2	Task 7	550	4.5	**2,475**					20%	20%	10%	10%	20%	10%	10%	
2.3	Task 8	230	8.2	**1,886**						25%	25%	25%	20%	5%		
3.1	Task 9	1500	0.5	**750**									30%	30%	30%	10%
3.2	Task 10	2000	1.1	**2,200**						10%	15%	20%	20%	15%	10%	10%
			Total Budgeted Cost:	**98,171**												

The Planned Value (PV)

- The table before is presented next showing the progress of each one off the activities is shown next in OMR.
- That is the Planned Value (PV)

					Planned Progress [OMR]											
WBS	**Task Name**	**Quantity**	**Unit Rate**	**Total Budgeted Cost (TBC)**	**Month 1**	**Month 2**	**Month 3**	**Month 4**	**Month 5**	**Month 6**	**Month 7**	**Month 8**	**Month 9**	**Month 10**	**Month 11**	**Month 12**
1.1	Task 1	1200	2.8	**3,360**	168	336	336	403	403	672	672	370	0	0	0	0
1.2	Task 2	900	5.5	**4,950**	0	396	396	495	644	1,139	990	495	396	0	0	0
1.3	Task 3	3000	1.8	**5,400**	0	0	0	0	1,080	1,080	1,080	1,080	1,080	0	0	0
1.4	Task 4	200	27	**5,400**	0	0	0	648	648	648	810	810	810	540	486	0
1.5	Task 5	180	7.5	**1,350**	0	0	0	0	0	0	0	270	270	338	270	203
2.1	Task 6	32	2200	**70,400**	0	0	0	0	0	0	0	14,080	14,080	17,600	14,080	10,560
2.2	Task 7	550	4.5	**2,475**	0	0	0	0	495	495	248	248	495	248	248	0
2.3	Task 8	230	8.2	**1,886**	0	0	0	0	0	472	472	472	377	94	0	0
3.1	Task 9	1500	0.5	**750**	0	0	0	0	0	0	0	0	225	225	225	75
3.2	Task 10	2000	1.1	**2,200**	0	0	0	0	0	220	330	440	440	330	220	220
Total Budgeted Cost				**98,171**	**168**	**732**	**732**	**1,546**	**3,270**	**4,725**	**4,601**	**18,264**	**18,173**	**19,374**	**15,529**	**11,058**
Cumulative Planned Value (PV)					**168**	**900**	**1,632**	**3,178**	**6,448**	**11,173**	**15,774**	**34,038**	**52,211**	**71,585**	**87,114**	**98,171**

Earned Value (EV)

- Now, we are at the end of month 8. What is the Earned Value (EV)?

					Actual Progress [OMR]											
WBS	**Task Name**	**Quantity**	**Unit Rate**	**Total Budgeted Cost (TBC)**	**Month 1**	**Month 2**	**Month 3**	**Month 4**	**Month 5**	**Month 6**	**Month 7**	**Month 8**	**Month 9**	**Month 10**	**Month 11**	**Month 12**
1.1	Task 1	1200	2.8	**3,360**	120	300	280	350	360	600	600	400				
1.2	Task 2	900	5.5	**4,950**	0	400	400	400	500	800	900	700				
1.3	Task 3	3000	1.8	**5,400**	0	0	0	0	1,000	1,000	900	900				
1.4	Task 4	200	27	**5,400**	0	0	0	650	650	650	800	800				
1.5	Task 5	180	7.5	**1,350**	0	0	0	0	0	0	0	270				
2.1	Task 6	32	2200	**70,400**	0	0	0	0	0	0	0	14,000				
2.2	Task 7	550	4.5	**2,475**	0	0	0	0	500	500	200	200				
2.3	Task 8	230	8.2	**1,886**	0	0	0	0	0	472	472	472				
3.1	Task 9	1500	0.5	**750**	0	0	0	0	0	0	0	0				
3.2	Task 10	2000	1.1	**2,200**	0	0	0	0	0	200	350	420				
Total Budgeted Cost				**98,171**	**120**	**700**	**680**	**1,400**	**3,010**	**4,222**	**4,222**	**18,162**				
Cumulative Earned Value (EV)					**120**	**820**	**1,500**	**2,900**	**5,910**	**10,132**	**14,353**	**32,515**				

Our Project Performance Metrics

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
Cumulative Planned Value (PV)	**168**	**900**	**1,632**	**3,178**	**6,448**	**11,173**	**15,774**	**34,038**				
Cumulative Earned Value (EV)	**120**	**820**	**1,500**	**2,900**	**5,910**	**10,132**	**14,353**	**32,515**				
Project Performance Metrics												
Schedule Variance (SV = EV - PV)	-48	-80	-132	-278	-538	-1,041	-1,421	-1,523				
Schedule Performance Index (SPI = EV/PV)	0.71	0.91	0.92	0.91	0.92	0.91	0.91	0.96				

- At the end of Month 8, the Schedule Performance Index (SPI) = EV / PV = 0.96
- Hence, the Schedule Performance Index is 96%
- Since the Schedule Performance Index is less than one, we are behind schedule.

Exercise on the Schedule Performance Index (SPI)

- You have a project to be completed in 12 months
- the cost of the project is 100,000 USD.
- Six months have passed and 60,000 USD has been spent, but on closer review, you find that only 40% of the work has been completed so far.
- Find the Schedule Performance Index and conclude whether the project is behind or ahead of schedule.

Solution

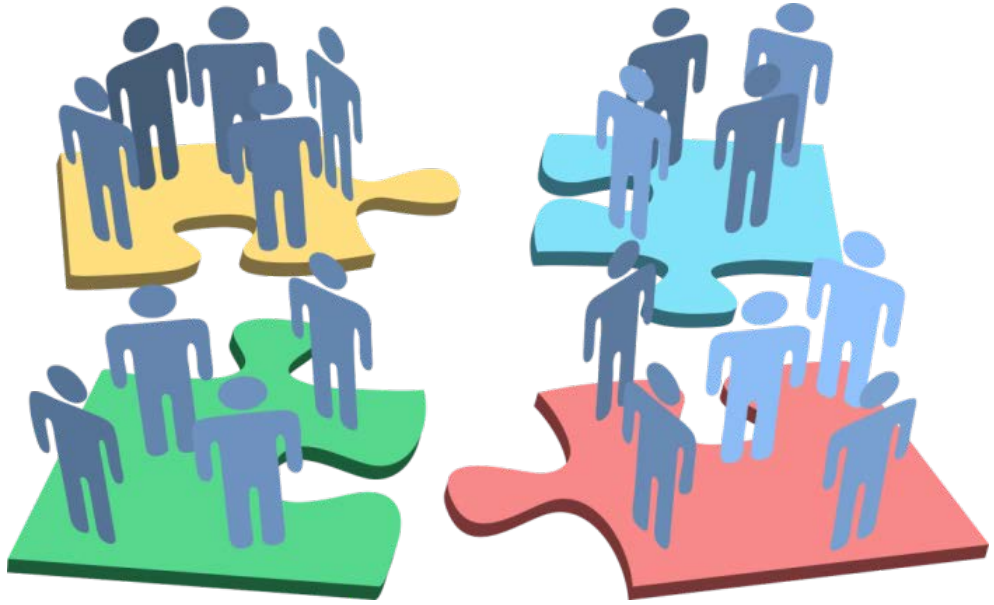
- Actual Cost (AC) = 60,000 USD
- Planned Value (PV) = 50% of 100,000 USD =50,000 USD
- Earned Value (EV) = 40% of 100,000 USD = 40,000 USD

Now,

- Schedule Performance Index (SPI) = EV / PV = 40,000 / 50,000 = 0.8
- Hence, the Schedule Performance Index is 0.8
- Since the Schedule Performance Index is less than one, you are behind schedule.

3.4 Project Closure

- What is Project Closure? Project Closure is the **formal ‘ending’ or termination of a project**.
- Project closing is the last phase of a project, when the project outputs are handed over to the stakeholders, contractual agreements properly taken care of, and project records elicited and stored for future reference .
- Project Closing Process
  - **Getting acceptance** by the Client (The Ministry) – It includes any necessary system test.
  - **Documenting** the Project - Archiving project documentation
  - Performing a **Financial Closure**
  - Performing **Post-Implementation Audit**. This is a critical analysis of the project in order to learn and improve, avoiding to repeat the same mistakes. Unsuccessful projects provide a lot of information. Useful lessons also from successful projects (what worked, what we could have done better)
  - **Releasing Staff** (Team supervising Contractor to be transferred to other activities)



3.5 Stakeholder Management

Stakeholder: According to the Project Management Institute (PMI), the term project stakeholder refers to, 'an individual, group, or organization, who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project'

Stakeholder management

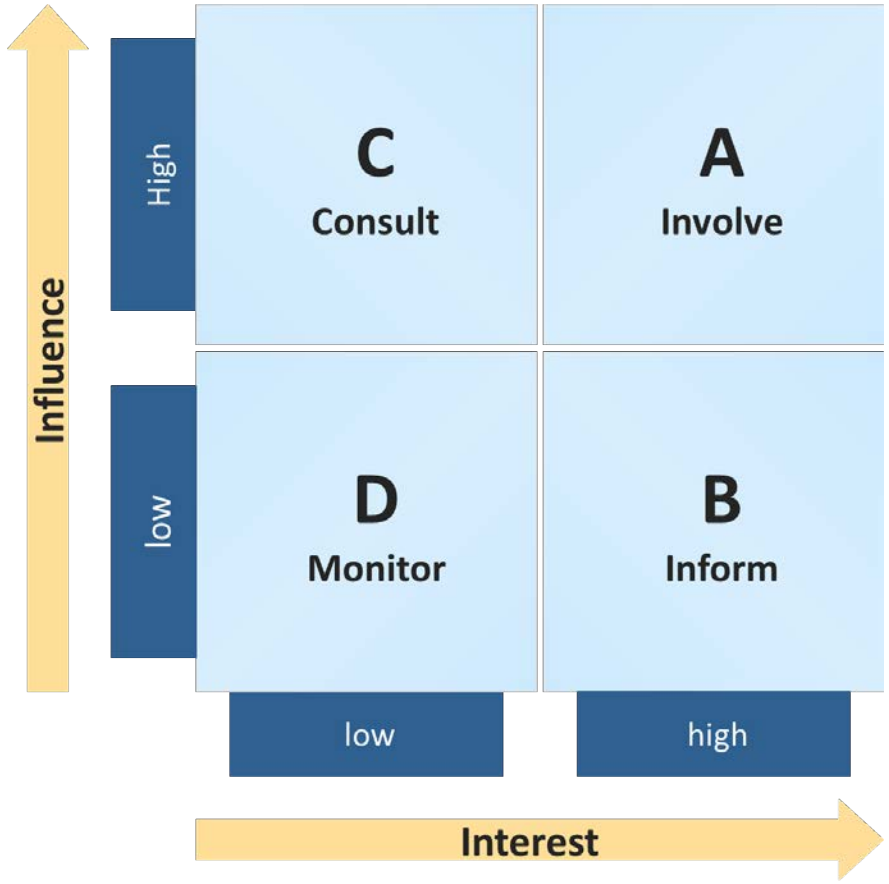
- **Objectives:** To provide a clearer understanding of stakeholders and, as a result, provide insights as to how best to engage them.
- Stakeholder management has 3 stages:
  - Identification
  - Analysis
  - Communication

Stakeholder Identification

- The first step in your stakeholder analysis is to **brainstorm who your stakeholders** are.
- As part of this, think of all the people who are affected by your work, who have influence or power over it, or have an interest in its successful or unsuccessful conclusion.
- Remember that although stakeholders may be both organizations and people, ultimately you must communicate with people.
- Make sure that you identify the correct individual stakeholders within a stakeholder organization.

Stakeholders Analysis

- A stakeholder's position in a quadrant suggests an approach to take with them during the project:
  - **A. High influence/high interest** = fully **involve** and make the greatest efforts to satisfy them
  - **B. Low influence/high interest** = keep them **inform**ed and request their input to relevant areas
  - **C. High influence/lower interest** = **consult** them in their interest areas, but not so extensively that they become frustrated with the level of detail
  - **D. Low influence/low interest** = **monitor** these people and keep them informed at a high level



Stakeholders Communication

- Stakeholders **must understand what you are trying to achieve**, builds an understanding of your goals and the benefits to the audience if they help you achieve those goals.
- Communication helps you to **build positive relationships** with people and organizations, such as the media or special interest groups, who influence other stakeholders.
- Your communication program must **focus on the stakeholders who have the greatest influence on your success**.

Discussion….

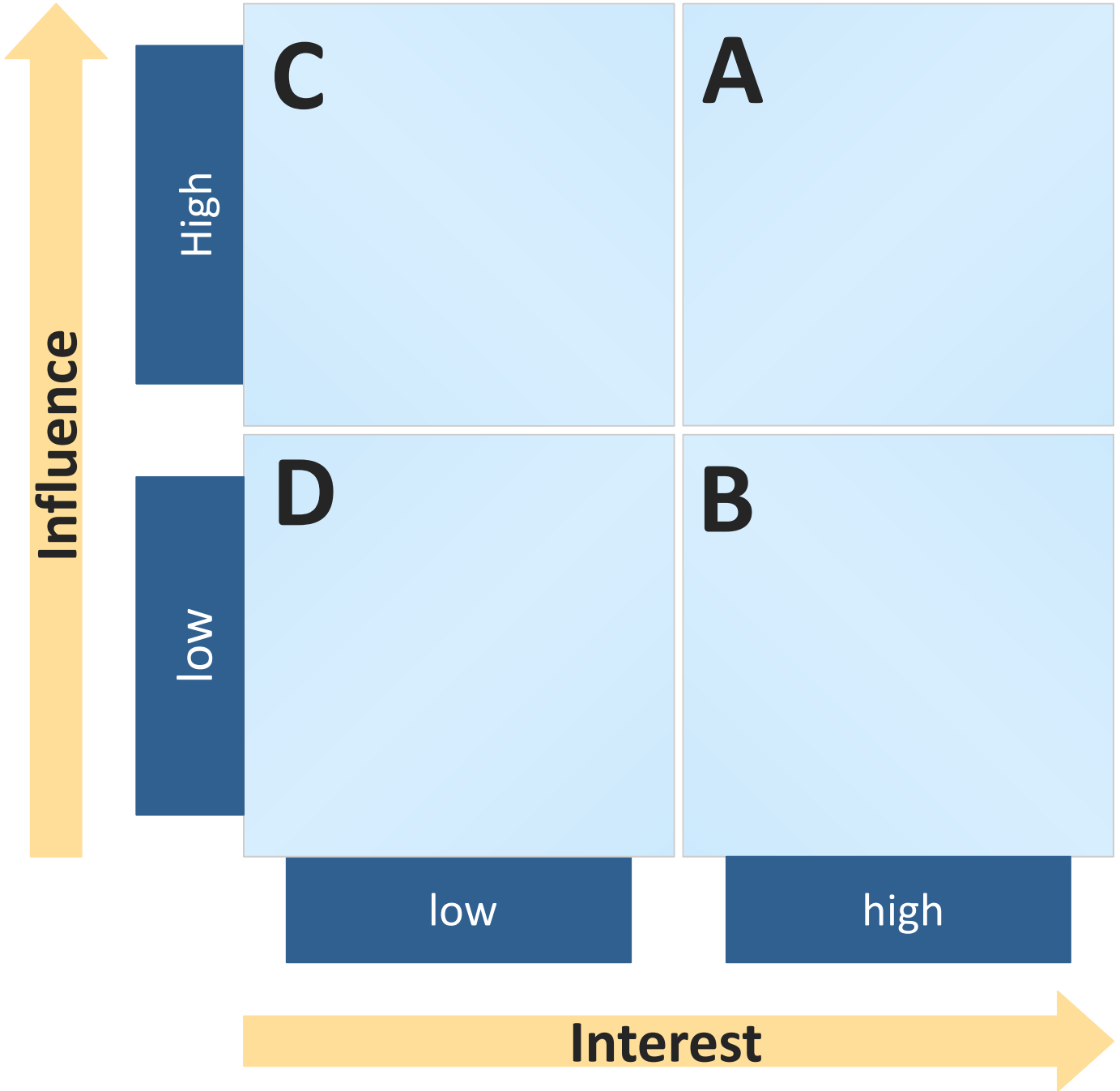
1. Is stakeholder management important for us?

2. Do we already apply stakeholder management?

3. What are our Stakeholders? Make a stakeholders analysis (see next slide)

Stakeholders analysis

A: Involve
B: Inform
C: Consult
D: Monitor



Annex:
Project Management Processes as per the PMI

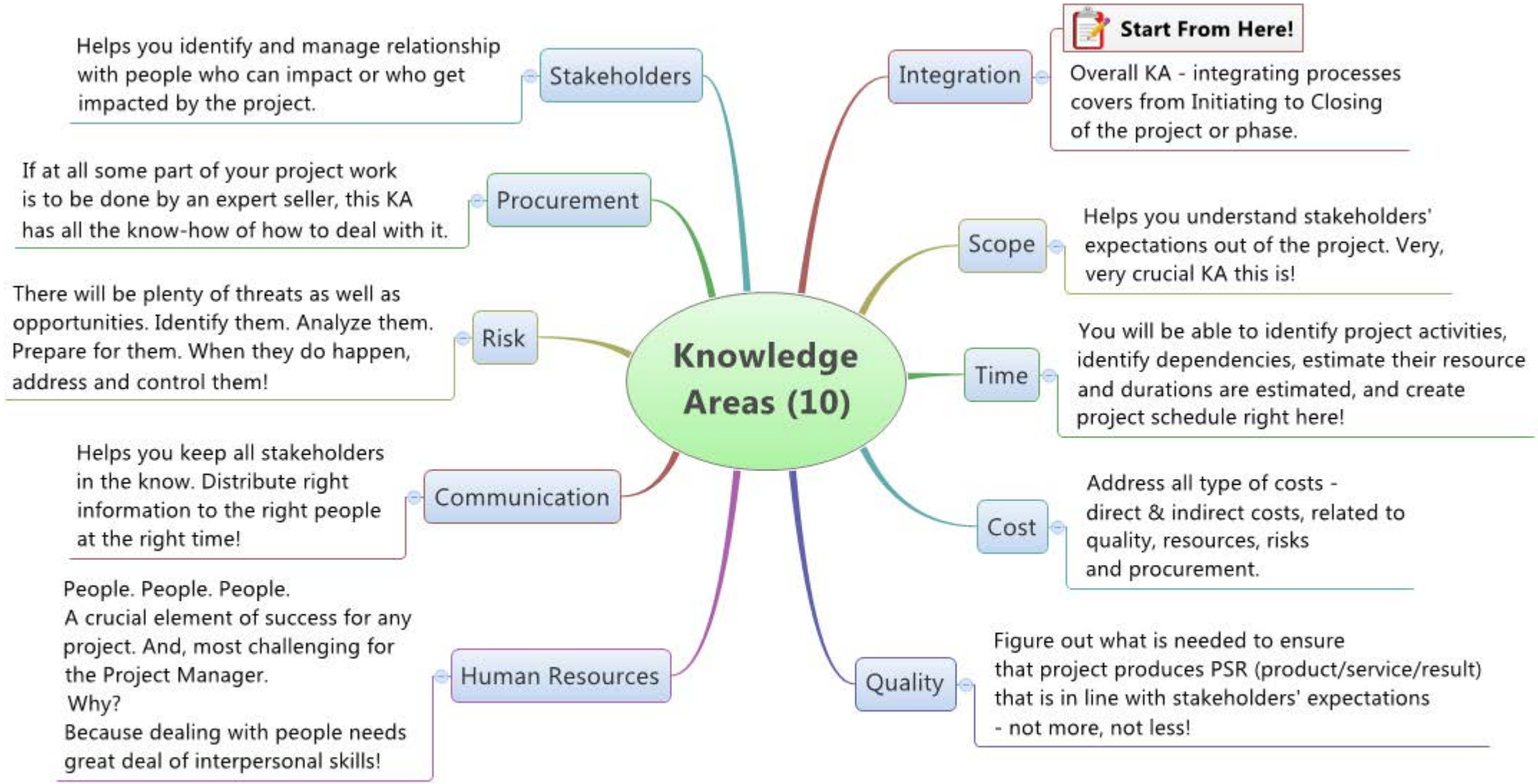
PMI = Project Management Institute (www.pmi.org)

Main Phases and processes of Project Management

The process of directing and controlling a project from start to finish may be further divided into 5 basic phases (PMI Institute, simplified presentation):

1. **Project conception and initiation:** An idea for a project will be carefully examined to determine whether or not it benefits the organization.
2. **Project definition and planning:** During this phase, a team should prioritize the project, calculate a budget and schedule, and determine what resources are needed.
3. **Project execution**
4. **Project monitoring and controlling:** compare project status and progress to the actual plan.
5. **Project close:** Approval of the outcome, evaluation to highlight project success and/or learn from project history.

- The 47PM processes are grouped in another fashion – based on the knowledge it takes to execute them. This grouping is called **Knowledge Areas**. There are 10 of them.
- Project **Integration** Management
- Project **Scope** Management
- Project **Time** Management
- Project **Cost** Management
- Project **Quality** Management
- Project **Human Resources** Management
- Project **Communications** Management
- Project **Risk** Management
- Project **Procurement** Management
- Project **Stakeholder** Management **(introduced in PMBOK 5th edition)**



To Remember, use the mnemonic :
"Integrating Scope and Time will Cost our Quality Human Resources to Communicate with a Risk of Procuring Stakeholders!"


47 Project Mgmt Processes
4. Integration Management
Initiating PG
Develop Project Charter
Planning PG
Develop Project Management Plan
Executing PG
Direct and Manage Project Work
Monitoring & Controlling PG
Monitor and Control Project Work
Perform Integrated Change Control
Closing PG
Close Project or Phase
5. Scope Management
Planning PG
Plan Scope Management
Collect Requirements
Define Scope
Create WBS
Monitoring & Controlling PG
Validate Scope
Control Scope
6. Time Management
Planning PG
Plan Schedule Management
Define Activities
Sequence Activities
Estimate Activity Resources
Estimate Activity Durations
Develop Schedule
Monitoring & Controlling PG
Control Schedule
7. Cost Management
Planning PG
Plan Cost Management
Estimate Costs
Determine Budget
Monitoring & Controlling PG
Control Costs
8. Quality Management
Plan Quality Management
Planning PG
Perform Quality Assurance
Executing PG
Control Quality
Monitoring & Controlling PG
9. Human Resource Management
Plan Human Resource Management
Planning PG
Acquire Project Team
Develop Project Team
Executing PG
Manage Project Team
10. Communications Management
Plan Communications Management
Planning PG
Manage Communications
Executing PG
Control Communications
Monitoring & Controlling PG
11. Risk Management
Plan Risk Management
Identify Risks
Perform Qualitative Risk Analysis
Planning PG
Perform Quantitative Risk Analysis
Plan Risk Responses
Control Risks
Monitoring & Controlling PG
12. Procurement Management
Plan Procurement Management
Planning PG
Conduct Procurements
Executing PG
Control Procurements
Monitoring & Controlling PG
Close Procurements
Closing PG
13. Stakeholder Management
Identify Stakeholders
Initiating PG
Plan Stakeholder Management
Planning PG
Manage Stakeholder Engagement
Execution PG
Control Stakeholder Engagement
Monitoring & Controlling PG
Mnemonic - to remember Knowledge Areas
"Integrating Scope and Time will Cost our Quality Human Resources to Communicate with a Risk of Procuring Stakeholders!"
An odd/silly mnemonic has better chances of recall!

A few words about me….

- Civil Engineer (MSc.) - University of Hannover in Germany
- Master Executive MBA degree - Athens University of Economics & Business
- Over 30 years of experience in the railway sector, including eight years in Director positions at Greek Railways Organization (OSE S.A.)
- 2013, 2014 development of the Omani National Railway Network
- 2015-today: Senior Railway Expert at the Ministry of Transport and Communications in Oman
- Website **www.railhow.com**, aiming to be the touchstone for people who are working within the engineering sector by offering practical, yet impactful knowledge and learning experiences.

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Leading a dynamic railway learning experience!

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