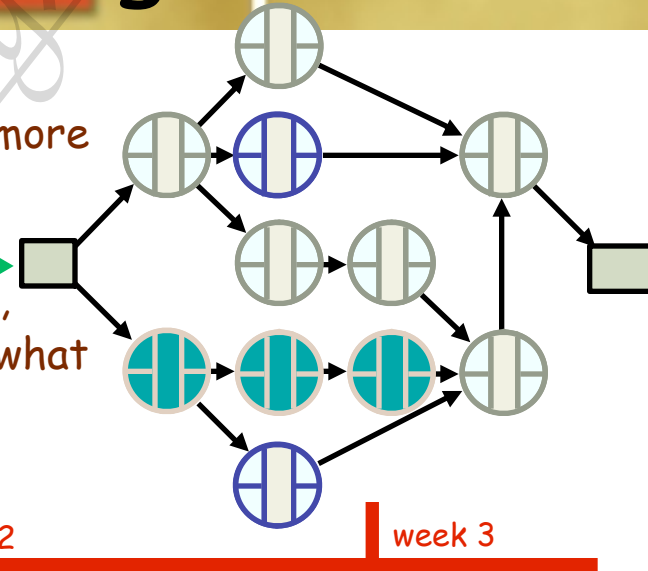
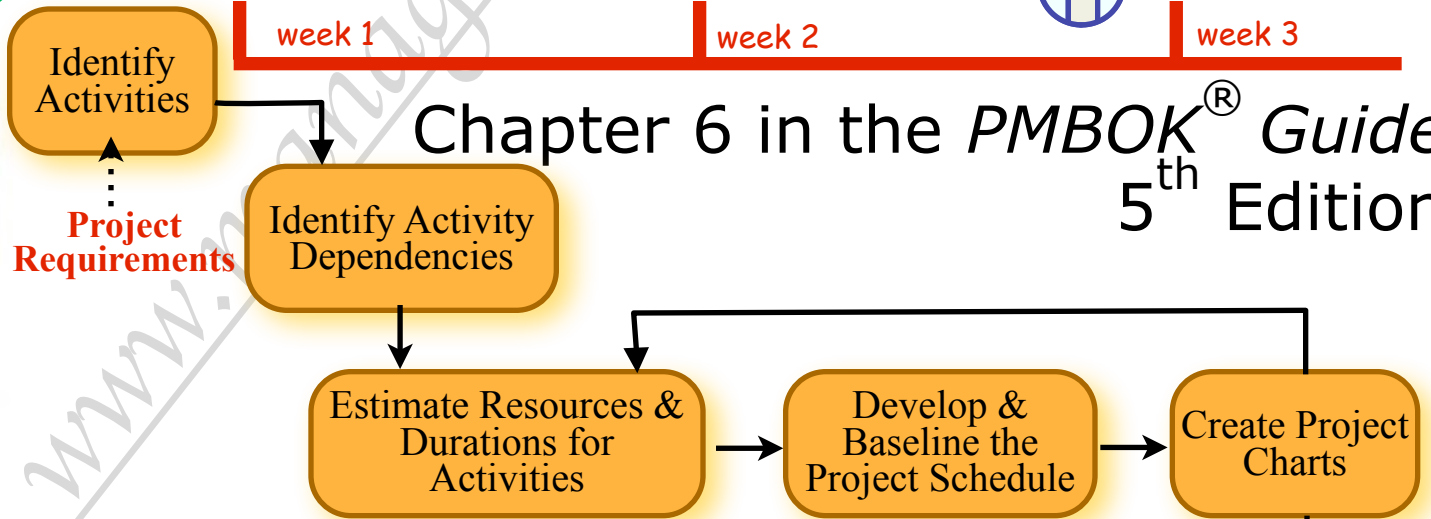


# Project Time Management

Time clearly is the total amount of time the project will take.  
 There is a direct relationship between ..... & ..... - the more  
 you want ..... longer it will usually take.  
 This is where ..... are set and met.  
 It starts with ..... the work that needs to be .....,  
 how & ..... done, what ..... are needed for what  
 time dimension.  
 From then on it's all about developing & ..... the schedule!



Chapter 6 in the *PMBOK*<sup>®</sup> Guide  
 5<sup>th</sup> Edition



Activity Charts  
 & Bar Charts

# Overview To Project Time Management

- Project schedules will be created using the organization's scheduling tool, starting with the deliverables identified in the project's Work Breakdown Structure (WBS)
  - Activity definition will .....
  - Activity sequencing will .....  
packages and assign ..... between project activities
  - Resource estimating will be used to .....  
..... in order to complete schedule development
  - Activity duration estimating will be used .....  
..... complete work packages
- Once a preliminary schedule has been developed, it will be reviewed by the ..... and ..... assigned to project tasks
  - The project team and resources must agree to ..... work package assignments, durations, and schedule
  - Once this is achieved the project sponsor will ..... the schedule and ..... then .....
- The following will be potential designated milestones for the project schedule:
 

<ul style="list-style-type: none"> <li>● ..... of scope statement &amp; WBS/WBS Dictionary</li> <li>● ..... project schedule</li> <li>● Approval of final project .....</li> <li>● ..... kick-off</li> <li>● ..... of roles and responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>● Requirements ..... approval</li> <li>● ..... of data mapping/inventory</li> <li>● Project implementation</li> <li>● ..... of final deliverables</li> </ul>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------



# Plan Schedule Management – T & T

## 1. Expert judgment

- Internal and/or external resources are often a good source for ..... information and valuable ..... from previous/similar projects
- Expert experience can also suggest whether to combine methods and how to reconcile differences between them

Judgment based upon expertise in an application area, Knowledge Area, discipline, industry, etc., as appropriate for the activity being performed, should be used in developing the schedule management plan

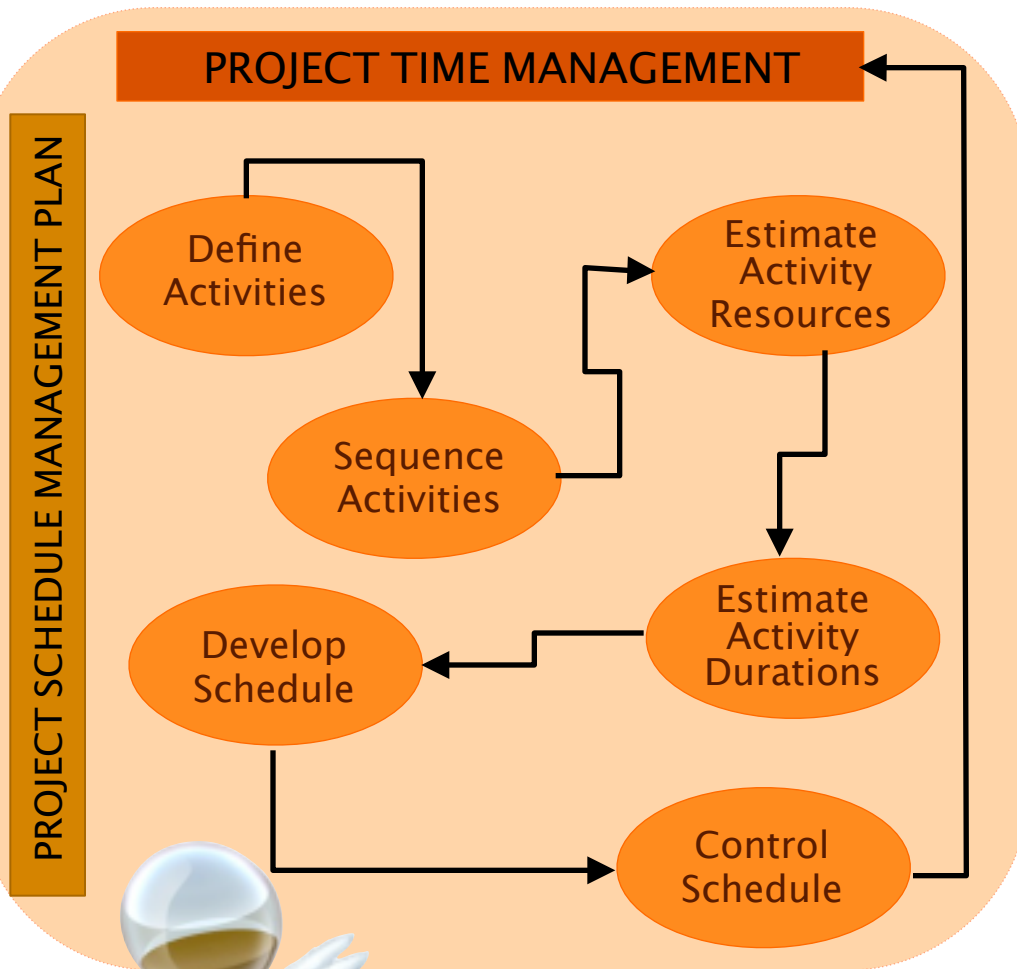
## 2. Analytical techniques assist with considering all options to ..... the schedule management plan such as:

- Scheduling methodology, scheduling tools and techniques, estimating approaches, formats, and project management software
- This plan may also detail ways to fast track or crash the project schedule
  - These decisions, like other schedule decisions affecting the project, may affect .....
- Organizational ..... and ..... may influence which scheduling techniques are employed in these decisions and may include:
  - Rolling wave planning
  - ..... associated leads and lags in the project
  - Creativity including .....
  - Methods for reviewing schedule performance

## 3. Meetings

- Project teams may hold planning meetings to develop the schedule management plan
- Participants at these meetings may include the project manager, the project sponsor, selected project team members, selected stakeholders, anyone with ..... for schedule planning or execution, and others as needed

# A Project's Time Management Process Flow



The project's Schedule Management Plan may also need to consider some other "time consuming" factors in the project:

- Activities related to Project Management activities – ....., ....., ....., ..... analysis and ..... preparation, estimations, etc.
- The effort for the Planning Process vis-à-vis ..... – progressive elaboration
- The limitations of the ..... sequencing of ..... and technical project activities
- The ..... Process and the dependency associated with ..... performance
- Accommodation of ..... caused by unforeseen internal & external ..... – (Labor ....., ....., ..... closing air traffic, etc.)
- Known & ..... events that can impact project timeliness



# Implementation Of The Time Management Processes

EEF: Org's Culture, Structure, Resources, Scheduling Tool, Commercial Data, Org's Work Authorization Systems  
 OPA: Sched. monitoring, reporting, & controlling Tool +related policies, procedures, templates & guidelines, + Risk & Change control procedures

Project Charter: Summary milestone schedule + Project approval reqmnts.

**6.1 PLAN SCHEDULE MANAGEMENT:**  
 Creating the Schedule Management Plan to develop, manage, execute, & control the project schedule

Project Plan: Scope Baseline +Schedule related Cost, Risk, & Comm. decisions

Scope Baseline

The Project's Schedule Management Plan

Details of Activity Attributes

EEF: Org's Culture, Structure, Commercial Info + DB, & the PMIS

**6.2 DEFINE ACTIVITIES:**  
 Identifying specific (technical) actions required to produce required project deliverables

Project's Activity List

OPA: Mandated Org. Policies & Procedures to define Proj. Activits + +Availb/reuse Act. Lists

The Project's Milestone List

In some projects identifying all of the tasks is .....

Therefore it is very important to ensure that as many tasks envisaged as important, are identified, because ....., will ultimately throw the project off schedule

*This step is necessary when working with large projects where the original WBS goes to only to level two or level three.*

•  
•

*At this point, level two or three is then ..... individual activities associated with their responsibilities.*

•  
•

*In practice many times Activity Definition might be accomplished during the .....*

The Define Activities process helps to identify the specific activities that the project team members and stakeholders must perform to produce project deliverables:

- Helps .....
- Assists with a further decomposition .....
- Produces an output called .....
- Provides the team with .....
- Activity attributes provide .....dates, and assumptions related to the activity - when, where, why, who, how!



# Define Milestones

## What is a milestone?

- Identifiable point that represents a requirement or completion of an important set of activities in the project.
- Typically zero duration
- Resource assigned

## Why use milestones?

- Helps to indicate .....
- Helps to define .....
- Provides visibility for major ..... dates

## Milestones are frequently used to monitor progress, but there are limitations to their effectiveness

- They usually .....
- It is not uncommon for .....

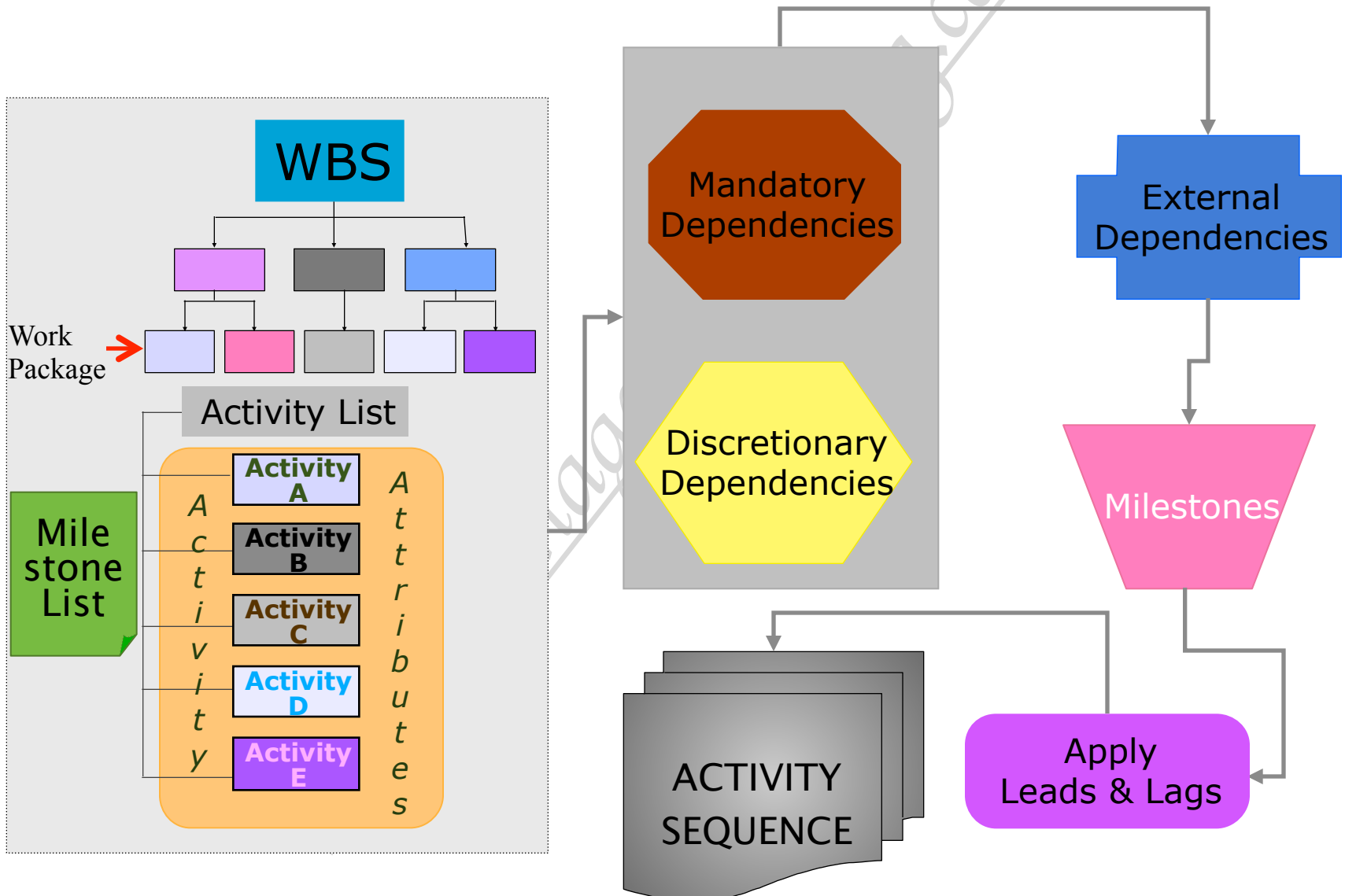
You are managing an oil rig development project. You want to create the basis that will be used later on for estimating, scheduling, executing, monitoring, and controlling the project work.

Which process performs this activity?

- A. Create WBS
- B. Define Scope
- C. Define Activities
- D. Create Project Management Plan

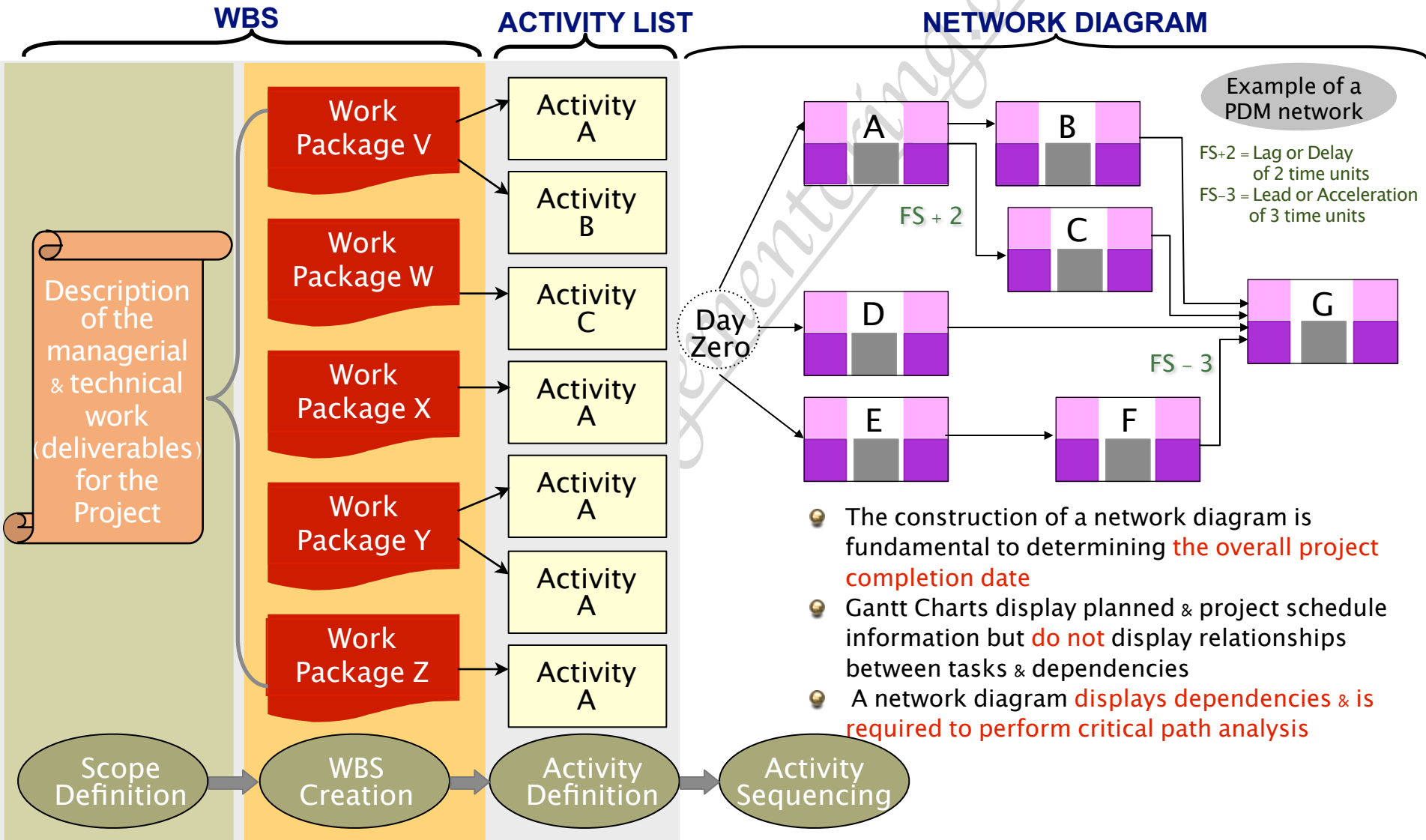
*Study the “Key Benefit” of all these processes - don't let the right choice elude you*

# Activity Sequencing Flow



# Project Decomposition

(Project Transition From The Scope Statement To The Project's Network Diagram)





## Precedence Diagramming Method & The Critical Path...

- If this network diagram is plotted against time or placed against a calendar-based scale, the network would be a time-scaled schedule network diagram
  - Also called Activity-On-Arrow (AOA) diagrams
  - Activities are represented by boxes
  - Arrows show relationships between activities
  - Annotations on these arrows can assist with knowing the type of relationship between related activities
- The benefits of a Network Diagram are
  1. Helps justify .....
  2. Aids the effective ....., ..... & ..... of the project
  3. Demonstrates ..... of all activities
  4. Shows the workflow so the team will know what activities need to ..... in a specific .....

# Background To Develop Schedule

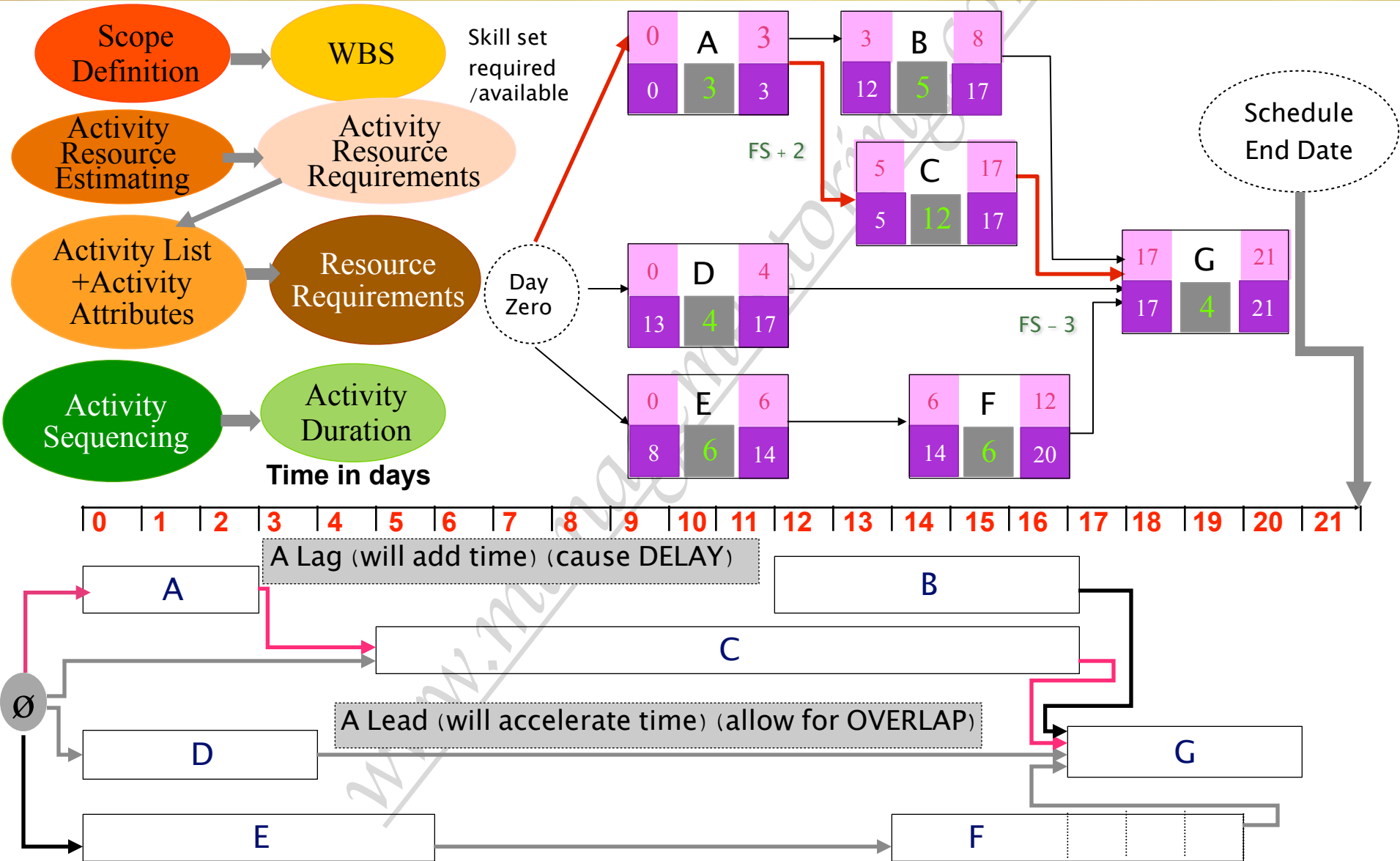
- The Schedule Development process is the heart of the Planning Process Group (26 combined Inputs, Outputs Tools & Techniques)
- This is where the PM will
  - Lay out the schedule for all .....
  - ..... their start and finish dates
  - Finalize activity ..... and .....
  - Arrive at the project schedule (work flow), & the potential ..... for the project
  - Schedule ..... are the main reason for conflicts on projects, especially during the ..... half of projects

**Principle:**  
What's in the schedule - gets done!

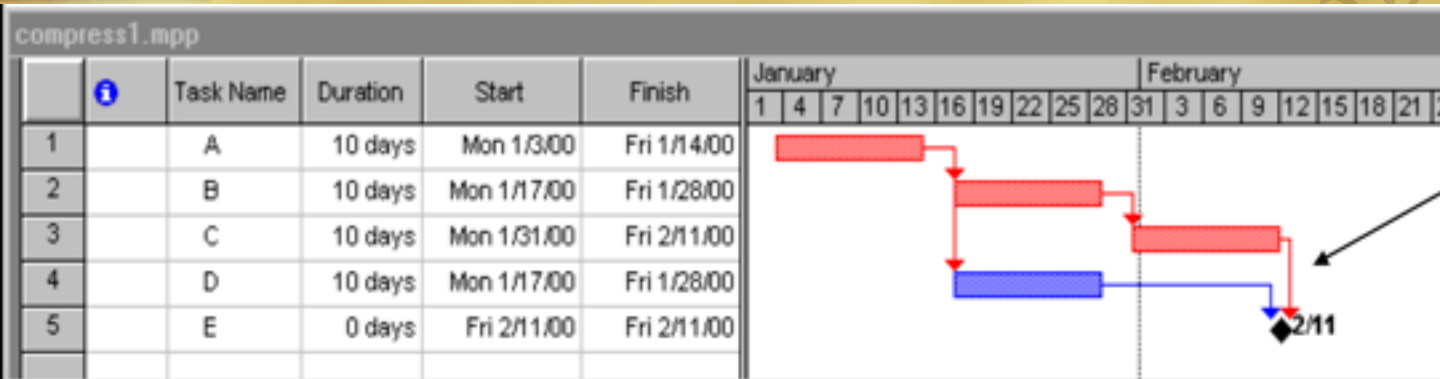
*After the team has created the WBS, estimated the effort and identified the resources, remember that the schedule is not complete - or realistic - unless it reflects the entire project plan, including cost, risk and quality.*

*Schedule-centered planning can help. Sure, there is always pressure to commit to dates right now — just be sure they're not delusions.*

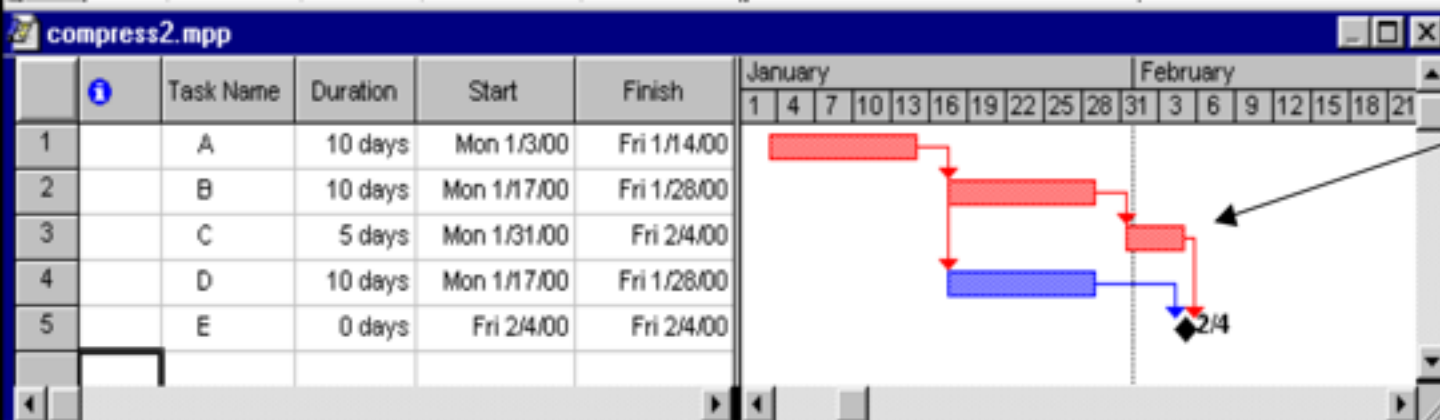
# Project Schedule Development



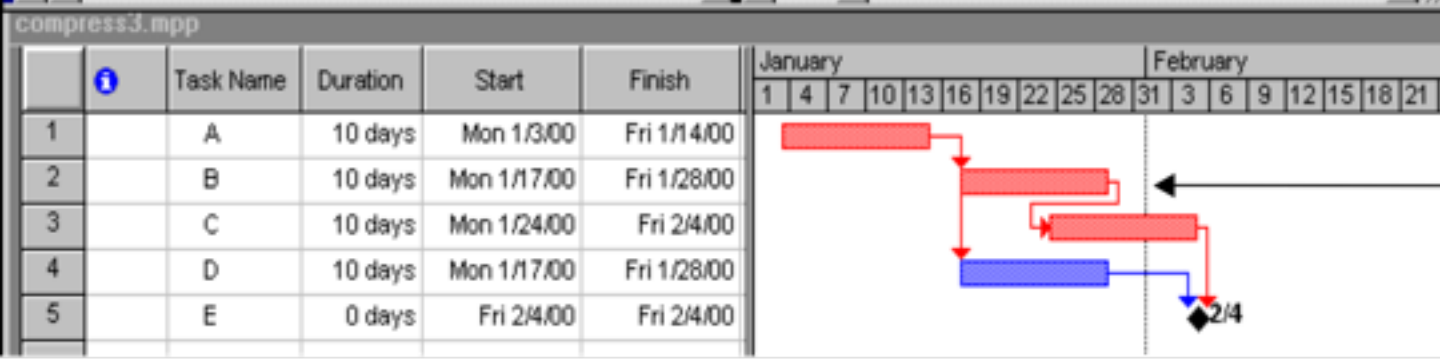
# Ways To Shorten A Project Schedule



**Original  
schedule**



**Shortened  
duration thru  
crashing**



**Overlapped  
Tasks or fast  
tracking**

# Analyzing Cost-Time Trade-Offs

- PMs use this analysis to determine the schedule that minimizes total project costs
  - When crashing an activity or project, extra money is spent on direct costs, but money is saved on indirect costs and possible penalties
- There are always cost-time trade-offs in project management
  - You can complete a project early by hiring more workers or running extra shifts
  - There are often penalties if projects extends beyond some specific date, and a bonus may be provided for early completion
- Crashing a project means expediting one or more activities to reduce overall project completion time and total project costs
  - Not all activities can be shortened

● Total Project Costs = direct costs + indirect costs + penalty costs

● **Direct costs** include .....

● **Indirect costs** include .....

● These can be reduced by reducing total project time

● The shorter the duration of the project, the lower the indirect costs will be

● **Penalty costs** are essentially .....

(You will meet these points again in the Cost Management Lecture)

A minimum-cost schedule is determined by starting with the normal time schedule and shortening activities along the critical path until the costs of crashing (direct costs) start to exceed the savings in indirect costs and penalty costs



# What Is Float Or Slack?

(Total Float Always Applies To Project & Free Float Applies To Individual Activities)

- If we start the activity as soon as possible, by how much can we lengthen the activity duration without delaying the overall project finish time?
- If not on critical path, the activity's start may be delayed (up to a point) without delaying project
- Note: Slack is always relative to critical jobs
- Free Float or Free Slack
  - Amount of time an activity can be delayed without delaying the early start of any immediately following activities
- Total Float or Total Slack
  - Amount of time an activity may be delayed from its early start without delaying the planned project finish date

In your project, you can delay 'Activity 1' by three days without delaying its successor 'Activity 2'. However, delaying 'Activity 1' will delay the project by six days without delaying the overall project finish date. Which of the following statements is correct in this scenario?

- A. The Total Float is 6 days and the Free Float is 3 days
- B. The Total Float is 3 days and the Free Float is 2 days
- C. The Total Float is 3 days and the Free Float is 6 days
- D. The Free Float is 3 days and the Total Float is 18 days

# Manage (Control) Project Schedule

During Project Planning, the PM with the team will create the Project Schedule.

Please remember a Schedule is a “plan”, (therefore requires review & approval).

Once this schedule gets the buy-in or agreement of all associated stakeholders, specially the Client &/or the Project Sponsor becomes the **Project's Schedule Baseline**.

This Schedule Baseline (and its subsequent revisions) will be used as the benchmark for monitoring & controlling project performance.

The Project Schedule (often viewed via a contemporary “Scheduling Tool”), is one of handiest tools the PM can use during the Project Execution & Control phase, to determine if the project is on track and plan for necessary tradeoffs.

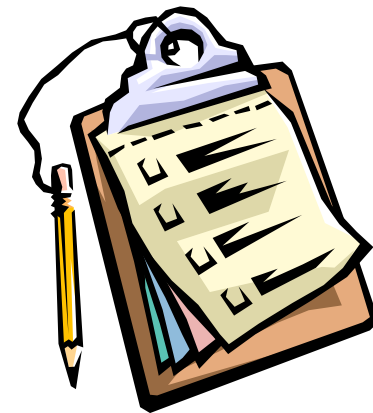
Project Team members must use the communications mechanisms documented in the Communications Plan to provide feedback to the Project Manager on progress

Each team member will provide the PM with their Progress Report (as per the frequency required):

- To indicate the ..... on assigned tasks
- To provide a tentative ..... for the ..... required to ..... work that is still in progress or not yet started according to the plan

Progress Reports will be used by the Project Manager

- Prepare the project's .....
- Re-plan and revise the Project Schedule to accommodate ..... after getting permission from the Project .....
- The ..... should be consulted when schedule compromises happen



## Outcome Of Controlling Project Schedule

After updating the Project Schedule, the Project Manager must take the time to review the status of the project and be able to answer these questions

- Is the project on .....
- Are there any .....that are becoming evident that need to be addressed now?
- Which tasks are taking more .....?  
Less .....
- If a task is late, what is the .....
- What is the next deliverable to be produced and when .....
- What is the amount of effort expended so far and .....
- Are any ..... over-allocated or under-allocated?
- How much of the time allocated has been ....., and
- What is the time required to ..... the project?



# Controlling The Project Schedule

**Principle:** If you are 15% into a project on the horizontal time line and you are in trouble, you are going to stay in trouble 😞

- Project Schedule Control is concerned with:
  - Determining the .....
  - Influencing the ..... changes to the schedule
  - Determining that the .....
  - Managing .....

Schedule Variance (SV)	Any difference between scheduled completion and the actual completion of a scheduled activity $SV = EV - PV$
Schedule Revision	Change in the network logic or constraints or deviation of working results from plan which require a redrawing of part or all of the network
Schedule Refinement	The rework, redefinition, or modification of the logic or data that may have previously been developed in the planning process as required, to properly realign resources, milestones, and priorities
Schedule Performance Index (SPI)	The ratio of work performed to work scheduled $SPI = EV / PV$