



# Introduction to Project Management



**PROJECT MANAGEMENT CONCEPTS**

**PROJECT SCHEDULING**



# PROJECT SCHEDULING GOALS



- Define precise and measurable events (milestones)
- Establish the duration of tasks
- Define priorities
- Define the critical sequence of tasks which determine the overall project duration (the critical path the “critical path”)
- Identify schedule risks
- Communication to management and the project team on progress



# DEFINITIONS - SCHEDULE LEVELS



## Level 1 Schedule or Executive Summary or Project Master Schedule (~1 page)

- ✦ Major milestones Major project activities and key deliverables

## Level 2 Schedule or Management Summary or Summary Master Schedule

- ✦ Summary of Level 3 schedule
- ✦ Major components of the project by area



# DEFINITIONS - SCHEDULE LEVELS



## Level 3 Schedule or Project Coordination Schedule

- Summary of Level 4 schedule
- Critical Path(s)
- Major milestones, major elements of design, engineering, procurement, construction, testing, commissioning, and start-up

## Level 4 Schedule or Execution Schedule or Project Coordination Schedule

- Detailed working level schedule
- Shows anticipated start and completion dates
- Major activities such as engineering, procurement, construction
- Maybe further detail (e.g. “Six Week Look Ahead” schedule)



# DEFINITIONS - TYPES OF PRESENTATION



- **Milestone Charts**
  - ✦ Simplest method
  - ✦ Identifies completion dates
- **Bar Charts or Gantt Chart**
  - ✦ Horizontal bars from left to right show duration of activity
  - ✦ Scheduled start date and scheduled completion date are shown
- **“Critical Path” Method Chart**
  - ✦ Shows the inter-relationships among the project tasks. Which must be started first, which must follow, and which may be done in parallel
  - ✦ The critical sequence(s) of activities determine the overall project duration. If these critical items are delayed, then the project’s completion is delayed



# TYPES OF PRESENTATIONS

## EXAMPLE – MILESTONES CHART



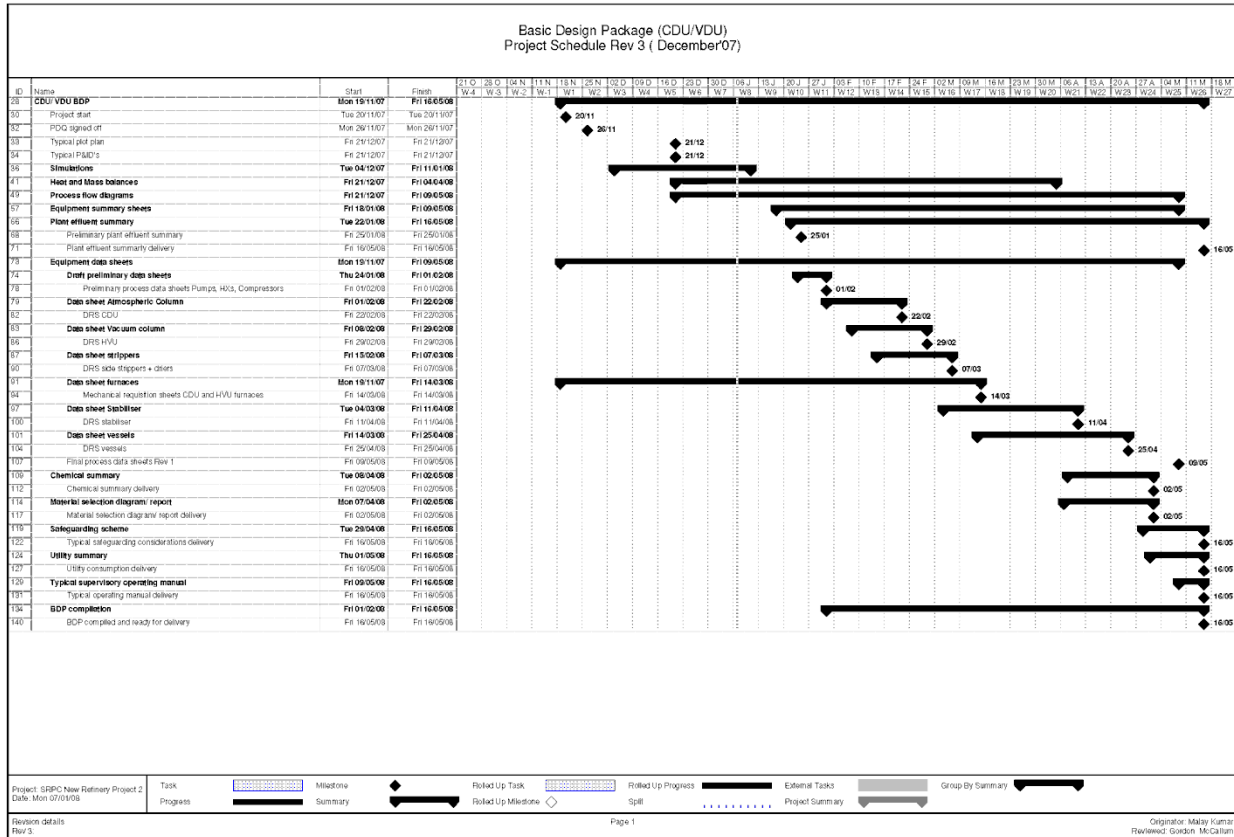
### Milestones chart Steel Structure Fabrication

ID	Task Name	Duration	ноя 2009				дек 2009				январь 2010			
			8.11	15.11	22.11	29.11	6.12	13.12	20.12	27.12	3.1	10.1	17.1	24.1
1	<b>Steel Structures fabrication</b>	10,8w												
2	Steel Structures DWG issue (AFC)	0w	◆ 10.11.2009											
3	Steel Structure MTO issue	0w	◆ 20.11.2009											
4	Order the Material (Steel)	0w	◆ 25.11.2009											
5	Shipment of Material to the Storage	0w	◆ 09.12.2009											
6	Preparing detail DWG of Supplier	0w	◆ 15.12.2009											
7	Start fabrication	0w	◆ 21.12.2009											
8	Delivery of 1 portion to the Client site	0w	◆ 05.01.2010											
9	Delivery of 2 portion to the Client site	0w	◆ 15.01.2010											
10	Delivery of 3 portion to the Client site	0w	◆ 25.01.2010											



# TYPES OF PRESENTATIONS

## EXAMPLE - BAR CHART



# PROJECT SCHEDULE MONITORING



## Schedule and Track by:

- Project Area
- Engineering Discipline
- Deliverable
- Tasks (Work Breakdown Structure)



# PROJECT SCHEDULE MONITORING



## Schedule and Track by:

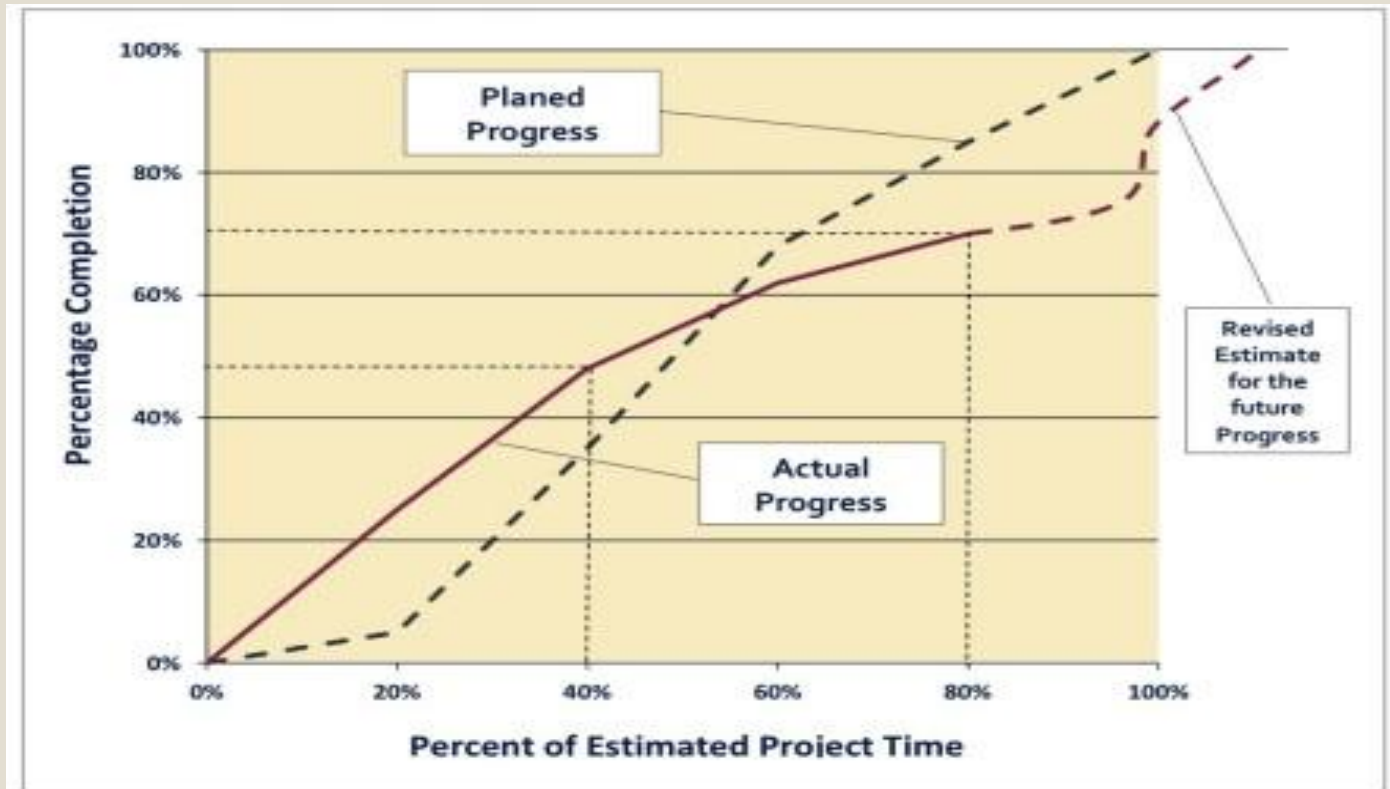
- Man-weeks
- Original Schedule versus present Schedule
- S-curve



# PROJECT SCHEDULE S-CURVE TRACKING



S-curves are the most intuitive means of tracking progress against control schedule



# MAKING A PROJECT SCHEDULE – START-UP/CONSTRUCTION



- Conceptual startup and interface plan output:
  - construction phase completion date
- Construction schedule outputs (based on the completion date):
  - Delivery date (equipment, materials)
  - Design phase completion date
  - Duration of construction tasks
  - Possible contract award date



# MAKING A PROJECT SCHEDULE- PROCUREMENT



- Procurement schedule outputs (based on material and equipment delivery dates):
  - Order date
  - Evaluation of bids date
  - Date for invitation to bid
  - Date of design/engineering specifications



# MAKING A PROJECT SCHEDULE – DESIGN/ENGINEERING



- Design/engineering schedule outputs (based on the other completion dates):
  - Detail design/engineering phase start date.
  - Equipment and material engineering specifications completion date
  - Duration of detail design/engineering tasks
  - Detail design/engineering phase start date
  - Possible contract award date

# PROJECT SCHEDULING PROGRAMS



- Scheduling is almost by definition computerized scheduling
- The question is, which package to use
  - Microsoft Project – the most ubiquitous
  - Primavera – the most powerful
  - Open Schedule – friendly and free
- Larger projects need bigger (& more expensive) scheduling tools



# SIZE OF PROJECT & SOFTWARE SELECTION



Very Small Project	Small Project	Medium Project	Large Project	Very Large Project
CAT	SHEEP	HORSE	ELEPHANT	WHALE
5 kg	50 kg	500 kg	5 000 kg	50 000 kg
<\$1 million project	<\$10 million project	<\$100 million project	<\$1 billion project	<\$10 billion project
<u>Tools:</u>				
Table				Primavera



# SIZE OF PROJECT & SOFTWARE SELECTION



Very Small Project	Small Project	Medium Project	Large Project	Very Large Project
CAT	SHEEP	HORSE	ELEPHANT	WHALE
<u>Problems:</u>				
Easy management of information flow	Consistency and accuracy of information flow	Consistency and accuracy of the information flow. Information flow between disciplines, as well as suppliers	Exchange of information between project participants, the owner, the government, suppliers, etc.	Information flow between multiple project teams





# SIZE OF PROJECT & SOFTWARE SELECTION



Very Small Project	Small Project	Medium Project	Large Project	Very Large Project
CAT	SHEEP	HORSE	ELEPHANT	WHALE
<u>Tools:</u>				
-Spreadsheet	-Desk-top scheduling S/W	-Server-based scheduling S/W -Engineering Collaboration Tools	-Primavera -Collaborative Engineering Design Environment -Standardized engineering design database environments (ISO 15926)	-Primavera -Collaborative Engineering Design Environment -Standardized engineering design database environments (ISO 15926)