

Project Management

Project Nomenclature

- **Deliverables:** Units that are delivered
- **Activities:** Major work categories
- **Tasks:** Small units of work that make up activity

Activity: Major Unit of Work

Culminates in major project *milestone*
(a scheduled event used to measure progress)

Examples of Activities

- Major Activities:
 - Planning
 - Requirements Elicitation
 - Requirements Analysis
 - System Design
 - Object Design
 - Implementation
 - System Testing
 - Delivery
- Sub-activities during requirements analysis:
 - Define scenarios
 - Define use-case model
 - Define object model
 - Define dynamic model
 - Design user interface

Big 3 Diagrams

- Work Breakdown Structure
- Precedence Diagram
- Schedule
 - with staff loading

Work Breakdown Structure (WBS)

- Break up project into **activities**, **sub-activities**, ... and **tasks**.
- The work breakdown structure does **not** attempt to show the interdependence or sequencing of the activities, only how they sub-divide and how much resources they are expected to require.

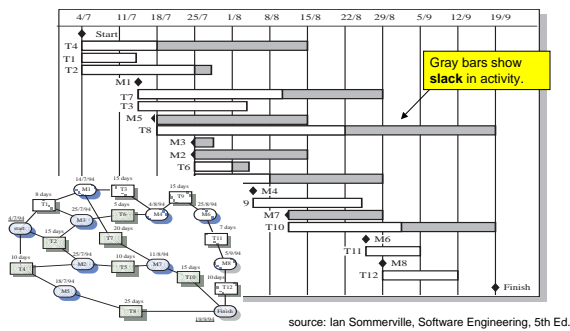
Critical Path

- A "critical path" on a Precedence chart is one in which the **sum of durations** of the tasks on the path equals the **shortest** overall project-completion time.
- The critical path is shaded on the preceding diagram.
- If your project's critical path is too long, what can you do to reduce it?

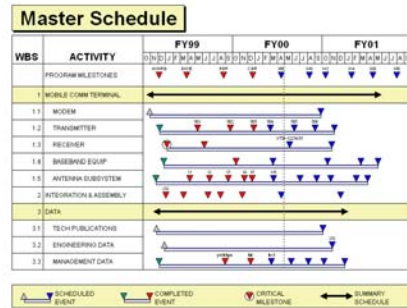
Gantt chart (schedule)

- **Schedule** (or Gantt chart) shows a **particular scheduling** of the tasks to time lines, subject to **all** of the constraints (not just precedence)

Gantt from Precedence (inset)



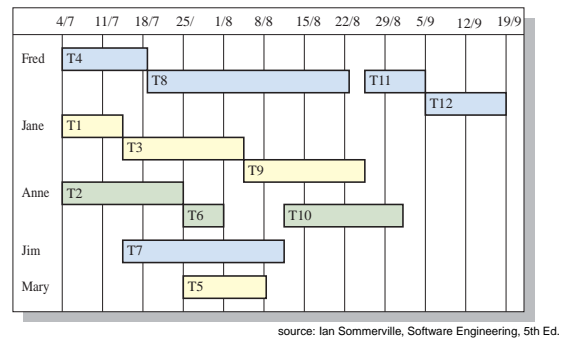
Example of Schedule Symbology (not standardized, so give a legend)



Staff Loading & Resources

- Staff loading and resource constraints are two aspects of scheduling not represented directly on Gantt chart.
- Generally they have the effect of providing **added sequencing due to resource contention**, and therefore lengthening overall project time

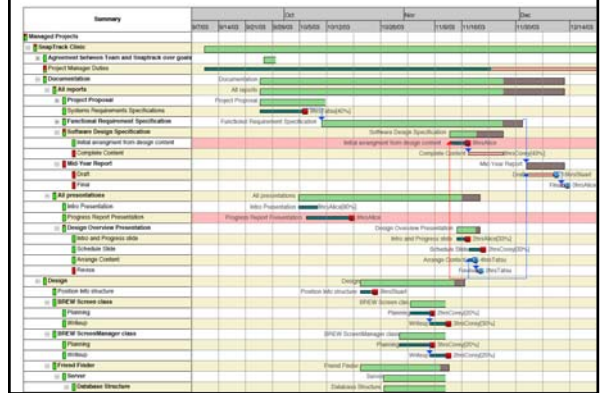
One Way to Show Staff Loading



3 Diagrams in 1

- If you choose the right tool, you can avoid duplicating work in creating diagrams.
- Some tools, such as Microsoft Project, allow you to show the work breakdown and precedence on directly on the schedule.
- You enter the information just once.

Portion of Schedule from a 2003 Project



Some Tools

- Microsoft Project
 - Handles WBS
 - Handles PERT to Gantt
 - Sort of handles staff loading
 - Does earned value tracking (to be described)
- Planner (<http://www.imendio.com/projects/planner/>) open source tool, for the Gnome Linux & Unix desktop
- TopDown (Mac) or Visio (PC) can be used for drawing any kind of diagram.
- PowerPoint is often useful for diagrams.
- Post pdf's of diagrams to your Wiki.

Tracking How Well We Are Doing

Troubles Shown by Gantt Chart

- Mostly long bars, and few of them
 - Difficult to track project status, since the longer the bar, the more likely there is error in the estimate
 - Solution: Break long bars into to smaller ones and reassign

Troubles Shown by Gantt Chart

- Long bars not **in parallel** with each other:
 - Is the **whole team** really doing that one task?
 - Or are a couple doing it while the others are idle?
 - Is it really not possible to describe in any finer detail?

Troubles Shown by Gantt Chart

- Long chains of short bars with one person assigned to each bar
 - Not enough parallelism among tasks
 - Solution: Reduce dependence between bars as much as possible.

Troubles Shown by Gantt Chart

- No specific staff assignment to bars
 - Difficult to know who on the team is actually doing the work
 - How do you know who to ask for status?

Think Carefully about Staff Assignments

- Idle staff now may mean that everyone pays later to make up for the lost resource.