

Lecture 8

Today: • Project Planning/Management

Reference: • G. K. Kapur, *Project Management for Information, Technology, Business, and Certification*, Prentice Hall, 2004.

Imagine that...

- Case 1: You are working on a big research project. The project deadline is 6 months later. Your advisor/manager asks you for the exact date of finishing the project. How do you respond?
 - Typical answer: paper survey...mm...1 month? Writing code...mm 1.5 months? Writing project report...0.5 month. Perfect!!
 - Results?? Orz
- Case 2: You are working on a big research project with quite a number of people from other department/lab/group. You don't know these people very well and you don't meet them very often. If the project is expected to be finished 3 months later, how can you ensure the project can actually be finished by the deadline?
 - Typical picture: people relax till two weeks left, then start to keep staying up late, getting mad, pointing finger at each other, thinking about giving up at some point. Finally submit whatever they have done at the very last minute.
 - Results?? Orz
- For professional project, time and perfection is very important. We can not afford finishing the project too late or submitting work with bugs. How should we ensure these won't happen?
- **Project planning and project management!!**



Project Planning/Management

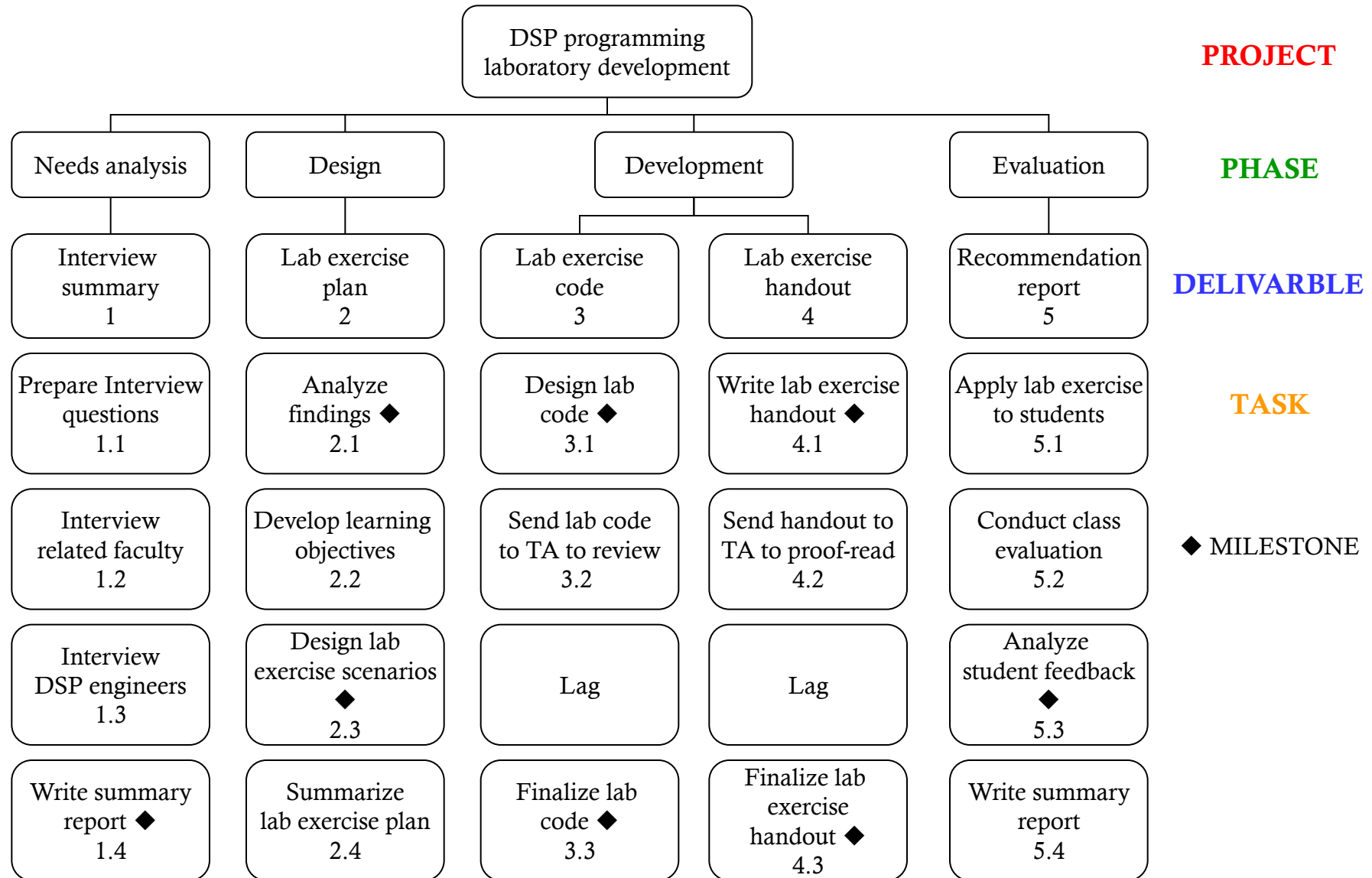
Learn to Plan/Manage Your Projects

- Students tend to work on the project at the last 2 weeks of the semester. The result is usually unsatisfactory.
- This semester we want you to manage your project in a professional manner.
- We will introduce the project management method used by the professionals in IT/Business nowadays.
- You will learn to use WBS (Work Breakdown Structure) to form a detailed project plan by breaking it down to phases, deliverables, and tasks.
- You will learn to use Open Workbench Project to organize and keep track of your project status.

WBS

- Project planning is often done using Work Breakdown Structure (WBS).
- WBS is an efficient way to decompose a complicated project into manageable tasks.
- WBS can be converted into task network which gives useful information such as the project timeline and the critical path of the project.
- WBS can let us know who to point the fingers at when something gets wrong.
- We will learn how to use the WBS technique to form a detailed project plan for your final projects.

WBS Example: DSP Lab Development



WBS Definition: Phase

- Phases denotes different development stages of a project.
- A phase can be named either by **verb** or **noun**.
- Ex: Requirement, design, test, implement, evaluation, ...
- Phase usually ends with a major check point.
- Phases are not necessarily executed in order. They usually overlap.
- Phase duration generally less than 3 months.

WBS Definition: Deliverable

- Deliverable is the result or product after finishing a task or a group of tasks. It is a measure of achievement.
- Deliverables form the main body of the project and thus need to be well defined without ambiguity.
- A deliverable should be named by a **noun**.
- Ex: Algorithm, simulation program, algorithm verification, code of particular function/module, data, project report, project prototype, project demo, material list, test plans, marketing strategies, ...
- A deliverable can only have one owner but one or more receivers.
- A deliverable should take less than 20 days on the average.
- Clear criteria should be defined for the completion of a deliverable.

WBS Definition: Task

- Task is a piece of work that leads to the accomplishment of a milestone or deliverable.
- Task should be assigned to only one owner.
- Task is usually named by a **verb**.
- Ex: survey face tracking algorithm, design eye detection algorithm, write eye detection simulation function, order materials, debug DSP code, make power point slides, write project report, ...
- A task should take no more than 40 hours. If it takes more than 40 hours, it should be breakdown into smaller tasks.
- For our DSP project, a reasonable time span for a task is 1 to 1.5 weeks.

WBS Definition: Milestone

- A event that is a significant progress of in a project is called “milestone”.
- A project should have one milestone every 1.5 weeks on the average.
- Usually named using **past tense** of a certain task.
- Ex: eye detection algorithm verified, project report written, project demo rehearsed, DSP code finalized, ...

WBS Definition: Lag

- Lag is a specific period of time delay between tasks.
- Ex: wait time for TA's proof-reading of the handout, wait time for TA's testing of the lab code, shipping time for the ordered tools to arrive, ...
- Lags can have significant effect on the completion time of the project. We should identify all the possible lags in WBS to keep track of your project timeline.

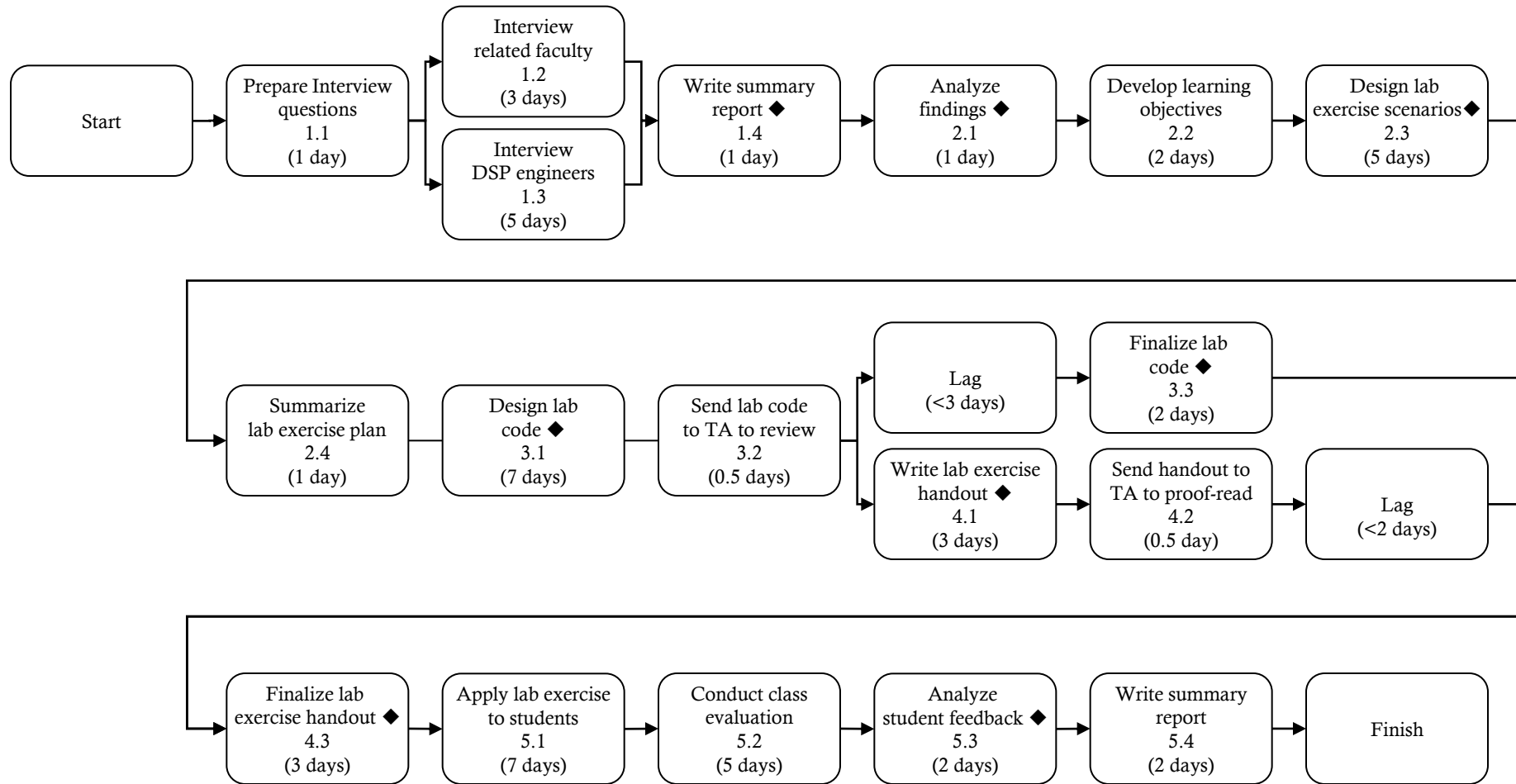
WBS Definition: Issue

- Issue indicates there is an unanswered question or a difference in opinion.
- Ex: How many people to work on the simulation work? Should we include xxxxx feature in our implementation? ...
- The more issues you have at any given time in the project, the slower the project progress. One should try to resolve as many issues as possible as the project moves on. Too many unresolved issues will cause your project to be in jeopardy.

Task Network

- A WBS can be converted into task network to visualize the execution process of the project.
- Task network gives us an estimate of the project execution time.
- One should make necessary adjustments to the task network to ensure the project can be finished on time.
- Ex: DSP programming lab development

Task Network Example



Estimated time <math>< 1 + \max\{3, 5\} + 1 + 1 + 2 + 5 + 1 + 7 + 0.5 + \max\{3 + 2, 3 + 0.5 + 2\} + 3 + 7 + 5 + 2 + 2 = 48</math> days

How to do project planning?

- Create a list of phases, deliverables, and tasks. Mark the milestones of the project.
 - Ex: Deliverable list
 - Project manager
 - Project scope description
 - Algorithm
 - Simulation program
 - DSP code
 - Prototype
 - Project report
 - Project demo slides
 - ...
 - Ex: Task list
 - Assign a project manager
 - Define project scope
 - Survey existing algorithms
 - Write xxxxx part of the simulation program
 - Verify the algorithm
 - Finalize the algorithm ◆
 - Write xxxxx part of the DSP code
 - Finalize the DSP code ◆
 - Design the demo script
 - Write project report
 - ...
 - Celebrate

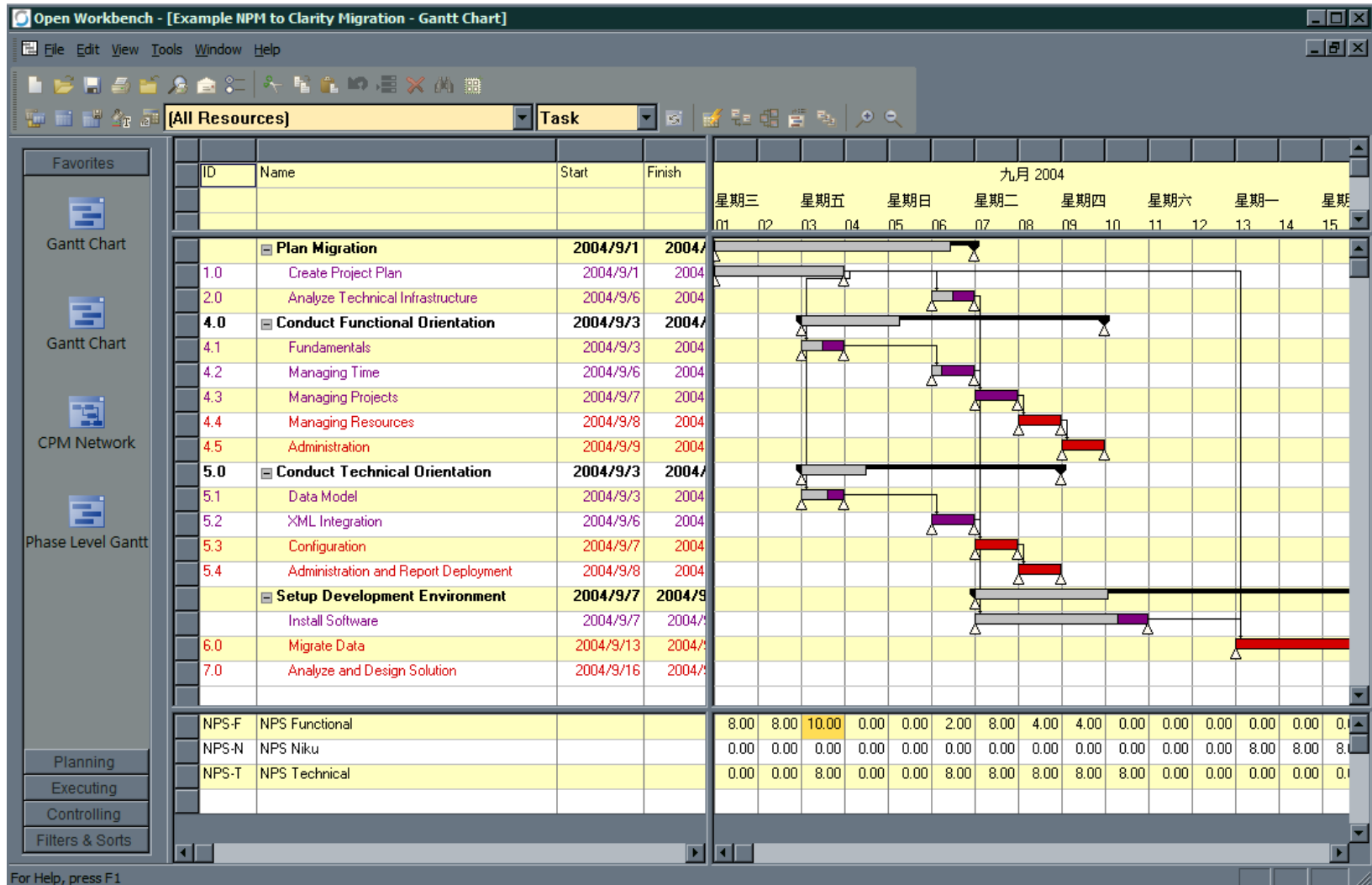
How to do project planning WBS?

- Determine the needed time for each task. If greater than 1.5 weeks, split the task into smaller tasks.
- Develop the WBS from the listed phases, deliverables, and tasks.
- Develop the task network from the WBS. Calculate the estimate of the completion time of the project. Do necessary adjustments (add more resource to a certain task, parallelize the tasks, etc.) to make sure the project can be finished within the deadline.
- Think of all the possible issues of your project and write it down.
- Keep track of the status of each tasks as the project moves on. Make necessary adjustment to your project plan if there is an unexpected delay in the completion of certain tasks.
- Resolve the issues as the project moves on.

Software for Project Planning/Management

- Microsoft project --> not free.
- Open Workbench --> free at <http://www.openworkbench.org/>
- Need to install java (<http://www.java.com>) first before using Open Workbench.
- There is an idiot-starting guide for Open Workbench on the web. Read it and work on your project plan.
- There is no “Deliverable” type in Open Workbench. We will use “Phase” type to denote deliverable.
- We will use “Key Task” to denote the milestone in Open Workbench.
- The time unit used in Open Workbench is in hours. To change it to days, make change in the resource property to set the availability of each resource to 1.0 (1 hr per day). (Note: resource = labor)
- In the resource property, change the weekends to workdays. Also mark the study days needed for your midterm exam, final exam and the days needed for your research, GF birthday(s) in the calendar as holidays.
- Every project should keep track of the project status each week and present your updated Open Workbench Gantt chart in the class at the beginning of each lecture starting from next week.

Open Workbench Project Examples



Open Workbench Project Examples

