Project Management

References: Text, Chapter 16 (and 1 thru 3)
Most introductory management books

Get organized!

• Without clear goals and roles, little gets done
Definition

Project Management
The discipline of planning, organizing and managing resources to bring about the successful completion of specific project goals and objectives.

Wikipedia
Project Management Steps

1. Plan
2. Organize
3. Manage time and resources
   Utilize limited resources most effectively

Plan the work and work the plan

Definition

Project
A set of activities that end with a specific accomplishment

- Non-routine tasks
- Distinct and defined start and finish dates for each task
- Resource constraints (time, money/people/equipment)
Project Planning

- **What**
  - Tasks, activities
- **When**
  - Schedule
- **How**
  - People, money, equipment

The goal of the planning process is to eliminate surprises

Definition

**Task:**
- Short duration relative to project
- Significant. Appropriate level of detail
- Defined start/end points
- Requires resources
- Assign a “verb-noun” name
  - "create drawings"
  - "build prototype"
  - “develop transmission”

Refer to [http://me.umn.edu/education/courses/me4054/assignments/wbsgantt.html](http://me.umn.edu/education/courses/me4054/assignments/wbsgantt.html)
Properties of a “Task”

1. Defined deliverable
   a. Document
   b. Demo
   c. Thing

2. Responsible person (one)

3. Due date

4. Work Breakdown Structure

   • A “to do” list, sorted by task
   • Task description (what)
   • Estimated time (length)
   • Person responsible for task (who)
   • Resources required
   • Cost ($)
Sample Work Breakdown Structure

<table>
<thead>
<tr>
<th>Task #</th>
<th>What</th>
<th>Person-hours</th>
<th>Who</th>
<th>Resources</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Profile motor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Design test stand</td>
<td>20</td>
<td>SE, JM</td>
<td>Pro/E</td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td>Build test stand</td>
<td>15</td>
<td>SE, JM</td>
<td>Parts, machine shop</td>
<td>$35</td>
</tr>
<tr>
<td>5.3</td>
<td>Test 3 motors</td>
<td>3</td>
<td>JM, SE</td>
<td>Stroboscope</td>
<td>$75</td>
</tr>
<tr>
<td>5.4</td>
<td>Plot torque vs speed</td>
<td>2</td>
<td>JM</td>
<td>Excel</td>
<td></td>
</tr>
</tbody>
</table>

Team Activity

- On your Google site, create a draft Work Breakdown Structure.
  - A “to do” list, sorted by task
  - Task description (what)
  - Estimated time (length)
  - Person responsible for task (who)
  - Resources required
  - Cost ($)
5. **Gantt Chart**

- Bar chart with
  - Tasks from work breakdown structure
  - Beginning and end of each task
  - Interdependencies
  - Milestones

- Most basic (and most common) planning tool

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**Definition**

**Milestone:**

- Tasks with Ø duration
- Mark significant project checkpoints
- Use to motivate
- Use to check progress
- Name by “noun-verb”
  - “report due”
  - “parts ordered”
  - “concept selected”
Sample Gantt Chart (segment)

<table>
<thead>
<tr>
<th>WBS</th>
<th>Task Name</th>
<th>January</th>
<th>February</th>
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<tbody>
<tr>
<td>1</td>
<td>Define specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Identify customers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Interview 10 customers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Interpret requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Benchmark products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Define target PDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td>Target PDS Released</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Generate concepts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Review comp products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Search patents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Brainstorm concepts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Select top 2 concepts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>MQ Presented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Profile motor power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Design test stand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td>Build test stand</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Software Tools

- **Microsoft Project**
  - Most popular project management software
  - Easy to use
  - Available in CSE computer labs
  - Web tutorials available

- **GanttProject** ([www.ganttproject.biz](http://www.ganttproject.biz))
  - Open source
  - Free download to your computer
Team Activity

• On your Google site, create a draft Gantt Chart.

  • List tasks and subtasks of your project
  • Beginning and end of each task
  • Links between tasks
  • Milestones

Team Leader / Project Manager

• It is critical that there is continuity in the role of project manager
• In industry, the team leader and the project manager can be, but often are not, the same individual
• If your team has elected to rotate the team leader role, it is strongly suggested that you assign a project manager who will have that role for the entire semester
Effective Meetings

• Have an agenda
  – Review agenda at start of meeting asking for additional items
  – Assign a duration for each item to be discussed
  – Have a definite end time

• Stick to the agenda

• Assign a scribe
  – Record decisions and post to Google site

Team Leader Activity

• Create the agenda for today’s group meeting.