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

A set of activities that end with a specific accomplishment
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
Project Planning

• What
  – Tasks, Deliverables

• When
  – Schedule

• How
  – People, money, equipment

The goal of the planning process is to eliminate surprises

Refer to [http://me.umn.edu/courses/me4054/assignments/wbsgantt.html](http://me.umn.edu/courses/me4054/assignments/wbsgantt.html)
## 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>
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<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>
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<tr>
<td>5.3</td>
<td>Test 3 motors</td>
<td>3</td>
<td>JM, SE</td>
<td>Stroboscope</td>
<td>$75</td>
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<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>

### What are the properties of a task?
Tasks
Properties of a Task

- Short duration relative to project
- Significant. Appropriate level of detail
- Requires resources
- Assign a “verb-noun” name
  - “create drawings”
  - “build prototype”
  - “develop transmission”

Refer to http://me.umn.edu/education/me4054/assignments/wbsgantt.html
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### What are the elements of a WBS?
Work Breakdown Structure

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

### WBS | Task Name
--- | ---
1 | Define specifications
1.1 | Identify customers
1.2 | Interview 10 customers
1.3 | Interpret requirements
1.4 | Benchmark products
1.5 | Define target PDS
1.6 | Target PDS Released
2 | Generate concepts
2.1 | Review comp products
2.2 | Search patents
2.3 | Brainstorm concepts
3 | Select top 2 concepts
4 | MQ Presented
5 | Profile motor power
5.1 | Design test stand
5.2 | Build test stand

Identify tasks... what are the properties of a task?
What additional information is included in the Gantt chart (compared to WBS)?
What is missing in this Gantt chart (Hint what? When? How?)
Properties of a Task (Gantt Chart)

- Short duration relative to project
- Significant. Appropriate level of detail
- Requires resources
- Assign a “verb-noun” name
  - "create drawings"
  - "build prototype"
  - “develop transmission”

- Start and end time/date
- Relationship between tasks
- Milestones

Identify Customers
Interpret Requirements
Benchmark Products

Differs from WBS….
Identify Milestones

What are the properties of a milestone?
Properties of a Milestone

- Tasks with $\emptyset$ duration
- Mark significant project checkpoints
- Use to motivate
- Use to check progress
- Name by “noun-verb”
  - “report due”
  - “parts ordered”
  - “concept selected”

Target PDS Released
MQ presented
Sample Gantt Chart (what’s missing?)

<table>
<thead>
<tr>
<th>WBS</th>
<th>Task Name</th>
<th>January</th>
<th>February</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3 6 9 12 15 18 21 24 27 30 2 5 8</td>
<td>11 14 17</td>
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<tr>
<td>1</td>
<td>Define specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Identify customers</td>
<td>1/7 1/8 1/11</td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Interview 10 customers</td>
<td>1/12 1/13</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Interpret requirements</td>
<td>1/14</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>1/9 1/11</td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Search patents</td>
<td>1/12 1/13</td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Brainstorm concepts</td>
<td>1/14</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Select top 2 concepts</td>
<td>1/15</td>
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<td>4</td>
<td>MQ Presented</td>
<td>1/16 1/18</td>
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<td>5</td>
<td>Profile motor power</td>
<td>1/17</td>
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<td>Design test stand</td>
<td>1/18 1/21</td>
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</tr>
<tr>
<td>5.2</td>
<td>Build test stand</td>
<td>1/22 1/28</td>
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</tr>
</tbody>
</table>
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
Software Tools

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

• **GantttProject** (www.gantttproject.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
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

• Use meeting time to report findings (i.e. come prepared)
What’s in a

- Create the agenda for today’s group meeting.