PSU Problem Solving Process

1. Position
2. Sense
3. Uncover
4. Solve
5. Build
6. Achieve

The Last Step

- PLAN
- IMPLEMENT
- EVALUATE

Project Management

How does a project get one year late? …One day at a time.
-Frederic P. Brooks
Project Management Questions

- How long will it take to complete the project?
- What individual tasks make up the project and in what order must they occur?
- Where do we have flexibility in task start and finish dates, i.e., which tasks can be delayed without affecting the overall schedule?
- What tasks are “critical” and must be completed exactly as planned in order to keep on schedule?
- Who is working on which task, and is there any flexibility, if needed?
- Are we going to be finished on time and on budget?

Project Management Tools

- Modern project management tools can help answer these questions:
  - Critical Path Method (CPM) scheduling
  - PERT (Program Evaluation & Review Technique) for task analysis
  - GANTT charts for evaluation and control
  - Programs like Microsoft Project combine these techniques so that projects can be more predictable and managed more proactively.

CPM (Critical Path Method)

- An approach that helps you organize, manage and control a project.
  - Identify the tasks/activities
  - Determine task sequence
  - Calculate task lengths
  - Graphically present an overview
  - And most importantly…
  - Work out the critical path

Modernize A Shopping Center

<table>
<thead>
<tr>
<th>Task Code</th>
<th>Description</th>
<th>Predecessor</th>
<th>Time (weeks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Prepare architectural drawings</td>
<td>None</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>Identify potential new tenants</td>
<td>None</td>
<td>6</td>
</tr>
<tr>
<td>C</td>
<td>Develop prospectus for tenants</td>
<td>A</td>
<td>4</td>
</tr>
<tr>
<td>D</td>
<td>Select contractor</td>
<td>A</td>
<td>3</td>
</tr>
<tr>
<td>E</td>
<td>Prepare building permits</td>
<td>A</td>
<td>1</td>
</tr>
<tr>
<td>F</td>
<td>Obtain permit approval</td>
<td>E</td>
<td>4</td>
</tr>
<tr>
<td>G</td>
<td>Perform construction</td>
<td>D, F</td>
<td>14</td>
</tr>
<tr>
<td>H</td>
<td>Finalize tenant contracts</td>
<td>B, C</td>
<td>12</td>
</tr>
<tr>
<td>I</td>
<td>Tenants move in</td>
<td>G, H</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Time = 51 weeks
Viewing The Plan Visually

- Now you can see which task can be done concurrently

Critical Path

- Figure out the Critical Path – the longest path through the project
- Total time can be reduced from 51 weeks to 26 weeks by working concurrently

PERT

- It lets you make an optimistic, pessimistic and “best guess” estimate of the time it will take for each task and the entire project
- Use a weighted average and a formula
- Plug this timing into the Project Management Software

Estimated Time = \left(\frac{\text{Optimistic} \times 1 + \text{Best Guess} \times 4 + \text{Pessimistic} \times 1}{6}\right)

- Best Guess = 10 weeks
- Pessimistic = 14 weeks
- Optimistic = 8 weeks
- Estimated Time = 10.2 weeks
GANTT Charts

Another way of looking at the relationships between activities and manipulating dependencies.

Microsoft Project

Many Types Of GANTT Charts

You must also allocate resources to each of the activities.

- Who will do it?
- How much will it cost?
  - Materials and labor
- Many software packages will allow you to track progress against budget and manage resource allocation.

Resources
Managing Project Meetings

- **DO** produce an agenda and provide it before the meeting.
- **DON'T** ignore what your team members have to say.
- **DO** make a note of who is following up on each course of action.
- **DON'T** let deadlines drift – keep a tight rein on them.
- **DO** review any action planned at a meeting.
- **DON'T** neglect to prepare properly for each meeting.
- **DO** face up to change if it proves necessary.