Project Management

- Definitions
- Creation x2
  - plan your work → work your plan
  - project drivers
- Centrality (or benefits) of PM
- Relevance of PM to “new” engineer
- *Project* Plan
- *Project* Time and Task Management
- *Project* Maintenance
- *Project* Post-Mortem
Definitions

Project

Project Management
Project

- temporary endeavor
- unique product/service/result

Project Management

- process (PMI defines 10 areas)
- combining systems, techniques, and people
- goals: *time, budget, and quality*

(PMI, 2013)

(Baker and Baker, 1998)

Q: Any relationship to self management and EQ?
SELF-AWARENESS
- Emotional Self-awareness
- Accurate Self-Assessment
- Self-Confidence

SOCIAL AWARENESS
- Empathy
- Organisational Awareness
- Service Orientation

SELF-MANAGEMENT
- Self-Control
- Transparency
- Adaptability
- Achievement Drive
- Initiative

RELATIONSHIP MANAGEMENT
- Inspirational Leadership
- Developing Others
- Influence
- Change Catalyst
- Conflict Management
- Building Bonds
- Teamwork & Collaboration

RECOGNITION

REGULATION
Q: What reality of engineering is depicted in this cartoon?
A: For engineers, all things are created (at least!) twice
Q: What is this?
→creation x2 (plan your work→work your plan)

Q: Where (on the diagram) is planning work vs working plan?
→ creation x2 (plan your work → work your plan)

Resources Expended, cumulative
(e.g., costs/budget)

Plan your work

Work your plan

Project completion

time/schedule
→creation x2 (plan your work → work your plan)

Q: What happens to shape of S-curve without planning stage?
Q: What happens to shape of s-curve without planning stage?
A: Increases in Resources Used and Time Needed, .....Scope?
→creation x2 (plan your work→work your plan)

Project Management “Truth”

- The first 80% of the effort takes 80% of the time and budget...

→creation x2 (plan your work → work your plan)
Project Management “Truth”

The first 80% of the effort takes 80% of the time and budget...

And the last 20% of the effort takes the remaining 80%.

Whether or not this is true for your project is up to you!
What are the primary project **Drivers or Goals**?
PROJECT GOALS
(drivers & metrics)

Quality/Scope
(“Better”)

Schedule
(“Faster”)

Cost/Budget
(“Cheaper”)
…less expensive
Relevance of PM to “new” engineer

Why is project management important for a new engineer?
Why is project management important for a *new* engineer?

- You will be designing a component/system (task = project)
- Tasks have budgets, scopes, and schedules
- Effective task management grows to effective project management
- Experience with various components/tasks better prepares/positions you for PM
Why PM?

→ centrality (or benefits) of project management
Why PM?.....Project Benefits!

- Pleased customers/clients/constituents
- Profitability (or solvency)
- Decreased dissatisfaction, liability
- On-the-job learning, mentoring
- Innovation
- Identification of future needs
- “Return” Business (“external clients”)
- New Business (“external clients”)
- Satisfied employees (“internal clients”)

→ centrality (or benefits) of project management
Planning Tools

- Task list (in no particular order)
- Chronological Task List
- Chronological and Critically-linked Task List
  - Critical Path Method
  - Gantt Chart
Let’s think about this with an example

What will preparation for the FE look like?
Example

Project: Preparing for FE exam (using Calvin BSE ME as basis)
FE exam

- **Scope:** passing (….competence!)
- **Schedule:** days......months......years?
- **Cost:** $ application (or $ BSE?)
Calvin Engineering—BSE Mechanical Concentration
Basic Science/Engineering Course Requirements

List of “Tasks”

Chemistry 103
Physics 133, 235
Math 171, 172, 241, 270, 231
### Planning Tools

Calvin Engineering—BSE Mechanical Concentration

Basic Science/Engineering Course Requirements

**Chronological List of “Tasks”**

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<tr>
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<th>F-1&lt;sup&gt;st&lt;/sup&gt;</th>
<th>S-1&lt;sup&gt;st&lt;/sup&gt;</th>
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</table>
Calvin Engineering—BSE Mechanical Concentration
Basic Science/Engineering Course Requirements

Critical Path Method (CPM) for "Tasks"

Planning Tools
## Calvin Engineering—BSE Mechanical Concentration

### Gantt Chart

<table>
<thead>
<tr>
<th>ID</th>
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</table>
How to Develop a PM Plan (e.g., costing and scheduling)

For each activity, how do you estimate:

- Costs
- Schedule requirements
- Resource availability

??
How to Develop a PM Plan (e.g., costing and scheduling)

- Personal experience
- Colleague/Company/Agency experience
- Similar past projects/task (“benchmarks”, e.g., MEANS data, cost curves)
- Sub-consultant, Sub-contractor, Vendor Information/Quotes
- Seasoned Intuition
- Apply appropriate contingency (highest at planning stages; decreases to completion
Project Management Truth

“Nine women cannot make a baby in one month.”

Adding resources has diminishing returns. Even with infinite resources, some things just require more time!
Do well-planned projects go as planned?
### Urgency vs. Importance

<table>
<thead>
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<th>Urgent</th>
<th>Not Urgent</th>
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<td><strong>Important</strong></td>
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<td>➤ Pressing problems</td>
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<td>➤ Firefighting</td>
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<td>➤ Major scrap and rework</td>
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<td>➤ Deadline-driven projects</td>
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<td>➤ Relationship building</td>
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<td>➤ Recognizing new opportunities</td>
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<td>➤ Planning</td>
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<td>➤ <em>Re-creation</em></td>
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<tr>
<td><strong>Not Important</strong></td>
<td>III ➤ Interruptions</td>
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<td><strong>Important</strong></td>
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<td>➤ Time-wasters</td>
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<td></td>
<td>➤ Pleasant activities</td>
</tr>
</tbody>
</table>

**Q:** Which quadrant(s) prioritized for project planning?
Projects are dynamic—Project Management is dynamic

→ scope changes
→ schedules change
→ costs change

.....Only when the project is built/shipped/delivered has 100-percent “design” been reached
Project Management Truth

“I have always found that plans are useless, but planning is indispensable.”

-- Dwight D. Eisenhower

(http://www.brainyquote.com/quotes/authors/d/dwight_d_eisenhower.html)

Or: “Plans are nothing. Planning is everything.”
How to control and communicate project (and sub-project) status and progress?

ASK where are we with respect to:

- current and future SCOPE?
- current and future COST?
- current and future SCHEDULE?

AND Proactively RESPOND
...and then do it again (and again, and again, ....)

ASK .................. *where are we with respect to:*

- current and future *SCOPE?*
- current and future *COST?*
- current and future *SCHEDULE?*

............ *AND Proactively RESPOND*
Project Post-Mortem

How?

External sources & Internal sources

Why?

- Improvement (for future)
- Resolution/Closure
- Relationships

[Image of gravestone with placeholder text: INSERT PROJECT NAME HERE]
Last Words

- Good PM’s don’t (immediately) have all the answers
- Good PM’s ask good questions
- Good PM’s listen
- Good PM’s think about team chemistry
- And............