Project Specifications
Based on lecture slides by Profs. Ayers and Gokirmak
Project Specifications

- **Specifications list** the requirements that the project must meet.

- Any competent engineering team should be able to design a device that performs the specified function.

- **Specifications list** the requirements that the project must meet.

- But do **NOT** state how to build it.
Specifications *(warnings)*

- In general, you should NOT specify any components.

- Modifying an *existing* device?: Describe the current device in as much detail as possible.

http://dornob.com/portable-power-pods-usb-batteries-keep-gadgets-going/
Introduction and Overview

• State the *purpose* of the project clearly.
  - Why are you building the device?
  - What will the finished device do?

• *Describe* the project carefully.
  - How will the device operate?
  - What is unusual about the device?
Be Specific!

Technical Specifications

Tabular form: All facts and figures needed to undertake the design project.
Specifications Format (example)

**Electrical Parameters**

Battery Life 6 months (continuous use)

Display:

- Number of Characters 30 (minimum)
- Size 2’ min. height x 1.75’ min. width
- Illumination Visible in strong sunlight
Specifications Format (cont.)

Electrical Parameters (cont.)

Transmitter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>100-1000 feet</td>
</tr>
<tr>
<td>Physical path</td>
<td>data transmission through walls</td>
</tr>
</tbody>
</table>
Specifications Format (cont.)

**Electrical Parameters (cont.)**
- Operating Voltage Levels
- Current Capabilities
- Input and Output Impedances
- Gains
- Input/Output Power
- Power Consumption
- Precision

...
Specifications Format (cont.)

**Mechanical Parameters** (sample)

**Button:**
- **Size:** 5” x 5” (min.)
- **Actuation Force:** 0.001 N (max.)

**Weight:** 5000 lbs. (max.)

**Durability:** Should survive 10-ft. drops.
### Specifications Format (cont.)

<table>
<thead>
<tr>
<th>Environmental</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td>Basement (6’ underground)</td>
</tr>
<tr>
<td><strong>Temp. Range</strong></td>
<td>-40 to +700 F</td>
</tr>
<tr>
<td><strong>Storage temp.</strong></td>
<td>-273 to 1000 F</td>
</tr>
<tr>
<td><strong>Moisture?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Corrosive liquids?</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Vibrations?</strong></td>
<td></td>
</tr>
</tbody>
</table>
### Specifications Format (cont.)

**Software**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Execution time</td>
<td>34.5 seconds (max.)</td>
</tr>
<tr>
<td>Termination/Reset</td>
<td>1 button</td>
</tr>
<tr>
<td>Interrupts</td>
<td>Standard ^C</td>
</tr>
<tr>
<td>Memory</td>
<td>4.5 MB</td>
</tr>
<tr>
<td>Platform</td>
<td>Windows PC</td>
</tr>
</tbody>
</table>
Priorities

• Priority 1 – The requirement is a “must have” as outlined by policy/law

• Priority 2 – The requirement is needed for improved processing, and the fulfillment of the requirement will create immediate benefits

• Priority 3 – The requirement is a “nice to have” which may include new functionality
Systems Engineering
Let’s Give it a Shot

http://dornob.com/crank-case-rechargeable-wind-up-emergency-batteries/
Don’t paint self into a corner!

Keep in mind

• Design time
• Implementation time
• Debugging
• First prototype
• First functioning unit …

• Work hard, never panic, keep low-expectations & stick to the K.I.S.S. principle
• It is better to beat expectations !!!