2.009 Product engineering processes

the only thing worse than no help is unreliable help
2.009 Product engineering processes today

technology logistics getting ready for Thursday

final presentation looking ahead
Assembly quiz

last class
Assembly quiz

types of fasteners

- Number of students
  - 1-5
  - 6-10
  - 11-15
  - 16-20
  - 21-25
  - 26-30
  - Many, ???

- Number of different kinds
  - 1-5
  - 6-10
  - 11-15
  - 16-20
  - 21-25
  - 26-30
  - Many, ???
Assembly quiz

total number of fasteners

number of students

total number of fasteners
Assembly quiz

total number of improvement suggestions

megan fu
Assembly quiz

list 4 design for assembly guidelines

Reduce part count
Reduce part types
Eliminate adjustments
Design parts to be self-locating
Consider access & visibility
Design parts to be easy to handle
Design parts to be only installed correctly
And now...
when a product fails during testing...

describe the faulty behavior in an ____________—____________ form
# Mini quiz

**Key attribute and specification: lifeline**

## Need

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Attribute</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>visible</td>
<td><strong>discernability in XX conditions</strong></td>
<td>distance, up to 100 ft, 90% reliability</td>
</tr>
<tr>
<td></td>
<td>bright color, glowing rope</td>
<td>color is yellow, glow-in-the-dark rope</td>
</tr>
<tr>
<td>reusable</td>
<td><strong>reload capability</strong></td>
<td>binary (yes/no)</td>
</tr>
<tr>
<td>quick to set up</td>
<td>time to launch</td>
<td>15 seconds time &lt;15s</td>
</tr>
<tr>
<td>can reach victim in water</td>
<td><strong>range from ship</strong></td>
<td>&lt;= 60 feet distance &gt;= 60 feet</td>
</tr>
</tbody>
</table>

**Mini quiz**

**Key attribute and specification: lifeline**

- High percentage in correct format

- **Need**
  - **Visible**: to whom, when?
  - **Reusable**: in what way?
  - Quick to set up
  - Can reach victim in water

- **Attribute**
  - Discernability in XX conditions
  - Reloadable cartridges
  - Time to launch
  - Launcher range

- **Specification**
  - Distance, up to 100 ft, 90% reliability
  - Binary (yes/no)
  - Time <15s
  - Distance <= 60 feet distance >= 60 feet
Logistics

Tech review details

Detailed tech review schedule will be posted on the website
(15 minutes on, 15 minutes off)

Tentative review locations

Red: Pappalardo team area
Green: Pappalardo team area
Blue: wood shop
Yellow: boat house
Pink: Pappalardo north foyer
Orange: pool, Pappalardo parking lot
Purple: Pappalardo south conference room
Silver: Pappalardo parking lot
Logistics
Tech review contract plotting

scheduler posting later today for Wednesday evening, strictly self-serve Thursday

have a well prepared 5 minute demo for your video

email final contract by midnight Thursday
2.009: a product development story

realistically know where the problems are!
Prototype Launch!
aka 2.009 final presentations 2018

a polished event
seating for 1100

~250 in little theatre
live webcast, 40,000 unique IPs for 15+ min

you will receive email to invite people
Final presentation

General format

A new product launch
But more technical and less sales

7 minute presentation
4 minute discussion
5 minutes for transition

A reception
Final presentation
expectations
good product
good presentation
design, testing, (a lot of) practice
compendium of 2017 presentations
Final presentation

timing

presentations start at 7:30 PM sharp, December 10

scheduled run-throughs 3-6 PM in auditorium

reception (with dinner) at 9:45 PM, mingling at booths

program is not over until the guests leave

details will be posted on course website
Final presentation

general format

all should attend and be on time

display the merits of your design:
  the prototype
  key needs and user experience
  technical innovations
  business case
  outstanding issues

design of the presentation and its execution is graded
Final presentation
review form

Guest: ___________________________ Team: Blue
Project Name: ____________________

1. Quality of Presentation (25%)
Was the overall structure of the presentation honest and effective?

Was the customer need clear?

Was the market clear?

Was the product concept clear?

Was the presentation of technical challenges clear?

2. Business Assessment (15%)
Was the manufacturing cost assessment plausible and meaningful?

Was the development plan and market assessment plausible?
3. Technology (25%)
Were major technical challenges/innovations identified (one or two)?

Were the challenges appropriately understood and engineered?

4. Prototype (35%)
Were design details well executed? 
(e.g., structures, bearings, actuators, controls)

Were the human interfaces well resolved?

Were subsystems well defined, integrated, and reliable?

I believe the prototype could be refined to become a real product.

5. Overall Comments:
Final presentation

Time allocation (not prescribed order!)

1. the product, where and how it is used, use experience
2. who it is for and why should we care
3. how it works, principle of operation
4. market and preliminary business model
Final presentation

typical presentation media

demonstration/role playing

slides

video if needed

animations

examples in gallery
Final presentation
presentation props/set

think about what type of setting you would like
provide a context and demo platform
abstracted to not compete
self contained and rolling, transport constraints

I will lead on implementation, with help
meeting with your teams Tuesday of thanksgiving week
Final presentation

booth/reception area

locations after thanksgiving
Final presentation

*typical booth*

product set as platform to demonstrate product

an online brochure, URL and QR code in brochure

**name tags for all team members**
(With timeline and instructions)
And finally
this week +

keep your team working effectively
if your task is done and you have time, offer to help

team areas 10-5 Saturday and Monday

machine shop 6-9 PM T, W

30 minute design reviews Monday after tech review

no lecture Wednesday, watch for emails

team pictures and video Friday after tech review