EE/CpE 423
Senior Design
Fall 2004
Class 2 – 9/7/04
Agenda

• Introduction of Jason Berenbach (jberenba@stevens.edu) – Senior Design TA

• Announcement, issues

• Directions and more logistics.
Problem Definition

• I want to build a widget
• Exploration of gizmos
• Programming a thingamabob

These are not problems,
They are solutions
### Problem Definition

<table>
<thead>
<tr>
<th>These are not problems,</th>
<th>These are problems,</th>
</tr>
</thead>
<tbody>
<tr>
<td>I want to build a widget</td>
<td>The solution will follow</td>
</tr>
<tr>
<td>Exploration of gizmos</td>
<td></td>
</tr>
<tr>
<td>Programming a thingamabob</td>
<td></td>
</tr>
<tr>
<td>Gizmos are too hard to use while riding a unicycle</td>
<td>These are problems,</td>
</tr>
<tr>
<td>Widgets are too expensive for everyday users</td>
<td>The solution will follow</td>
</tr>
<tr>
<td>Thingamabob’s use too much power to last a day</td>
<td></td>
</tr>
<tr>
<td>Doohickeys are too large to carry in your pocket</td>
<td></td>
</tr>
</tbody>
</table>
I asked for 120 Problem Definitions by 9/3

• By 9/5, I had
  
  • 16 problem definitions
  • Including 13 other students
  • 5 more solutions
  • Including 6 other students

• Total represents ~40 students

• ~80 were not responsive and not included in others’ proposals.
Sunday Version of Problem Definitions

• http://www.ece.stevens-tech.edu/~bmcnair/senior_design-04-05/problems.html
September 14 Deliverable:

http://www.ece.stevens-tech.edu/sd/material/Project_advisor_form.doc

Forming a group to commit to an idea is the first priority.

Finding an advisor to work with you is your next priority.

A working project title is fine.

A paragraph to a page description is sufficient at this stage.
Senior Design Tasks – Fall ‘04

- Identify project
- Form group
- Select advisor
- Develop project proposal
  - Publish project proposal
- Develop final design report
  - Submit parts list, final design report
  - Oral/slide presentations

Weekly status reports

9/1/04 10/1 11/1 12/1 1/1/05
Stages in Development Cycle

- Basic Research
- Applied Research
- Exploratory Development
- Advanced Development
- Prototype / Initial Product Development
- Refinement of Technology
- Application of Technology
- Suitable for Senior Design

Development of Technology

Proof of Feasibility of Technology

Refinement of Technology

Application of Technology
Constraints That Can (Should?) Be Relaxed For Prototype

• Physical size
  – Level of integration (VLSI vs. FPGA, µC, LSI/MSI, etc.)

• Implementation platform
  – simulating a Palm on a laptop,
  – simulating functions in software that would normally be in hardware, and vice versa

• Feature set
  – What is essential to demonstrate concept, vs. what could be imagined/assumed
  – What is known to be doable vs. what is to be demonstrated

• Performance
  – Speed, capacity, etc.

• Environmental constraints
  – Operating temperature range, shock, vibration, etc.

➢ Focus on key attributes of end design, not every detail
Upcoming Discussion/Seminar Topics

- Patents, Trade-secrets, Intellectual Property and Technical Business Ethics
- GPS and Geolocation Services
- RS-232 Interfacing with Uncooperative, Non-Standard Devices
- Embedded systems
- I’ll add other topics as they occur to me or students propose them
Other Resources

• Circuit Cellar Magazine