Agenda

1. Notes about good projects
2. Some particulars from Drafts A & B
3. A close look at certain Final Draft components
4. The Design Review Meeting

What this is about

This is about your project, not about a meeting or a document.

If your project is set up properly, the document and the meetings are just reports on your project.
**Good Projects** [Ref: Supervisor’s Almanac, p. 16]

- Clear goal
- Testable project requirements
- Suitable scope & complexity to fit timeframe
- Requirements, design, timeframe, budget all solidly backed up

**Bad Projects**

- too open-ended and/or without a clear purpose (e.g. ‘play with a new technology and see what happens’)
- lacks design content. e.g. a paper survey
- “mushy” or impossible requirements (“high bandwidth”, “high throughput”, “maximize S/N”, “as small as possible”)
- Poor scheduling: uncertain lead times, superficial task breakdown, no slack, little time for integration / testing
- Little regard for “what if”s (Risk Management)

**Bad Reports**

- Poor raw material (project work not done)
- Poor organization
- Poor communication

**Hint:** Diagrams!!!! Tables!! Lists!!!
force organization, reveal holes in material, reduce writing, increase readability
(but you must have some explanation of each to draw it into the flow of the document)

**What we look for in the Proposal and Design Review**

- See the last 3 slides.
System-level overview

- Start with a System Block Diagram [ECE298-6.2]

Module-level descriptions

- Describe the modules individually so that their function, inputs, and outputs are clear

Refine Your Proposal

Explore different ways to document your technical design [Ref: ECE298 Notes, Section 5.5]

- Sequence Diagram
- Connection Diagram
- Timing Diagram
- Flow diagrams
- Sketches of final product concept

Sequence Diagram

customer

purchase order

confirmation

boxed product

shipping notice

invoice

sales

build order

product

manufacturing
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Following Directions

- Please do….

Plagiarism

- Incorrect or missing references on copied or almost copied work is plagiarism = cheating.
- Anything you submit that is not your own work that is presented as your work is cheating

A document on avoiding plagiarism has been placed in the Blackboard->Design Project documents. See also the instructions on IEEE referencing methods.

Unsupported Statements

“Since the earth was first formed, mankind has been waiting for a faster internet connection”

- Leave out generalized, unsupported statements
- If everyone knows it, it’s boring. If not, it must be supported, otherwise it’s incorrect and may be plagiarism!
(Seeming) Contradictions between ECC & Instructions

“I think it is worth emphasizing this: in the end, there is a lot of variation and engineers have to use a lot of judgment in their writing.” – Peter Weiss

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Sample Budget

<table>
<thead>
<tr>
<th>Item</th>
<th>Priority</th>
<th>Cost Price</th>
<th>Unit Cost</th>
<th>Quantity</th>
<th>Total Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS receiver (quote attached)</td>
<td>3</td>
<td>$950.00</td>
<td></td>
<td>1</td>
<td>$950.00</td>
</tr>
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<td>GPS receiver (quote attached)</td>
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<td>$449.00</td>
<td></td>
<td>1</td>
<td>$449.00</td>
</tr>
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<td>Software, SIM</td>
<td>NA</td>
<td>$250.00</td>
<td></td>
<td>1</td>
<td>$250.00</td>
</tr>
<tr>
<td>Software, SIM</td>
<td>NA</td>
<td>$250.00</td>
<td></td>
<td>1</td>
<td>$250.00</td>
</tr>
<tr>
<td>Software, SIM</td>
<td>NA</td>
<td>$250.00</td>
<td></td>
<td>1</td>
<td>$250.00</td>
</tr>
<tr>
<td>Software, SIM</td>
<td>NA</td>
<td>$250.00</td>
<td></td>
<td>1</td>
<td>$250.00</td>
</tr>
<tr>
<td>Total contribution for 2 students</td>
<td>NA</td>
<td>$150.00</td>
<td></td>
<td>1</td>
<td>$150.00</td>
</tr>
<tr>
<td>Net Amount Requested from Design Center</td>
<td>NA</td>
<td>$500.00</td>
<td></td>
<td>1</td>
<td>$500.00</td>
</tr>
</tbody>
</table>

Funding Requests

Request for funding support are made separately by email when you submit your final proposal draft

- Funding from industrial sponsors - most attractive
  
  a six-fold increase in cash contributions:
  
  Example:
  
  Cash and in-kind contributions from company (e.g. $100 cash + $100 in tech support = $200)
  Matched by UofT/Design Centre (add $200)
  Matched by OCE Connections program (add $200)
  Effective support for project = $600 (plus student contributions)

- Funding from industrial sponsors (cont)
  
  - Support letters required from sponsor. Samples posted.
  
  - Must have a cash component. In-kind contributions cannot exceed cash portion.
  
  - Intended for purchases of materials, ‘components’ (e.g. wireless transceiver), contract services, even travel expenses, but not for big capital purchases (e.g. PC’s, oscilloscopes)
  
  - Submit application to Kelly Chan or email to ask496@eecg.utoronto.ca
  
  - Details on website under ‘Students’ -> ‘Budget & Funding’
Ethics Review

- Required if testing on human or animal subjects
- Required if gathering personal information about people
- Requires completing an Ethics Review Form
- Submit completed form to Kelly Chan in EA316
- ECE496 staff will obtain necessary approvals from department and university
- Send questions to ask496@eecg.utoronto.ca.

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Design Review Meeting

Goals:
- defend team's Project Proposal
- highlight individual contributions, and work to date
- discuss implementation plan (technical method, delegation & scheduling of tasks, etc.)
- set target milestones for progress report

An industry perspective by Ross Gillett:

“We spend the session asking them the difficult questions and grading them on their understanding and their technical ability to defend their project. Design Reviews are a very real thing in engineering, and frequently are structured payment milestones, where a 'PASS' translates to a payment, while a 'FAIL' means that the payment is withheld until the issues identified at the review are resolved. I know this from (sometimes painful) experience.”

Sample Design Review Questions

- Discuss the other design alternatives you investigated.
- Is the work plan realistic? Fair?
- How do you plan to build it? Test it?
- What intermediate steps or experiments do you need?
- What equipment, hardware, or software do you need?
- What will you do if module X were unavailable?
Design Review Meeting Details

- 30-minutes long timeslots on weeknights, 7-9PM, Oct. 26th to Nov. 5th unless otherwise indicated by your administrator.
- Supervisors can attend. Please inform administrator in advance.
- Be prompt!

1. Phang  Tue & Thu.  BA5287A
2. Kunov  Arranged by email  TBD
3. Korf   Tue & Thu.  BA5281
4. Anderson  Tue & Thu.  BA8229
5. Timorabadi  Mon & Wed  SFB560
6. Taglione  Tue & Thu.  SFB560
7. Gillett  Wed & Thu.  SF2104

Booking an Appointment

- Sign up sheets will be posted up in the Design Centre, SFB 520, starting tomorrow, Oct. 9, 9am-5pm
1. Select a time when all your team-mates (and supervisor if he/she wishes to attend) can be at the meeting.
2. Sign up for a time slot by printing your project ID and email address of the main contact person for the team.
3. Mark the date, time, and location of your meeting on your calendar!
4. On Oct. 29th, on your final draft, write on the front of your proposal the time and date of the appointment before dropping it into the box.

Design Review Meeting Details

- Bring: marked drafts A and B
- Arrive at your appointment a few minutes early.
- Review Administrator's comments in Draft A.

A Good Method of Preparation for the DRM

For final design, in particular: (Compliance matrix)

<table>
<thead>
<tr>
<th>Requirement or Decomposed Requirement</th>
<th>How the Proposed Design Complies</th>
<th>How the Proposed Design will be Verified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shall be red</td>
<td>Outer housing painted red</td>
<td>By design specification</td>
</tr>
<tr>
<td>Software shall have a worst timing path of 5.0 msec</td>
<td>Analysis and adjustment of critical areas</td>
<td>Final software timing analysis</td>
</tr>
<tr>
<td>Shall have less than 2% voltage ripple</td>
<td>Components xx and yy will be adjusted until ripple is under 2%</td>
<td>Measurement of final design</td>
</tr>
</tbody>
</table>
Recommendation: Bring to design review

- Goal statement and list of requirements (in bullet statements)
- Top level system diagram showing functional blocks, inputs, outputs and interfaces
- Compliance matrix (as already discussed), which repeats the requirements and adds compliance and verification methods
- Project schedule

Going Forward

- Read all documentation / meet course requirements
- Avoid common problems: use Checklist: 'List of Common Problems' under 'Students' -> 'Grading'
- Make timely decisions
- Don’t put off ECE496 work
- Review these slides

Upcoming Microcontroller Workshops

- The tutorial will be comprised of four sessions of one hour (or more, if needed), in which you will practice your skills on putting a given microcontroller circuit together from start to finish.
- Session Dates: Oct. 15 & 29th, Nov. 12 & 19th
- Sign up by emailing Bruno Korst at bkf@comm.utoronto.ca
- Limited space (around ~20 students), 1 member per team

Done! …

Q&A