OUTLINE

- Administrative Details:

  - Due Midnight Tonight: Final Design Choice, Priority Checkmark Chart and Best-of-Class Chart, Weekly Project Meeting Notes, Writing Assignment 2.

  - Tesla trip: Pick up 1:45pm March 3 at the Gunn Building (SIEPR), 366 Galvez St (at Memorial Way). Let us know in advance if not coming. Text us if running late.

  - Due Next Week: Detailed description/block diagram(s), Schedule, Cost Estimate, Prototype/model/proof of concept description (Optional).
OUTLINE (Cont)

- Lecture
  - Finalizing and Communicating Design Outcomes

- Speaker
  - Benoit Schillings, Yahoo
Date: Wednesday 3/15

Time: 3:30-6:30PM
- Assignment of Time Slots

Location: 103 Littlefield Center

Format: 30-minute presentation
- Set up: 5 minutes
- Presentation: 20 minutes
- Questions: 5 minutes
- Presentation by ALL team members

Guests:
- Project Advisors
- Family & Friends
Date: Tuesday 3/21

Time: Midnight

- Please submit report electronically (not paper) to Andrea & My (make sure you have correct email addresses).
- No late submission will be accepted – no exceptions!

Format:

- Each team member must write at least one section. Please indicate clearly name(s) of author(s) for each section.
- Please select one member to be the editor of report and indicate in the report who is the editor.
LECTURE

FINALIZING AND COMMUNICATING
DESIGN OUTCOMES
FINALIZING AND COMMUNICATING DESIGN OUTCOMES

- Models, Prototypes, and Proofs of Concept
- Design Review
- Presentation
- Report
Models, Prototypes, and Proofs of Concept

- A model is “a miniature representation of something,” or a “pattern of something to be made,” or “an example for imitation or emulation.”
  - Used to represent some device or process.
  - May be paper models or computer models or physical models.
  - Used to illustrate certain behaviors or phenomena to verify the validity of an underlying theory.
  - Usually smaller and made of different materials than final design.
  - Usually tested in a lab or other controlled environment.

- A proof of concept is a model of some part of a design
  - Used specifically to test whether a particular concept will actually work as proposed.
  - Proof-of-concept tests entail controlled experiments to prove or disprove a concept.

- Prototypes are “original models on which something is patterned.”
  - Full-scale and usually functional forms of a new design (such as an airplane).
  - Typically is a working model of the design.
  - Typically tested in the operating environments where the design will be used.

All three can be used to communicate design ideas to clients.
When/What to do as part of your design?

- Models typically done early in the design
- Proof of concept typically done mid-way to validate certain aspects of the design and/or to get customers or financing
- Prototypes typically done towards the end to validate the entire design
Purpose of a Prototype

“I haven’t failed. I’ve just found 10,000 ways that won’t work.”

Thomas Edison
Failed Prototypes

Failed Prototype #2
Failed Prototype #7

THE WORLD'S FIRST AND LAST 5 DOOR SEDAN.
Prototyping in Chip Design: FPGAs

- Chip design starts with hardware and software development
- Typically implemented in an FPGA prior to tapeout
- Many bugs in the design caught via the FPGA
Communicating Design Outcomes

Well, I've finished the project on time and on budget!

That means I've given you too much time and too much money!
GENERAL GUIDELINES

- Know your purpose.
- Know your audience.
- Choose and organize the content around your purpose and your audience.
- Write precisely and clearly.
- Design your pages well.
- Think visually.
- Write ethically!
DESIGN REVIEW

- **Purpose:** Team presents its design to an audience who can
  - Assess the design;
  - Raise questions;
  - Offer suggestions.

- **Audience:** Technical professionals.

- **Duration:** Long in duration; detailed in presentation.

- **Frequency:** Often have multiple design reviews
  - Preliminary and critical/final design reviews.
Presentations are made for different reasons:

- Before project.

- During project:
  - Initial findings.
  - Alternatives under consideration.
  - Progress toward completion.

- End of project: report to clients, other stakeholders and interested parties.
PRESENTATION OUTLINE

- Beginning
  - Title Slide.
  - Overview.
  - Problem statement.
  - Background material on problem.
  - Key objectives.
  - Functions that design must perform.
PRESENTATION OUTLINE (CONT)

- Alternatives
  - Design alternatives.
  - Highlights of evaluation procedures and outcomes.
- Choice
  - Selected design.
  - Features of design.
  - Proof of concept testing.
PRESENTATION OUTLINE (CONT)

- Ending
  - Demonstration of prototype.
  - Conclusion(s).
FINAL REPORT

- **Purpose:** to ensure client’s thoughtful acceptance of team’s design choices.
  - Results should be summarized in clear, understandable language.

- **Goal:** lucid description of design outcomes.
  - *Not chronologies of team’s work.*
  - *Want to clearly convey design choices and why made.*

- The larger the writing team, the greater the need for a single editor.
WRITING FOR THE CLIENT

- The report is written for the client
  - Conveys to client reasoning behind the team’s design choices.
- The report requires:
  - Clear presentation of design problem and needs to be met.
  - Discussion of design alternatives to meet these needs.
  - Clear presentation of chosen design and basis for this design choice.
Design reports typically include the following:

- Abstract.
- Executive summary.
- Introduction and overview.
- Analysis of the problem, including relevant prior work.
- Design alternatives considered.
- Evaluation of design alternatives and basis for design selection.
- Results of alternatives analysis.
- Design selection.
- Supporting materials: drawings, fabrication specs, etc.
FROM ROUGH OUTLINE TO FINAL REPORT

- Rough outline should look like a table of contents with section, subsection, and subsubsection titles.

- Start with the titles of the sections
  - Include a few sentences of what should be described in that section.

- Then create titles of subsections
  - Include a few sentences of what is described there.

- Then create titles of subsubsections
  - Include a few sentences of what is described there.

- If subsubsections are not sufficient to organize your ideas, then reorganize your paper structure.
As you write your final report, you will realize things that are missing or should be moved to another section

- Do not feel obligated to stick to your outline.
- There is not necessarily an optimal organization, but some are better than others.

- It is often wise to write the abstract and executive summary last
  - These are also the hardest parts to write.

- It’s a good idea to write your introduction first.
In a team project, you will often have different people contributing to different sections.

This can create discontinuities, repetition, and heterogeneous styles.

The report should read as if one person wrote it.

Often its best if one person does write it, or at least takes full responsibility for integrating all the pieces. This is the document editor.

It is also good to assign an editor for each section that integrates the various pieces into a coherent whole before handing off to the document editor.
GROUP EXERCISE

- You are team leader and editor for your team’s design report.
- One of your team members does not submit their required documentation.
- Another has a very poor writing style.
- A third severely criticizes contributions from others.

*How would you handle these issues?*