Proposals and Oral Presentations

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Introduction

• Communication is key to
  – Manage your project
  – Getting your project funded
  – Sell the merits of your project

• Communication skills required
  – Written proposals
  – Oral presentations
Outline

• Proposals
  – Know your audience
  – Proposal structure

• Oral Presentation
  – Know your audience
  – Organization and Focus
  – Presentation Style
  – Time Management
Proposal: know your audience

• Research projects
  – Proposals to government agencies are all peer reviewed.
    • National Science Foundation funds 10-15% of submitted proposal
    • Other external proposals also undergo competitive reviews by panels or individuals
      • Judged on strength of ideas, quality of writing, ability to deliver, and team’s prior record
  – Interested in advancement of science and/or engineering
  – Need to convince agency your ideas advance science/engineering
  – If there is a specific question, ANSWER IT!
    • $$$ for ways to improve spectral efficiency of optical comm, etc
    • So answer HOW you’re going to do that.
Proposal: know your audience

- **High Tech Start-ups**
  - Proposals to Venture Capital firms are reviewed by firm’s partners
    - Most venture capital firms fund <1% of proposal
    - VC firm may hire experts or consultants for due diligence
    - Judge on strength of team members, market appetite for the ideas, and quality of ideas
  - Interested in making money.
    - What are the chances of this company going public? How soon?
    - What are the chances that a large corporation will buy this company?
  - Need to convince VC that the idea will make money
Proposal: know your audience

• Internal project proposals
  – Proposals will be reviewed by various levels of management
    • Management may or may not be technical
    • Final project proposal may need sign off from different divisions of the company including sales, marketing, support, manufacturing, etc.
  – Proposal needs to make a business case
    • Does new project/product align with current business?
    • Do the projected revenues justify the associated costs of project development?
    • Are there available resources within the company to complete the project? - money, people, equipment, etc.
    • If pure research, how does it advance the long-term goals of company?
Proposal: know your audience

• Design proposals
  – Proposals will be reviewed by engineering peers or managers
    • Reviewers will be technical but may not be on same design team
  – Proposal needs to show that the design meets requirements
    • Is the design technically correct?
    • Have you met all specifications?
    • Have you considered all conditions?
    • Does the schedule and budget make sense?
    • Do you have a reasonable test plan?
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Basic Outline

• Title
• Summary
• Background
• Solution [technical proposal]
• Project phases, timing, milestones
• Budget
• Information about personnel and collaborators
Introductory Elements

- Inviting but meaningful
- Summary [clear statement of what is proposed]
- Background [statement of the problem to be solved including importance].
Technical Proposal

• Requirements/Specifications
  – Identify all constraints
  – Any standards that you need to comply with?
• Theory
  – Explain relevant theory
• Approach
  – State your potential design solutions
• Preliminary evaluations or experimental results
Project Plan

- Phases
- Timing
- Milestones [what are the key intermediate accomplishments]
- Graphical presentation works well here.
- Break down the work into modules. Look for a logical organization. What tasks must be completed before subsequent phases can be undertaken? Which tasks can be done in parallel?
Budget

• Find out how much your sponsor is willing to spend
• Should be reasonable for what you propose to do
• May have two budgets
  – Development cost
  – Per-unit cost
• Typical categories
  – Salaries [include indirect costs]
  – Equipment
  – Supplies
  – Travel
  – Administrative
  – Overhead [40-60% universities, >100% companies]
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Oral Presentation: Know your audience

• Clearly identify the audience’s depth of knowledge
  – Do not derive semiconductor physics to investment bankers
  – Do show fundamental understanding of engineering to whoever is giving the grades!

• Clearly identify the audience’s interests
  – Investment Bankers want to make $$$$  
  – Your professors want to make sure you understand engineering 
  – Everyone likes to be entertained!
Know your audience

• Do research on your audience.
• What does the audience want to hear??
• Venture Capitalists?
  – How you’re going to make them money
• Naval Research Managers?
  – How you’re going to improve their ships’ capability to communicate
• Senior Design Project Proposals?
  – Demonstrate that your design will work and that you know what you’re talking about
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  – Presentation Style
  – Have fun! Enthusiasm is contagious
• What is the point? Why am I here?
  – oral presentations
• For long talk, can lose audience easy
  – Avoid lengthy equations
  – Unavoidable in most ECE lectures
  – A picture is worth a thousand words
  – NOT, a picture with a thousand words

Too Many Details for most talks
Focus

• Remind audience of important points.

• Detailed Technical figures may be unavoidable in engineering presentations.

Details visually...
Organization: Provide outline of talk

• Proposals
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  – Proposal structure

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Organization

- Easy for audience to lose big picture
- Get lost in details
- Useful tip: redisplay the talk outline for each topic
- Highlight present topic
- Remind audience the organization of the talk

Outline

- Oral Presentations
  - Know your audience
  - Organization and Focus
  - Talk to the audience (and not to the slides)
  - Time Management
Organization: Basic Structure

- Start with Introduction
  - Motivations
  - Why is this interesting
- Provide outline of the talk
  - Can be redisplayed to show topic progression
- Background material as needed
- Your new ideas
  - New and better ways to do ...ship2ship communications, make $$, lose weight, etc
- Defend your ideas
  - Examples are helpful
- Conclusion
Organization

• Powerpoint Rules
  – Keep it simple
    • Cut clutter
    • At the most two font families
    • No more than one or two charts or figures per slide
  – 666 rule
    • 6 words per bullet
    • 6 bullets per page
    • 6 word slides in a row
  – Be consistent
Organization

• Powerpoint Sins (Joseph Sommerville, http://entrepreneurs.about.com/cs/marketing/a/7sinsofppt.htm)
  – Slide Transitions and Sound Effects
  – Standard clipart
  – Presentation templates
  – Text-Heavy slides
  – Text and images are too small
  – Reading the slides
  – Faith in technology
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Talk to the audience

- Obtain and maintain interest
  - Make eye contact with people in different parts of the room
  - Drive home the point with examples that emphasize your point
  - Face the audience not the screen or computer
  - Don’t read from notes
Dress Code

• Depends on the setting
• Conferences can range from shorts/t-shirts to suits
  – Find out ahead of time what the prevailing dress code is
  – Always err to the more conservative
  – At a minimum – business casual
• Proposals
  – Usually suits - at a minimum blazer with tie
Humor

- Be appropriate!
- Invited talks, lectures, okay to use some jokes.
- People are more awake if they’re laughing
- Proposal talks, i.e. asking for money in a competitive bid, be more serious.
- Humor maybe misconstrued as not taking the task seriously
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Time Management

• First rule of presentations
  – KNOW HOW MUCH TIME YOU HAVE!!!
  – Nothing irritates an audience more than a presentation that runs long - especially if it's boring

• Keep a watch or clock easily visible

• Know ahead of time which slides you can skip if you are running long
  – Skip implementation details
  – Show results - that’s what impresses people

• Good rule of thumb - 1 to 2 minutes per slide
Time Management

• Best way to judge time is to practice ahead of time

• Do a run through as a team and with your advisor

• Practice as if you were doing the actual presentation
  – You can catch places where you may not be expressing the material clearly enough
  – Use the notes feature to help you

• Practice enough times so that it is natural
  – You should be able to know what the next slide is so you can transition naturally
Conclusion

- **Design Proposals**
  - Demonstrate the feasibility of design
  - Present your case clearly and concisely

- **Oral presentations**
  - Know your audience
  - Organize and focus
  - Talk to your audience
  - Time Management