Organizing a ~30-minute prelim/final talk

This pie chart shows how much pie I ate while making this chart.
The Oral Presentation for the Prelim or Thesis

ANATOMY OF A GROUP MEETING PRESENTATION

- pulled all-nighter. finished slides 5 minutes before meeting started.
- trying to come up with insightful question that will impress advisor.
- first year. only person actually paying attention. has no clue what's going on.
- relieved she doesn't have to explain why she hasn't done anything this week.
- starving. thought there'd be food at meeting.
- has written two proposals in his head since meeting started.

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How Do You Start Drafting Your Presentation?

First, draft an outline for your presentation!!
Example organization of ~30-minute prelim talk

**Background and Introduction** (7–9 minutes)

⇒ 5–6 slides

~1 Title slide - Your name, advisor’s name, research title
~1 Outline slide – Organization of talk
~1 Overview slide – Why is this research important?
~2-3 Background slides – Provides essential background for non-experts

**Methods and Preliminary Results** (7–9 minutes)

⇒ 5–6 slides

~2-3 Methods slides – Theoretical/experimental methods used
~0-3 Preliminary results slides – Proof-of-principle results
Example organization of ~30-minute prelim talk

**Proposed Research** (10–12 minutes)
⇒ 5–6 slides
~1-2 slides per proposed project

**Summary and Acknowledgments** (1-2 minutes)
⇒ 2 slides
  1 Summary slide - Review the main points
  1 Acknowledgment slide – Acknowledge collaborators, funding agencies, helpful colleagues/staff, etc.

**Questions**
⇒ 3–N back-up slides – Anticipate questions that might arise
The title slide and outline prepares the audience to listen and shows organization of talk

Title slide
Your name and affiliation
Your advisor
Venue and date
Attention-getting graphic

Outline or overview of presentation
Prepares the audience to listen
Provides a logical structure for your talk
Provides motivation and context
Summarizes key points (limit to two or three for a ~30-minute talk)
The “body” of your presentation is the intellectual content of your talk

- Problem statement, motivation
- Previous work, essential background info
- Methods
- Results and Discussion
- Proposed work (prelim)
Provide a “summary” slide

Recap key preliminary results
Reiterate proposed projects

This slide will probably stay on the screen during the question period and will thus get the longest audience exposure—make it count!
Tips for preparing your talk

Adjust the presentation to your audience! Your committee are not all experts...make sure you have sufficient background to orient all members.

You don’t have to tell the committee everything about your research: Identify the 2-3 main points you can reasonably convey in a 30-minute talk.

Create an outline of your talk, i.e., have a logical organization: You can use the same outline as used for your prelim paper.
Tips for preparing your talk (cont.)

Have only 1 idea per slide

Use the header to state the main idea of the slide, and use the body of the slide to support that idea

Use well-labeled graphs and figures to illustrate your key points...this makes the slide more real and interesting to the audience

Avoid too much text....

- Fillets reduce leading edge vortices in nature and in engineering
  - Fillet on dorsal fin of shark
  - Fillet on Seafloor submarine

- Literature Review:
  - Heifier developed a dynamic thermal model for semiconductor temperature-dependent IGBT elecrical and thermal characterization. The model in terms of the instantaneous temperature, which depends upon the model and design parameters. The thermal behavior of the silicon chip is compared with the results of the circuit simulation.
  - Adams and coworkers modeled the interactions between the heat sources, the thermal resistivity of the walls, and the thermal boundary layer. While it was difficult to identify which physical effects and level of detail were needed, the results were compared to the thermal behavior of discretely heated enclosures.
  - Chen, Wu and coworkers are modeling of thermal and electrical behavior using several commercial softwares (1-DEAS, Maxwell, Flotherm and Saber) and 3-D, transient approaches.
Tips for preparing your talk (cont.)

Have only 1 idea per slide

Use the header to state the main idea of the slide, and use the body of the slide to support that idea

Use well-labeled graphs and figures to illustrate your key points...this makes the slide more real and interesting to the audience

….or too many distracting images
Label all elements in a figure

- Point out important features
- Label both axes of graphs and show units
- Provide a brief caption
- Give credit to source

The Nike laser system uses discharge pre-amplifiers. *(Courtesy US Navy)*

Sample normalized signals from the two-beam optical drive. *(Courtesy C. Michael)*
Presenting data is your most important and challenging task

- Avoid copying a graph from a formal article – they have a different style, e.g., labels are too small
- Use color and make lines thick, labels legible
- Label axes and annotate important points with arrows and add words
- Use tables sparingly – if used highlight important parts
Show the equipment IF it helps as part of your proof – but sparingly, not just because you love it

- **Photographs** give scale and reality – but add labels
- **Schematics** provide concept
- **Diagrams** strip away unnecessary details
- **ALL OF THESE** can be useful in combination
Use equations sparingly

Use equations only when necessary

If you use equations
   Slow down
   Talk through step by step
   Explain relevance
   Combine with a picture that illustrates the physical principle involved

If you must use mathematics in your presentation, slow down, and talk the audience through each equation...
The Radiative Transfer Equation

\[ \frac{dI}{ds} = -In(q_a + q_s) + \mathcal{S} \]

Number of Photons
Density of Dust Grains
Absorption Coefficient
Scattering Coefficient
(From geometry and composition of dust grains)

Requirements to solve analytically:
• \( n \) is a constant
• \( q_a = 0 \) or \( q_s = 0 \)

We want turbulent clouds. \( n \) is not a constant
Remember, your goal is to convey your ideas, so avoid distracting text and effects!

Don’t overuse PowerPoint animations and sounds!

Make sure there is good contrast between text and background

Use simple (or no) backgrounds on slides

CP
- Parity invariance fails, combine it with charge conjugation to create a new invariant
- Converts the right-handed anti-neutrino into a left-handed neutrino—exactly what we observe in nature
- Neutral kaon experiment
Eschew weird fonts

Don’t use calligraphy or serif fonts

USE THE SAME FONT THROUGHOUT THE TALK

Make all text at least 20 pt
Use “normal” colors

DON’T use red/green or red/blue as contrasting colors

Make sure colors looks the way you expect using an LCD projector!

Avoid neon colors and pastels

Don’t use many random colors; people expect color to mean something.

Superconductivity is an electronic state of matter that exists below certain currents, magnetic fields, and temperatures.

I - Current
B - Magnetic Field
T - Temperature

I_c - Critical Current
B_c - Critical Magnetic Field
T_c - Critical Temperature

Strive for easy reading.
“Embed” special fonts in PPT

(1). Open the document in PowerPoint
(2). Click on the "Tools" tab on the top menu
(3). Click on the "Options" link
(4). Click on the "Save" tab
(5). Locate “Font options for current document only” and “Embed TrueType fonts”
(6). Click in the check box to turn on the option
Tips for presenting your prelim/final talk

Astrophysics made simple
Pointers for giving the best possible talk:

Maintain eye contact with audience
  Don’t stare at screen or monitor

Do not read your talk!

Avoid nervous mannerisms
  Pacing, bobbing, waving arms, jingling coins

Use laser pointer or stick directed at screen
  Don’t point directly at overhead on projector
  Don’t block the screen

Train yourself to speak slowly and distinctly—practice!

Avoid “fillers”: “uh”, “like”, “um”, “okay”

Be enthusiastic!
  If you don’t act excited by your results, don’t expect the audience to be!
Pointers for giving the best possible talk:

Don’t show any material on slides (e.g., figures, equations, text, etc.) you can’t explain!! This will invite questions you don’t want!!

Rehearse how you’ll end your talk
Don’t end with “Well, I guess that’s it…”
Don’t just stop and let the committee guess that you’re done
Thank the audience!
The best way to prepare for a talk is to **Know Your Material**

**Practice, practice, practice**

**Focus on communicating, not performing**
- Humor is good, but don’t overdo it

**Keep explanations simple**

**Prepare key phrases and words**
- It’s okay to write out material first
- Write the key point to make for each slide
- If the slide doesn’t have a point, eliminate it!!!

**Stay on track**
- Small (planned) digressions fine if motivated, but get back on track (shows you are paying attention to audience)

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It takes three weeks to prepare a good ad-lib speech
Check *everything* just before your talk

**Check the projector**
- Make sure you know how to turn it on
- See that it is plugged in
- Check which way to position your slides
- Adjust the focus

**Check microphones, pointer, other tools**

**Arrange your slides, notes, and other materials**
- Be able to reach everything without moving
- Be able to go through your slides without fumbling

**Have a “clock” handy to check the time**