Best Practices for Presentation Design and Delivery

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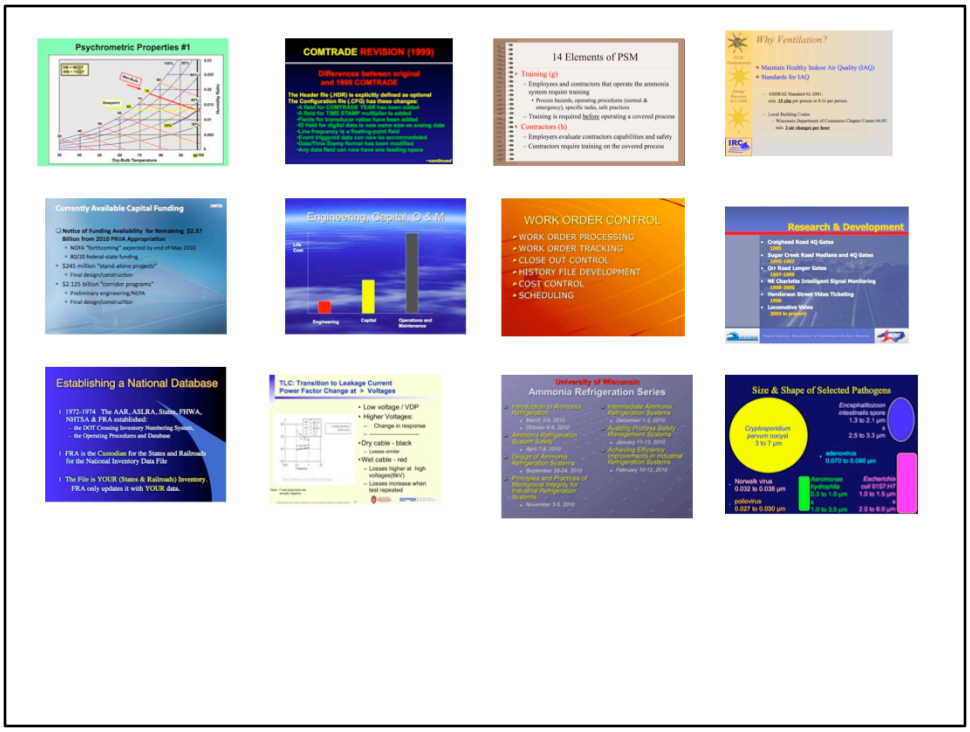
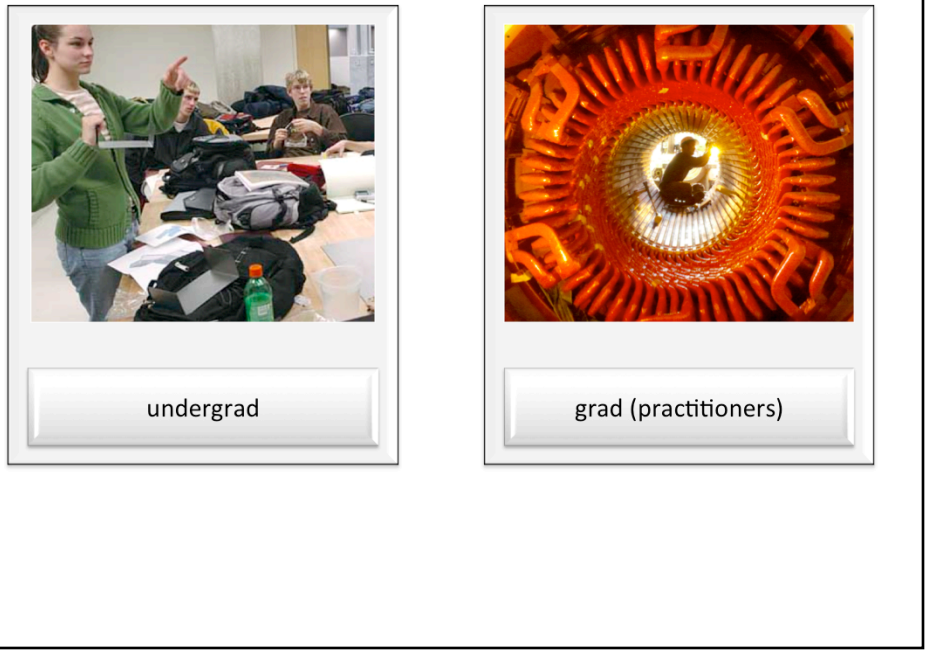
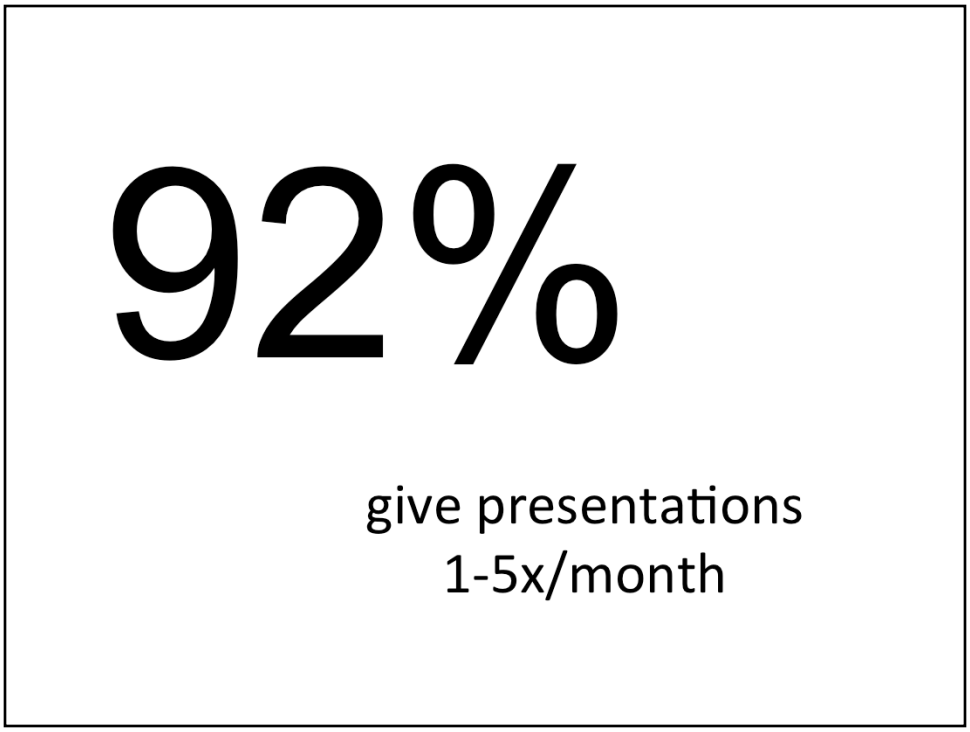


These examples are all slides from various courses that I have worked with in the past. These are prime examples of what NOT to do. There are too many bullets and too much visual junk.

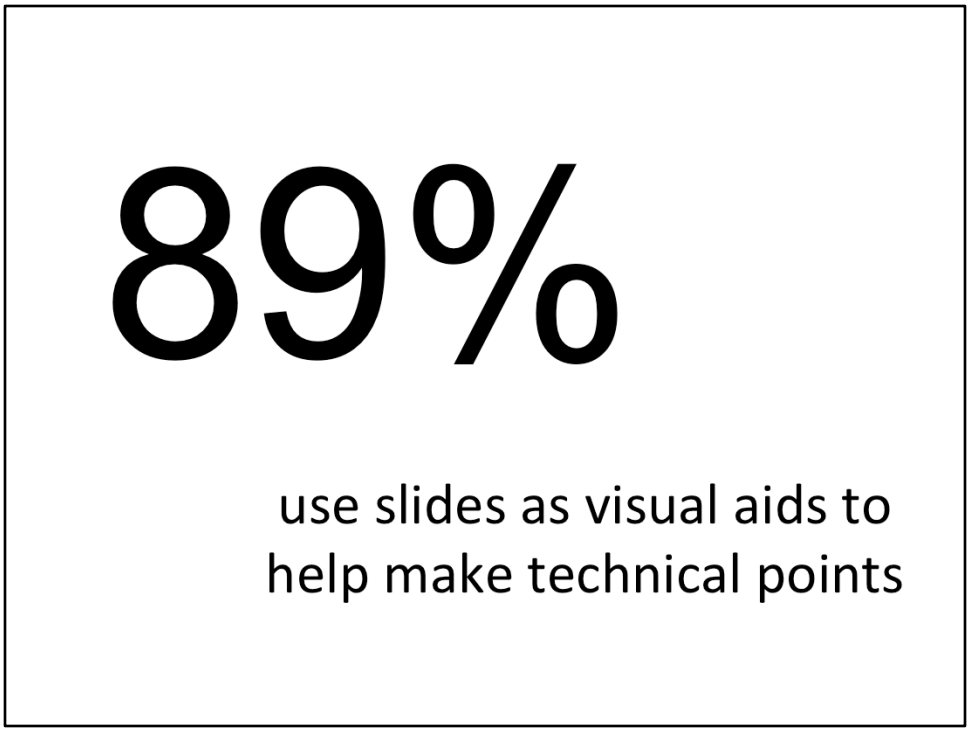


History about Traci's past work…

Grad teaching:
I work in the U of Wisconsin's Masters of Engineering in Professional Practice and Masters of Engineering in Engine Systems programs. These are masters degrees specifically for practicing engineers; to be admitted, you have to be at least 5 years into your career. This informs my work and my advice greatly…and here's why.



Over the last couple of years, my colleague Christine Nicometo and I have started to take a somewhat informal survey of incoming students to these Masters programs. Here are some results.



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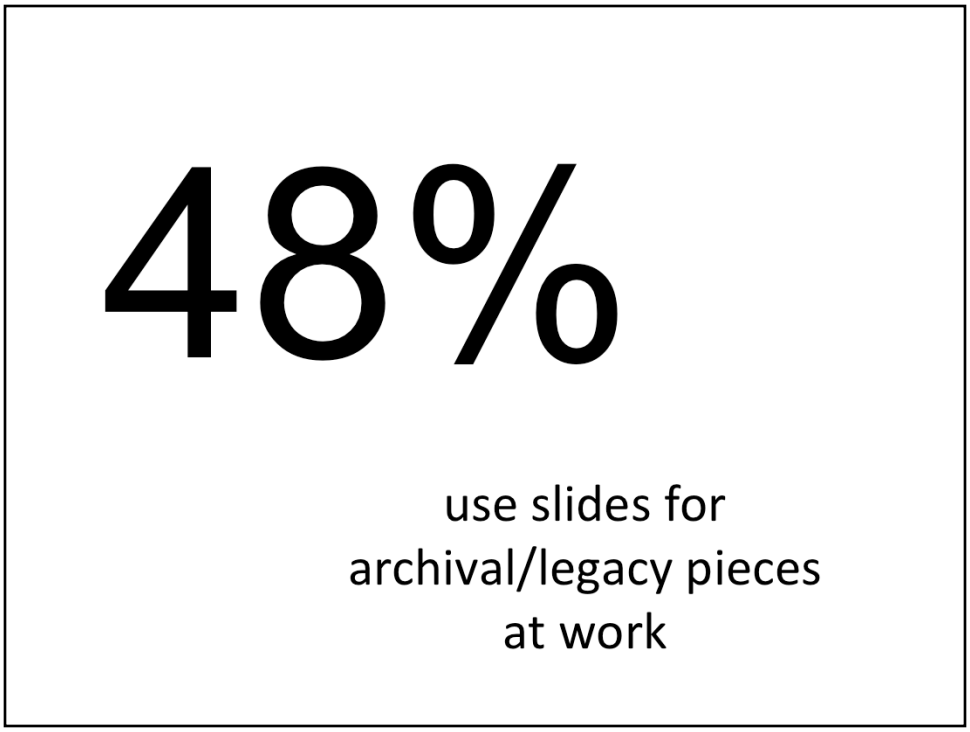

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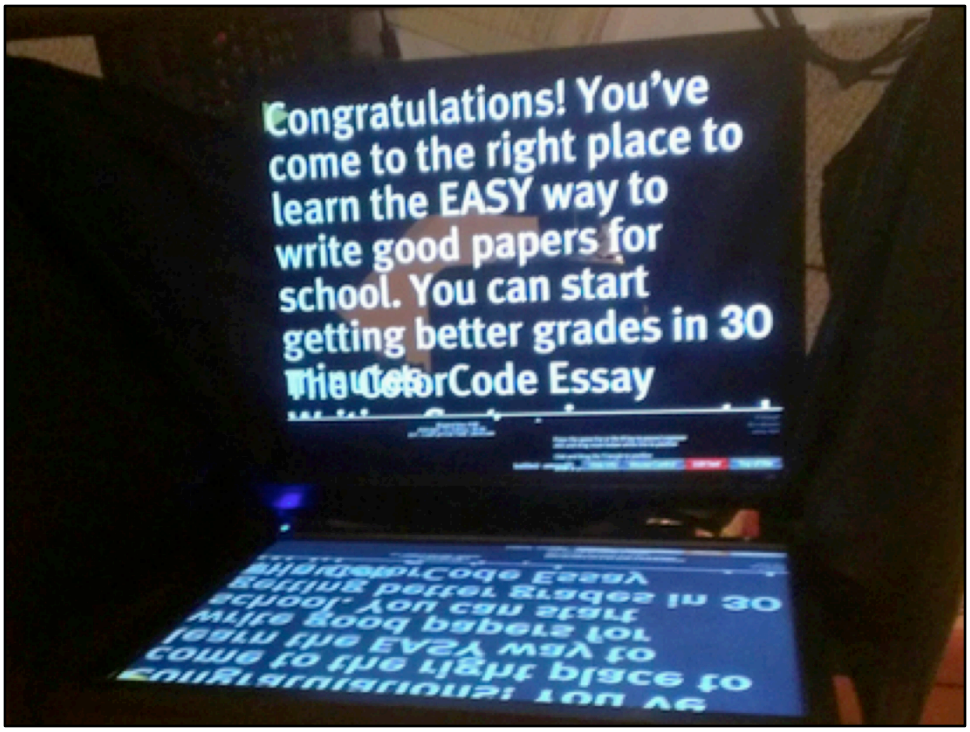
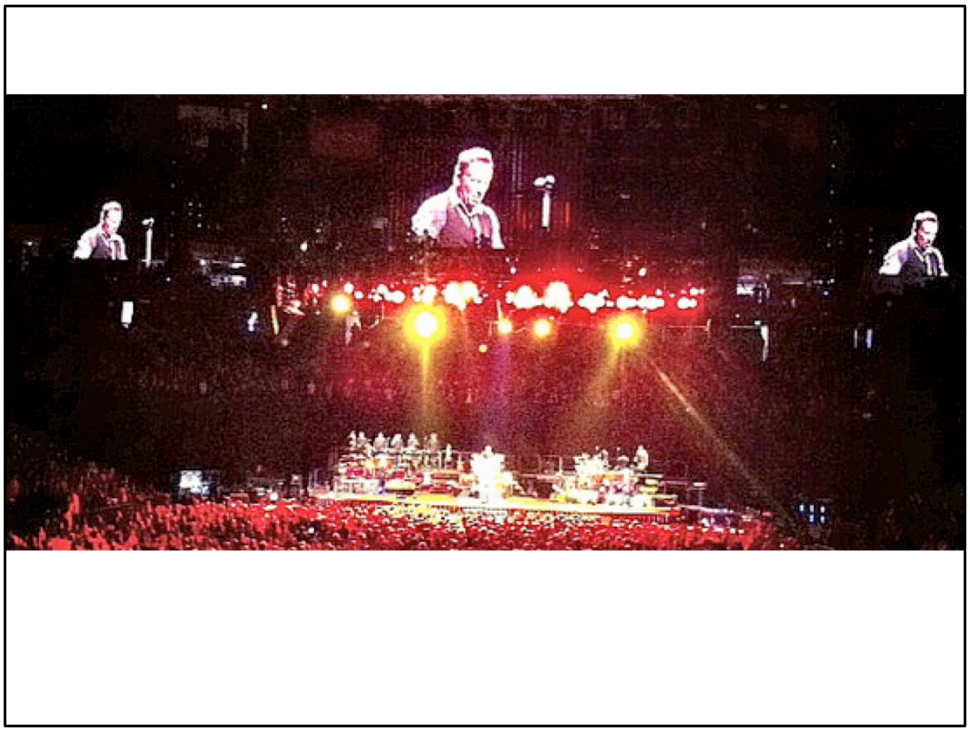
most

admit to using slides as teleprompters



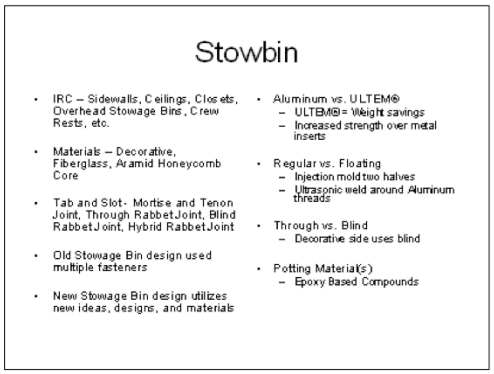
As subject matter experts, we do not need (or SHOULD not need) telemprompters.



Instead, imagine your slides as a JumbTron, backing you up as you take the stage as a technical expert.

The old ways don't work for anyone.

Traditional model =

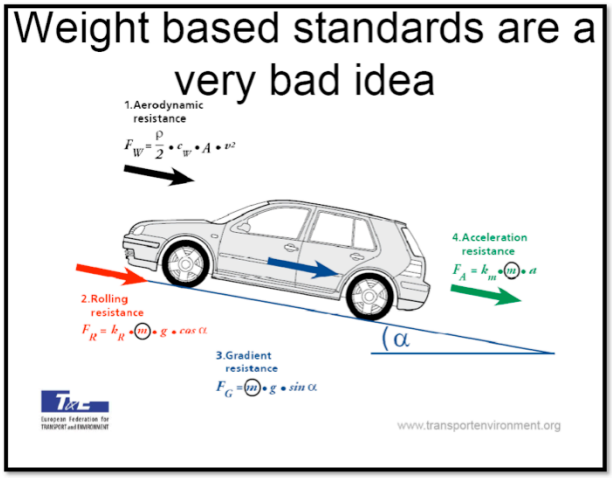


Herein, we are going to give you some basic guidelines about slide creation. As well, we will provide you with some new methods, grounded in research about learning, that will aid you in creating better slides that will reach your audience more readily.

The old bullet-ridden slides are holding you back!

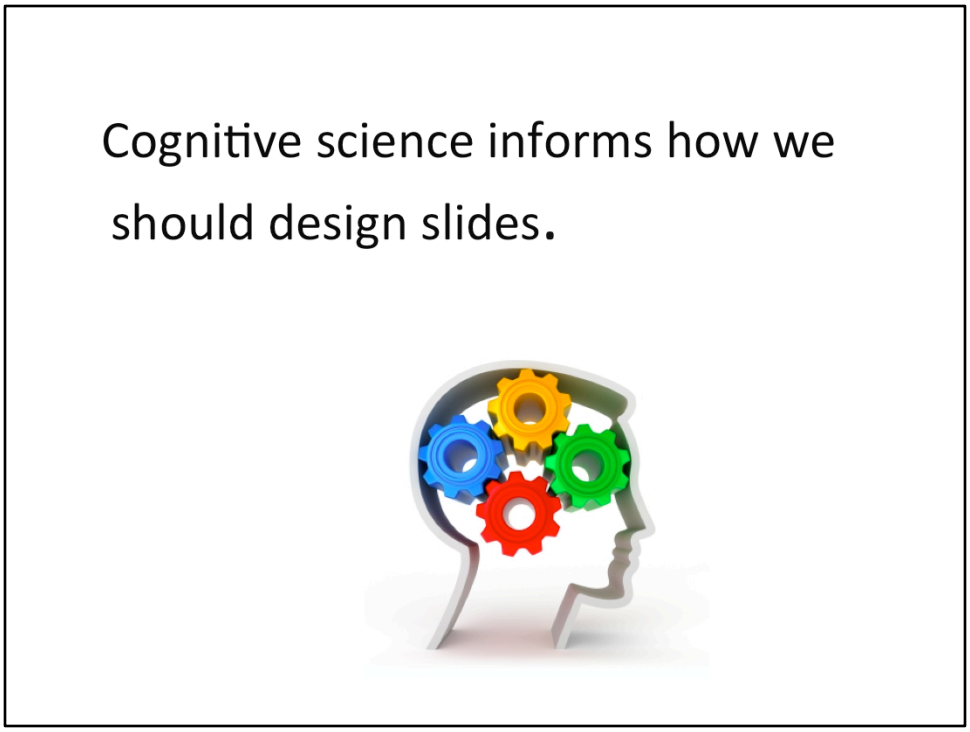
There are better alternatives that exist.

New model =



Better slides can markedly aid audience retention, display your message more clearly, and create sets of notes that have more meaning for your audience.

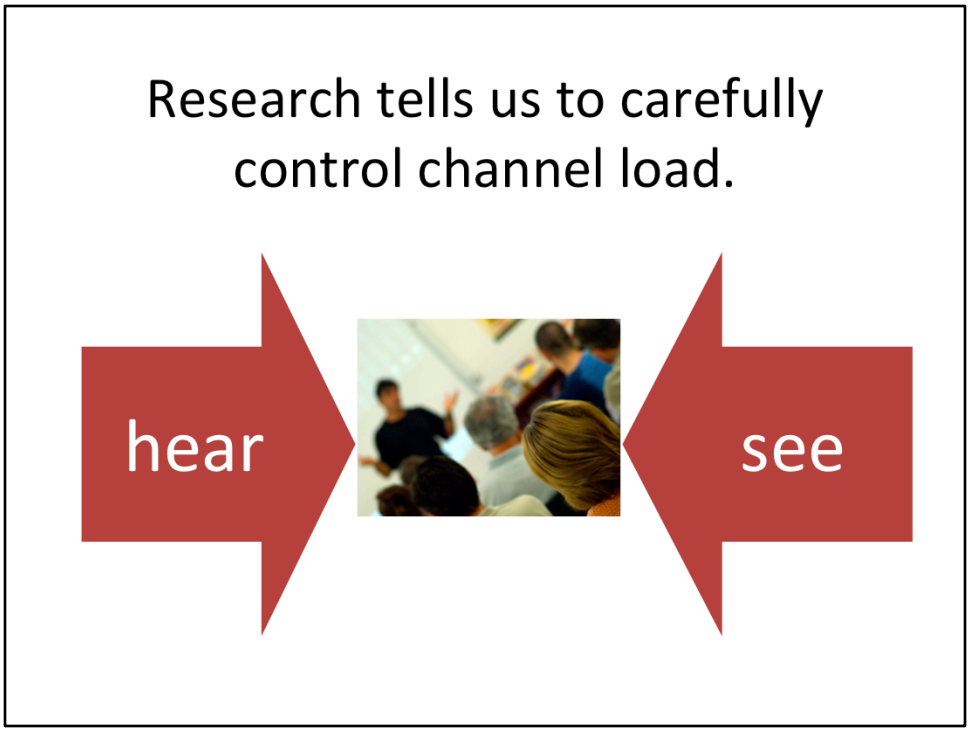
This module will reveal several techniques that can increase information retention by audience members.



So let's look at how recent science affects the way we should be working with our slides.

In recent years, cognitive psychology has taught us a great deal about the ways our brains use, adapt, and learn from various forms of multimedia. Much of this work was pioneered by Dr. Richard Mayer from UC Santa Barbara and informs several of the methods that we will be discussing. The most significant finding we can take from Mayer's work involves the concept that we have limited capacity in verbal and visual channels. For example, if we are being both talked to and simultaneously trying to read information, our comprehension and retention of concepts from either the talk or the text is going to be extremely limited. In order to manage the cognitive load for optimal comprehension and retention, we must limit the amount of information pushed through each channel.

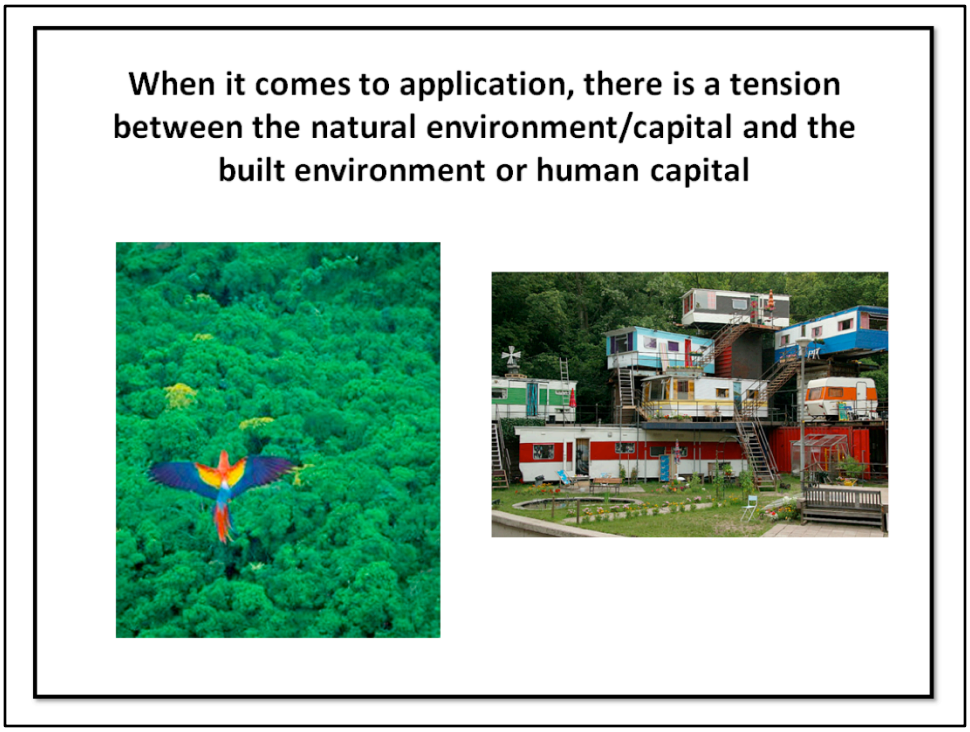
Sources:
Richard Mayer
John Sweller



For presentation planning, this cognitive framework gives us clear design guidelines:

We must limit our use of text on slides and make better use of easier, visual cues and devices that are better comprehended and retained by our audiences.

Specifically, we want to avoid making our audiences struggle to decide whether to listen or read during our presentations. This is true for both face to face talks, webinars, and captured video.



When you begin creating your slides, plan to focus on ONE main idea per slide.

Then, as you begin to craft your talk more fully, implement some of the following best practices for a stronger talk. This header is too long and it needs to be shortened, but the presenter had the right idea…

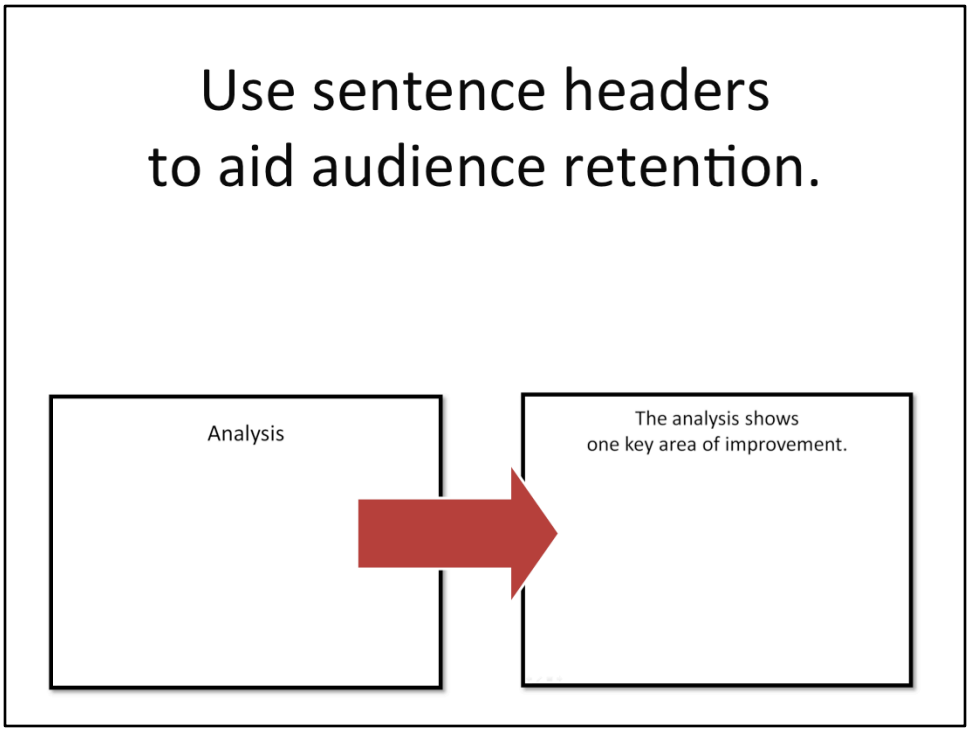
Slide Source:
Eagan, P. (2010). Sustainable development: Opportunities for environmental engineering. Engineering Professional Development, College of Engineering, University of Wisconsin-Madison. Lecture.

Team requirements:

- ❑ Intro
- ❑ Problem formulation
- ❑ Very short description of the solution process used
- ❑ Validation
- ❑ Mesh convergence
- ❑ Important Results, Conclusions in terms of Design Recommendation

From the BEE requirements…

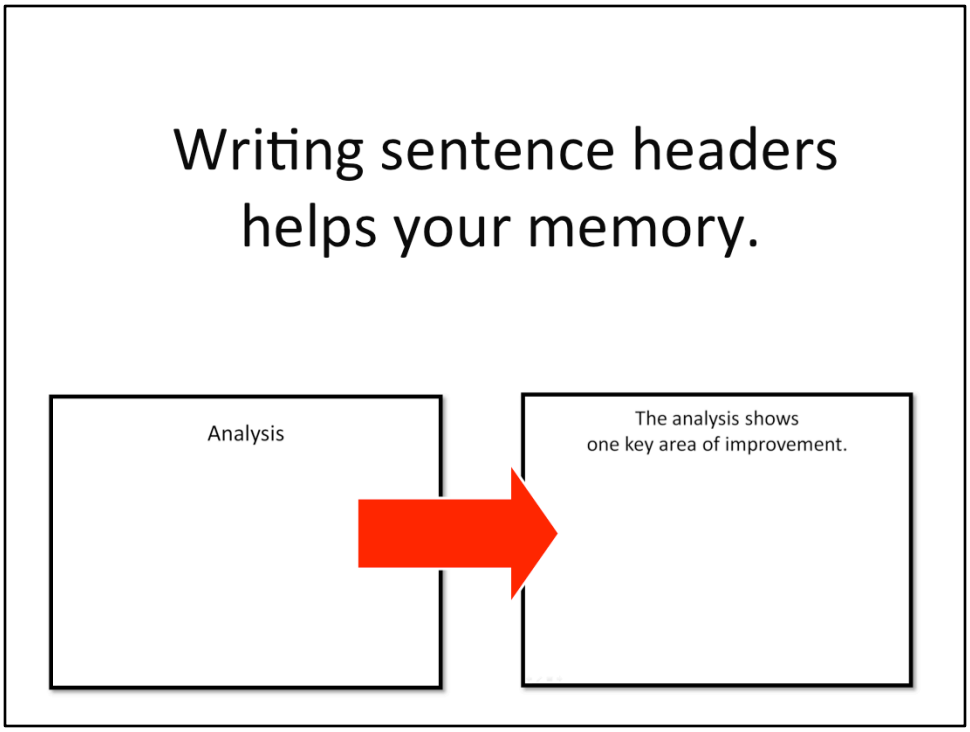
Big Idea #1



One of the strongest changes you can make to your slides is to use full, short, sentence headers.

Instead of using fragments, or brief phrases, as the basis for your outline, challenge yourself to outline with complete thoughts. This sentence header acts as an executive summary for your learners.

Without having to struggle to fill in the blanks in your thinking, your audience will be better able to retain the information and ideas you are presenting. In addition, your assertions will leave little doubt in your audience's mind as to the direction of your presentation.



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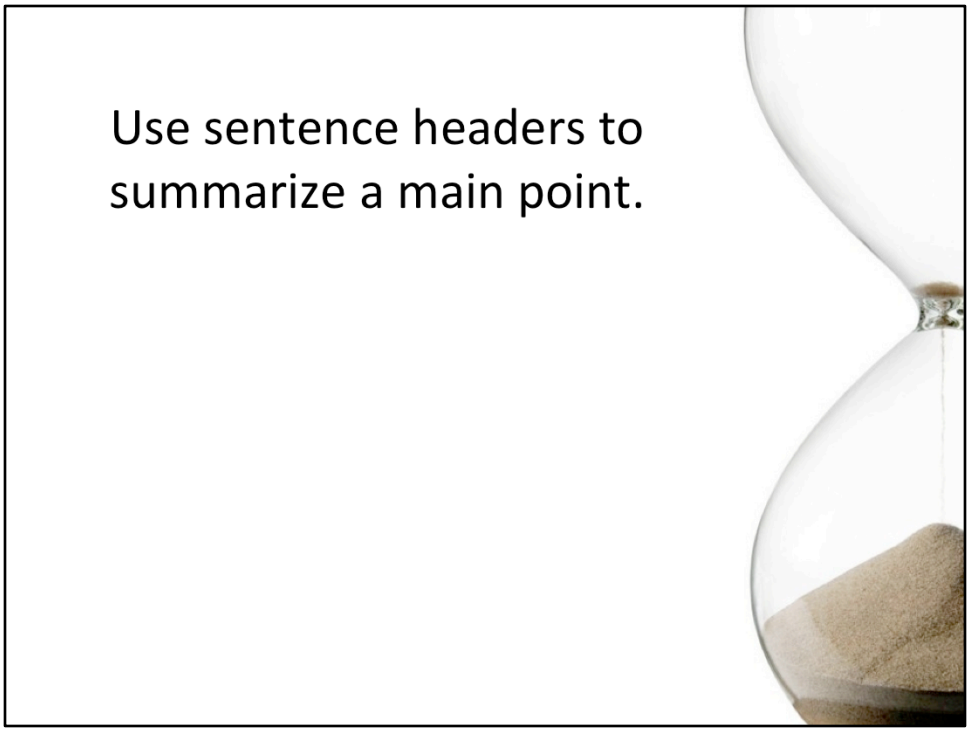
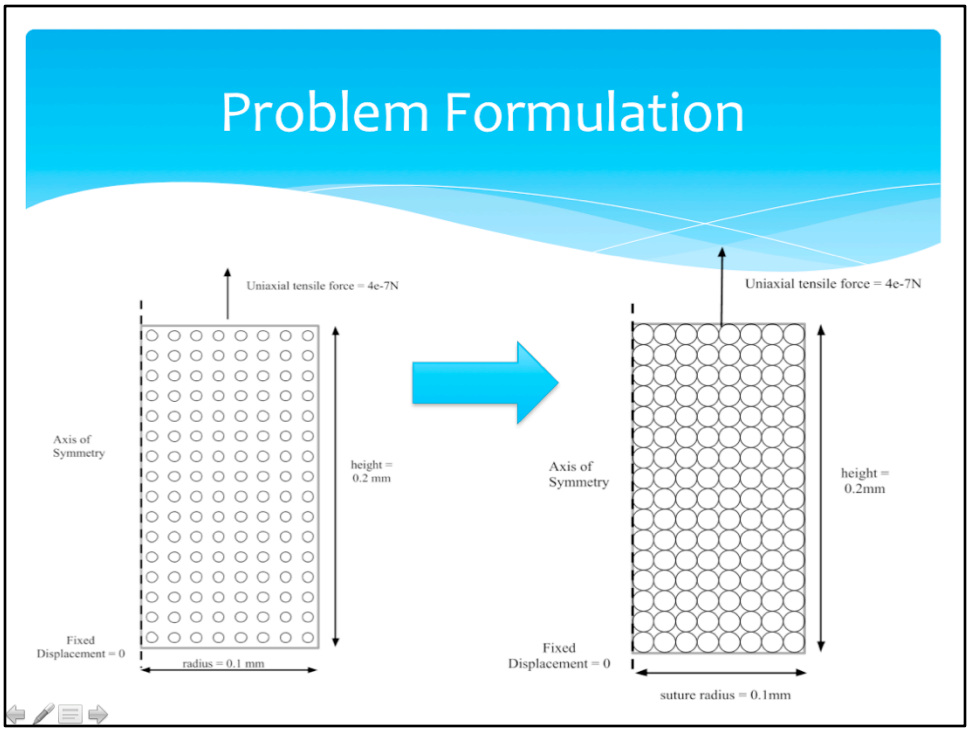


Another benefit of using complete sentence headers is that they provide both the live audience, but also any audience members who may view the slides as an archive piece later, with a complete summary of the main points presented in the talk. In this way, they can more quickly draw your audience to the main points of your talk – saving everyone valuable time and effort.

These practice is often called assertion/evidence method, as the header asserts and the visuals provide evidence.

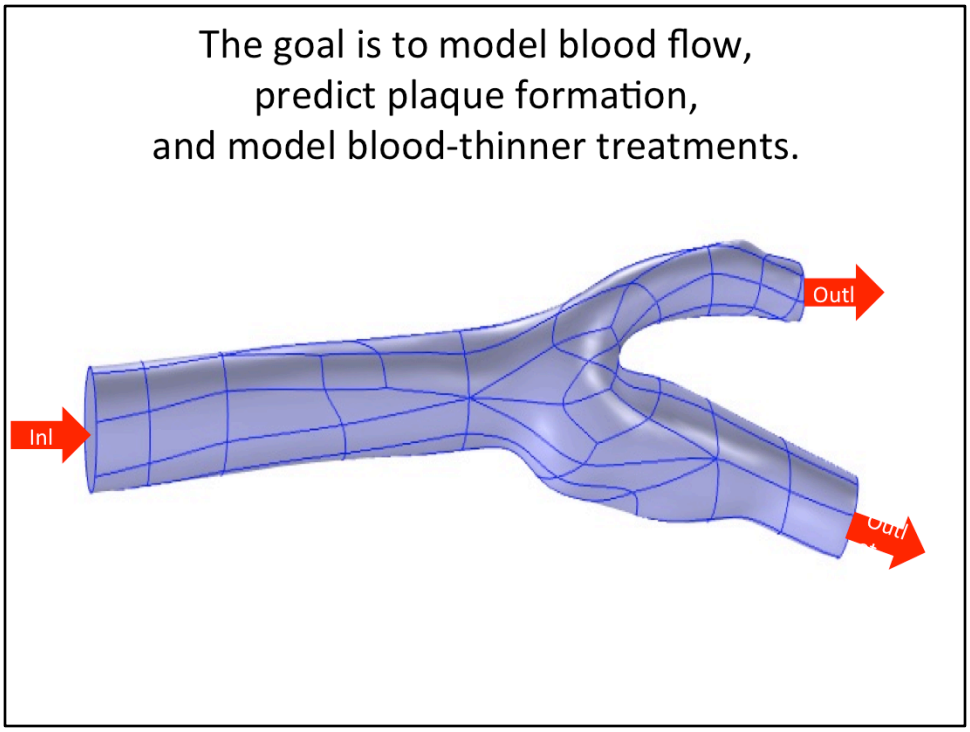
Let's take a look at a few examples from both industry and EPD of sentence headers in action.



While the visuals are great, there is a great opportunity lost when the sentence header remains a fragment. Instead, put up an abbreviated version of the team's problem statement.

Source: Dude, Where's My Stitch?
Strength Analysis of Absorbable Sutures via Computational Model

Group 3, Spring 2013:
Owen Dong
Jon Kaufman
Supriya Kumar
Liana Mari
Alex Warning



Here is a better example of using the header to state the goal/problem. ‘

---The team had in its Notes this_____

-The goal of this project was to model the blood flow in the bifurcation point of the carotid artery and use COMSOL particle tracking to deposit and add a plaque.
-Additionally, this project seeks to analyze the effects using aspirin, a blood thinner, on blood pressure, blood flow, and stress in the bifurcation point of a carotid artery with a plaque.

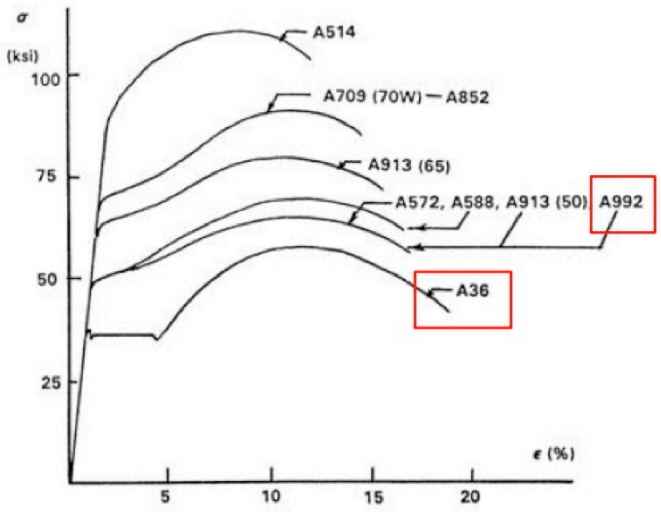
------end quote

Slide source:**Modeling Flow Characteristics in Carotid Artery Bifurcation Afflicted with Atherosclerotic Plaques**

Spring 2013
BEE 4530
Group 8

Alexandra Braun
Stellie Ford

Displayed is the stress-strain curve for the steel in the current structure and proposed new structure.



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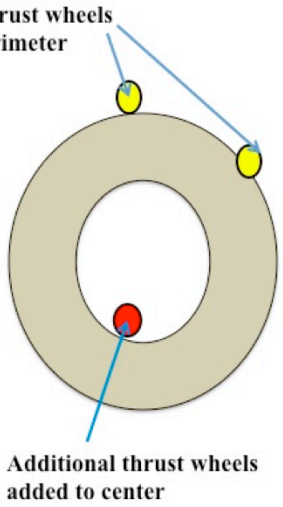
And another good use of sa sentence header from another source.

Additional thrust wheels would aid in reducing wear that causes misalignment

- **F=ma**
- $F_f = \mu_k N$



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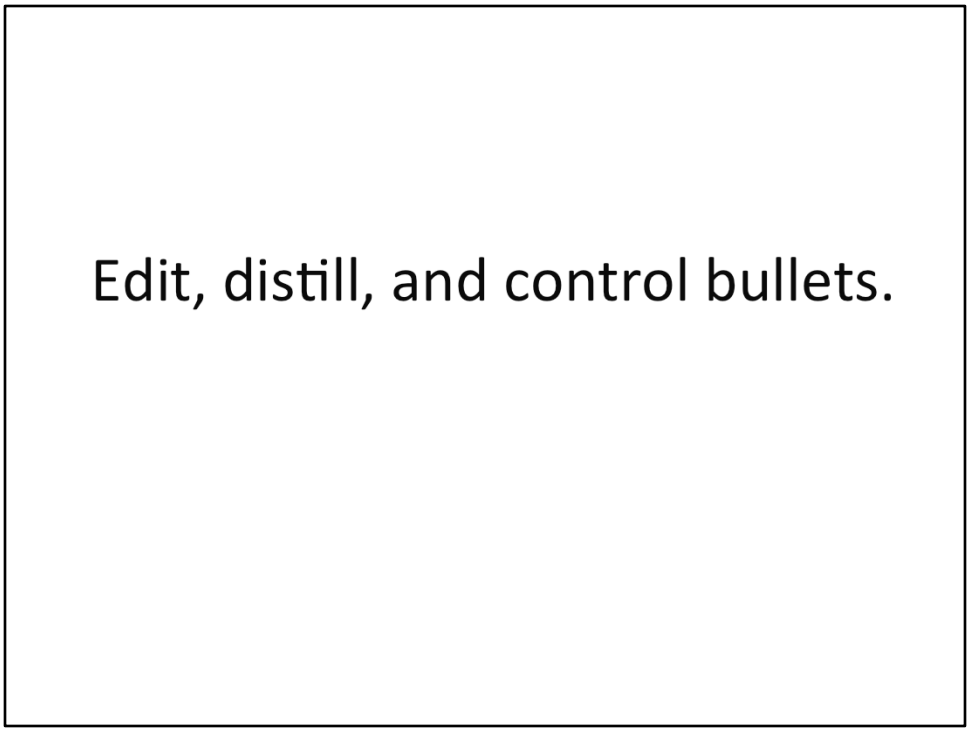
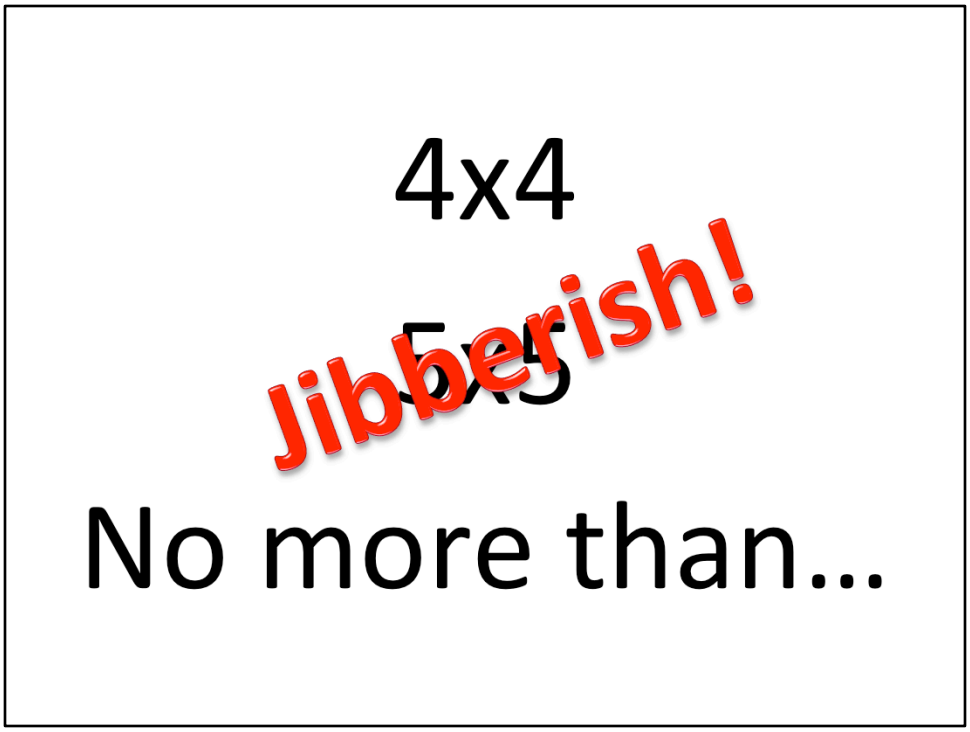
This, too, works beautifully as both a sentence header AND as a great visual supported by the equations.

Big Idea #2



Getting away from the use of too many bullets is perhaps the most difficult aspect of these techniques for presenters. But bullets are aptly named—they kill.

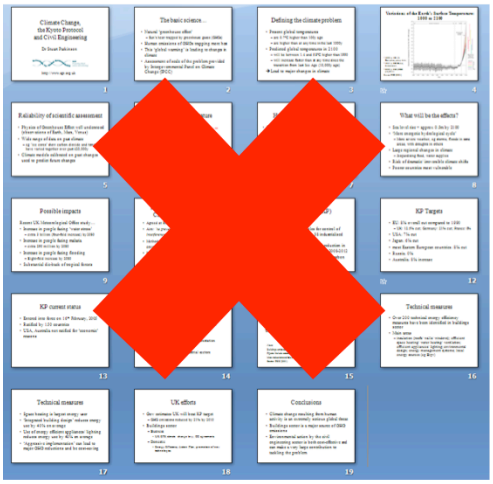
They create fragmented thoughts, they often don't flow logically from one to the next, and they are too text heavy for learners to process while the subject matter expert is talking. Bullets can actually prevent retention of information because they fight with what the speaker is saying or doing.



You may have heard various rules over the years about how much text to use, how many bullets are permissible, and so forth. There is NO basis for these rules in any research to date.

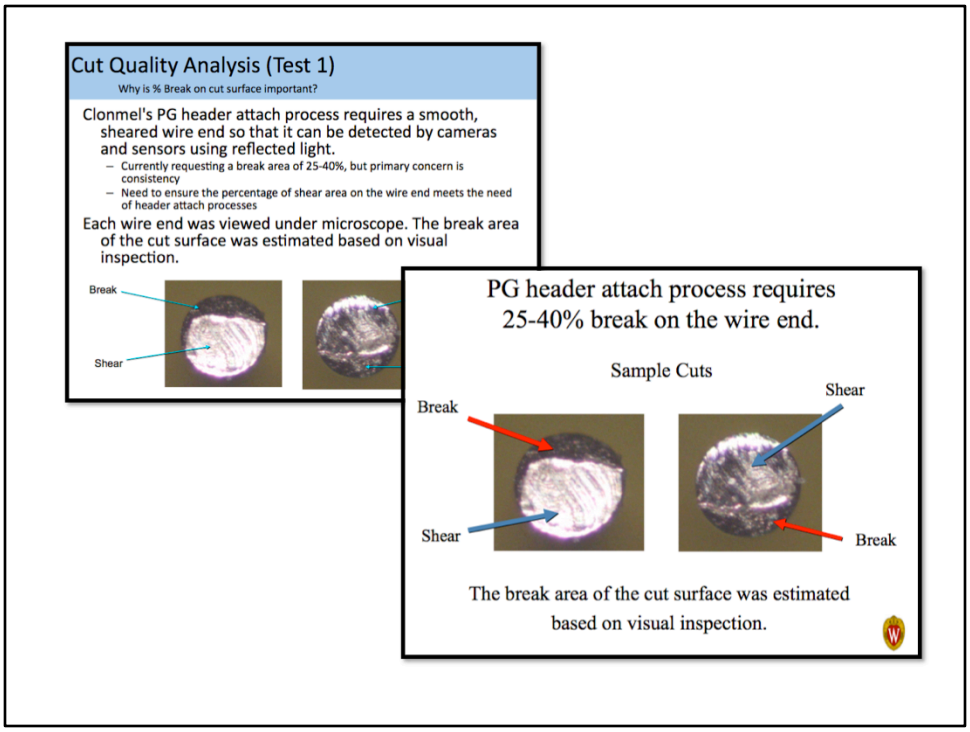
As we have discussed, there IS research about how much load the human mind can take at any given moment, and it's not a lot.

Visuals convey more than bullets.



To maximize retention from our audiences, we need to go with a much higher visual strategy combined with severe restraint from bullets. And while bullets can, indeed, be useful – even needed – at times, they should not be the defining strategy for your information delivery.

Let's look at some general before-and-after examples that demonstrate how to move away from bullets and heavy text.

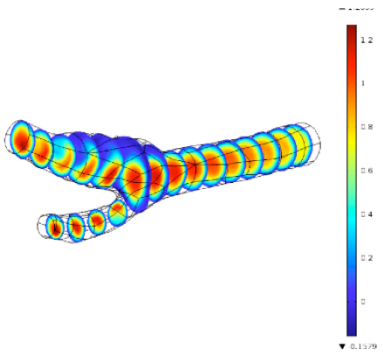


On the left, again we see a “traditional” slide that is laden with bullets and too much information. The complex information is hard to distill and makes little sense, even as notes.

On the right is a cleaned-up version. The emphasis has been defined more closely (on the percentages), and the main points have been highlighted. There is little doubt that users will find the key information.

Blood velocity: PrePlaque

- Fastest at center
- Edges
- Modeling velocity profile
- Rate pre-defined

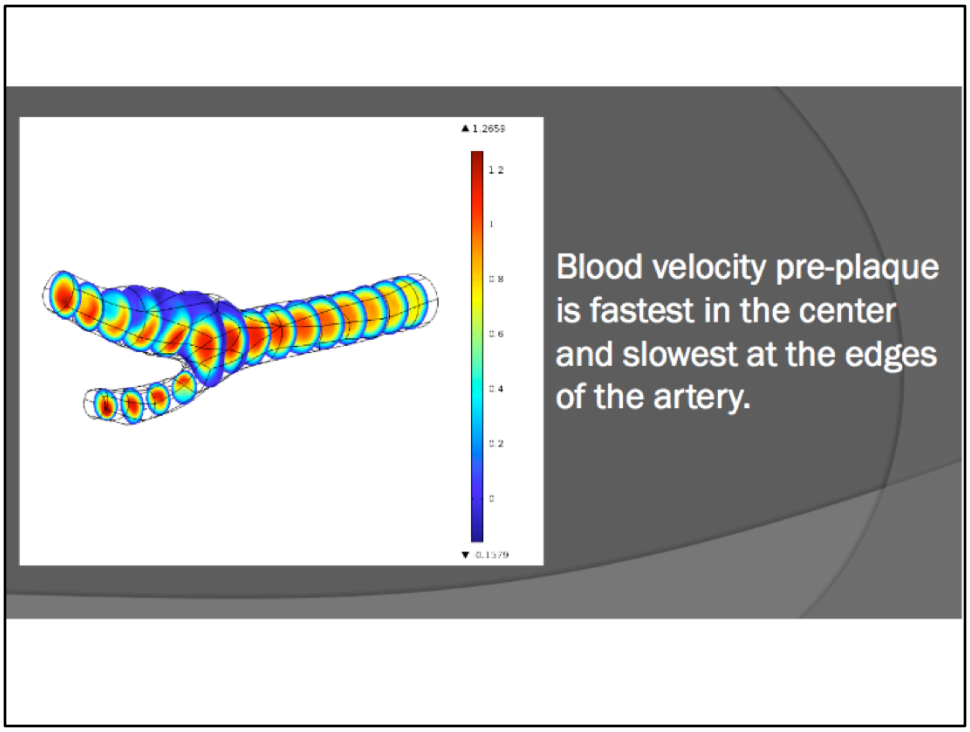


This example I made (Traci) from 2913's Group 8. Their work was never this raw, when I saw it. Here we see demonstrated how all to many technical talks are put into slides. There are too many bullets that are vague and oddly written, the grahic is tiny, and the header is a fragment.

Adapted from **Flow Characteristics in Carotid Artery Bifurcation Afflicted with Atherosclerotic Plaques**

Spring 2013
BEE 4530
Group 8

Alexandra Braun
Stellie Ford
Marina Shumakovich
Alden Sonnenfeld



This is how their work actually looked, which is great!

Slide source:**Modeling Flow Characteristics in Carotid Artery Bifurcation Afflicted with Atherosclerotic Plaques**

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This set of slides comes from Eric Diep, IRE project Fall 2013.

This researcher used one slide, three layered in main points. It was brilliant.

Instead of a header with bullets, he chose a more engaging layering example. Notice how each text unit is a short, full sentence with a beautiful graphic.

The material should be remain undamaged.

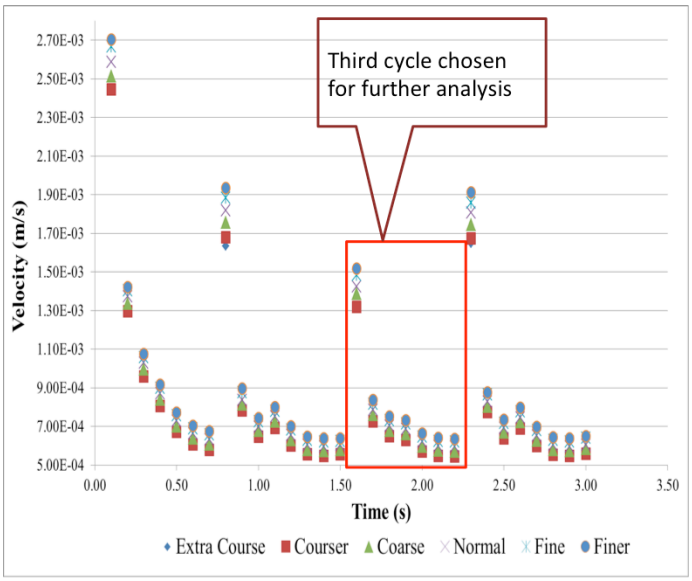
The cleaning solution is crazing the material.

Repeated use is causing material to break at the crazes.

25

What do I do with a boring graph?

Mesh convergence shows pulsating flow.



This team showed the graph and then indicated right where we should look. Brilliant!

------Start team Slide Notes_____

-Third cycle chose for further analysis because that is where results reach a steady state and the flow profile is mostly established.
-The fine mesh is necessary for full convergence, however due to limited processing capacity a normal mesh was used for further computations.
-Fine and normal mesh are similar enough in their results that model is not compromised by the substitution.

------End team Slide Notes------

Slide source:**Modeling Flow Characteristics in Carotid Artery Bifurcation Afflicted with Atherosclerotic Plaques**

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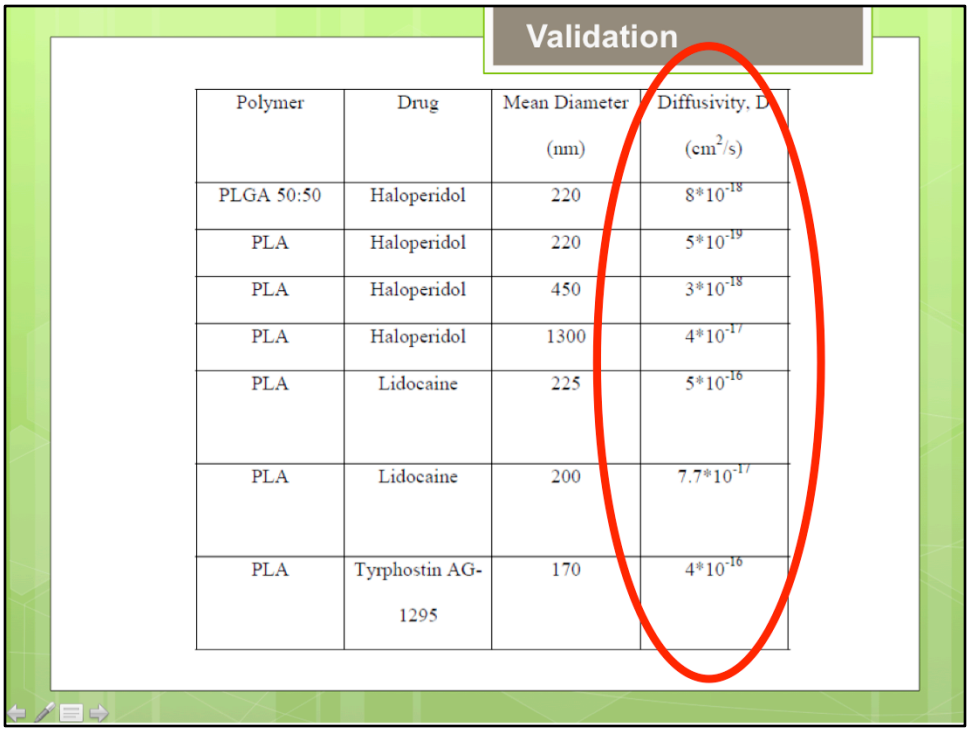
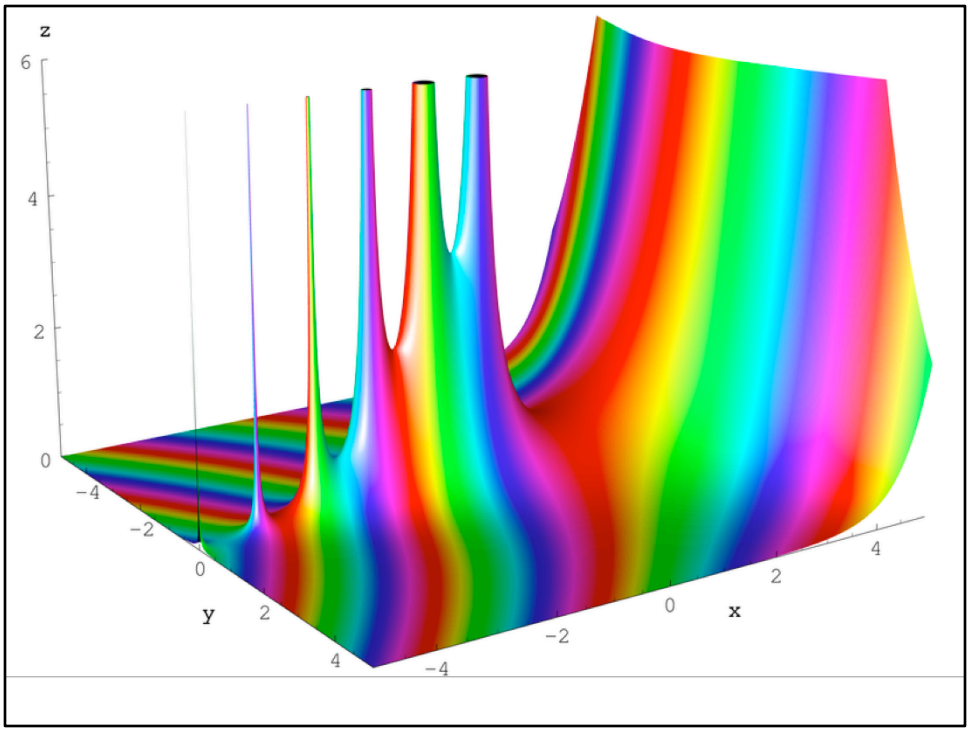
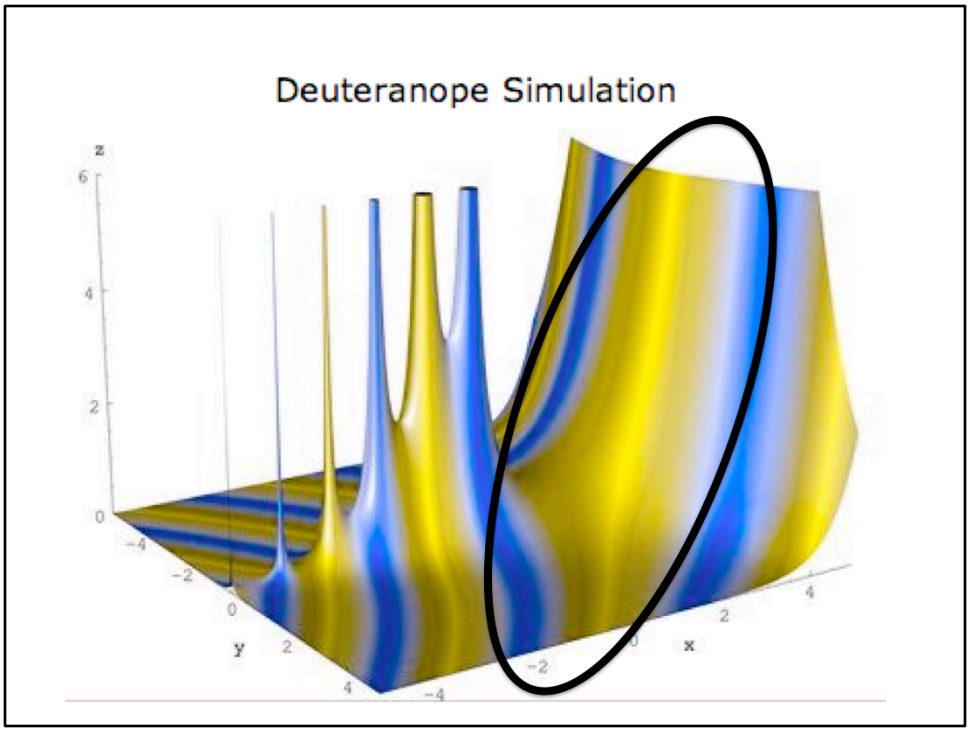


While the header could be improved, it was very smart of this team to show us where to look.

Let’s talk about color…



When we have mapping or results that rely on color, we have to be careful of meaning collapse with that color. See what happens on the next slide when a member of your readership/audience is color blind.



This is how that same map looks to someone who is color blind. So, the use of circles or shapes to indicate where to look is a helpful backup.

http://www.vischeck.com

Or use Google:

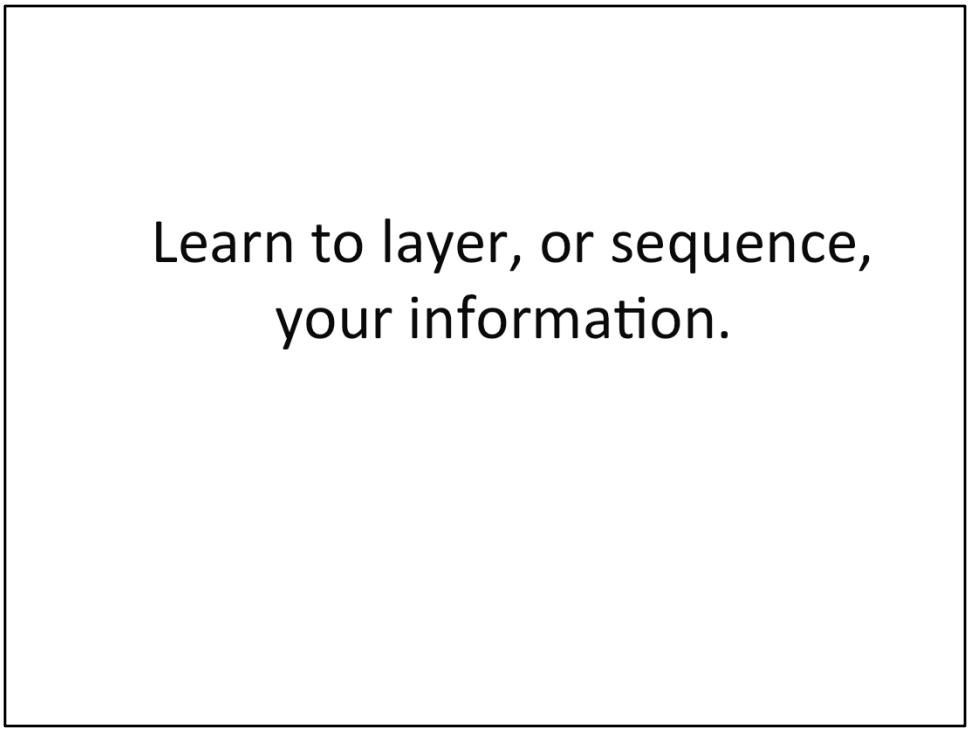
“Color blind etre”

Here are places to take your visuals to check with for color-blind issues.

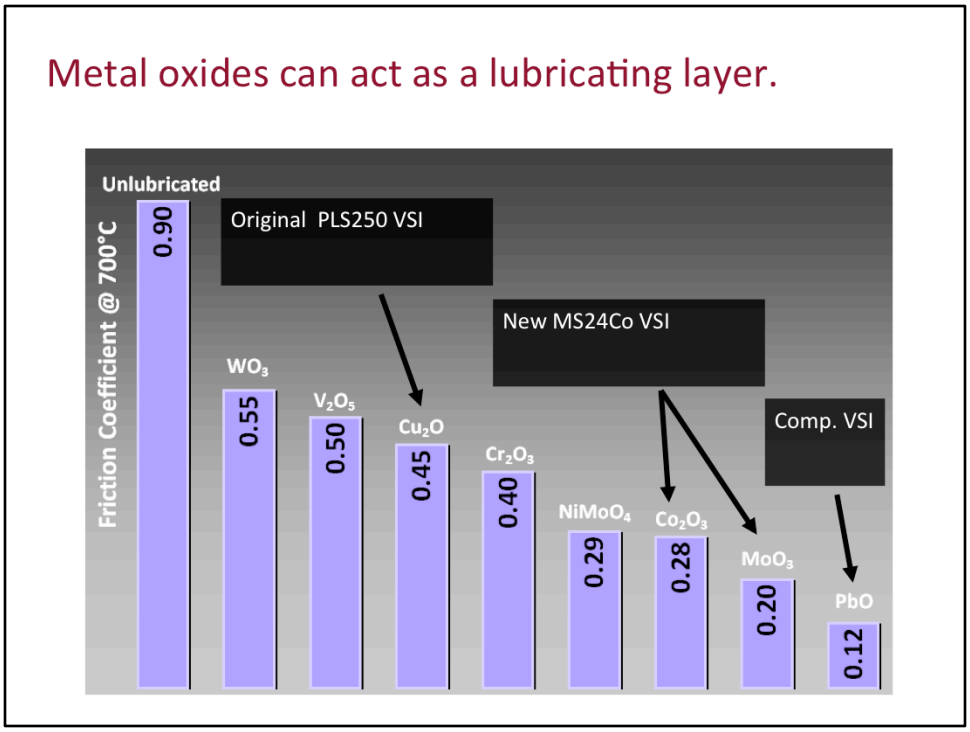
Big Idea #3

Control the release of information.

Contolling the release of information by bringing in elements one by one is an effective strategy. Let's look at some examples of how this works particularly well for technical arguments.



Because in the technical realm, we often work with and aim to improve processes, using our visuals to help show process is a great way to help audiences understand them.



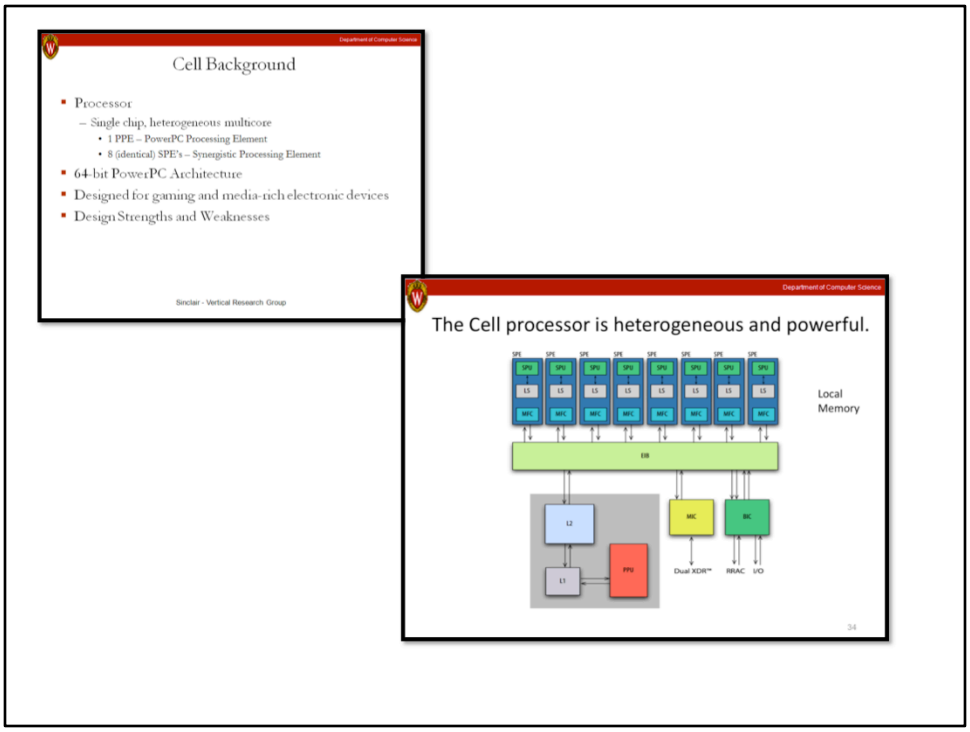
Here, we have the main assertion at the top so that we understand the context. However, as each of the black boxes are brought in, the speaker introduces us to the ways that these various oxides have been used in his organization over the years, and where they intend to head with their use of them in the future.

Content notes from original MEPP presenter:
The metal Dicopper oxide of is 0.45

DiCobalt Trioxide is 0.28
Molybdenum trioxide is 0.20

Lead Oxide is 0.12

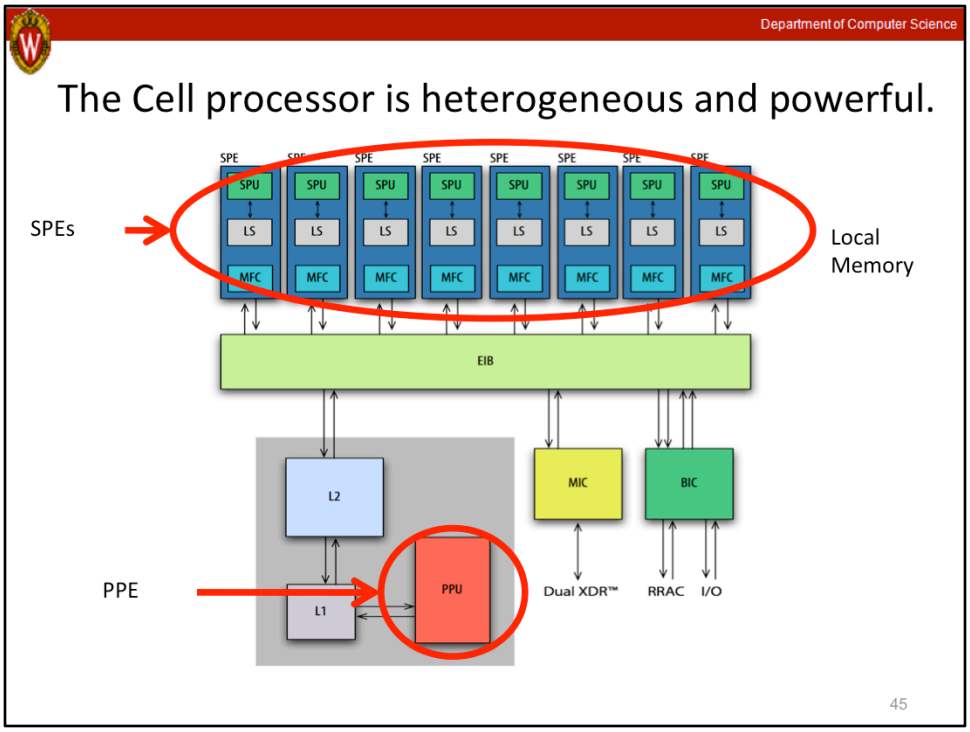
This is a simplified representation as the alloy of materials forms a alloy oxide.



On the left is a traditional BEFORE slide. On the right is the engineer's revised slide that uses relevant visuals that highlight the architecture he was trying to describe by bullets.

Let's look a little more closely at how this engineer enhanced this slide further.

Source:
Matt Sinclair, EPD 397, Fall 2009. He is part of the Vertical Research Group for his graduate work.



After revising the previous text-heavy slide, and switching to a more visual approach, the speaker was able to walk the audience through the process by which information was saved in the cell processor, bringing them to more deeply understand the underpinnings of his work.

This is the AFTER slide from Sinclair.

He writes this:

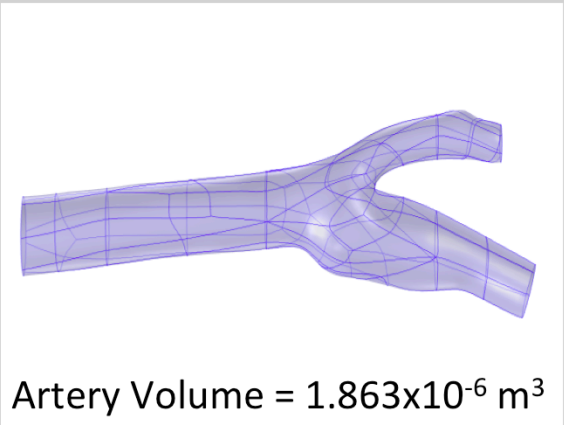
----------Slide Notes-------

Picture from:
J. Kurzak, A. Buttari, P. Luszczek and J. Dongarra, "The Playstation 3 for high-performance scientific computing," Computing in Science and Engineering, vol. 10, pp. 84, 2008.

As you can see from this picture, the Cell processor has many different units packed onto its chip. Today I will be covering the main parts of the processor. The Cell processor is a single chip, heterogeneous multicore, 64-bit architecture. It contains 1 PPE (also known as PPU) – the PowerPC Processing Element. This core is the master of the Cell processor. All work that is sent into the Cell processor is initially sent to the PPE. The PPE is then responsible for dispersing the work to the 8 (identical) SPE's – Synergistic Processing Elements.

The SPEs act as the slaves in the Cell processor – they perform whatever task the PPE tells them to do. This design is not typical of modern computer architectures, but it lends itself to certain types of applications. Part of using the SPEs is the unique memory system of the Cell processor, which requires the user to perform their own memory operations. Additionally, the memory uses a non-standard, DMA-centric approach. Each SPE has a Local Store (LS), which uses the MFC (memory controller) to take in and move out data from the global

Plaque formation decreases artery volume.



Artery Volume = 1.863×10^{-6} m^3

This is a several-slide build of information. Spring 2013.

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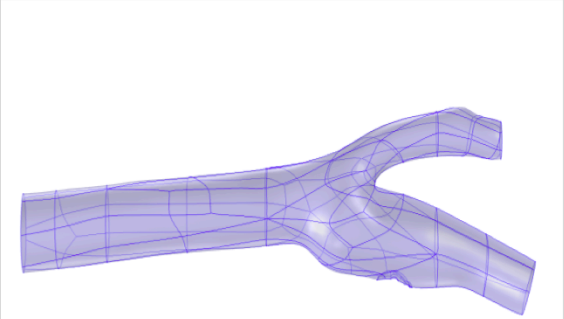
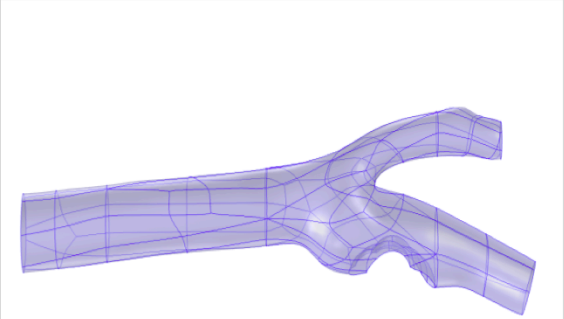
Plaque formation decreases artery volume.



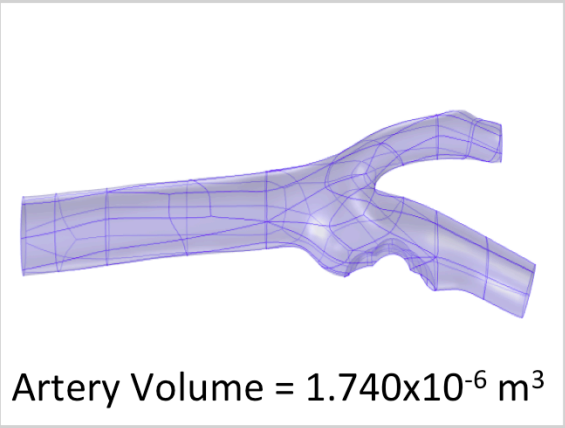
Artery Volume = 1.844×10^{-6} m^3

Plaque formation decreases artery volume.



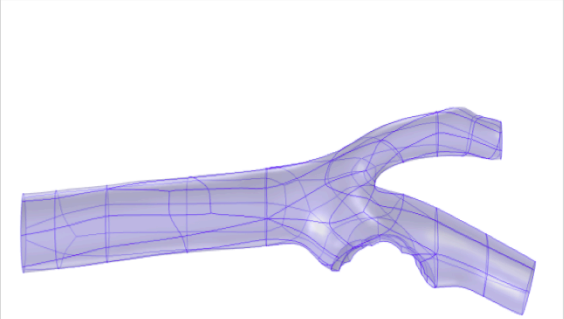
Artery Volume = 1.758×10^{-6} m^3

Plaque formation decreases artery volume.



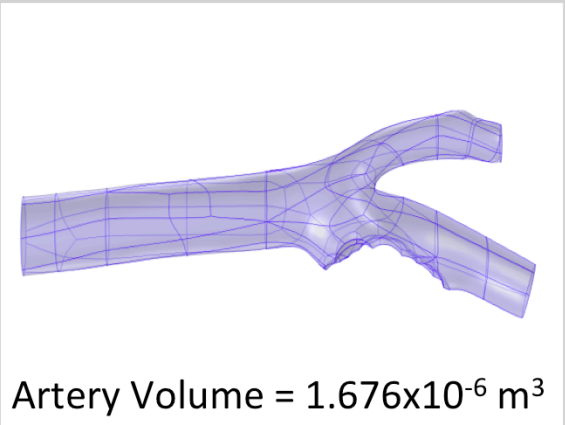
Artery Volume = 1.740×10^{-6} m^3

Plaque formation decreases artery volume.



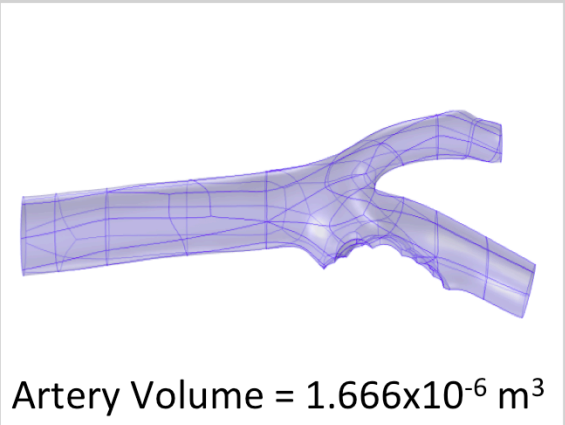
Artery Volume = 1.700×10^{-6} m^3

Plaque formation decreases artery volume.



Artery Volume = 1.676×10^{-6} m^3

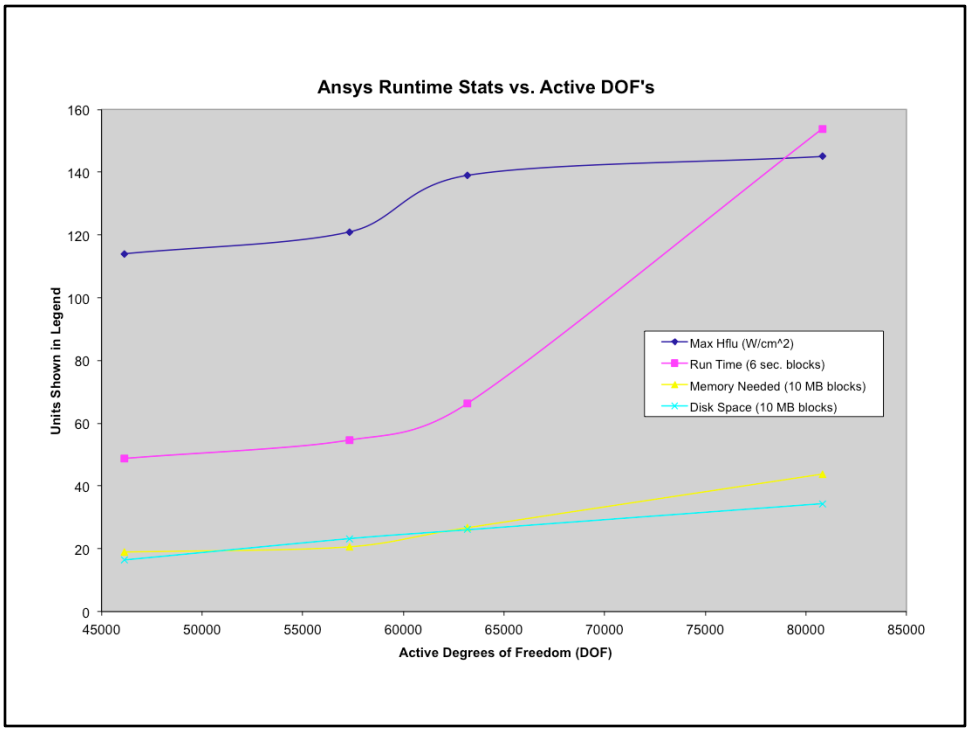
Plaque formation decreases artery volume.



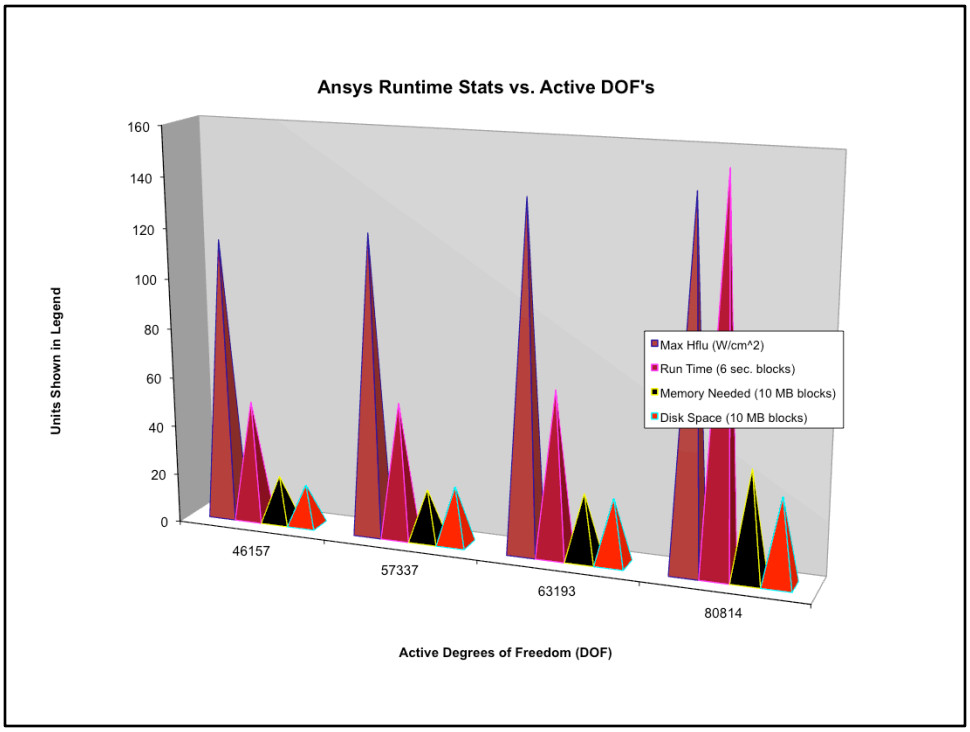
Artery Volume = 1.666×10^{-6} m^3

One last point that we'd like to make in this module is that not all visuals are created equal. Learning to think visually about your topic means carefully considering your audience first and recognizing that tangentially related clip-art images are usually not the best way to tell the story of your work.

Whether is means creating your own image using standard shapes, or using an image from another source and citing that work, you will need to think critically about how to show what you are telling the audience about.

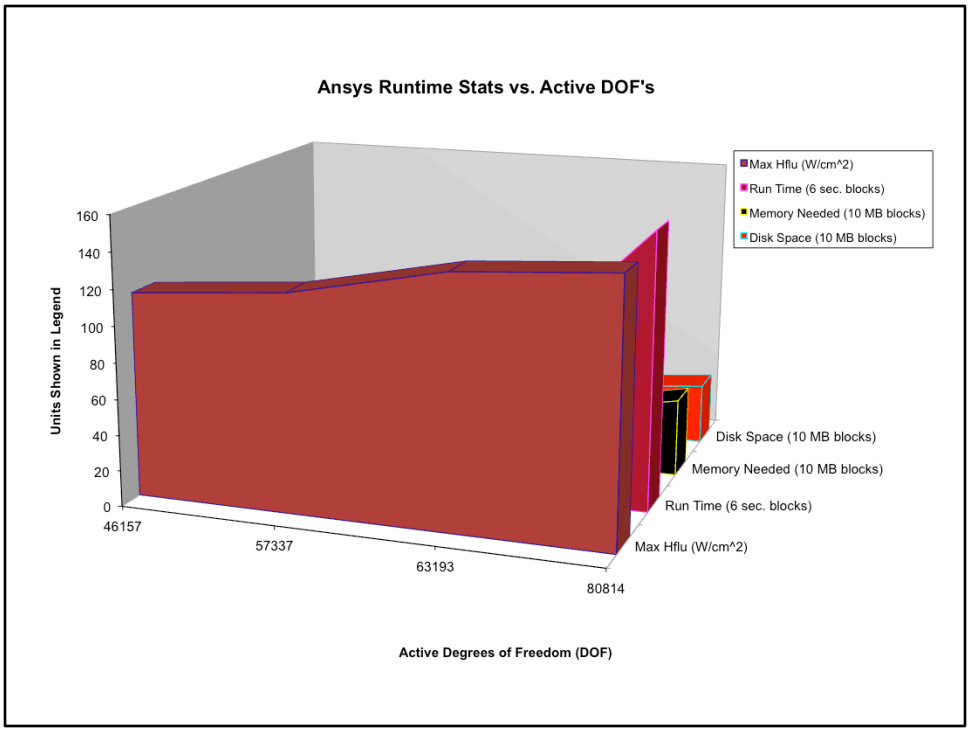


This graph collapses because of the grey background and the yellow and teal lines that are too hard to see.



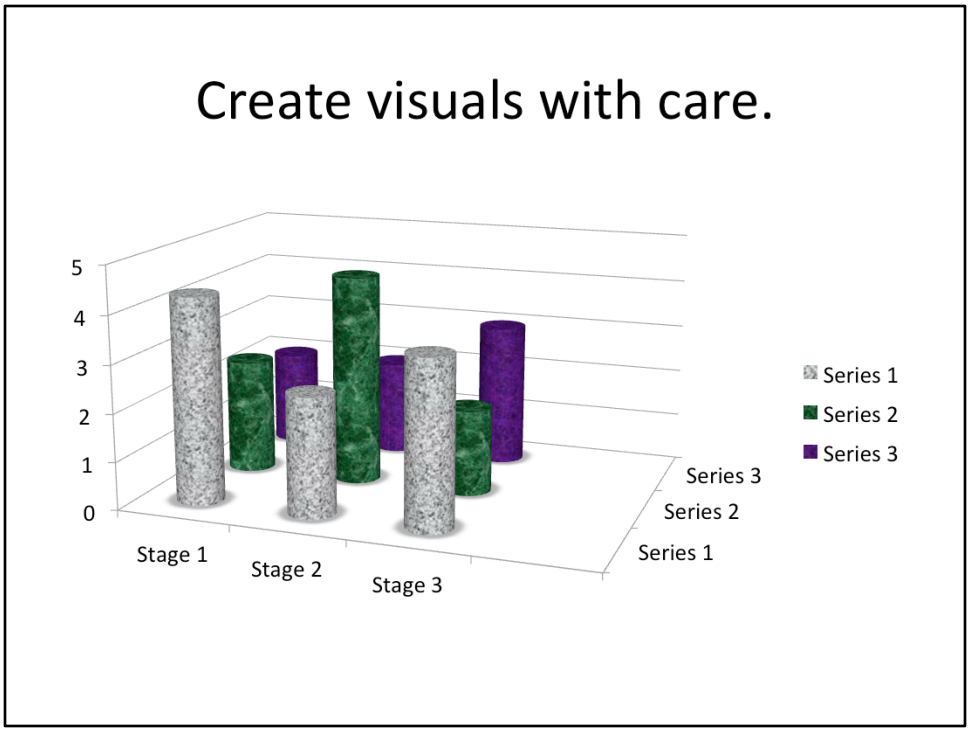
Here is the same graph, in poorly-chose 3D pyramids. Look up the term “chartjunk” for an extended discussion on what to avoid when making charts.

This is also covered will in the book “Slide Rules,” authored by Nathans-Kelly and Nicometo.

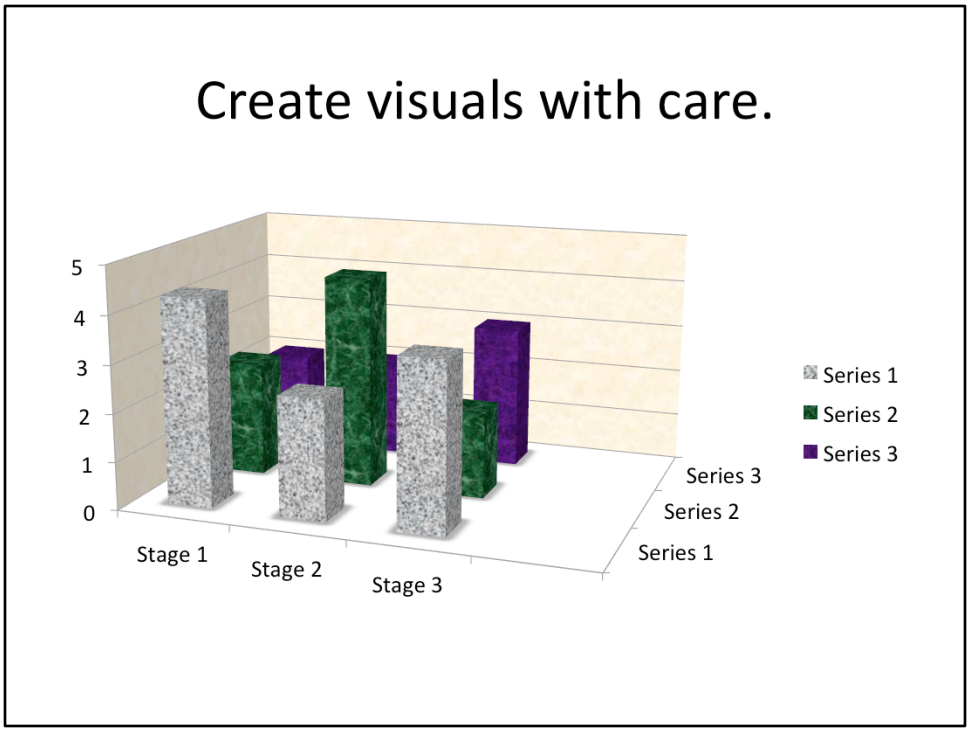


Here is the same graph, in poorly-chose 3D layers. Look up the term “chartjunk” for an extended discussion on what to avoid when making charts.

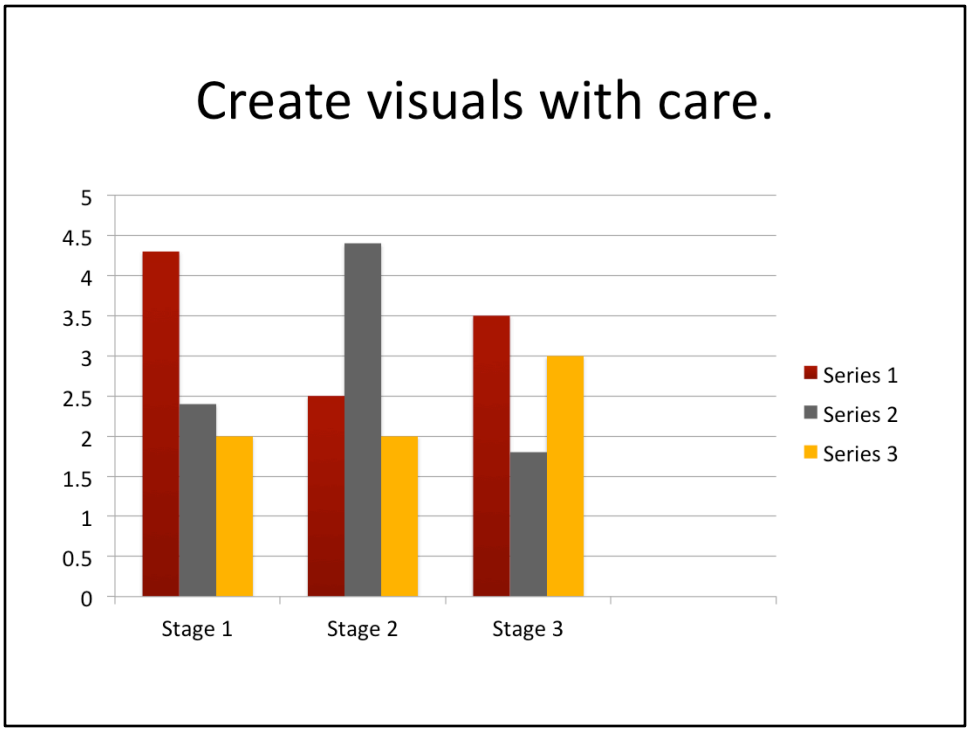
This is also covered will in the book “Slide Rules,” authored by Nathans-Kelly and Nicometo.



Only use visual depth when it is necessary and communicates meaning. Here, there is no purpose to the 3-D display, in fact, it makes it more difficult to read the measurements on the vertical axis. In addition, using units on axis is always important (yet, they are lacking here).

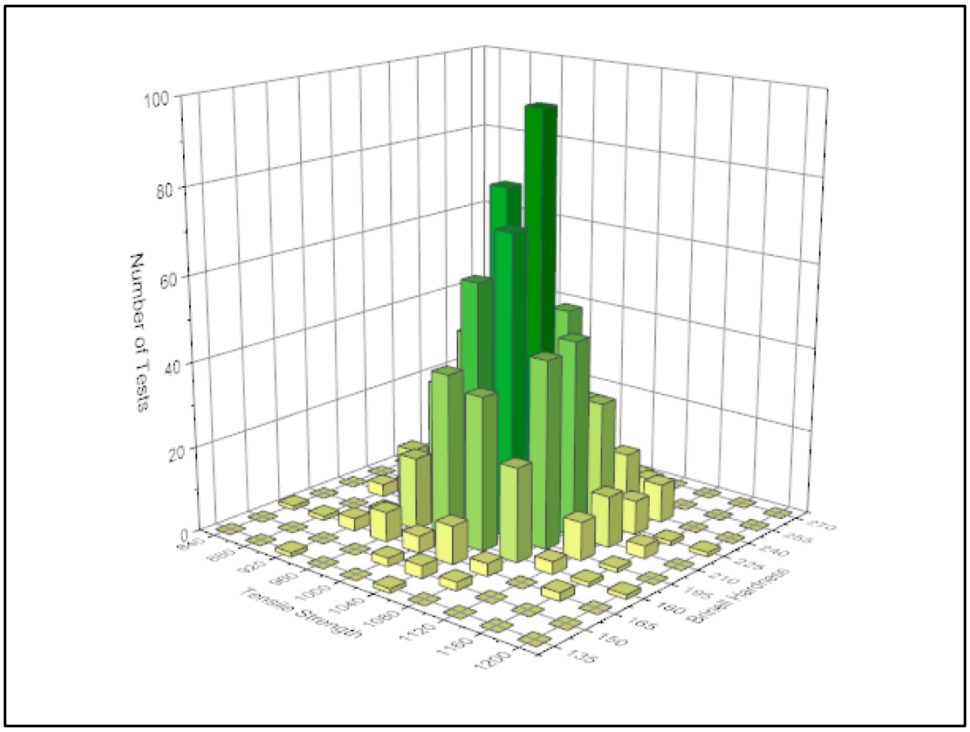


This change doesn't help.



Charts should be flat because other formats visually distort our numbers. With a flat display, we can easily discern the units and better compare stages and series in those stages.

Label all parts – units on the vertical axis are still lacking.



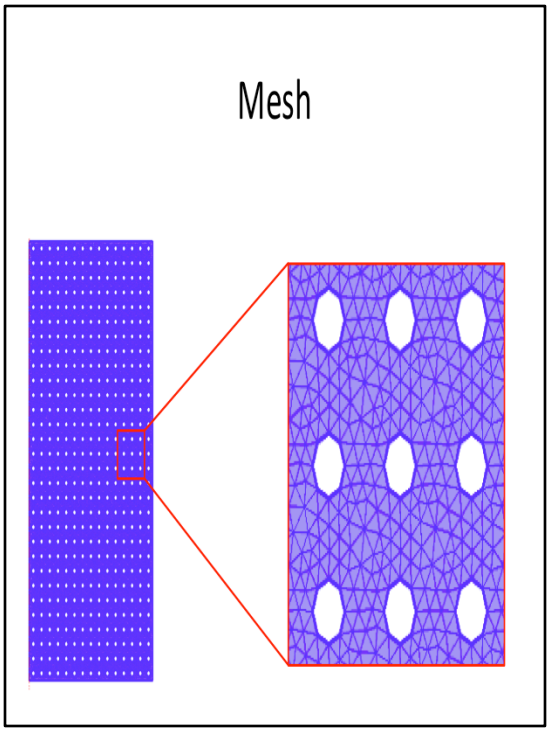
While graphics like this can look pretty awesome at first, they are actually quite useless in technical terms because we look about 35% of the information visually.

http://www.originlab.com/www/products/GraphGallery.aspx?s=1&e=0&t=Bar%20Chart&k=Flattened%20Surface

Big Idea #4:

Use the Notes field for storing extra content.

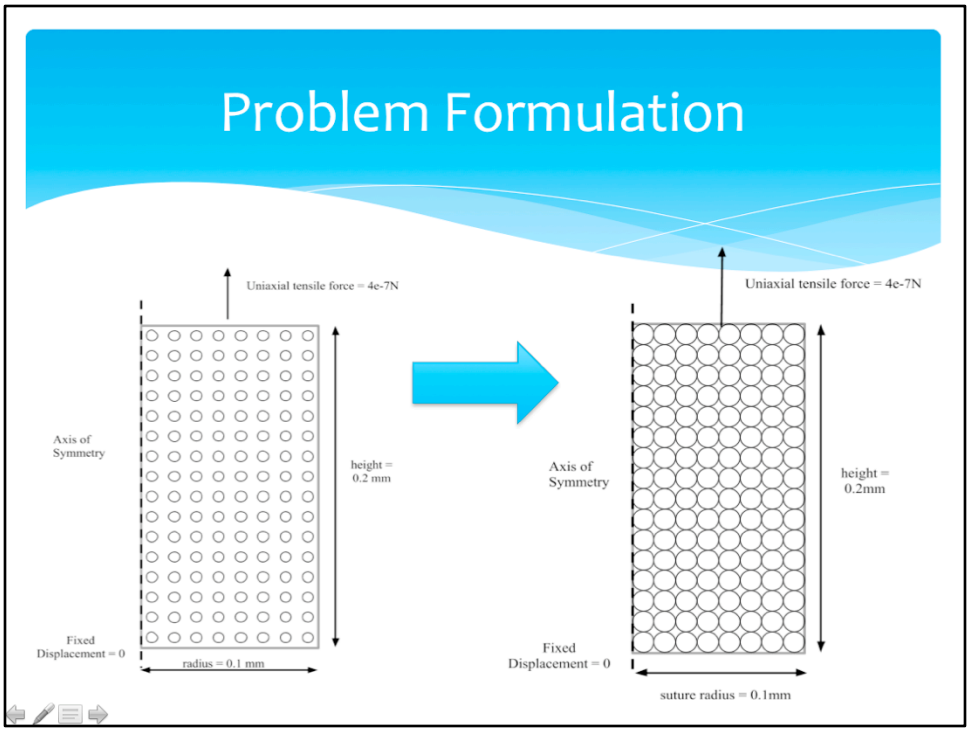
NOTES can hold talking points, fine details, meeting notes, references, and more. More can be storied in Notes than can ever be put on slides!



Yes, a better sentence header is needed. But what happens to this slide if there isn't anyone there to explain it? We don't know what the idea or main point is.

Graphics Source: Dude, Where's My Stitch?
Strength Analysis of Absorbable Sutures via Computational Model

Group 3:
Owen Dong
Jon Kaufman
Supriya Kumar
Liana Mari
Alex Warning



Again, without using "Notes" to enrich your slide document, too much can be lost. Imagine if this slide had no notes. What *IS* the problem statement?

Graphics Source: Dude, Where's My Stitch?
Strength Analysis of Absorbable Sutures via Computational Model

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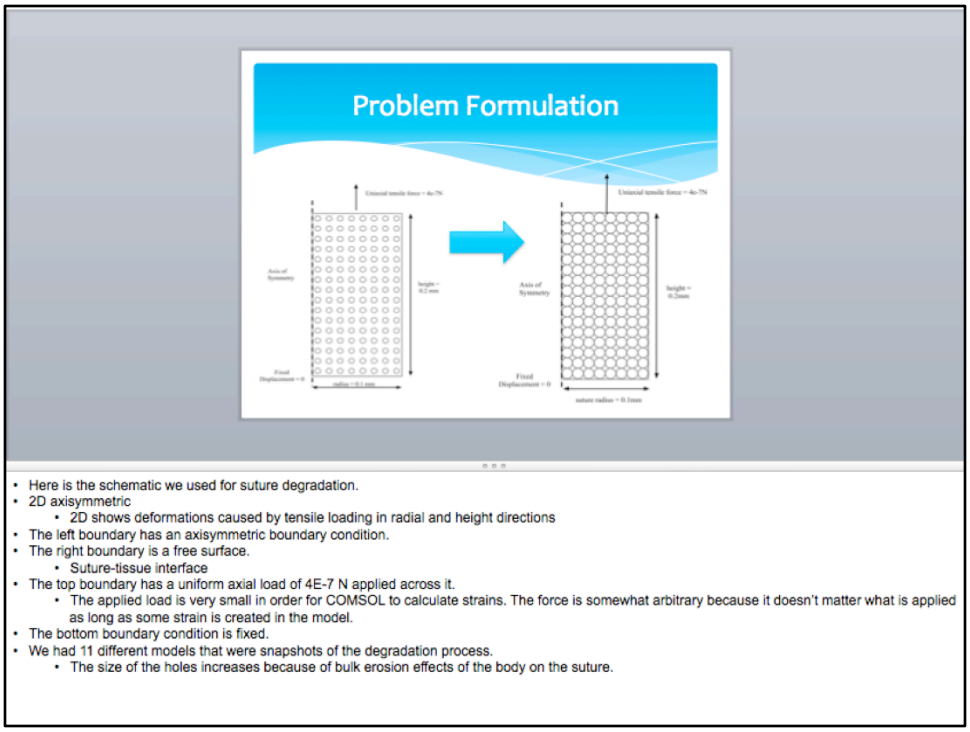
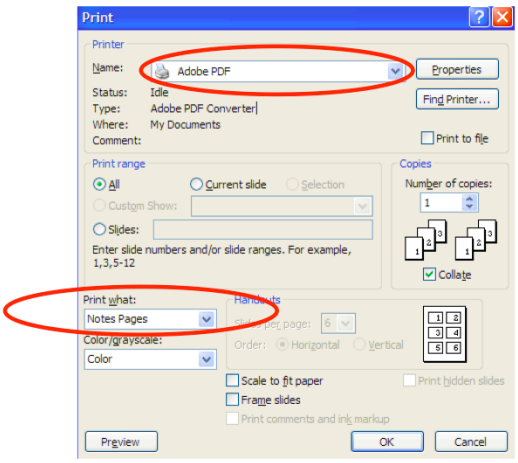


However, this team had fantastic Notes in its slides, and we therefore have a very rich resource now.

Source: Dude, Where's My Stitch?
Strength Analysis of Absorbable Sutures via Computational Model

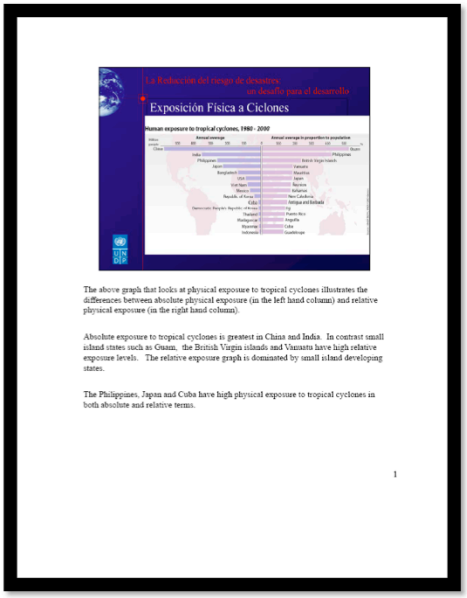
Group 3:
Owen Dong
Jon Kaufman
Supriya Kumar
Liana Mari
Alex Warning

Here’s how to print to PDF with notes in order to archive.



To save and send to others, do this:

Your PDF page will then look like this to anyone who accesses it.



La Reducción del riesgo de desastres, un desafío para el desarrollo

Exposición Física a Ciclones

Human exposure to tropical cyclones, 1980 - 2000

The above graph that looks at physical exposure to tropical cyclones illustrates the differences between absolute physical exposure (in the left hand column) and relative physical exposure (in the right hand column).

Absolute exposure to tropical cyclones is greatest in China and India. In contrast small island states such as Guam, the British Virgin islands and Vanuatu have high relative exposure levels. The relative exposure graph is dominated by small island developing states.

The Philippines, Japan and Cuba have high physical exposure to tropical cyclones in both absolute and relative terms.

1

…for this result.

Best Practices for Presentation Design and Delivery

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