

# Giving Good Talks Isn't as Hard as it Looks



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# What is a talk?



A talk  
is really nothing more than a  
story

# Caveats

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- ✍ This talk may not make you a gifted speaker
- ✍ None of the rules that I give you are iron clad
- ✍ You will need to modify these rules to suit your personal speaking style

Your mileage may vary!

# Some reasons for sharpening your communication skills

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- ✍ Probably **the single most important** aspect in job hunting is your interview talk. The interview talk can make or break the interview
- ✍ Giving talks is expected in many jobs and can be a critical factor in job success
- ✍ If you're heading into academia then you'll be giving talks almost every day!

# What types of talks are there?

- ✍ Job interview
- ✍ Present a new result, e.g. at a conference
- ✍ Status report for a project
- ✍ Argue for/against something

Each of these talks will be different  
but the basic structure will be the  
same !

# There are three key elements

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 **What is your message?**

 **Who's the audience?**

 **How are the pieces connected?**

# The Message



# What is your message ?

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- ✍ Should be able to answer the question -  
What's your point?
- ✍ Should be short, 2-3 sentences at most  
and understandable at a high level
- ✍ Short talks should have only one message

**Most common mistake is not  
having a clear message**

# Everything in your talk should support your message

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- ✍ Start with the message and work backwards in developing your talk
- ✍ It's incredibly easy to fall into the trap of thinking that
  - ✍ \_\_\_\_\_ is just too interesting to let the audience miss
- ✍ If you're not sure, ask yourself once again - What's your point?

# The Audience



# Who's the audience ?

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- ✍ Would you give a talk in Spanish to an English speaking audience?
- ✍ Would you give a talk on QCD to kids in elementary school?
- ✍ Would you give a talk on the wonders of optimization theory to engineers?

# You need to tune the talk to the audience

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- ✍ Need to be able to answer the question – Why should I care?
- ✍ Find out the demographics of an audience and why they are there
- ✍ Emphasize or de-emphasize parts of your argument

**Second most common mistake is using the same talk for all audiences**

# Putting it together



# How to structure your talk

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- ✍ It's not enough to lay out the key elements - you need to show how they fit together
- ✍ Walk the audience through your key points
- ✍ Most talks suffer from too much detail and not enough overview

**Third most common mistake is to give details rather than showing the connections**

# Fitting the pieces together – Sample 30 minute talk

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## Set the stage (5-10 minutes)

-  Tell the audience what the main issues are
-  Lay out your problem/issue
-  Describe why it's important!

## What happened (10-15 minutes)

-  How was the problem resolved
-  Only need the key ideas here
-  Don't necessarily need chronological order

## Summarize (5 minutes)

## Questions?

# Some Tips and Tricks



# Try to keep your points simple

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- ✍ Use at most 3 points at any given time
- ✍ Most people/societies/cultures have a hard time dealing with more than 3 things at one time
- ✍ Remember that for a large part of your audience the material is new

# Give specific examples wherever possible

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- ✍ Examples can be used to clarify a given point
- ✍ Examples can be used to create a big impact
- ✍ Most audiences relate to visual examples better than to written examples

# Model-based Safety Assessments Can Be Used to Simulate Accident Scenarios (Take 1)

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- ✍ The goal is to determine the worst-case response in an accident
- ✍ This problem is described by a coupled set of nonlinear partial differential equations that include Navier-Stokes, thermal, and structural dynamics equations
- ✍ The simulation of coupled sub-systems requires new methods
- ✍ The geometries and complex physics required make this a very difficult problem

# Model-based Safety Assessments Can Be Used to Simulate Accident Scenarios (Take 2)

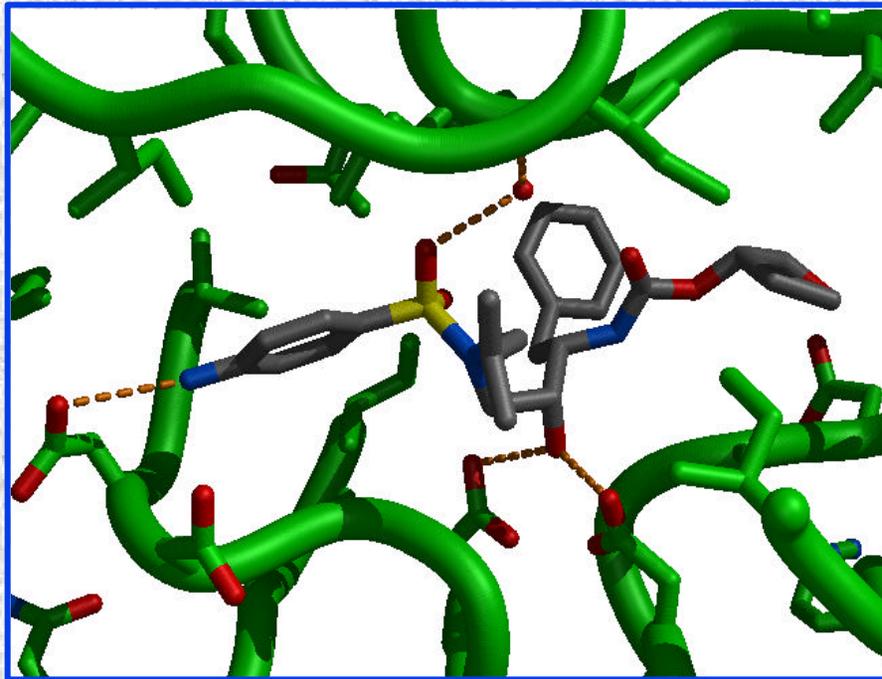
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- ✍ Goal is to determine the worst-case response
- ✍ Simulation of coupled sub-systems requires new methods
- ✍ Complex physics and 3D geometries make this a difficult problem

# Drug design is an energy minimization problem

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HIV-1 Protease Complexed with Vertex drug VX-478

- ✍ A single new drug may cost over \$200 million to develop and the design process typically takes over 10 years
- ✍ There can be thousands of parameters and constraints
- ✍ There are thousands of local minima

# Some essential elements that should be included in a seminar talk

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✍ Why is this problem important?

✍ Why should I care?

✍ What was the outcome/product/....

✍ Is there a tangible result?

✍ What was **your** contribution?

✍ Use words like, *"This is my main result"*

# Handling questions

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- ✍ Make sure you understand the question
- ✍ Prepare for the obvious questions
- ✍ Try to answer all questions, but some questions can/should be deferred

Don't Panic !

# Top 10

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- 1) Have a clear message you want to deliver
- 2) Prepare for your audience
- 3) Tie the pieces together into a story
- 4) Only use material that supports your message
- 5) Avoid unnecessary details
- 6) Use (visual) examples to clarify your points
- 7) Outline the importance of your problem
- 8) Present your contribution
- 9) Prepare for questions
- 10) Practice

# Some references

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 J. Asher, *Even a Geek Can Speak*

 N. Higham, *Handbook of Writing for the Mathematical Sciences*, SIAM.

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 G. Spence, *How to Argue and Win Everytime*

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**The End**

