SCIENTIFIC COMMUNICATION
Oral presentations

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The importance of presentations

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Do you want to avoid this ?

3

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Advises for captivating the audience

- Have a message !
- Make attractive slides
- Increase the signal-to-noise ratio
- Pay attention to (body) language and respect timing
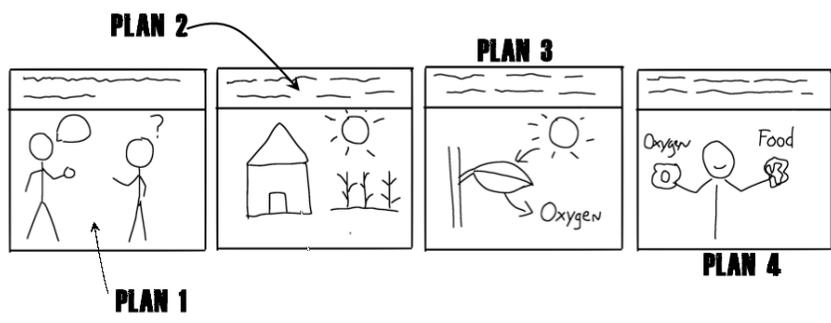

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Have a message

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Making a scenario

Structure your report/presentation and check that :
- the parts are in the right order
- transitions are coherent
- everything you want to talk about is there
- your final message is clear

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Building your message

1. What is the context ?
2. What question/problem do you want to address ?
3. What is your methodology / procedure ?
4. What results did you get ?
5. What kind of **information** can you extract from it ?
6. What are the future actions/decisions to be taken ?

→ At the end of the story, you want your audience to
remember the most important information

and to convince them with proper arguments

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Example of a 20 min presentation

BATir

DYNAMICS GROUP

ULB

Optimization of Tuned Mass Damper parameters based on numerical optimization and model reduction

M. Soubeyroux [1], C. Dumoulin [2] and A. Deraemaeker [2]
[1] ENSTA ParisTech
[2] Université Libre de Bruxelles, BATir

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So what was the message ?

- There is a need to optimize TMD parameters
- Analytical techniques have limitations
- Numerical approaches are too expensive

- Model reduction is introduced to lower computational costs
- It leads to a drastic reduction (2days -> 2min)

  Very convincing argument

→ This approach should be extended for more realistic
  load cases and other objectives

  This is your message.
  How can you deliver it efficiently ?

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Target your audience

10

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Make attractive slides

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Graphical charter, template and layout

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Fonts type

I am sans.
I am serif.

This is
Comic Sans

It's really
ugly!

Scriptina Regular

For scientific presentations :
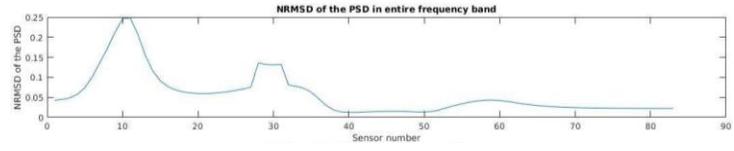- Prefer sans serif
- Avoid fancy fonts

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Fonts size

Font 10
Font 16
Font 22
Font 28
Font 34
Font 40

- Be consistent (titles, subtitles, main text, …)
- Make sure it is readable

Adjust font size in graphs !

NRMSD of the PSD in entire frequency band

[from student presentations]

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Colors

- Pick a few colors
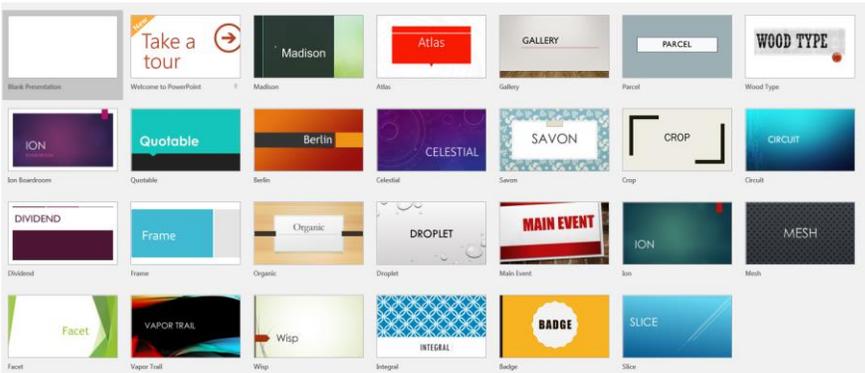- Be consistent with their use

000   237 125 49   127 127 127

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Template

- The best background for readability is white
- No need to repeat the logos on each slide.
- Prefer the blank presentation

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Template : example

Small size volume velocity sensor on a PCB plate

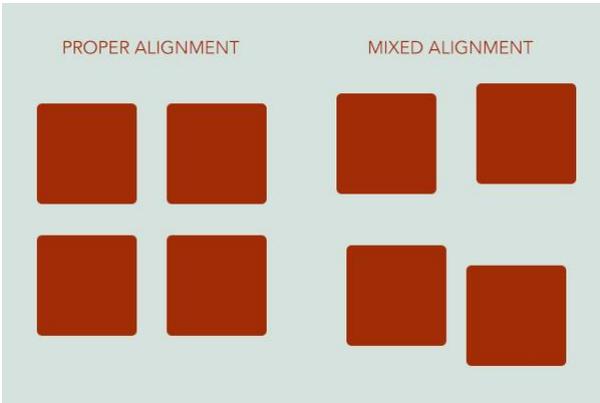- Useless
- Distracting the eye

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Sizing and alignment

- Crop your pictures to have similar size
- Align as much as possible

PROPER ALIGNMENT   MIXED ALIGNMENT

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Sizing and alignment : example

- Two sensors
- Pre-amplifier
- Beam heated in the oven at 300 ^oC
- Vaseline
- Excitation source
- Specialized software

[from student presentations]   19

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Improving sizing and alignment

- Two sensors
- Pre-amplifier
- Vaseline
- Beam heated in the oven at 300 ^oC
- Excitation source
- Specialized software

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20

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My template

Colors :

0 0 0   237 125 49   127 127 127

Fonts :   Titles : Oswald Regular

- MAIN TITLE PAGE (48 pts, capital)
- Subtitle page (40 pts)
- Slide title (32 pts)

Text : Didact Gothic (24 pts)

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My template

Main page

Section page

General slide

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Visual grammar: basic elements

1. What is the context ?
2. What question/problem do you want to address ?
3. What is your methodology / procedure ?
4. What results did you get ?
5. What kind of **information** can you extract from it ?
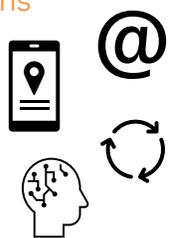6. What are the future actions/decisions to be taken ?

→ At the end of the story, you want your audience to **remember the most important information**
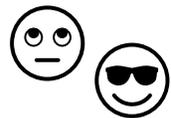<u>and to convince them with proper arguments</u>

- Highlight (bold, underlined, framed)
- Font size
- Colors
- Bullet points
- Arrows

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Visual grammar: additional elements

Icons

Cutout people

Emoji

- Replaces text
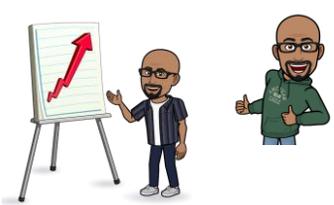- Personal touch
- Conveys emotions

Illustrations

Avatar

Don't overdo it !

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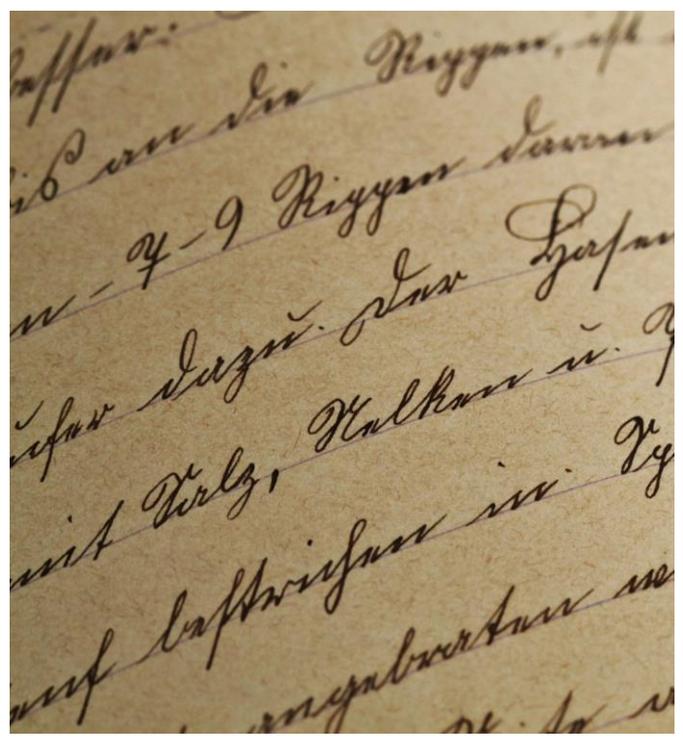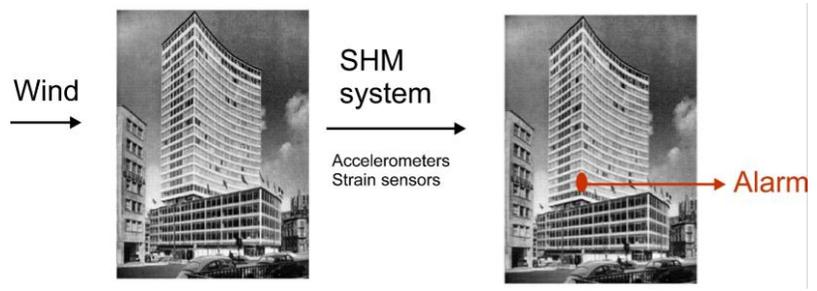## Illustrations vs text

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Example : SHM of the Westbury Hotel

What about making an illustration and
reducing the amount of text ?

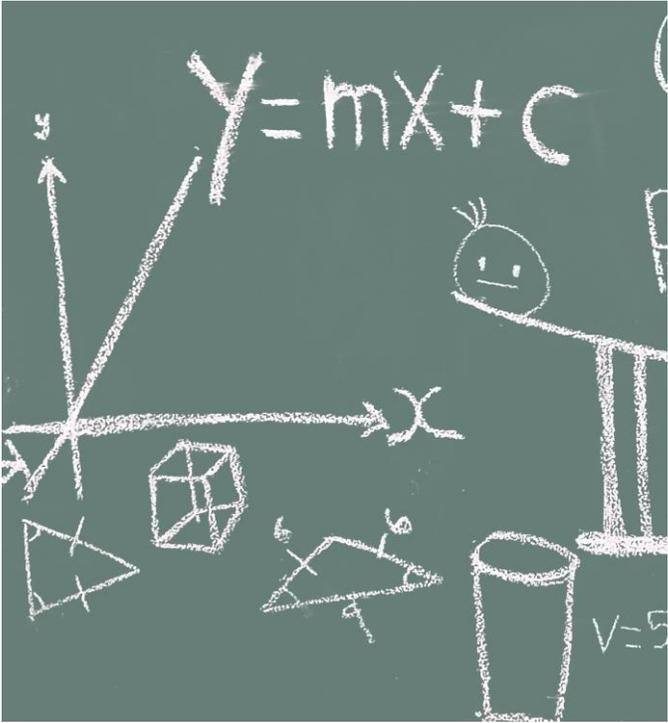Wind → SHM system (Accelerometers, Strain sensors) → Alarm

Objective :
- define a strategy to locate damage based on time-domain data
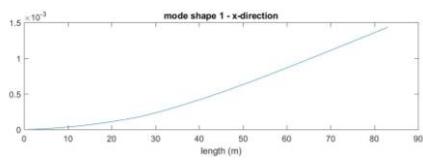- compare strain and acceleration measurements
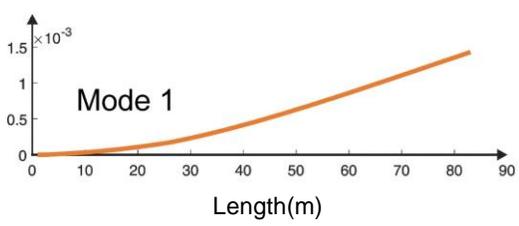
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Figures, graphs, equations and pictures

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Stay away from default graphs

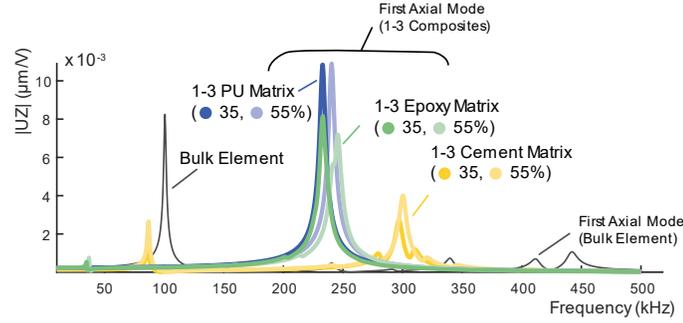Stay away from the default Matlab/Excel style to improve aspect
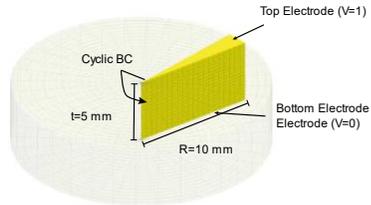

Bending around y

Mode 1

Length(m)

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Graphs and information

Highlight information
- Type of graph
- Color codes
- Legends
- Add illustration

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Graphs and information
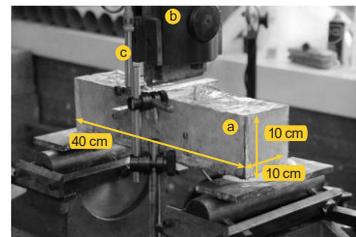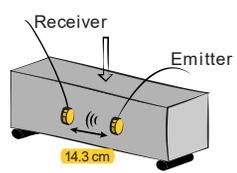
Is all the important information present to deliver the message ?

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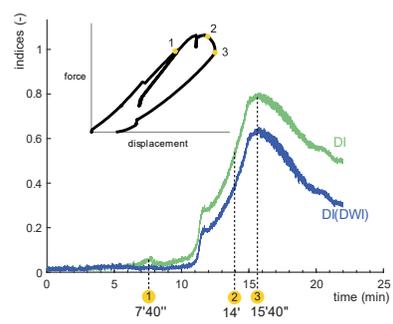
Equations

Powerpoint equation editor

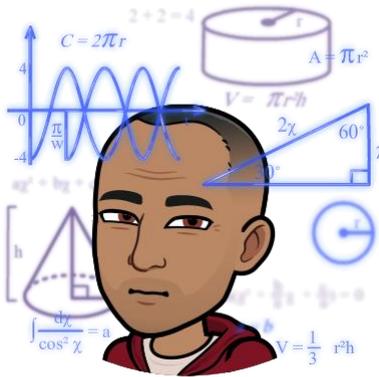$$D^2 = (\varepsilon_z - \tilde{\varepsilon}_z)^2$$

Latex-> pdf -> image

$$D^2 = (\varepsilon_z - \tilde{\varepsilon}_z)^2$$

Iguana Tex

$$D^2 = (\varepsilon_z - \tilde{\varepsilon}_z)^2$$

Put only the equations that are necessary to tell your story

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Pictures

- Crop
- Pay attention to the background
- Adjust brightness, levels, saturation
- Add information
- (recompose)

Apple

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Increasing signal-to-noise ratio

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Noise and signal

Noise is everything that distracts attention of the audience

Signal is information which allows to understand the message

Increase signal-to-noise ratio

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Signal-to-noise ratio

- Focus on the necessary information only
- Everything else is noise -> Remove
- If you are not going to discuss a graph/sentence -> Get rid of it
- Avoid as much as possible text if you do not read or explain it


The M&M's bowl

Jean-Luc Doumont (http://www.principiae.be/)

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Example : UPV test

This test is done to assess the quality of beam by ultrasonic pulse velocity method

Ultrasonic pulse analyzer

VUB VRIJE UNIVERSITEIT BRUSSEL

Principle of the test
- The method consists of measuring the **time of travel** of an ultrasonic pulse passing through the beam being tested.
- Pulse velocity= Path length ÷ Transit time
- Comparatively higher velocity is obtained when beam quality is good in terms of density, uniformity, homogeneity etc.
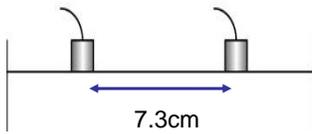
7.3cm
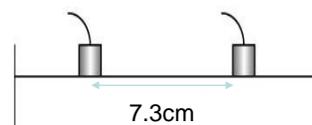
[from student presentations]

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Example : UPV test – slide rearranged

7.3cm

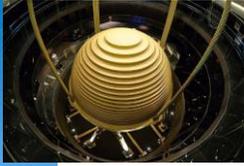Measurement of time of travel

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Rythm and animations

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ISMA presentation : mechanical TMDs

Mass-spring
Tuned Mass Damper
(TMD)

Pendulum
Tuned Mass Damper
(PTMD)

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ISMA presentation : Problems with the analytical approach

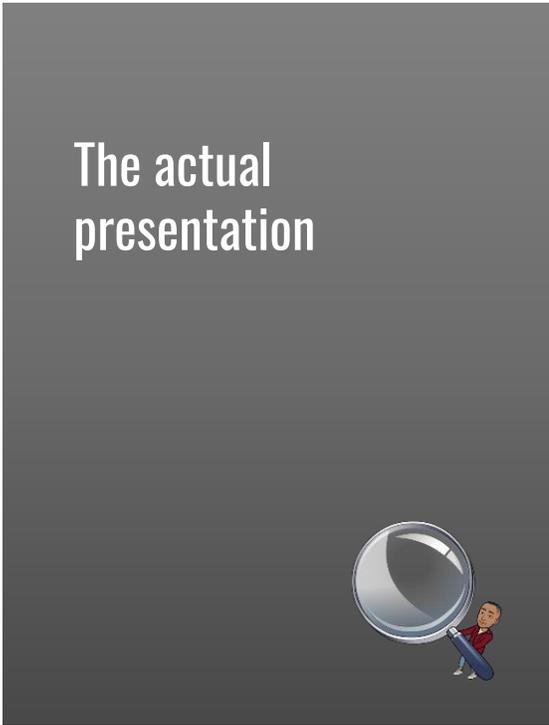Reduction of the main system to a one dof system :
- Introduces errors leading to sub-optimal solution
- Is not possible in the case of base (earthquake) excitation

Optimized quantities are limited to:
- Harmonic force excitations
- White noise random excitations

Tuned mass damper

L m,k,b ?

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The actual presentation
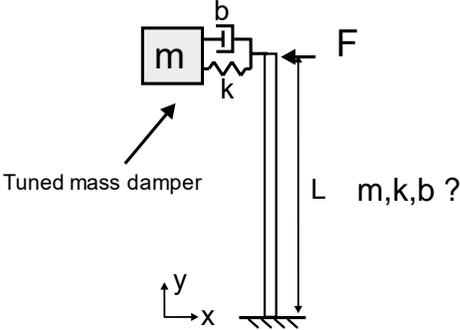
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How to dress ?

Just be respectful...
It depends on the context

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Respect the timing : 20 minutes is 20 slides

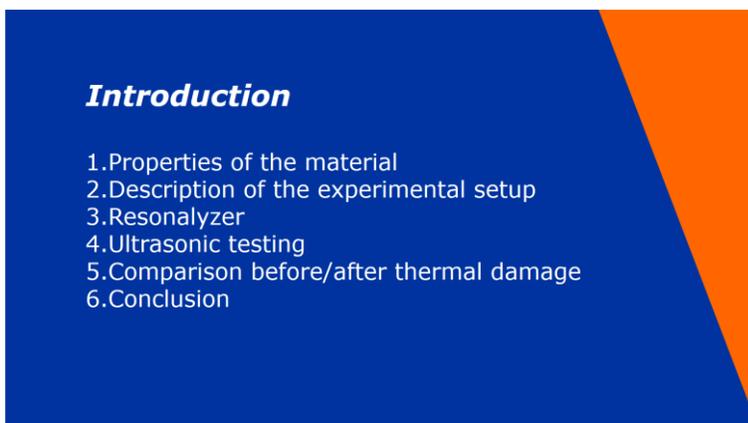Respecting timing is a mark of respect for the audience

- Number your slides !
- Rehearse several times at home
- Speak slowly
- Focus on memorising first few slides
- Breathe, and remember, we have been there before ...

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Gain some time : table of contents

Do you need a table of contents ?

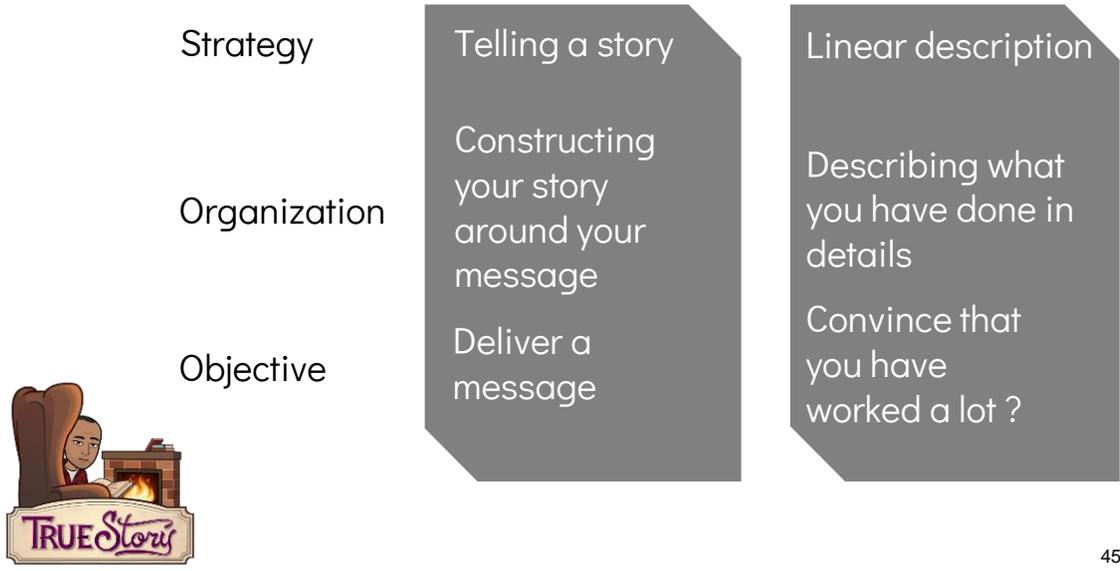**Introduction**

1. Properties of the material
2. Description of the experimental setup
3. Resonalyzer
4. Ultrasonic testing
5. Comparison before/after thermal damage
6. Conclusion

Most of what you are saying cannot be understood anyhow, so ?

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Gain some time : talk only about the essential

Strategy	Telling a story	Linear description
Organization	Constructing your story around your message	Describing what you have done in details
Objective	Deliver a message	Convince that you have worked a lot ?

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Talking

Avoid monotonic speech

https://www.youtube.com/watch?v=0_kkfhjgUaE

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Body language

https://www.youtube.com/watch?v=TmbQFWBvTtY

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Summary

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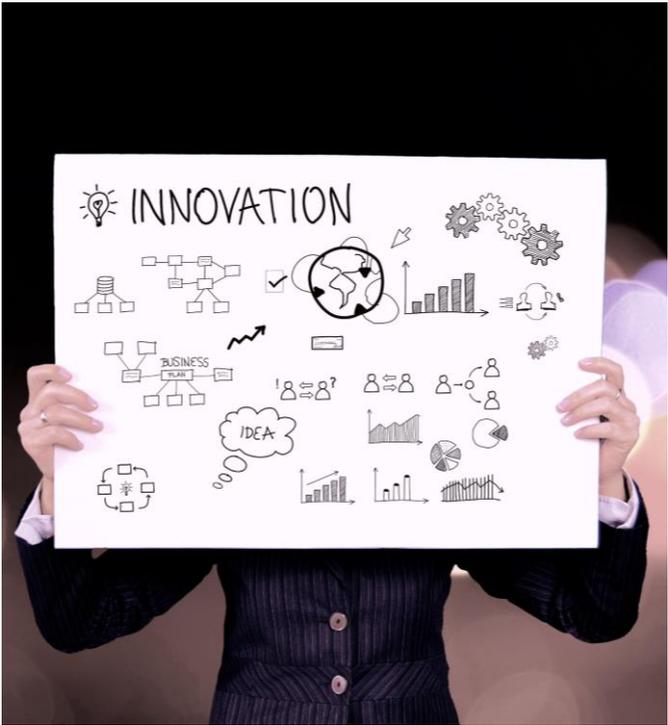
Tips to make efficient scientific presentations

- Have a message !

- Make attractive slides

- Increase the signal-to-noise ratio

- Pay attention to (body) language and respect timing

Spend the necessary time to prepare !

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