10 MINUTES

is the average general/sustained attention span.

Continuous/transient attention span is about 8 seconds.
is the number of years it took me to realize that communication is all about the receiver and that dialog can help matching expectations and progression
The goal of science communication is to communicate scientific results to select target groups.
WHAT IS SO SPECIAL ABOUT SCIENCE COMMUNICATION?

*Critical rationalism*

**Ontology:** what is reality? We study a single reality.

**Epistemology:** how do we know something? Reality can be measured.

**Methodology:** How do we find out? Usually quantitative experiments, methods and analysis, falsification of hypotheses
Learning from journalism: \textit{why} to communicate

Learning from communications and journalism: \textit{what} to communicate

Learning from communications and rhetoric: \textit{how} to communicate
Why to communicate?
The five news crieteria

• **Actuality:** Why bring the story/message now?
• **Relevance:** What is the relevance for the reader or viewer?
• **Identification:** Can the reader or viewer identify with the topic of the story?
• **Sensation:** Is the story surprising and exciting?
• **Conflict:** Does the story have conflicting views?
What to communicate?
The journalism triangle

Most important info first: who, what, when, where, why, how

Important details

General background info
What and how to communicate?
the seven C’s

- Completeness
- Conciseness
- Consideration
- Concreteness
- Clarity
- Courtesy
- Correctness

http://www.managementstudyguide.com/seven-cs-of-effective-communication.htm
What and how to communicate?

1. Completeness

- A message is "complete" when it contains all facts the listener needs for the reaction you desire.
- Listeners differ in their mental filters; they are influenced by their backgrounds, viewpoints, needs, attitudes, status, and emotions.
What and how to communicate?

2. Conciseness

- Conciseness is saying what you have to say in the fewest possible words without sacrificing the other C qualities.
- Eliminate wordy expressions
  - Include only relevant statements.
  - Avoid unnecessary repetition.
What and how to communicate?

3. Consideration

• Prepare every message with the recipient in mind and try to put yourself in his or her place.

• Try to visualize your listeners (or readers)—with their desires, problems, circumstances, emotions, and probable reactions to your request.

• This thoughtful consideration is also called the "you-attitude"
What and how to communicate?

4. Concreteness

• Communicating concretely means being specific, definite, and vivid rather than vague and general.
• Use specific facts and figures.
• Put action in your verbs.
• Choose vivid, image-building words.
What and how to communicate?

5. Clarity

• Getting your message across so the receiver will understand what you are trying to convey. You want that person to interpret your words with the same meaning you have in mind.

• Choose short, familiar, conversational words

• Construct effective sentences and paragraphs

• Achieve appropriate readability (and listenability)

• Include examples, illustrations, and other visual aids, when desirable.
What and how to communicate?
6. Courtesy (politeness)

- Courteous messages help to strengthen the bond between you and listeners. Courtesy stems from sincere you-attitude.
- Be sincerely tactful, thoughtful, and appreciative.
- Omit expressions that irritate, hurt, or belittle.
- Grant and apologize good-naturedly.
What and how to communicate?

7. Correctness

• Use the right level of language
• Include only accurate facts, words, and figures
• Maintain acceptable writing mechanics
• Choose nondiscriminatory expressions
• Apply all other pertinent C qualities
How to communicate?

rhetoric is modes of persuasion

• **Logos:** logical appeal or the simulation of it
  – facts and figures that support the speaker's topic

• **Pathos:** is an appeal to the audience’s emotions
  – demonstrate agreement with an underlying value of the reader or listener

• **Ethos:** is an appeal to the authority or honesty of the presenter
  – convinces the audience that he or she is qualified to present (speak) on the particular subject
References and further reading

- http://www.sdu.dk/en/Om_SDU/Fakulteterne/Teknik/Kontakt/Nyhedskriterierne
- http://www.explorehr.org/articles/Personal_Development/Seven_Communication_Principles.html
- http://www.managementstudyguide.com/seven-cs-of-effective-communication.htm
## Communicating scientific results and knowledge

<table>
<thead>
<tr>
<th>Area</th>
<th>Target group</th>
<th>Knowledge level</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>Researchers and developers</td>
<td>General scientific/engineering education</td>
<td>Knowledge dissemination obligation, facilitating scientific impact and recognition, project partner recruitment</td>
</tr>
<tr>
<td>Education</td>
<td>Current and future students</td>
<td>General public level</td>
<td>Retention and recruitment</td>
</tr>
<tr>
<td>Innovation</td>
<td>Companies and organization employees (business developers, product managers etc.), policy makers, general public</td>
<td>General public level</td>
<td>Knowledge dissemination obligation, public branding, project partner recruitment</td>
</tr>
</tbody>
</table>
## Danish ministry level societal challenges

<table>
<thead>
<tr>
<th>A society facilitating green growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>A society supporting health and quality of live</td>
</tr>
<tr>
<td>An effective and competitive society</td>
</tr>
<tr>
<td>A competent and cohesive society</td>
</tr>
<tr>
<td>A high technology society with high innovation capacity</td>
</tr>
<tr>
<td>Knowledge generates value: increased collaboration between research institutions and companies</td>
</tr>
<tr>
<td>Education system shall support the increase of innovation capacity</td>
</tr>
</tbody>
</table>

[http://ufm.dk/publikationer/2012/danmark-losningernes-land](http://ufm.dk/publikationer/2012/danmark-losningernes-land)
# Horizon 2020 societal challenges

<table>
<thead>
<tr>
<th>Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health, demographic change and wellbeing</td>
</tr>
<tr>
<td>Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the bio-economy</td>
</tr>
<tr>
<td>Secure, clean and efficient energy</td>
</tr>
<tr>
<td>Smart, green and integrated transport</td>
</tr>
<tr>
<td>Climate action, environment, resource efficiency and raw materials</td>
</tr>
<tr>
<td>Europe in a changing world - inclusive, innovative and reflective societies</td>
</tr>
<tr>
<td>Secure societies - protecting freedom and security of Europe and its citizens</td>
</tr>
</tbody>
</table>

Society readiness level (SRL) can help setting expectations

- **SRL 1**: identifying problem and identifying societal readiness
- **SRL 2**: formulation of problem, proposed solution(s) and potential impact, expected societal readiness; identifying relevant stakeholders for the project.
- **SRL 3**: initial testing of proposed solution(s) together with relevant stakeholders
- **SRL 4**: problem validated through pilot testing in relevant environment to substantiate proposed impact and societal readiness
- **SRL 5**: proposed solution(s) validated, now by relevant stakeholders in the area
- **SRL 6**: solution(s) demonstrated in relevant environment and in co-operation with relevant stakeholders to gain initial feedback on potential impact
- **SRL 7**: refinement of project and/or solution and, if needed, retes ting in relevant environment with relevant stakeholders
- **SRL 8**: proposed solution(s) as well as a plan for societal adaptation complete and qualified
- **SRL 9**: actual project solution(s) proven in relevant environments

[https://innovationsfonden.dk/sites/default/files/societal_readiness_levels_-_srl.pdf](https://innovationsfonden.dk/sites/default/files/societal_readiness_levels_-_srl.pdf)
## The four parts of a presentation in as few slides as possible

<table>
<thead>
<tr>
<th>Part</th>
<th>Content</th>
<th>Knowledge level</th>
<th>Goals</th>
<th>Target group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The problem and context as well as relation to societal challenges and SRL</td>
<td>General public level</td>
<td>Relevance and identification for listeners</td>
<td>All</td>
</tr>
<tr>
<td>2</td>
<td>Hypotheses, specific problems addressed, results and future projections and outcomes</td>
<td>General public level</td>
<td>Providing listeners with knowledge and why results are important, surprising, and has impact and societal consequences</td>
<td>All</td>
</tr>
<tr>
<td>3</td>
<td>Scientific material and methods as well as detailed results</td>
<td>General scientific/educated in field</td>
<td>Convincing the educated about completeness and correctness</td>
<td>Students and researchers</td>
</tr>
<tr>
<td>4</td>
<td>References and related work</td>
<td>General scientific/educated in field</td>
<td>Convincing the educated about completeness and correctness and creating recognition</td>
<td>Students and researchers</td>
</tr>
</tbody>
</table>
Guidelines for slide deck production

1. Select the topic: an area where you have some significant knowledge and results.
2. Prepare a slide deck with 4 parts and use multimedia elements.
3. Only first two parts if general audience unless simple view graphs pictures can be made.
4. Use why, what, and how to communicate elements as a check list to enhance presentation.
5. Make sure to plan for 0.5-1 slide per minute.
6. Rehearse you presentation - especially with focus on how to communicate.

TED here we come