

# Presenting Academic Work

Engage, Talk, Visualize

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Academic Literacy

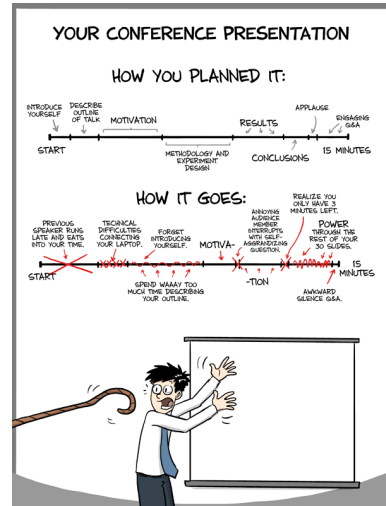
Winter term 2019/2020



medieninformatik

IMAI – Institut für  
Mathematik und  
Angewandte Informatik

- Ladies and Gentlemen...
- Presentations and Talks:
  - Motivation
  - Presentation
  - Layout
  - Disruptions
  - Feedback



PhD Comics 1553

# YOUR CONFERENCE PRESENTATION

## HOW YOU PLANNED IT:



## HOW IT GOES:



# Outline

Styles

Present

Visualize

References

**1** Styles

2 Present

3 Visualize

# Character

- How does one design a presentation?
- Learning by example
  - Content Level
  - Form level
- Get to know different variants
  - Fill your own toolbox
  - find out what fits
- Compare notes

Styles

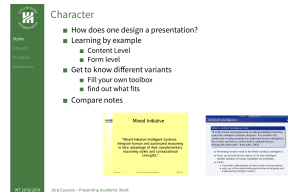
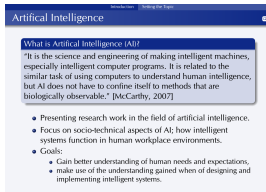
Present

Visualize

References

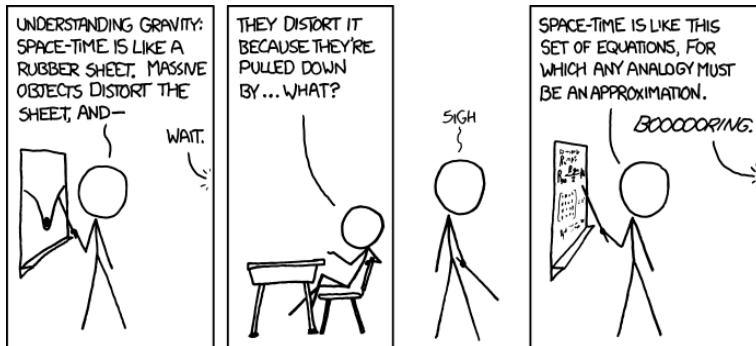
# Character

- How does one design a presentation?
- Learning by example
  - Content Level
  - Form level
- Get to know different variants
  - Fill your own toolbox
  - find out what fits
- Compare notes



# Role Models

- Two potential role models
  - Bill Gates
  - Steve Jobs
- 🖱️ Garr Reynolds (2005): Gates, Jobs, & the Zen aesthetic

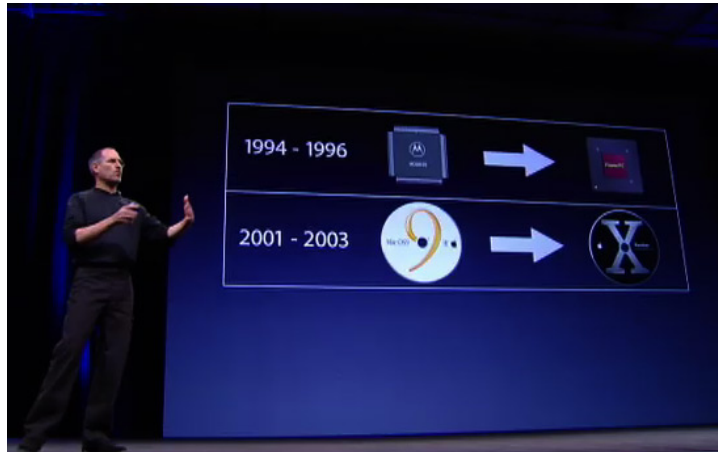


🖱️ xkcd: teaching physics



We have lots to show to you!





We have lots to show to you as well!



The big (colourful) picture



I need your full attention for the next topics...

# Take Away

Styles

Present

Visualize

References

## Focus

- Reduced design language/simplicity
- Reduced colour palette
- Do not be afraid of white space
- A slide is not a handout

## Caveat

But: Find your own style. Not everybody is like Steve Jobs.

Find your own style

Not everybody is like Steve Jobs

# Outline

Styles

**Present**

Visualize

References

1 Styles

**2 Present**

3 Visualize

## ■ Present

- Definition
- Preparation
- Execution
- Non-verbal behaviour
- Reflection

## ■ Visualize

- Definition and Goals
- Design elements
- Colours and Shapes
- Composition
- Tips

## ■ Present

- Definition
- Preparation
- Execution
- Non-verbal behaviour
- Reflection

## ■ Visualize

- Definition and Goals
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- Colours and Shapes
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- Tips



## ■ What?

### ■ Connecting

- verbal,
- non-verbal and
- visual

means of communication to make certain content accessible for a recipient

## ■ How?

- Consistent, clear structure
- Successful visualization
- Authentic presentation behavior
- Multi-medial, Multi-modal, Multi-codal

## ■ What?

### ■ Connecting

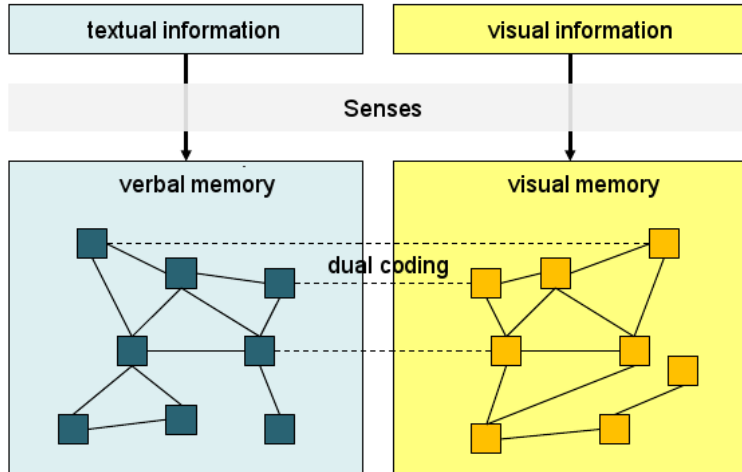
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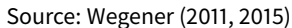
## ■ How?

- Consistent, clear structure
- Successful visualization
- Authentic presentation behavior
- Multi-medial, **Multi-modal, Multi-codal**

# Dual Coding



Dual-coding-theory: Paivio (1986)



- Three reference points for determining the content
  - Goals
  - Content
  - Time
- Yardstick for selection of content
- Goals:
  - Which goal (e.g., learning objective) would I like to achieve?
- Content:
  - What content is necessary to achieve my goal?
- Time:
  - How much time is available?

- Three reference points for determining the content
  - Goals
  - Content
  - Time
- Yardstick for selection of content
- Goals:
  - Which goal (e.g., learning objective) would I like to achieve?
- Content:
  - What content is necessary to achieve my goal?
- Time:
  - How much time is available?
    - and how long would the audience like to listen?

# Collect, Select, Compress, Express

Styles

Present

Visualize

References

## 1 Collect & select content

- What would be suitable for presentation?
  - Topics
  - Examples
  - Visuals

## 2 Compress content

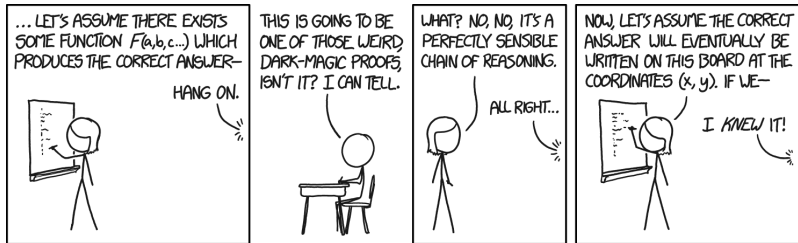
- Reduce to the important
  - You don't have much time

## 3 Express content

- Bring the content into shape
- Textual representation
- Visualization

# Compress

- new information takes precedence over known ones
- Focus on most important information
  - To reach your goal
  - To satisfy the target audience
- Make use of context
  - Prior knowledge
- Restrict yourself to the essentials



👉 xkcd: proofs



# Target Audience

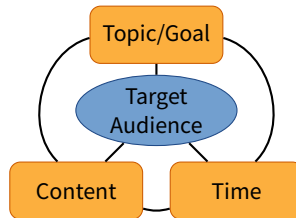
Styles

Present

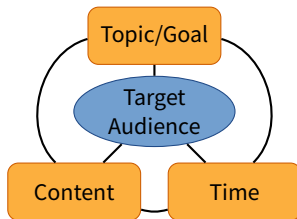
Visualize

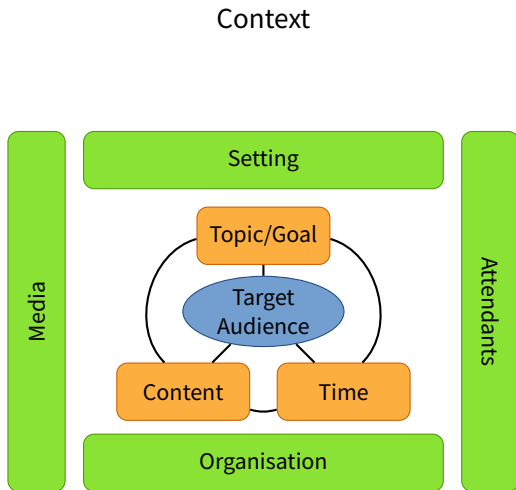
References

- Context of talk important
- Centred around the audience
  - How large is the audience?
  - Any commonalties?
    - Age
    - Gender
    - Profession
    - Prior knowledge
  - What do the participants expect?
  - What are they interested in?



## Context



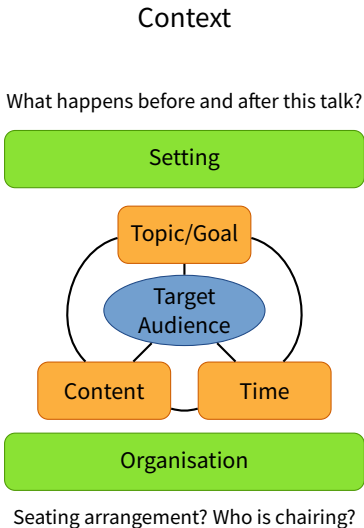


What media are available?

When do I check them?

Do I want to use a handout?

Media



How many attendants expected?

What do they know & expect?

Is the audience homogeneous?

Attendants

# Organisation I

- Length, breaks
  - Review of the length of the lecture
  - Prepare “Emergency program” (select the most important points)
  - Do not talk for more than 45 minutes
- Documents for participants (handout)
  - Design as text (in its own right) or as an image of the slides
  - Always discussed: when to hand it out?
    - before: to annotate
    - after: probably with extensions
- Personal preparation
  - Visualize sequence of the presentation in your mind
  - Create notes, index cards, or a presentation guide
  - Clarify dress code
- Media
  - Available?
  - In working order?

# Organisation II

- Check presentation technology
  - Projector
  - Wifi, Internet
  - Computer, software
  - Connections, Cables, Adapters
  - Loudspeaker
  - Presenter
  - ...
- Anticipate problems
  - Live-Demo
    - Video and/or screenshots of the system
  - Presentation
    - Laptop
    - USB-Stick
    - Dropbox...
    - E-Mail
    - Printout
    - ...

# Preparation

Styles

Present

Visualize

References

- Check spelling
  - Best by another person
- Practice talk, best...
  - in the right room
  - in front of an audience
  - with the technical means to be used
- While doing that or after
  - Take time, usually required:
    - BA-/MA-Colloquia: 30 minutes talk, 15 minutes demo
    - Seminar: 30 minutes, 15 minutes discussion
    - Project/lab course: 30 minutes, maybe including demo
  - revise problematic passages
  - identify & reduce skip actions



## ■ **Introduction** (5%)

- Welcome the audience
- Present yourself
- Arrange the formalities
- Introduce topic & goal
- Present the structure

## ■ **Main part** (75%)

- ...

## ■ **Conclusions** (20%)

- Summary
- Move to discussion
- Marking the end

# Introduction

Styles

Present

Visualize

References

- Welcome
- Introducing yourself
  - Embedding into context
- Agreement on style and procedure
  - When are questions asked?
  - Is something demonstrated?
- Introduce topic and goal
  - motivate the audience to listen
    - ask questions
    - Show benefits
    - provoke (sparingly)
    - entry joke

# Main Part

- Speak freely (index cards)
- Keep eye contact
  - Talk to the audience, not the wall (screen)
- Short, understandable sentences
- Use your voice in a targeted manner
- Take breaks
- Do not play with a pen, pointer, etc.
  - But you can stick to the pen
- Involve listeners
- Give summaries in between
- Use redundancy consciously
- Build some dramatic effect
  - Posters, situational foils, situational logo

- Short Summary
- Designated time frame & objective for discussion
- Move to discussion/workshop phase
- Clarify what will happen with results
- At the end: thanks for participation
  - But no “thank you” slide
  - Better: title page or slide with contact details

# Disruptions

Styles

Present

Visualize

References

- Late arrivals
  - Welcome by eye-contact only
- Questions
  - Depending on the agreed upon procedure: answer or refer to later
- Slip of the tongue
  - Correct, do not apologize
- Forgotten terms
  - Describe
- Chatty audience
  - Eye contact, direct questions
- Technical mishaps
  - Continue without media or break

- Presentation must be visible to all
- Stay out of line of sight
- Do not talk to the media, but to the people
- Use visualization as a “thread”
- Projector: try the mouse instead of a laser
  - Laser pointers can irritate quickly
  - Therefore: Use sparingly (we are no cats)
  - By no means point to everything you say (karaoke)

# Structure

- Structuring: (intermediate) headings
- Situation: Where in the talk are we?
  - At the beginning: agenda
  - During the talks:
    - hinted on every slide (eg as with LaTeX beamer) or
    - repetition of the agenda as intermediate foils
- Page numbers

There Is No Largest Prime Number

Results

Proof of the Main Theorem

---

There Is No Largest Prime Number

The proof uses *reductio ad absurdum*.

Theorem

There is no largest prime number.

Proof.

1. Suppose  $p$  were the largest prime number.
2. Let  $q$  be the product of the first  $p$  numbers.
3. Then  $q + 1$  is not divisible by any of them.
4. Thus  $q + 1$  is also prime and greater than  $p$ . □

Results

Proof of the Main Theorem

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# Verbal & Non-verbal

## ■ Voice

- Control speed
- Use breaks in speech
- Control sound, tone, volume

## ■ Posture

- Upright

## ■ Movement

- Natural
- No subconscious movement

## ■ Gesture

- Fitting the content
- Avoid uncertainty
- Authentic

## ■ Eye contact

- Builds relationship
- Catching signals



# Briefing and Reflection

Styles

Present

Visualize

References

- Why?
  - optimize
  - learn from mistakes
- What?
  - goal reached?
  - talk suitable for audience?
  - was structure okay?
  - opening succeeded?
  - conclusion succeeded?
  - was use of media okay?

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- Design elements
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# Text I

- Text
  - Good readability
  - Be aware of reading habits:
    - left to right
    - from top to bottom
- Consistent (own) style
  - Corporate Identity
- Legibility
  - dark font
  - bright background
- Font
  - sans serif
  - if possible only one font
- Navigation
  - Chapter structure
  - Slide number

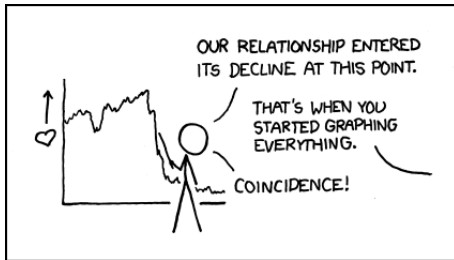
- Reduction to the essentials
- Keywords instead of sentences
- Visualizations examples
- Four intelligibility enhancers:
  - simplicity
  - Structure & order
  - Shortness & conciseness
  - Additional stimuli

### Krug's Third Law of Usability, 2005

“Get rid of half the words on each page, then get rid of half of what’s left.”

# What is Visualization

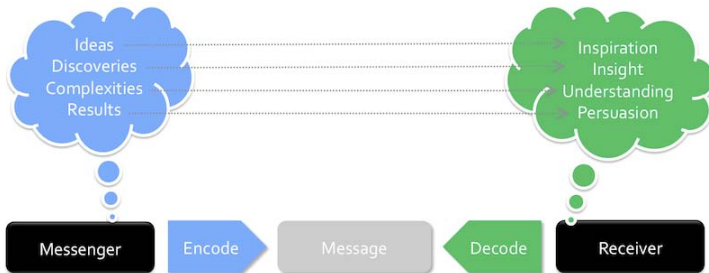
- Visualizing is pictorial representation
  - “A picture is worth a thousand words”
- Aims:
  - Make information easier to grasp
  - Give guidance
  - Provoke statements
  - Further memories



xkcd: decline

# Field of Visualization

- Draws from many fields
- Requires a deep and broad knowledge across several traditionally discrete subjects, including cognitive science, semiotics, statistics, graphic design, cartography, and computer science
- Goal: Communication



Source: Kirk (2012)



# Graphic Elements

- Graphs, icons, diagrams
- What for?
  - Avoid too much text
  - additional stimuli
  - Loosening up “dry” topics

Styles

Present

Visualize

References

# Graphic Elements

- Graphs, icons, diagrams
- What for?
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  - Loosening up “dry” topics
- and really?
  - Clarification/highlighting of elements
  - Explanation of facts
  - Illustration of facts

Styles

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Visualize

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# Graphic Elements

- Graphs, icons, diagrams
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- and really?
  - Clarification/highlighting of elements
  - Explanation of facts
  - Illustration of facts
- Question: What should be achieved with the picture?
  - choose appropriate visualization
- no images/scans/photos of poor quality (pixelated, crooked, illegible, ...)
  - better to do it over yourself
- Avoid 3D-effects or shadows
- Use color sparingly

# Diagrams

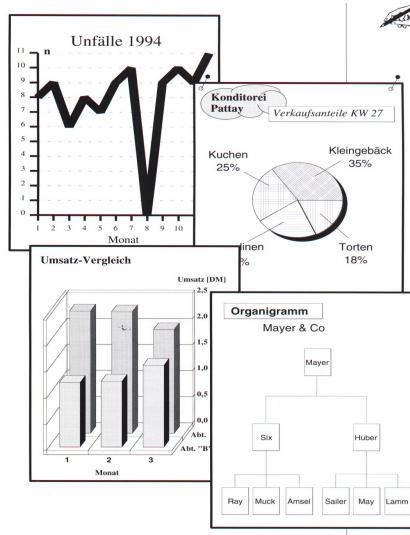
Styles

Present

Visualize

References

- Comparison of:
  - absolute numbers
  - development courses
  - proportions
- Illustration of:
  - procedures
  - structures



# Layout

- Pictures have captions
  - Can be omitted if the image serves mainly structuring purposes or the content is communicated in the graphic
- Pictures have numbers
  - Can be omitted in numbered slides
  - otherwise number consecutively, possibly by chapter
- Graphic processing of data
  - Attach legend
  - Axes of the coordinate system intersect at the origin
    - if not: indicate
  - Always specify axes and/or units
  - Make multiple curves easily distinguishable
    - Texture/hatching, color, strength
  - Observe scientific layout rules
    - 3D-effects usually counter-productive
  - Supplement the measures of the central tendency with dispersion measures

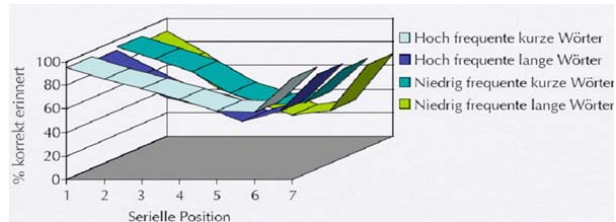
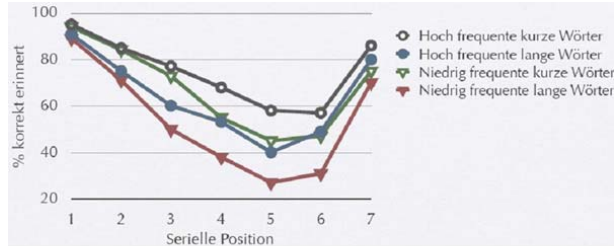
# 3D-Effects

Styles

Present

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References



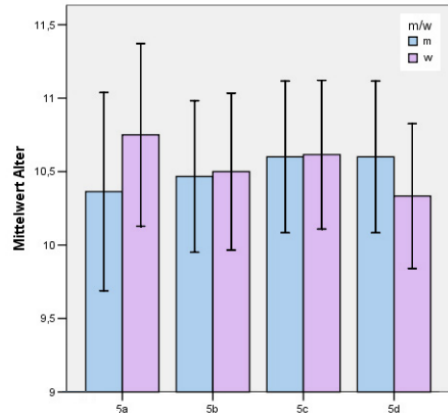
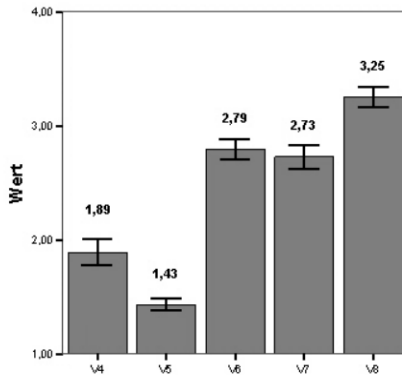
# Error Bars

Styles

Present

Visualize

References



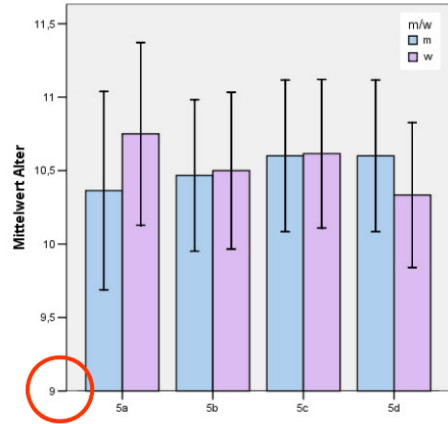
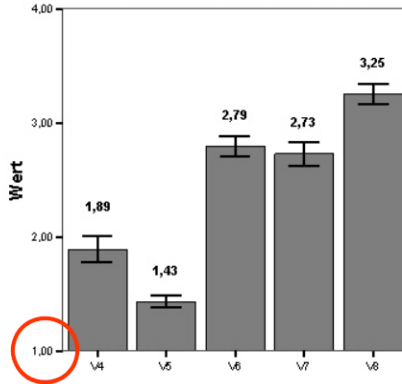
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Styles

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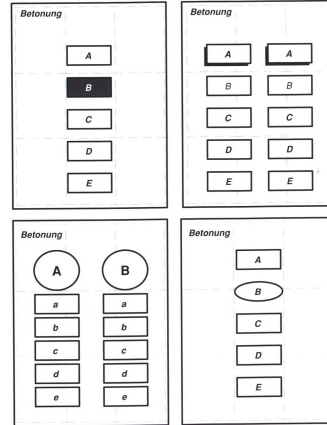
Visualize

References





- What for?
  - Highlight important information
  - Clarify relationships
  - Make cross references between several representations clear
  - connect successive representations



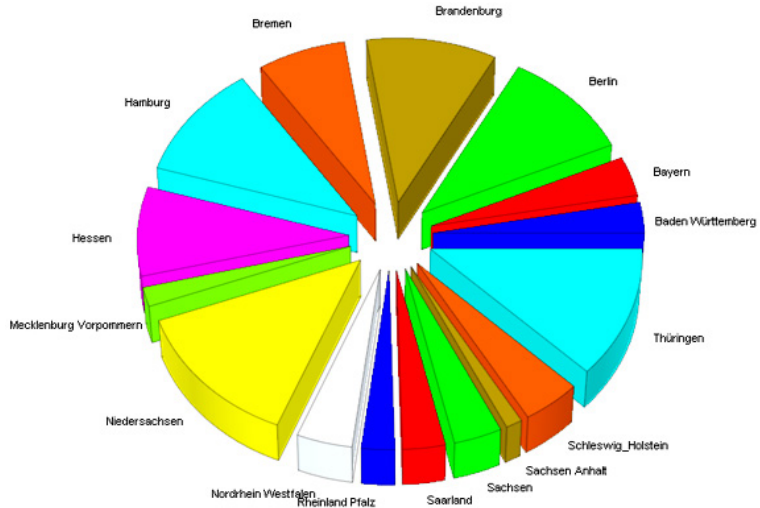
# Pie Charts

Styles

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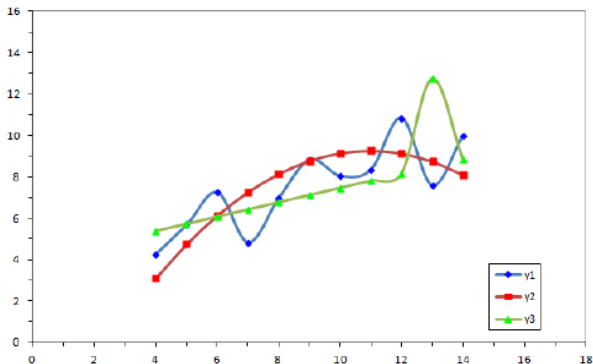


[schule.mupad.de/aktuelles/presse/bilder/index\\_11.shtml](https://schule.mupad.de/aktuelles/presse/bilder/index_11.shtml)

# Tables

- avoid unnecessary (vertical) lines
- maintain sufficient distance to the cell boundary (padding)
- if possible: supplement with diagrams

x	y <sub>1</sub>	y <sub>2</sub>	y <sub>3</sub>
4	4,26	3,10	5,39
5	5,68	4,74	5,73
6	7,24	6,13	6,08
7	4,82	7,26	6,42
8	6,95	8,14	6,77
9	8,81	8,77	7,11
10	8,04	9,14	7,46
11	8,33	9,26	7,81
12	10,84	9,13	8,15
13	7,58	8,74	12,74
14	9,96	8,10	8,84



# Composition and dramaturgy

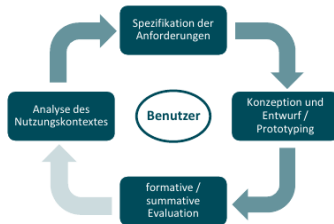
Styles

Present

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References

- Reveal/uncover and animation
- Why?
  - Suspense
  - Loosening up



# Composition and dramaturgy

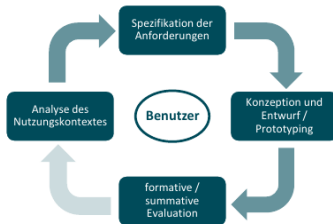
Styles

Present

Visualize

References

- Reveal/uncover and animation
- Why?
  - Suspense
  - Loosening up
- And really?
  - Visualization of processes, processes, phases
  - Clarification of differences and/or developments
  - Not an end in itself!



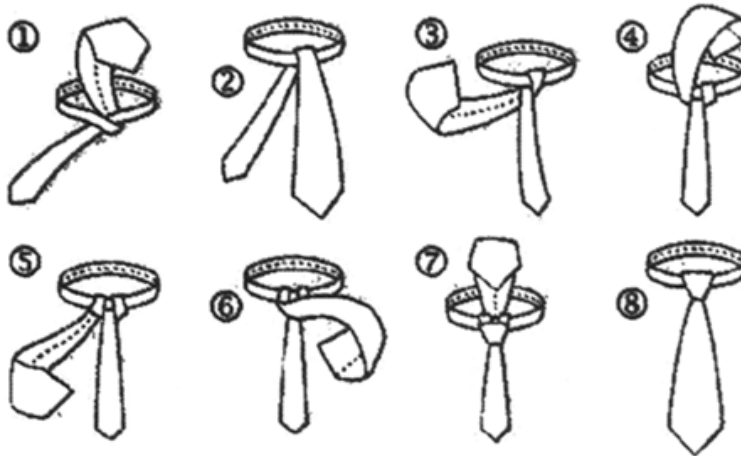
# Process Visualization I

Styles

Present

Visualize

References



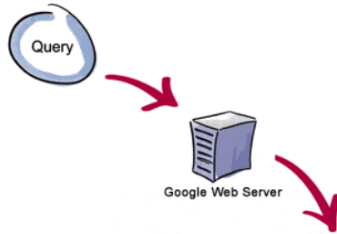
(aus Wirth 2004, S.64)

# Process Visualization II



from:  
<http://zoo.cs.yale.edu/classes/cs155/spr03/lectures.html>

# Process Visualization II

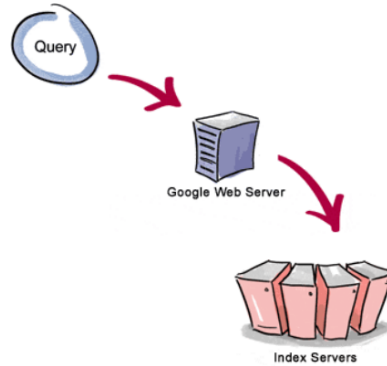


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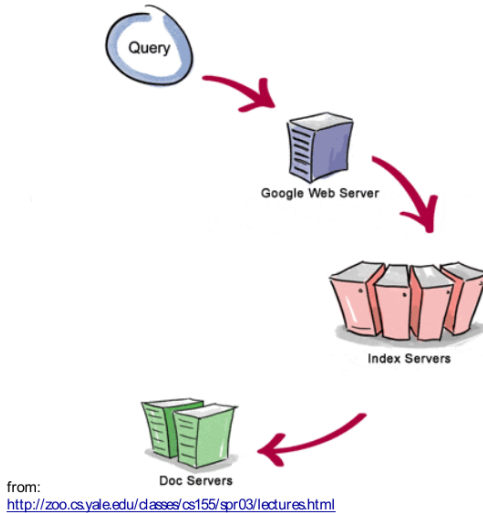
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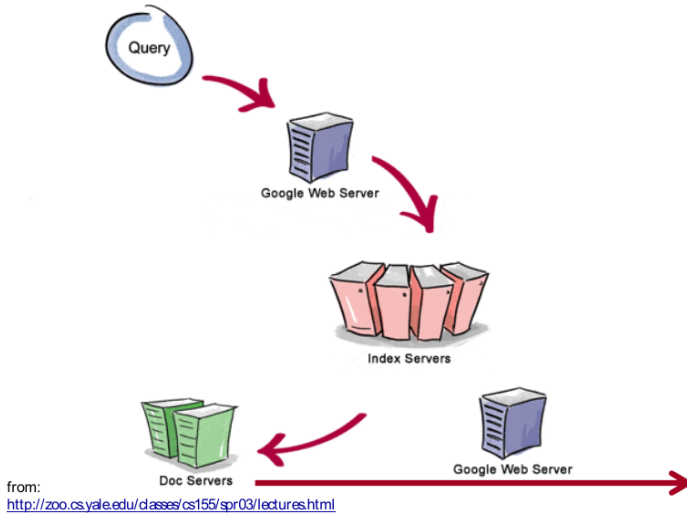
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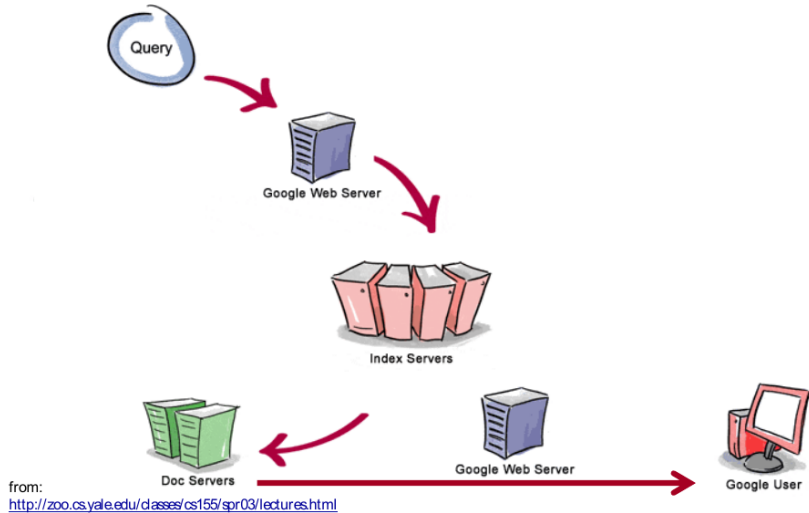
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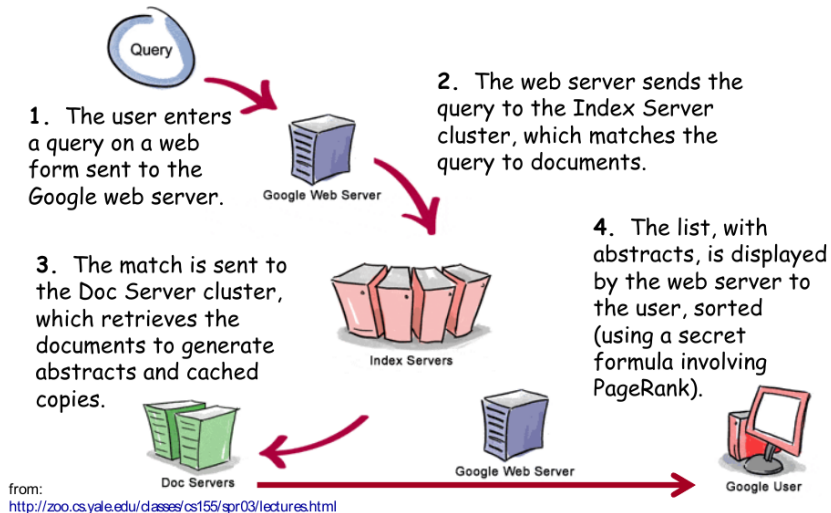
# Process Visualization II

Styles

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- maximum 3 colors per representation
- Visually summarize sense units (color, spatial)
  - Gestalt Principles
- Emphasize important aspects
- leave enough space
- Font size at least 18 point (Powerpoint etc.)
- sans serif font (Droid Sans, Frutiger, Helvetica, Futura)
- Keep slides to show in case of questions

Ludwig Mies van der Rohe

“Less is more!”

# Presenting Academic Work

Engage, Talk, Visualize

Jörg Cassens

Institute for Mathematics and Applied Informatics

Academic Literacy

Winter term 2019/2020



medieninformatik

IMAI – Institut für  
Mathematik und  
Angewandte Informatik

Kirk, A. (2012). *Data Visualization – A Successful Design Process*. PACKT Publishing, Birmingham.

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Wegener, R. (2011). *Parameters of context: from theory to model and application*. PhD thesis, Department of Linguistics, Macquarie University.

Wegener, R. (2015). *Continuing Discourse on Language. A functional perspective, Vol. 1*, chapter Studying language in society and society through language: context and multimodal communication. Equinox.