Visualisation

Why?
What?
With what?
How?
Balance for **combination of hearing and seeing**:

Information intake 94%
- 50% forgotten
= 47% of the information intake will be **memorized**
Visualize – why?

**Left brain hemisphere:**
- Digital
- Verbal
- Language
- Rules/ laws
- Analysis
- Time
- **Detail**
- Logic

**Right brain hemisphere:**
- Analog
- Non-verbal
- Body language
- Creativity
- Synthesis
- Space
- **Overview**
- Emotion/ intuition

1/8 Intellect
7/8 Feeling
Visualize – Advantages

Advantages of visual demonstration:

• Issues, demonstrated supported by pictures, drawings or other visual impressions will be better memorized

• Complex combinations (procedures, measuring values, structures...) can be better explained with visualization

• Visualization of issues concentrates to the most important points (Selection between essential and inessantial information)
Visualize- what?

- Figures
  illustrate and making clear
  - Spreadsheets
  - Diagrams

- Structures and combinations
  Illustrate formation, chronologies oder relations (cause/ effect)

- Chronologies
  Chronologies of action and decision, instructions...
  - Flow chart
Visualize- Figures Diagram

General:

- Title, underline, where necessary indication of source
- Colors and shading must be clear and specific
- Colors have meanings - be careful!

Too much!

Less is more
Visualize- Figures Diagram

Diagrams make comparisons better understood:

- Structures (consistence)
- Ranking (major/less; bigger/smaller)
- Changes over time (up- and downturns, in-/decreases)
- Frequency distribution
- Correlations (Connections between influence values)

Abstracts of data before demonstration makes them arranged better!
Visualize - Figures: spreadsheets

• Spreadsheets
  Instrument for a demonstration presentation of results in modest use
    - reasonable composition of columns and lines
    - clearness regarding statement
      (perhaps summarize with a diagram)
    e.g.
    - to compare figures, they should stay below each other
    - highlight for easier orientation
    - spreadsheets always with headlines
    - regional information better used with maps
Visualize- Figures: Diagram

If something is important, it also has to be readable
- also axis legends, headlines etc.

- Circular chart:
  typical to visualize percentage proportions on basic population (=100%)
  - If possible <6 values (=segments) – better orientation!
  - Segments of a circle arrange starting with biggest value in clockwise direction
  - To highlight a single aspect one segment can be exposed
• Bar chart and column chart:
  Frequency distribution = column chart
  Rankings, to draw comparisons = bar chart
  • One-dimensional bars / columns easier and faster to understand
  • Maximum 5 bars or columns
  • If very different values – scaling
Visualize - Figures Diagrams

- Curve chart or Line chart:
  changes over time; up- and downturns...

  - < 7 points in time also is suitable a column chart,
    otherwise better use a line chart

  - Max. 5 curves with max. 5 data points each

  - Or <5 curves with more data points
Visualize- Figures: Diagrams

• Pictogram

Values are shown in symbols (people, animals, objects or similar)
  • good for fast orientation
  • pictograms have to be clear and simple to understand
Visualize - Chronologies

• Supports to understand a time line and consistence
• Flowchart: 5 elements

- Begin and end
- Activities
- Decisions
- Direction of action
- Connecting point (with letter or numeric character)
Visualize- with what?

Mediums support the presentation- the use depends of:

- Number of participants and dimensions of the presentation room
- Text has to be readable from each seat
- Possibilities of the medium (e.g. Video sequences)
- Availability, a change of the medium supports the attention
- Mediums emotionalize

But no „Medium magic“ !
Visualize - Mediums

Beamer
(slide projector)

Flipchart

pinboard

Blackboard or whiteboard

Overhead-projector
**Visualize- with which kind of medium**

**Overview ability to intention:**

<table>
<thead>
<tr>
<th></th>
<th>Beamer</th>
<th>Flip-Chart</th>
<th>Pinboard</th>
<th>Overheadp.</th>
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<td></td>
<td></td>
<td>+</td>
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<tr>
<td>Products/ benefits</td>
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<td>Opinions (pro/contra)</td>
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<td>++</td>
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</table>
Visualize- how?

• Composition laws
• Font composition
• Use of color
• Implementation of pictures
Visualize- how? Compositon laws

Result of research of psychologie of cognition

- **Law of nearness**
  at close quarters are seen as a whole piece
  ➡️ e.g. picture and legend are close together

- **Law of closeness**
  closed parts are more seen as a whole than open parts
  ➡️ e.g. framing around pictures or central quintessences control the focus of the viewer
Visualize- How? Composition laws (2)

• Law of similarity
  Parts with same form, colour, dimension are felt as a whole
  (visual uniformity signalize factual togetherness)

  ▶ e.g. what belongs together should be demonstrated
    with same colours, shiftings, identical fonts

• Law of conciseness
  Elements with features like regularity, symmetry come together to a
  good figure

  ▶ e.g. symmetric contours/areas keep help easy to memorize
Visualize- How? Font

• Font face should fit to content
• Be careful with changes in font face, font size, font style:
  – One type face, max. a second to highlight a headline
  – 4 font sizes:
    ▪ main headline >= 32
    ▪ subheading >= 24
    ▪ continuos text >= 20
    ▪ legend (picture) > 18
  – Max. 2-3 font styles, no combinations!
    (e.g. fat, cursive, underlined)
Visualize- How? Color

- Colors are instruments for illustrating and mostly have meanings. Attention: cultural differences are possible!
- Use for structuring of information and orientation of the viewer

3 aspects for use:
- Use colors targeted for highlighting/structure/differentiation - be careful not to redirect!
- Few colors (max. 4), otherwise turbulent, confusing
- Keep readability in mind (background, contrast)
Visualize - How? Colors

Circle of colors

- blue
- violet
- red
- yellow
- orange
- green

Background color and font

- Black at white is good readable
- White at black is fatiguing
- Black at soft tinted is ideal
- Black or white at grey is good
Effect and meaning of colors

Blue
• Standard for Flip Chart
• Neutral, like handwriting
• Good readability and contrast

Red
• Aggressive (stimulus word), use it sparingly!
• For underline, framing, symbols

Black
• Typical print color
• Rich in contrast, with red possibly aggressive

Green
• Low contrast
• Only completion color
• Pictures, drawings, graphics

Violet Yellow Mint green
• Act unserious
• Extrem colors don’t engage so’s sympathy!

Use of color combinations:
• text max. 2 colors (blue/black+red)
• 3 colors for partly prepared flipcharts
• 4 colors only for prepared charts
Visualize- How? Pictures

Pictures are necessary for sophisticated visualizations:
„One picture tells more than 1000 words“ (chinese slogan)

• Self making
  Photos
  Videos
  Graphics

• Using other sources
  Scanning
  Attention: respect intellectual property rights!
  Search at web or picture data bases
5 Rules for design of slides

• Manageable number of information

• Clear structure
  Arrange information
  use sparingly and consistent typographic elements

• Choice right font size

• Considered use of font type/ -style

• Targeted use of colors
5 Rules for design of slides at one glance

1. Amount of Information
   - magic

2. Structure
   - 1.
   - 2.
   - 3.

3. Font size
   - Minimum 18...
   - Better: 24

4. Font type
   - Arial !!!
   - Times Roman !!!!
   - forte ????

5. Color design
   - Red = danger