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Interaction & Information Designer

Managing Director of Interactive Things
Editor of Datavisualization.ch
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Interactive Things
Design Studio

Digital Product Design
Established 2010
Five Equal Partners
Fifteen Employees

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Kapitel 1

Einsatzbereich

Wo werden Visualisierungen eingesetzt?
Visual Analytics

Selection of scientific research visualizations from Visualcomplexity.com
Data-Driven Journalism

Selection of data-driven reportings from NYTimes.com
Data-Driven Products
Selection of heads-up displays, interfaces, and holograms from various movies
Video Games
Visualizations have become a ubiquitous format for data and information in everyday life.
Kapitel 2

Aufgabe

Welche Aufgaben können mit Visualisierungen erfüllt werden?
Three Jobs of Visualizations

**Exploration**
Searching for significant facts.

**Evaluation**
Examining and making sense of data.

**Explanation**
Conveying information to others.

**Discovery**

**Understanding**

**Communication**

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Stephen Few (2014), Why Do We Visualize Quantitative Data?
Competence Browser
Data visualization of research activity and competency.

Client: ZHAW
Release: August 2014
Services: Interaction Design, Interface Design, Data Visualization, Software Engineering
Credits: Benjamin Wiederkehr, Ilya Boyandin, Jan Wächter, Jeremy Stucki, Peter Gassner, Tania Boa, Thomas Preusse

Link: expertisenkarte.zhaw.ch
Augment
Mobile application for tracking and analyzing medical grade vital signs.

Client
Biovotion

Release
September 2018

Services
Design Strategy, Design Conception, Interface Design, Interaction Design, Data Visualization

Credits
Anna Wiederkehr, Christoph Schmid, Jan Wächter

Link
biovotion.com
Roger Federer
Data story about the career of the legendary Swiss tennis player.

2004–2010
The most powerful five years of all time in tennis

20 Years
20 Titles
20 years ago, he played his first professional match. Roger Federer has now won his 20th Grand Slam title.

Client
SRG SSR

Release
January 2018

Services
Interface Design, Interaction Design, Data Visualization, Software Engineering

Credits
Tania Boa, Luc Guillemot, Angelo Zehr (SRG SSR)

Link
srf.ch/static/srf-data/data/2018/federer

2004 was one of his first years. Out of 24 matches, he lost
13 tournaments he played in his own eleven, including three Grand
Slams first in the world was indisputable.

2008 Federer won just about everything there was to win.
He was nearly always against the arch rival the Spaniard Rafael
Nadal by no means in the Croats, and retained a full 160
three years, eight titles in him.

Service games won in 9%
vs. Nadal, Sharapova, Murray
Visualizations are tools to explore, evaluate, and explain insights hidden in data.
Kapitel 3

Funktion

Wie funktionieren Visualisierungen eigentlich?
With visualizations, we encode data into a visual form that can be decoded and understood by people.
Fragen, die wir zuerst beantworten müssen

- Wer ist das Publikum der Visualisierung?
  Entscheidungsträger, Fachexperten, Laien, etc.

- Wo wird die Visualisierung gesehen und genutzt?
  Frontalpräsentation, Arbeitsmittel, Berichtsdokument, etc.

- Welche Aufgabe soll die Visualisierung erfüllen?
  Verständnis schaffen, Aussage treffen, Entscheidung beeinflussen, etc.
Profit
Kapitel 4

Prozess

Wie erstellen wir bei Interactive Things Visualisierungen?
Violence Info
Global knowledge platform about violence prevention.

Client: World Health Organisation
Release: October 2017
Service: Interface Design, Interaction Design, Data Visualization, Software Engineering
Credits: Gerhard Bliedung, Tomas Carnecky, Peter Gassner, Luc Guillemot, Ece Kavlak, Kalliroii Retzepi, Christian Siegrist

http://apps.who.int/violence-info
1. Inform

Have a shared vision for the project.
News office at Neue Zürcher Zeitung: Marcel Gyr, Benjamin Wiederkehr, Martina Franzén, Sylke Gühnwald
1. Inform
Have a shared vision for the project.

2. Prepare
Collect and refine the data ready for analysis.
Construct personas, scenarios, use cases.
Collecting and Refining Data

- **Collect**: Gather data from systematic reviews, then fill in single studies.
- **Harmonize**: Summarize the data and align dimensions, metrics, and terms.
- **Organize**: Map the structure of the data to the mental model of the user.
- **Visualize**: Translate the attributes of the data into intuitive visual variables.
Understanding Users and Scenarios

Policy Makers
Interested in high-level evidence for decision and policy making.

Researchers
Interested in scientific data and tools to explore that data.

Journalists
Interested in stories for communication and distribution.

Public
Interested in easy-to-understand facts and figures.
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3. Explore
   Understand the texture of the data.
   Observe and inquire the user in his context.
## Raw data for Education Inequalities

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>USA</td>
<td>Literacy</td>
<td>90.1</td>
</tr>
<tr>
<td>2020</td>
<td>Canada</td>
<td>Access</td>
<td>95.7</td>
</tr>
<tr>
<td>2020</td>
<td>France</td>
<td>Participation</td>
<td>92.3</td>
</tr>
<tr>
<td>2020</td>
<td>Italy</td>
<td>Dropout Rate</td>
<td>10.5</td>
</tr>
<tr>
<td>2020</td>
<td>Japan</td>
<td>Dropout Rate</td>
<td>7.8</td>
</tr>
<tr>
<td>2020</td>
<td>Germany</td>
<td>Dropout Rate</td>
<td>5.2</td>
</tr>
</tbody>
</table>

Note: The data includes literacy rates, access to education, participation rates, and dropout rates for various countries.

Source: UNESCO Institute for Statistics.
Detail data analysis for Education Inequalities

Average of edu4_17_m for each country. Color shows details about category. Details are shown for subcategory1. The data is filtered on year, which ranges from 2005 to 2005. The view is filtered on country and category. The country filter excludes no members. The category filter has multiple members selected.
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Understand the contents of the data.
Analyze and interpret the behavior of the user.
Results from a mini design sprint for Violence Information
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Understand the texture of the data. Observe and inquire the user in his context.

4. Discover
Understand the contents of the data. Analyze and interpret the behavior of the user. Map the user flow and user journey.

5. Sketch
Translate ideas into concept visuals.
Lifetime prevalence studies of child maltreatment

- Median prevalence 5.099% for All
- Median prevalence 14.25% for Any
- Median prevalence 4.7% for Financial
- Median prevalence 4.599% for Neglect
- Median prevalence 3.8% for Physical
- Median prevalence 11.25% for Psychological
- Median prevalence 0.6% for Sexual
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Map the user flow and user journey.

6. Question
Verify the selected visualization method.
Verify that it meets the user’s expectations.
Studies of child maltreatment risk factors

**Individual risk factors (child):**
- Externalizing behaviors & problems
- Intellectual disability
- Mental and neurological disorder
- Other

**Individual risk factors (parent/caregiver):**
- Low self-esteem
- Unmarried/unfavorable pregnancy
- Poor economic control
- Mental and neurological disorder
- Other

**Relationship risk factors:**
- Poor pre/parental relationship
- Parental death separation
- Poor family relationships
- Violence in the family
- Other

**Community risk factors:**
- Rural residence
- Other

Height: Median odds ratio

Scale:
- Small
- Large
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7. Design
Create the specification for implementation.
Studies of intimate partner violence risk factors
Homicide Rate

Size: Homicide rate  small  medium  large
Application Architecture
Visual Design Aesthetics

“We accept the first girl, the second should be killed, then the third will be a son”

— Unknown

“We accept the first girl, the second should be killed, then the third will be a son”

— Unknown

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— Unknown

“We accept the first girl, the second should be killed, then the third will be a son”

— Unknown

“We accept the first girl, the second should be killed, then the third will be a son”

— Unknown
Visual Design Styleguide
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   Create the specification for implementation.

8. Develop
   Build a flawlessly working application.

   Map the user flow and user journey.
Development Toolkit

Client Side
- d3js.org
- reactjs.org
- catalog.style

Server Side
- nodejs.org
- graphql.org
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9. Evaluate
Ensure the result is understandable.
Ensure the result is usable.
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9. Evaluate
Ensure the result is understandable.
Ensure the result is usable.

10. Deliver
Finalize the project and ship it.
Welche Werkzeuge helfen uns, Visualisierungen zu erstellen?
Werkzeuge: Spektrum der Arbeitsresultate

Vordefiniert
Exportiert aus Excel, Numbers, Tableau, etc.

Angepasst
Standard Layout oder Beispiel-Vorlage

Massgeschneidert
Spezifische Gestaltung und Umsetzung
Werkzeuge für die Analyse

R
r-project.org

OpenRefine
openrefine.org

Tableau
tableau.com
Werkzeuge ohne Programmieren

Datawrapper
datawrapper.de

RAW
RAWGraphs
rawgraphs.io

Flourish*
flourish.studio
Werkzeuge fürs Programmieren

JavaScript
js.org

D3
d3js.org

React
reactjs.org
Empfohlene Werkzeuge

Finde die passenden Helfer: selection.datavisualization.ch
Empfohlene Werkzeuge

Liste (fast) aller verfügbaren Helfer: visualisingdata.com/resources
Empfohlene Werkzeuge

Finde die richtige Darstellungsform:
datavizproject.com
Many Thanks!
Don’t hesitate to contact us.

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