

Übung zur Vorlesung

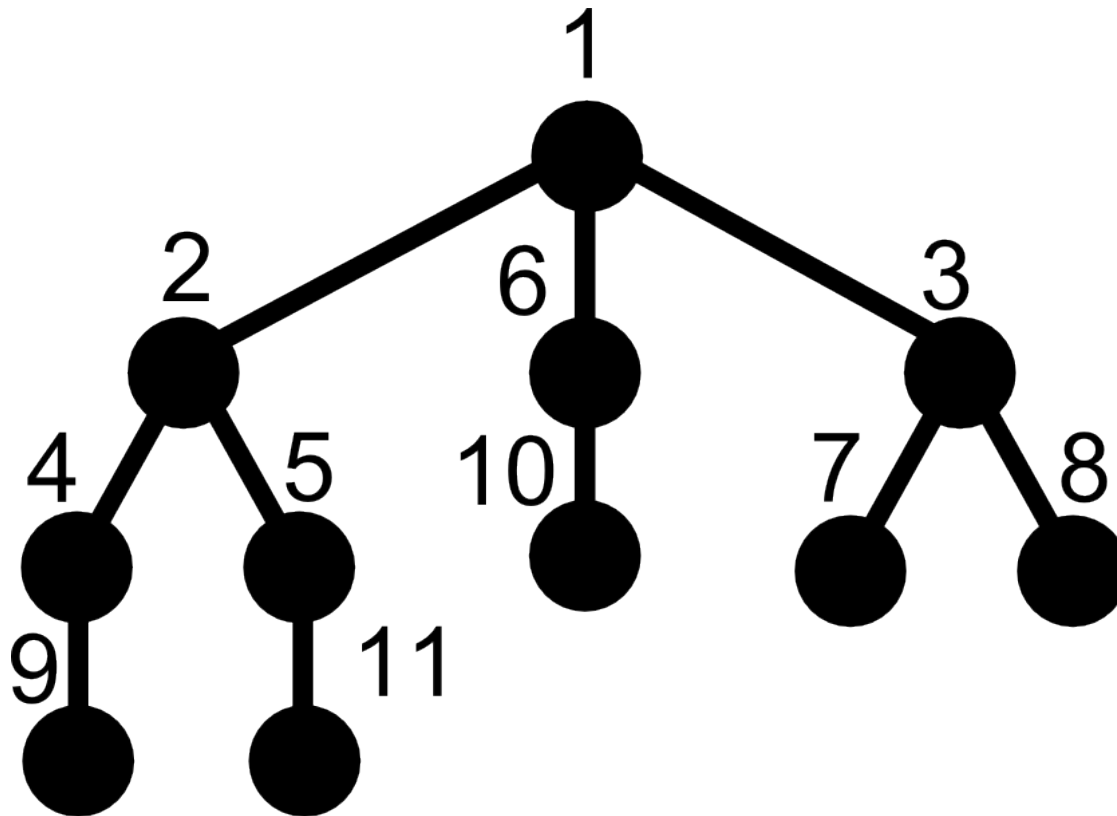
Informationsvisualisierung

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Ludwig-Maximilians-Universität München
Wintersemester 2012/2013

Solution 7

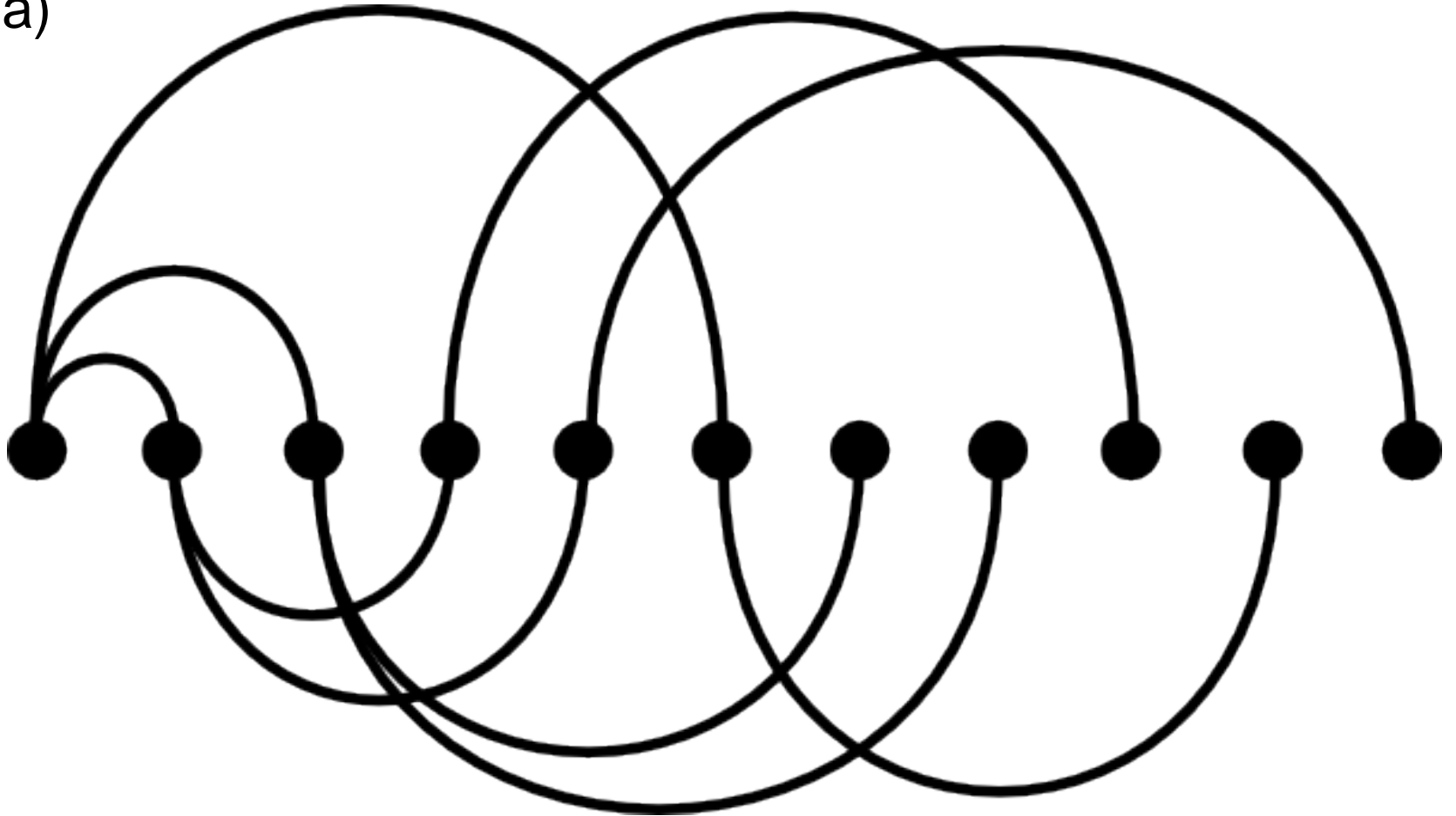
Solution 7 – Thread Arcs

a)



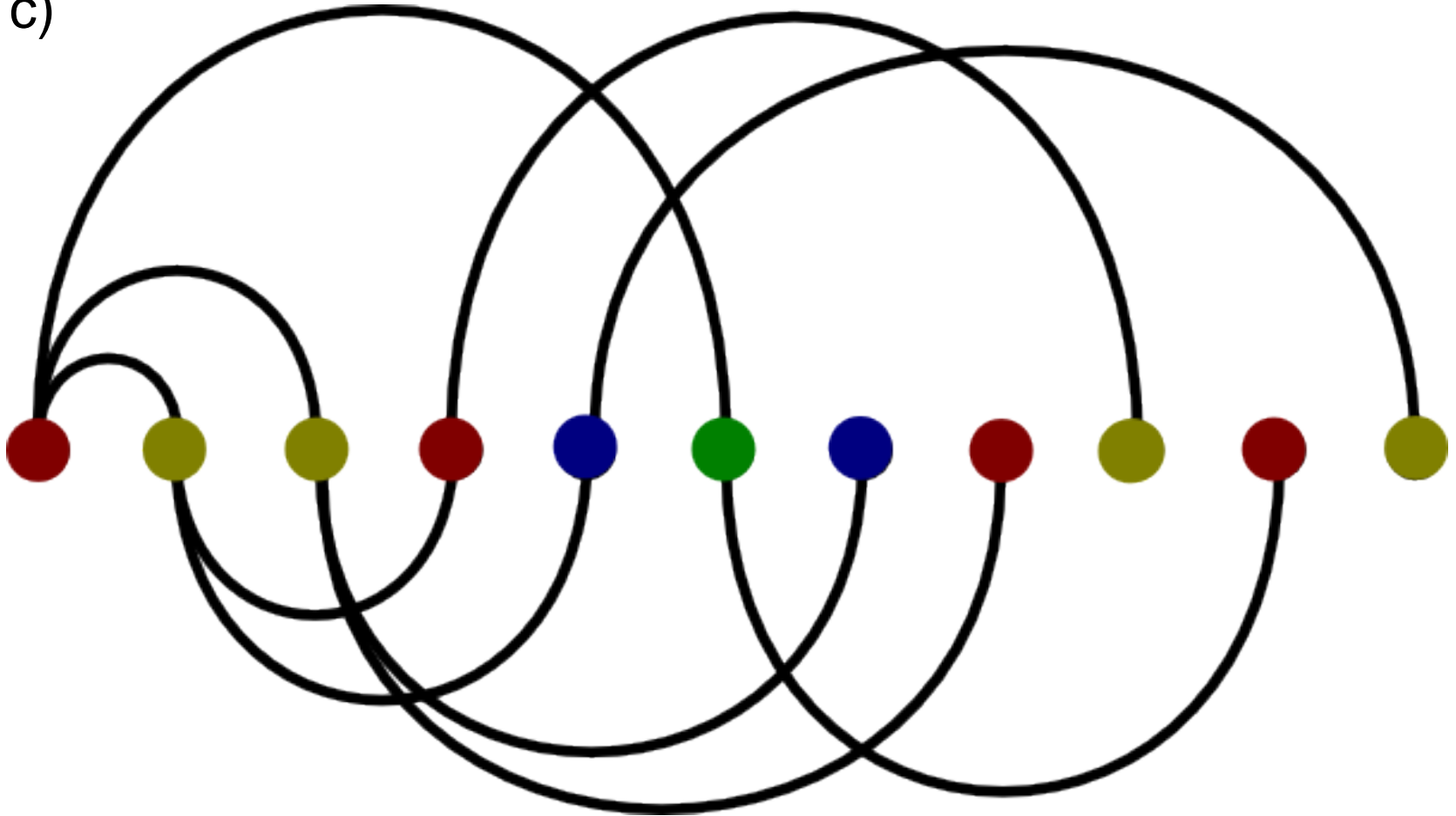
Solution 7 – Thread Arcs

a)



Solution 7 – Thread Arcs

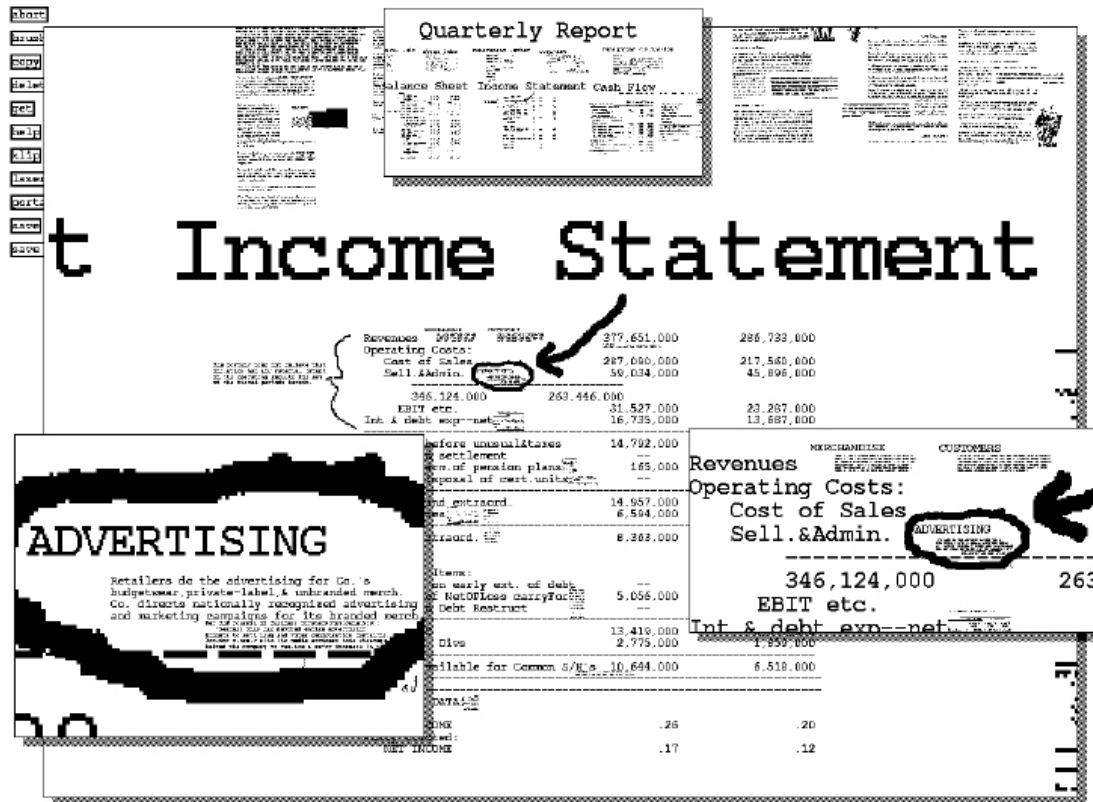
c)



Zoomable User Interfaces

Zoomable User Interfaces

- “Pad, the first multiscale interface”



ZUIs - Advantages

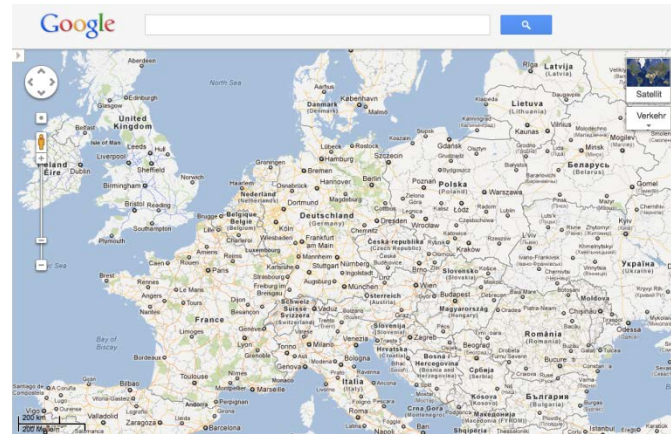
- Highly intuitive (direct manipulation)
- Unlimited information space
- Allows for spatial ordering of data
 - E.g. logical arrangements
- Adapt information depending on the zooming factor (semantic zoom)

Zoomable User Interfaces

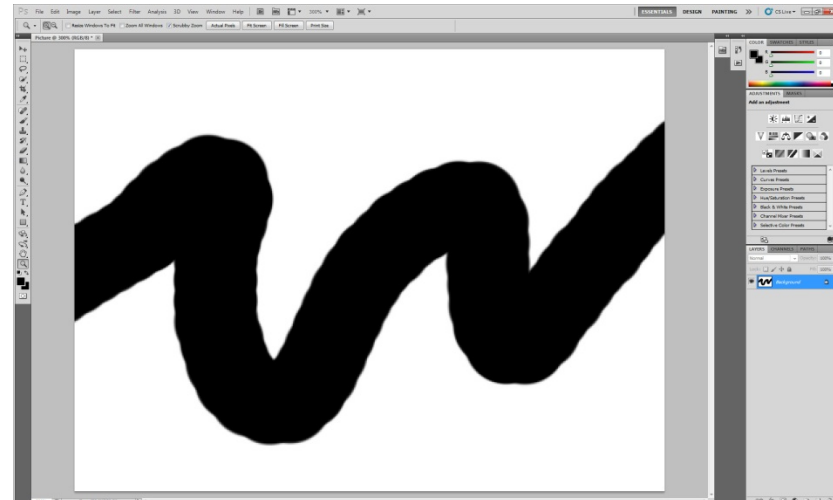
- They're already here!



Safari mobile



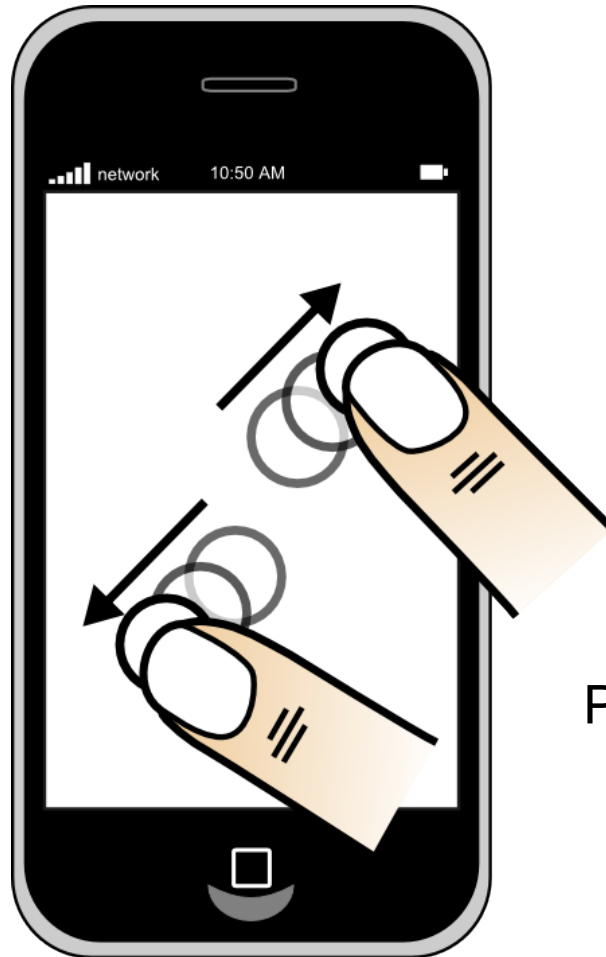
Google Maps



Photoshop

ZUIs on Touchscreens

- iPhone Safari mobile



Pinch gesture

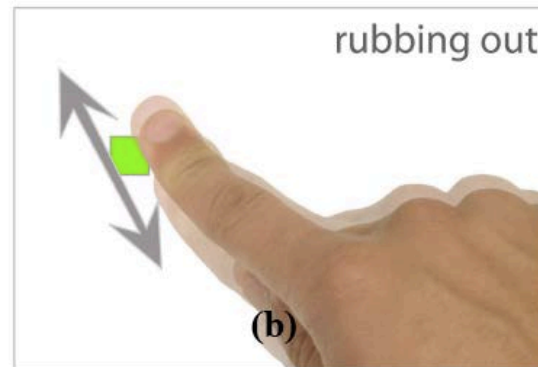
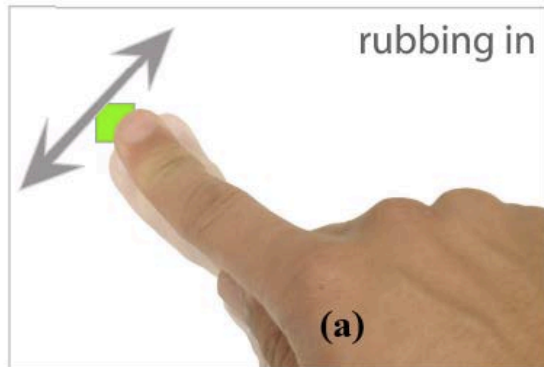
ZUIs on Touchscreens

- What if there is no multi touch?
- Zoom buttons
 - Problem:
 - Small screens with limited size
 - Occupy screen real estate
 - Cover information
 - Have to be big (fat finger problem)
- Double tap
 - Problem:
 - Only one step zoom



ZUIs - Interaction

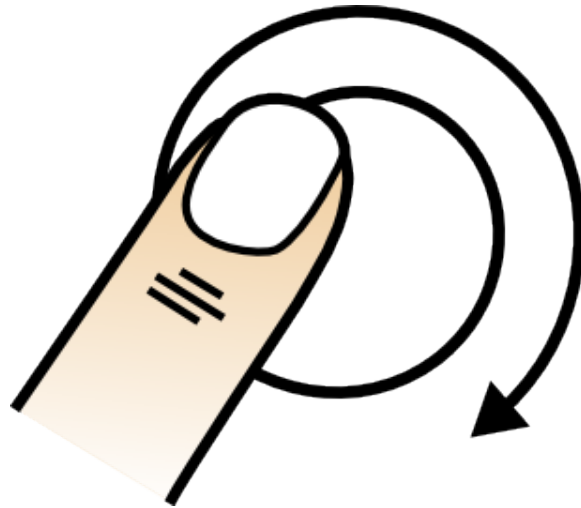
- Rubbing and Tapping [3]
- Problem:
 - How to differentiate it from panning?



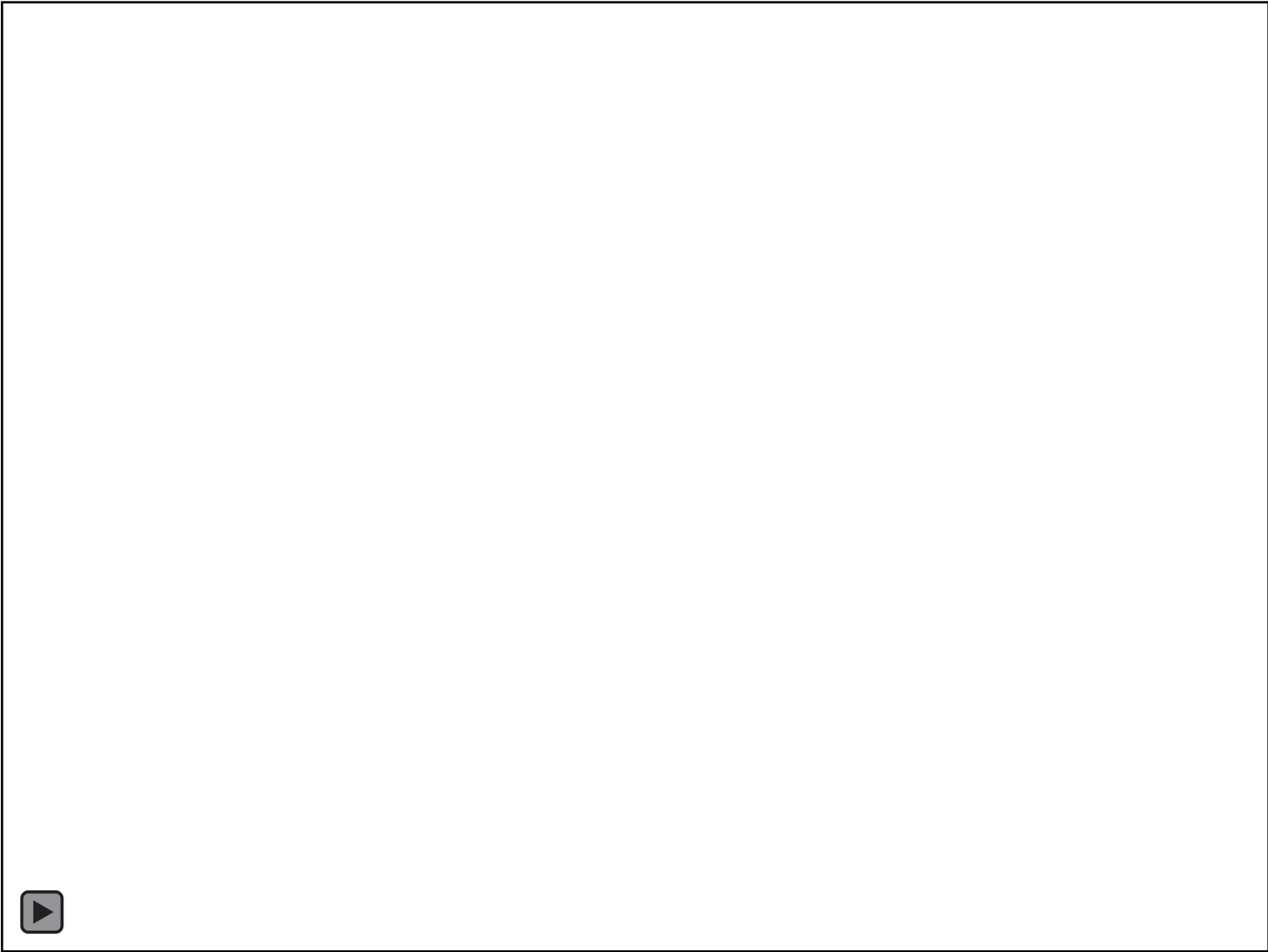
[3]

ZUIs - Interaction

- Circular touch, Nokia browser



ZUIs - Circular Touch



ZUIs - Problems

- Getting lost (**too far in**)

What is this?



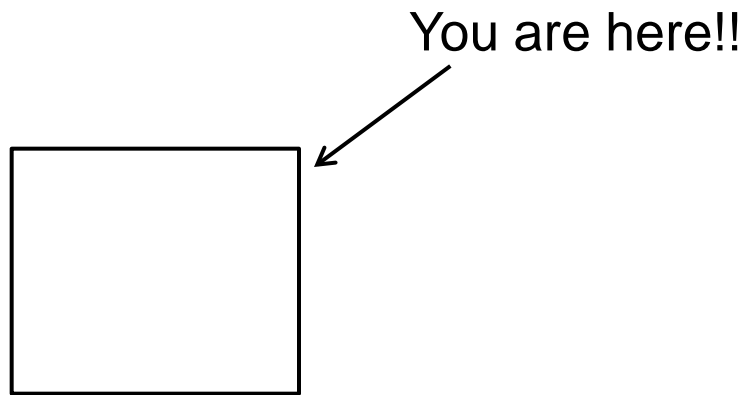
ZUIs - Problems

- Getting lost (**too far out**)

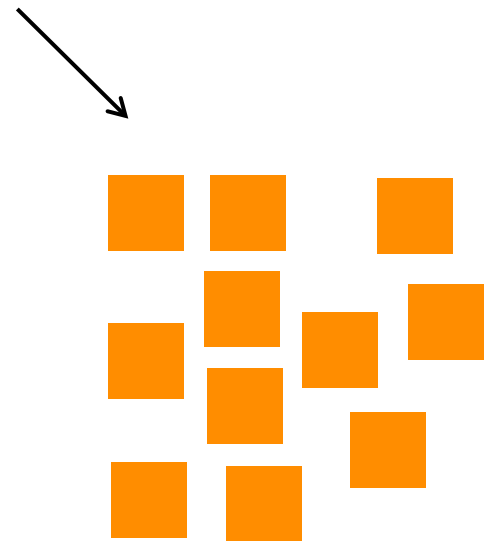


ZUIs - Problems

- Navigation

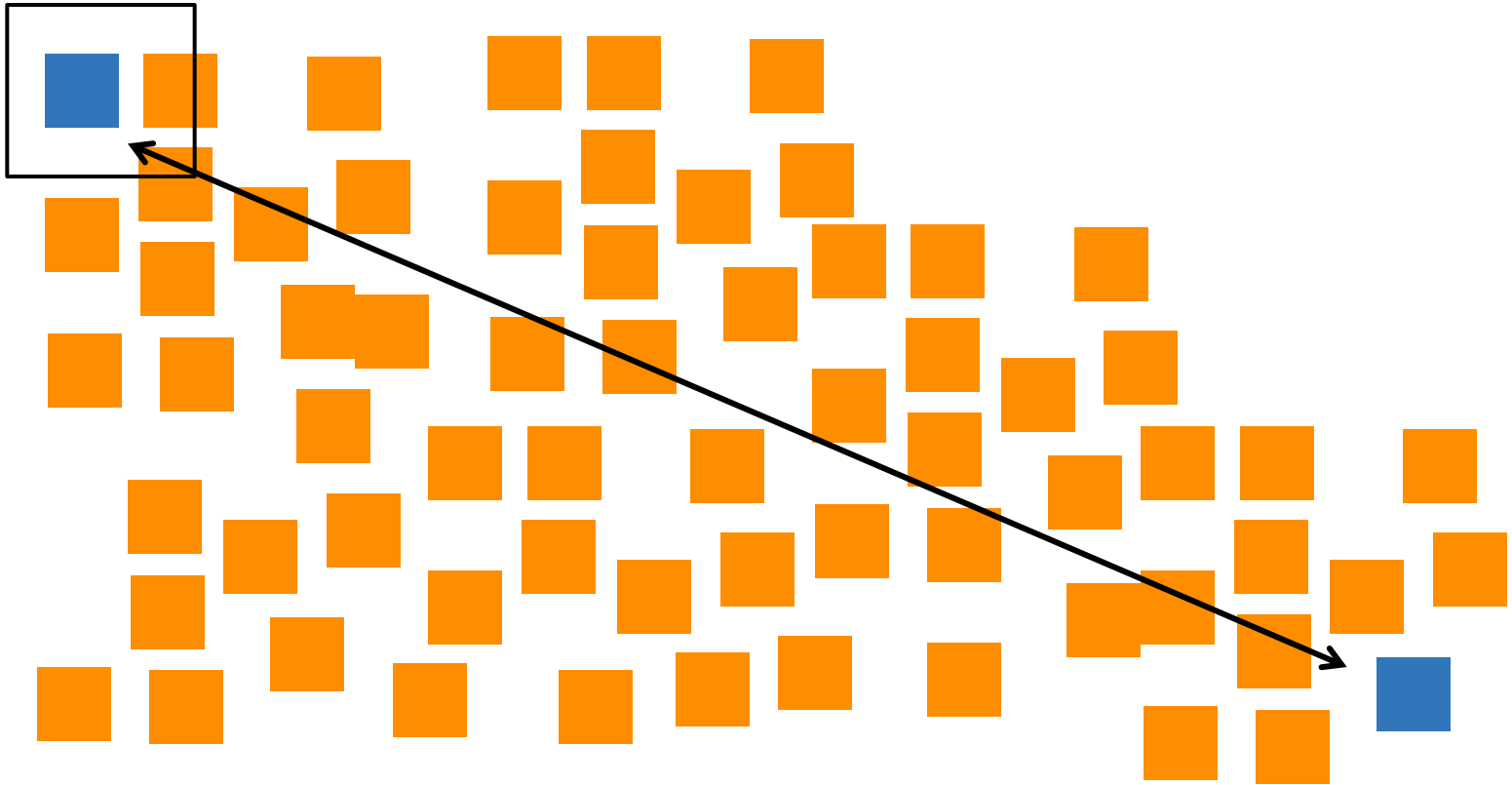


Your data is here!



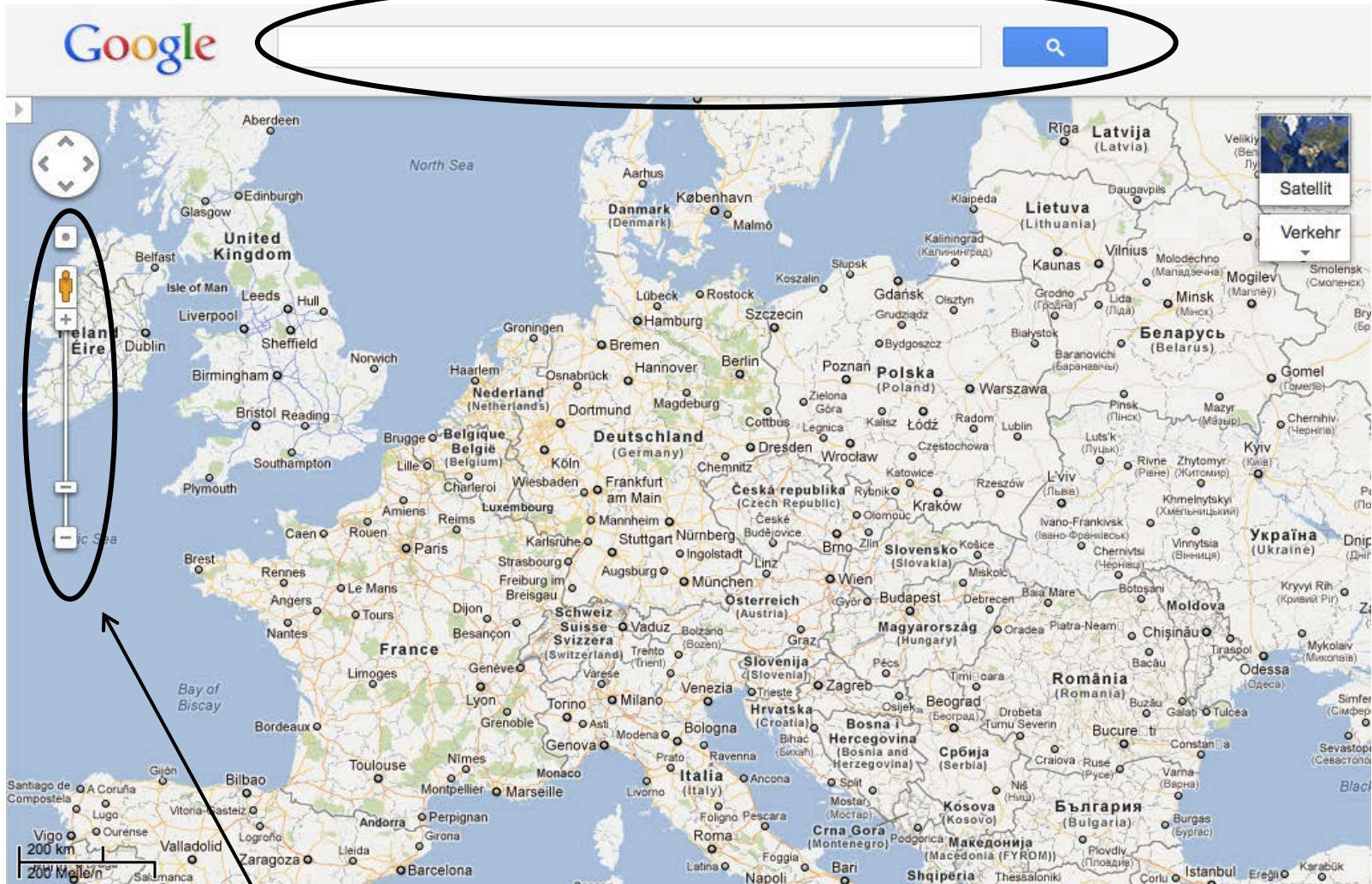
ZUIs - Problems

- Navigation



ZUIs – Some Solutions

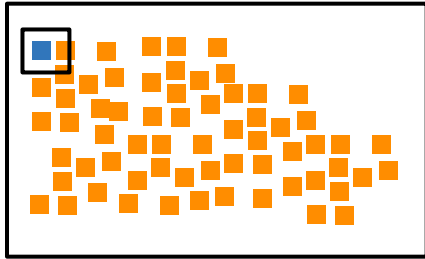
Search



Limit zoom factor and pan

ZUIs – Some Solutions

- Overview plus Detail (see later)



Overview + Detail Interfaces

Overview plus Details

- Show details of an information space together with an overview

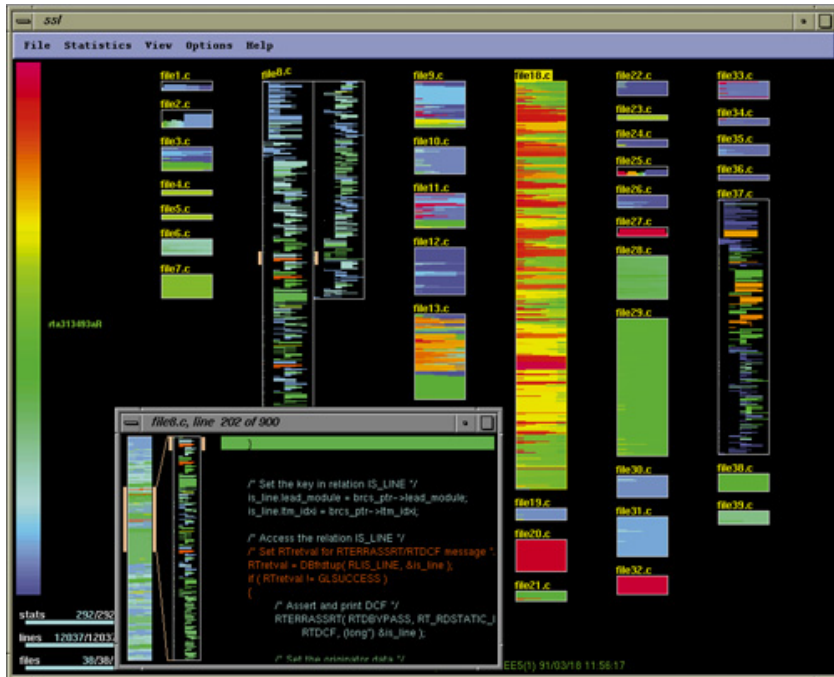


Nokia Browser © pocketnow.com

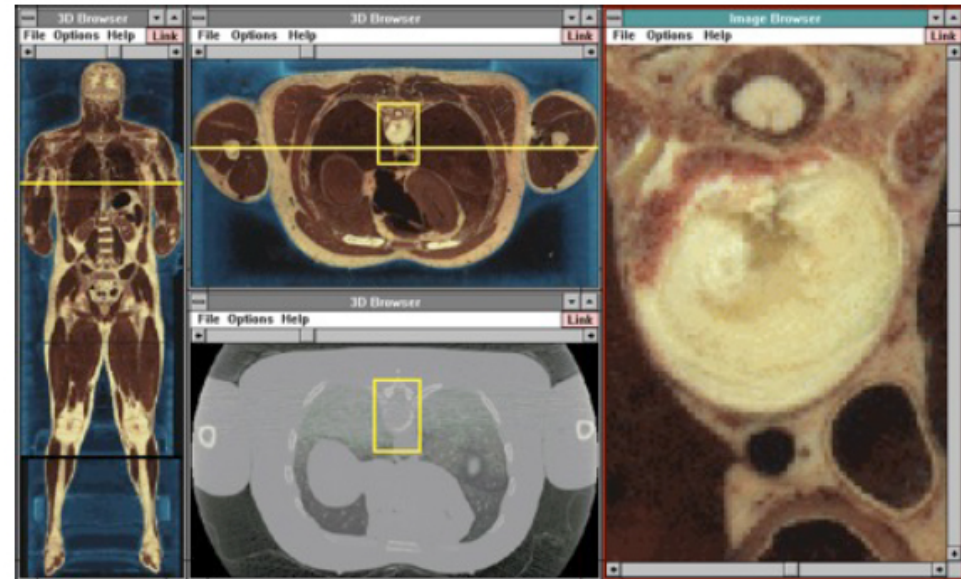


Google Maps

Overview plus Details



SeeSoft, Eick et al. ,1992 [1]



North & Shneiderman 1997

Overview plus Details

- Who invented it?



Dune 2, 1992
Source: Paranoid/Wikipedia

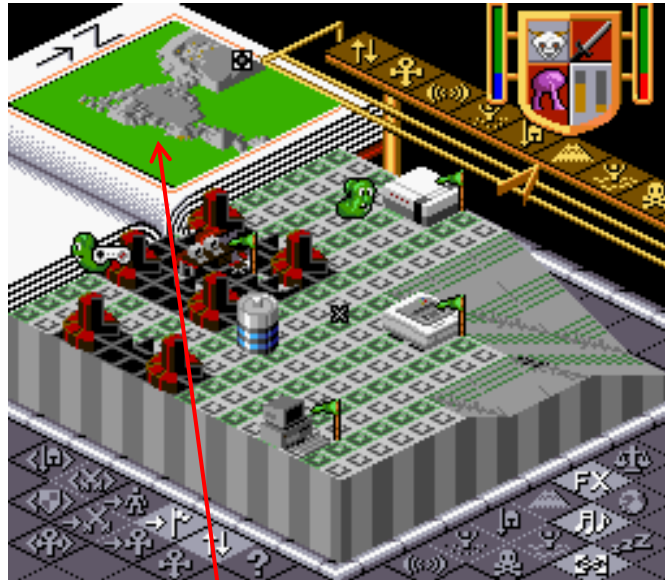


Super Mario Kart, 1992
Source: Wikipedia

Remember that SeeSoft [1] is from 1992 as well!!

Overview plus Details

- Some more years back...



Populous, 1989

Source: MobyGames/Juan Ramirez

Overview plus Details



Google Maps



Super Mario Kart, 1992
Source: Wikipedia

Innovations

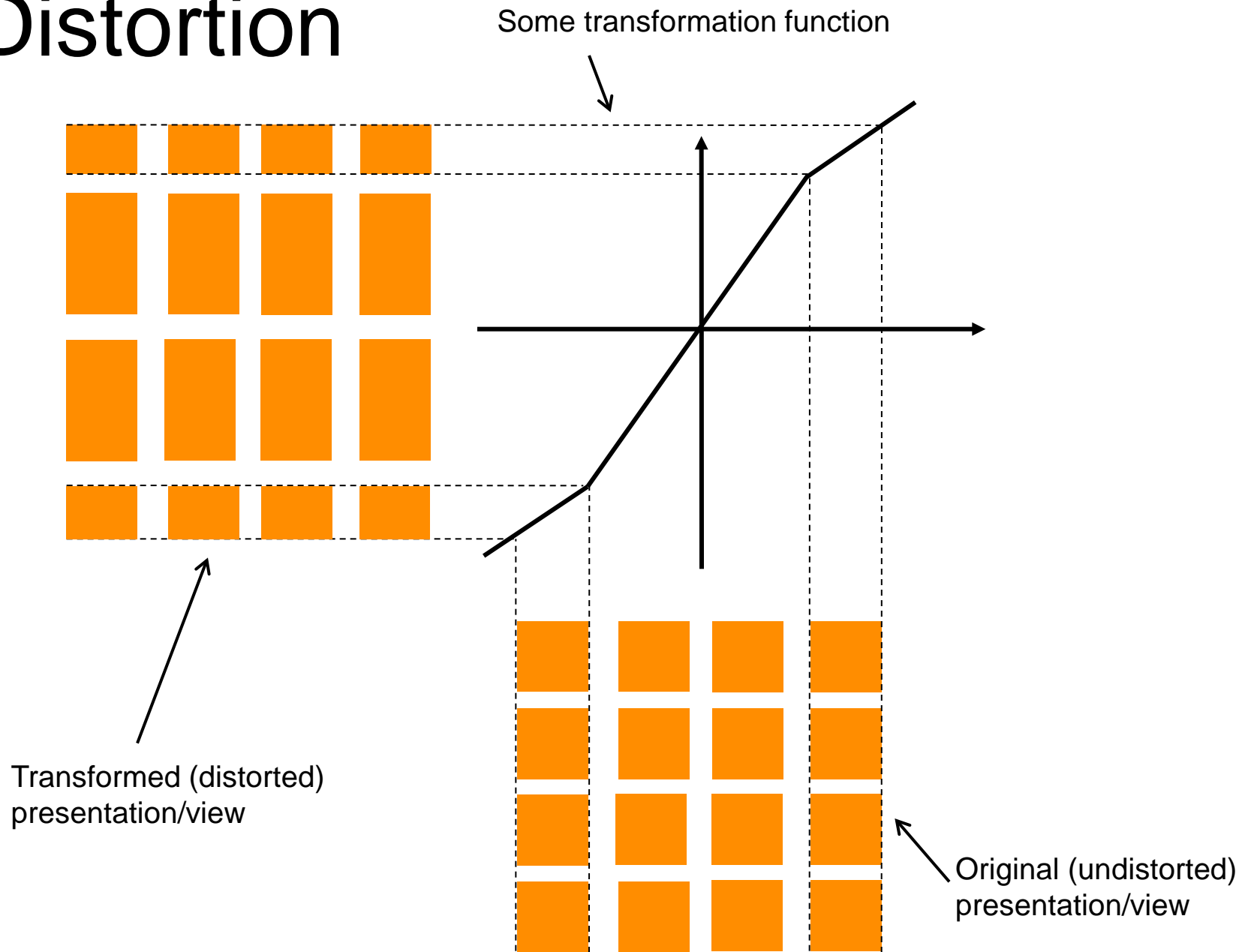
- It is not always clear where a specific approach comes from
- Innovation is often driven by commercial issues
- Game development is:
 - very competitive
 - always on the edge of what is possible
 - Highly innovative

Distortion (Focus + Context)

Why Distortion?

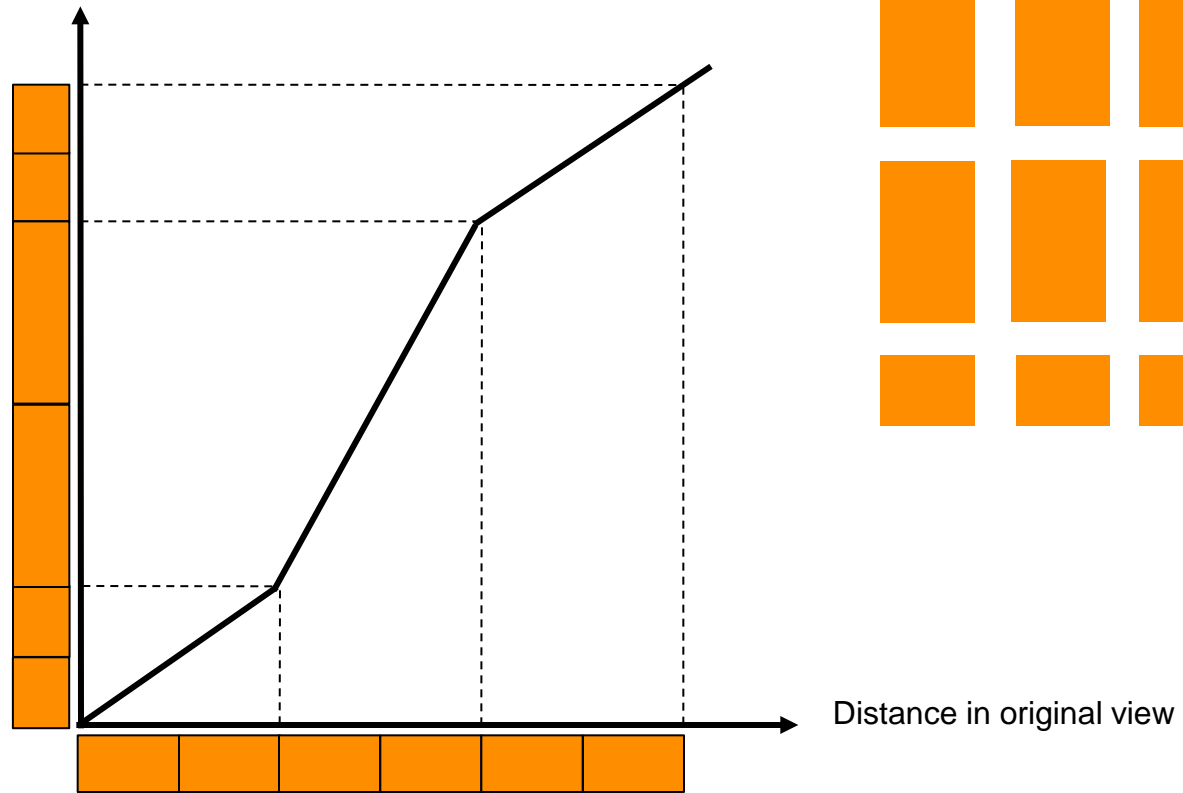
- Show a huge amount of information with limited amount of space
- Focus plus context: provide context to support navigation tasks
- No zooming and no scrolling required

Distortion



Distortion

Distance in distorted view

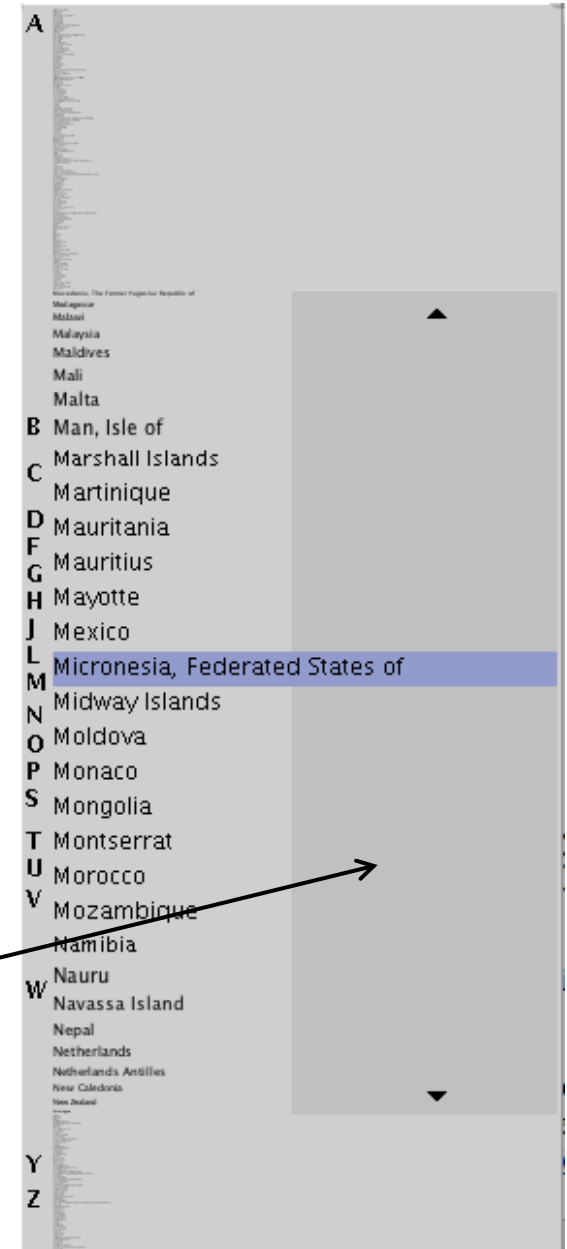


Example: Transfer function for a bifocal display

Fisheye Menu

- Example: Fisheye Menu by Bederson et al. [1]
- Font-size reduced with distance from the cursor
- [Demo](#)

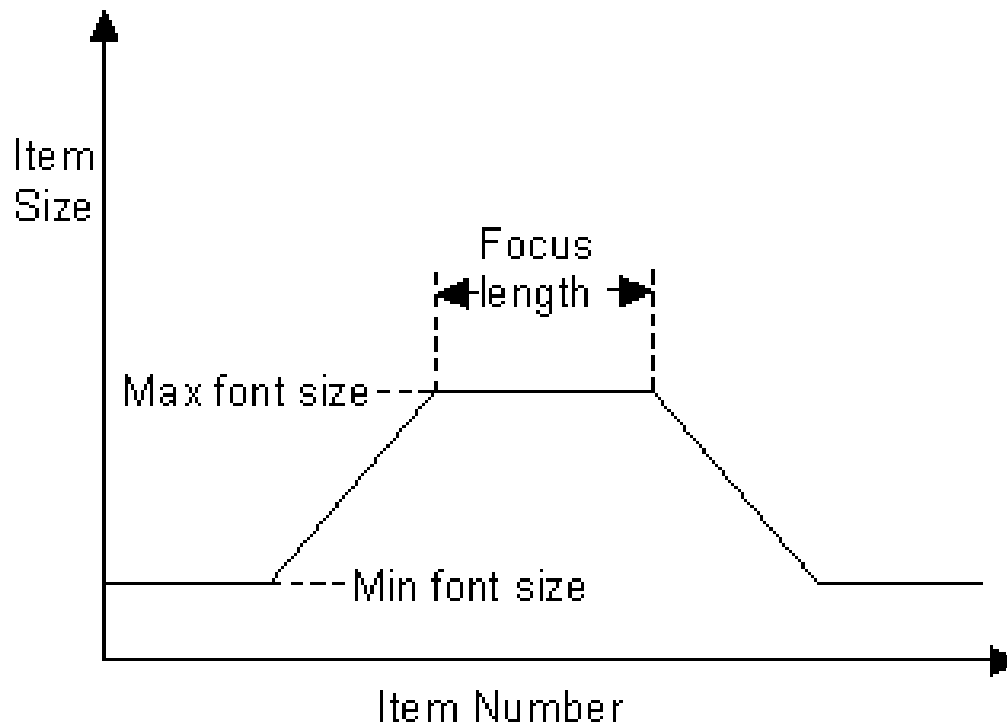
Fixation area to solve the overshoot problem



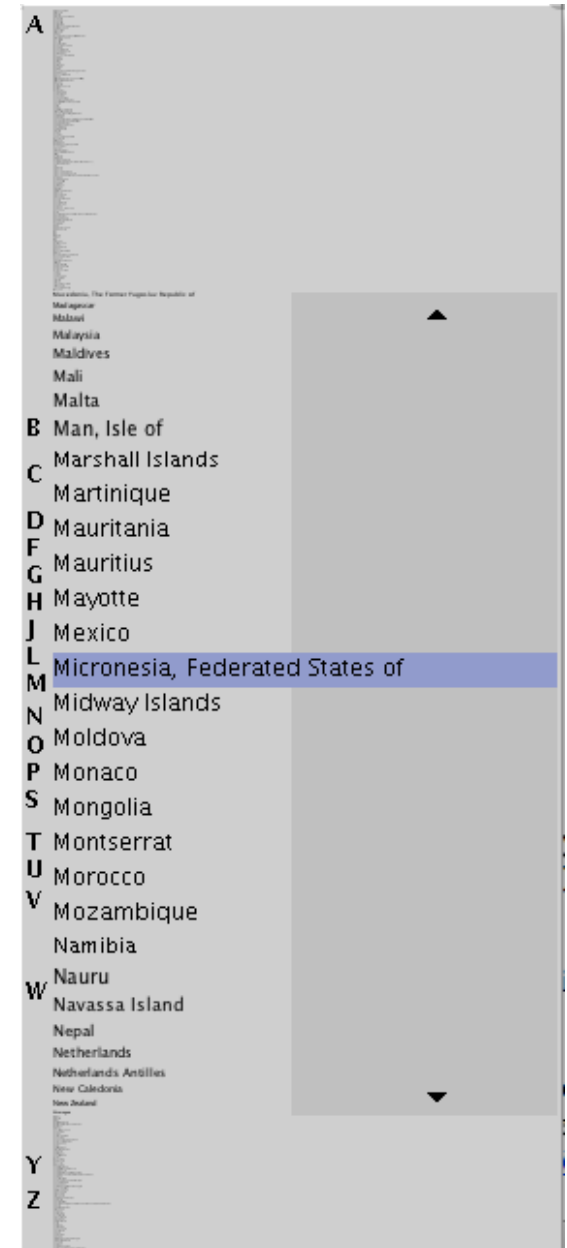
Fisheye Menu [1]

Fisheye Menu

- Degree of interest function



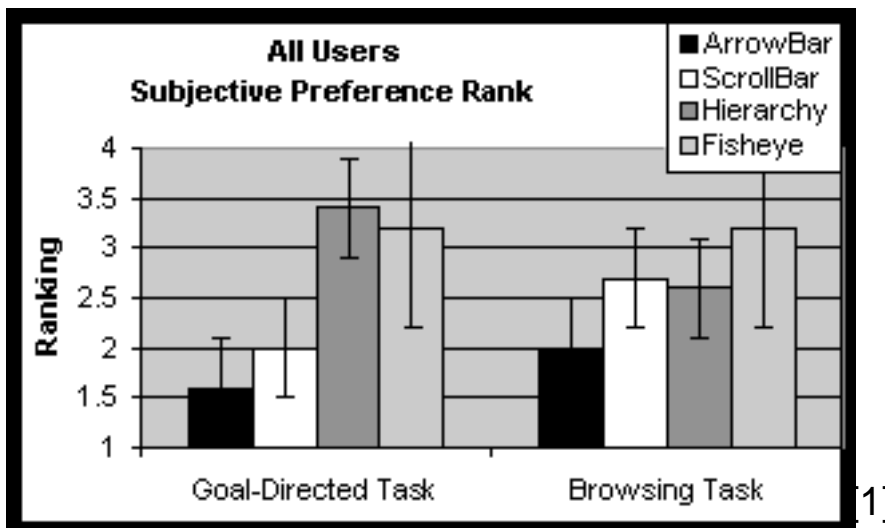
[1]



Fisheye Menu [1]

Fisheye Menu Study

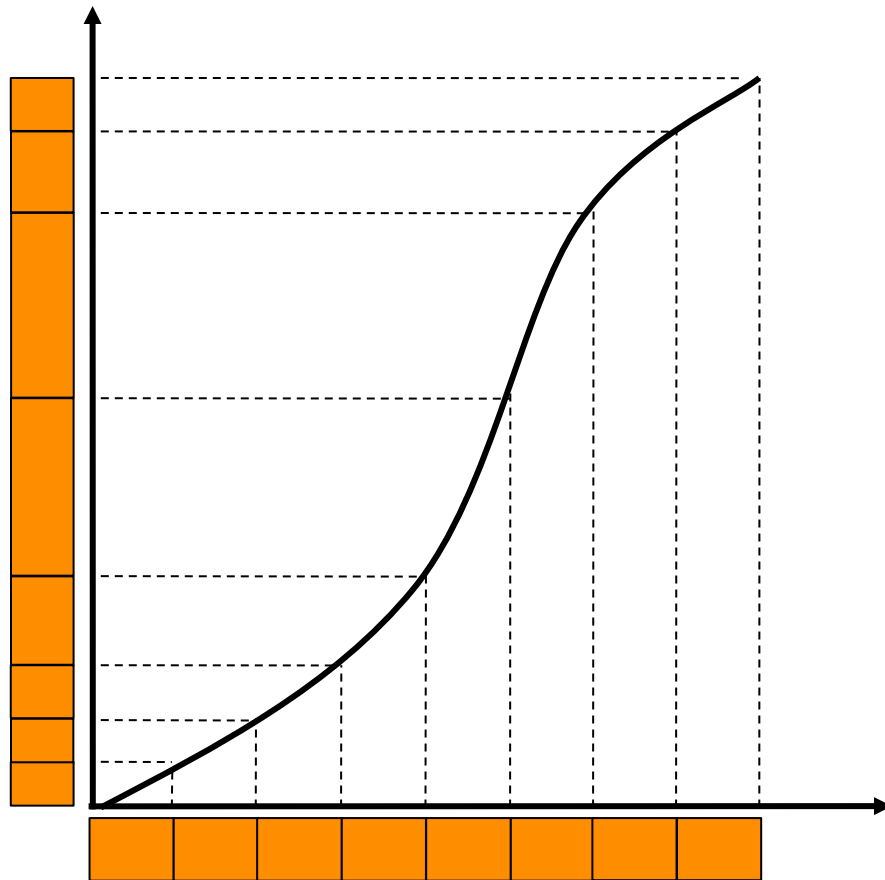
- 10 users
- ArrowBar vs. ScrollBar vs. Hierarchy vs. Fisheye
- click 3 items (near beginning/middle/end)
- "browse the lists for a website you would like to visit"



Fisheye Menu [1]

Fisheye Menu

- Transfer function for the fisheye menu [1]



Fisheye Menu [1]

Magnifying Glass

- Magnifying glass is not a focus plus context technique
- Why not?

I am just an example. Do not read me since that would be a waste of your precious time. If you already did read me ... too bad for you.

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Context close to the detail gets completely lost!

Roadmap

Roadmap

- **31.01 / 01.02:** **Probevorträge Barkeeper**
- **05. 02:** **Abschlussvorträge**
- **07.02 / 08.02:** **Klausurvorbereitung**
- **12.02:** **Klausur**

References

1. Stephen G. Eick, Joseph L. Steffen, and Eric E. Sumner Jr. *SeeSoft - A tool for visualizing line oriented software statistics*. IEEE Transactions on Software Engineering, 18(11):957--968, November 1992.
2. Perlin, K. and D. Fox. Pad: An Alternative Approach to the Computer Interface. Computer Graphics (Proc. SIGGRAPH' 93), 57-72.
3. Alex Olwal, Steven Feiner, and Susanna Heyman. 2008. Rubbing and tapping for precise and rapid selection on touch-screen displays. In *Proceedings of the twenty-sixth annual SIGCHI conference on Human factors in computing systems (CHI '08)*.