

Übung zur Vorlesung

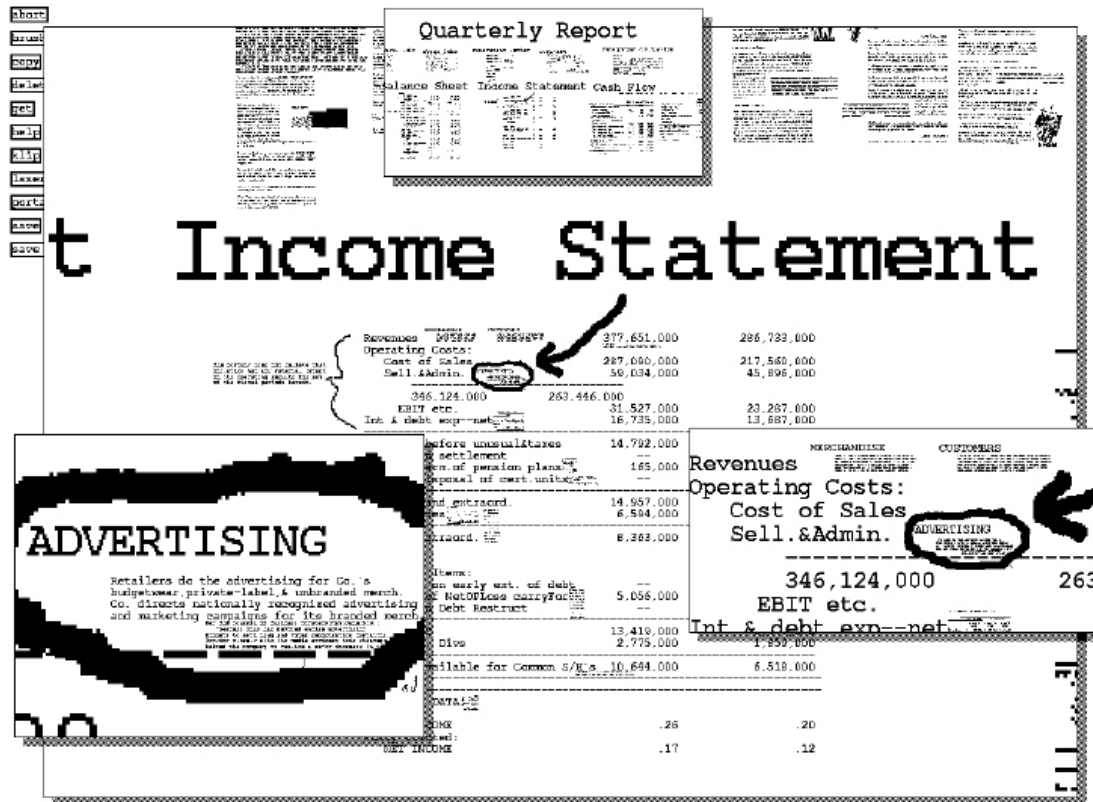
# Informationsvisualisierung

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# **Zoomable User Interfaces**

# Zoomable User Interfaces

- “Pad, the first multiscale interface”



# ZUIs - Advantages

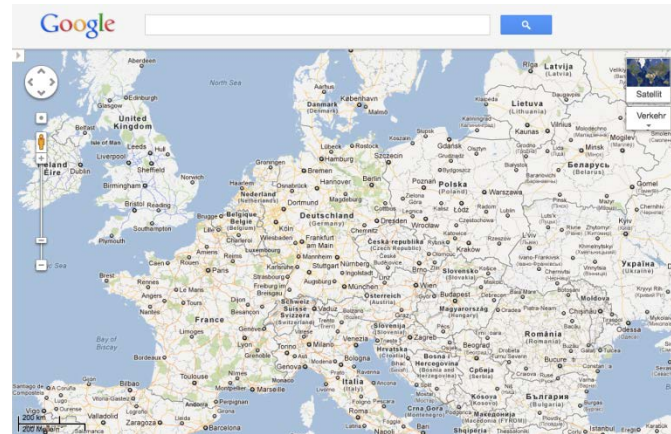
- Highly intuitive (direct manipulation)
- Unlimited information space
- Allows for spatial ordering of data
  - E.g. logical arrangements
- Adapt information depending on the zooming factor (semantic zoom)

# Zoomable User Interfaces

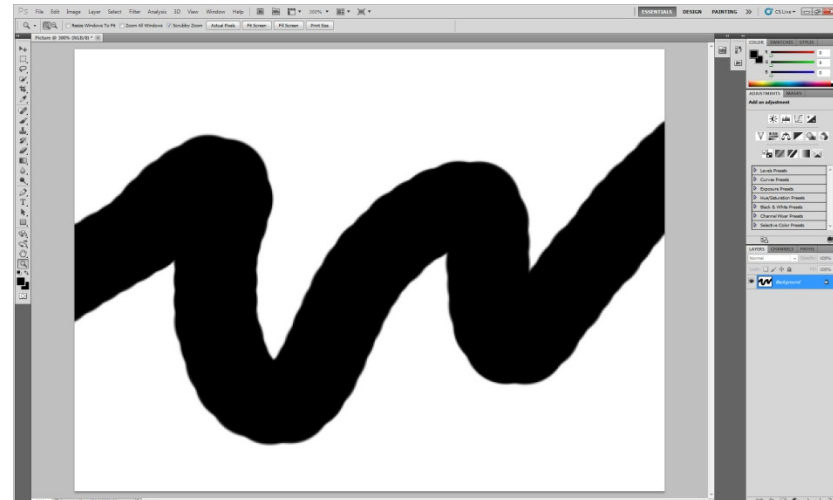
- They're already here!



Safari mobile



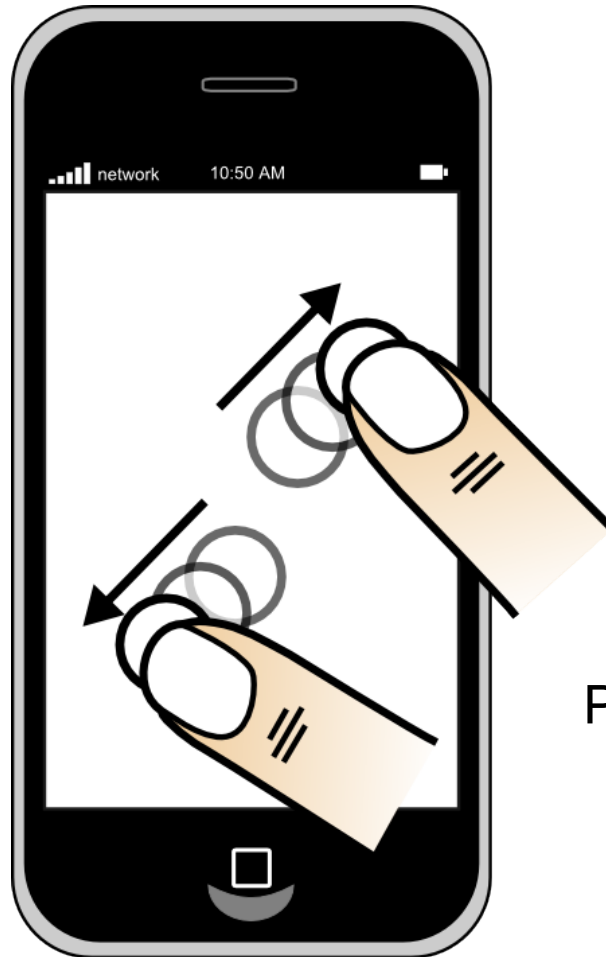
Google Maps



Photoshop

# ZUIs on Touchscreens

- iPhone Safari mobile



Pinch gesture

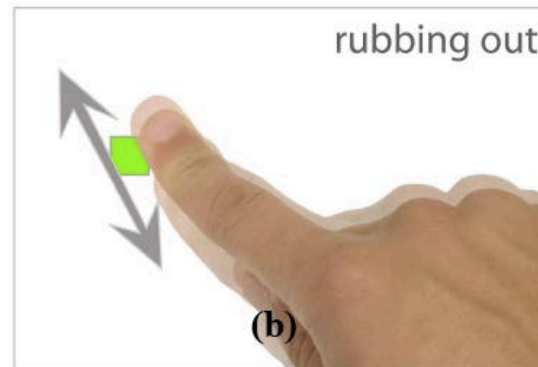
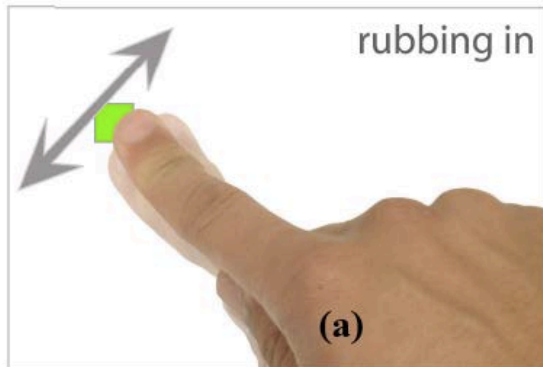
# ZUIs on Touchscreens

- 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 - Advantages

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

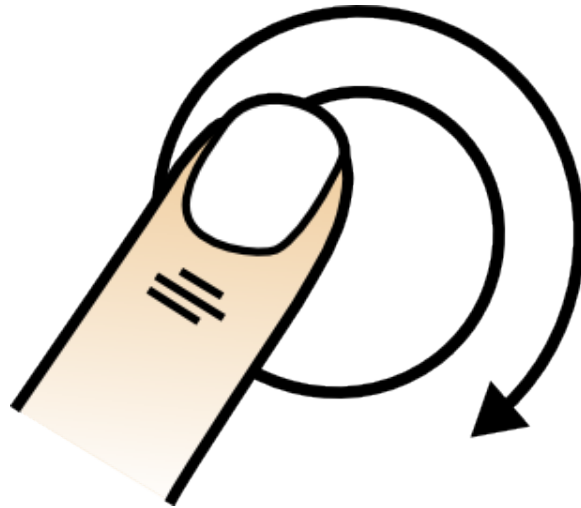


[3]



# ZUIs - Advantages

- Circular touch, Nokia browser (Video)



# ZUIs - Problems

- Getting lost (too far in)

What is this?



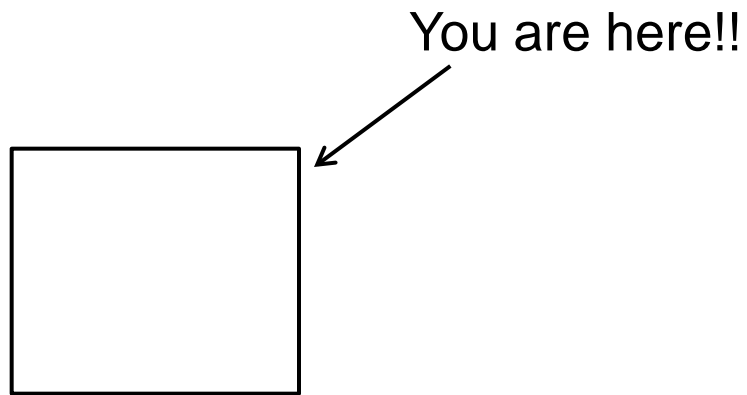
# ZUIs - Problems

- Getting lost (too far out)

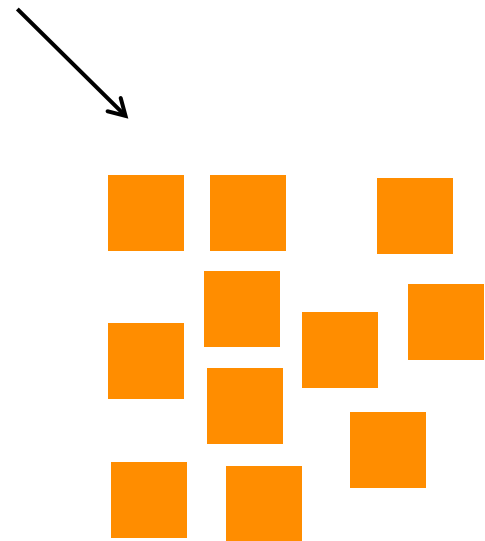


# ZUIs - Problems

- Navigation

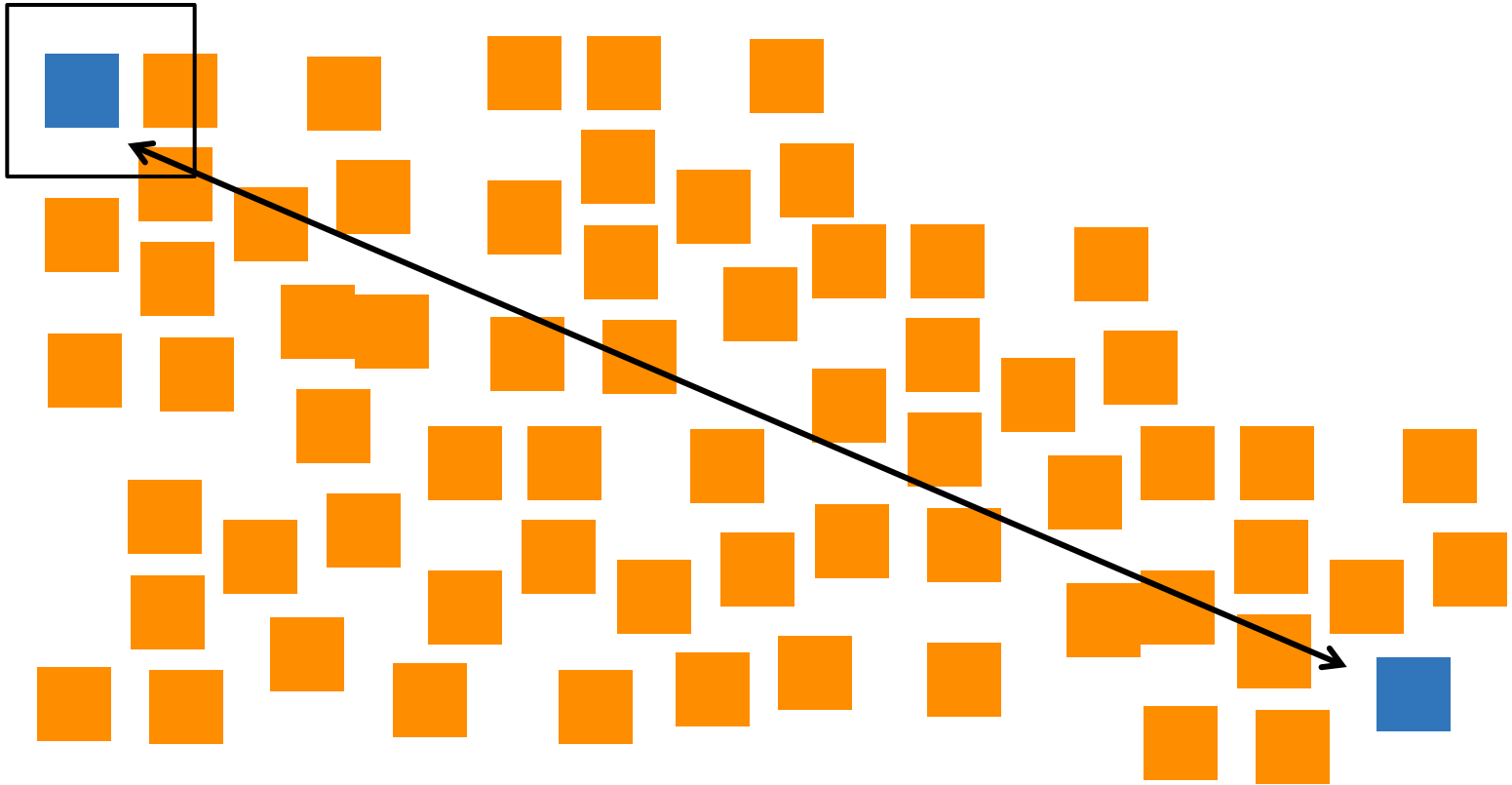


Your data is here!



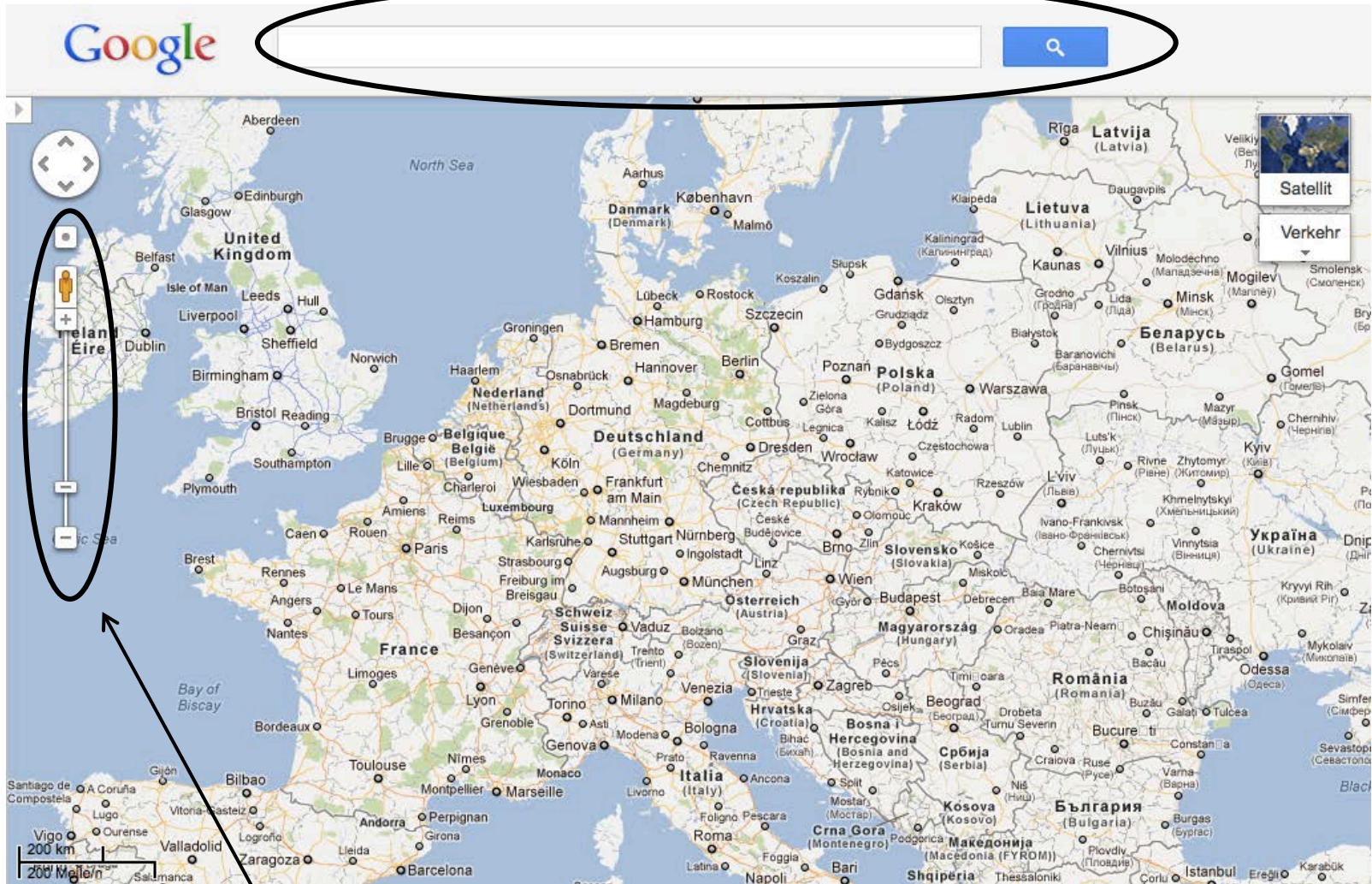
# ZUIs - Problems

- Navigation



# ZUIs – Some Solutions

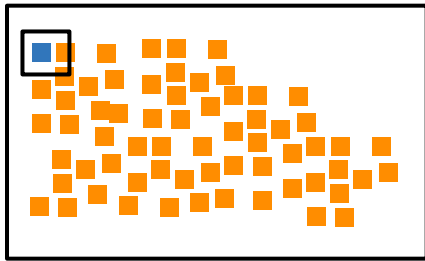
Search



Limit zoom factor and pan

# ZUIs – Some Solutions

- Overview plus Detail (see later)

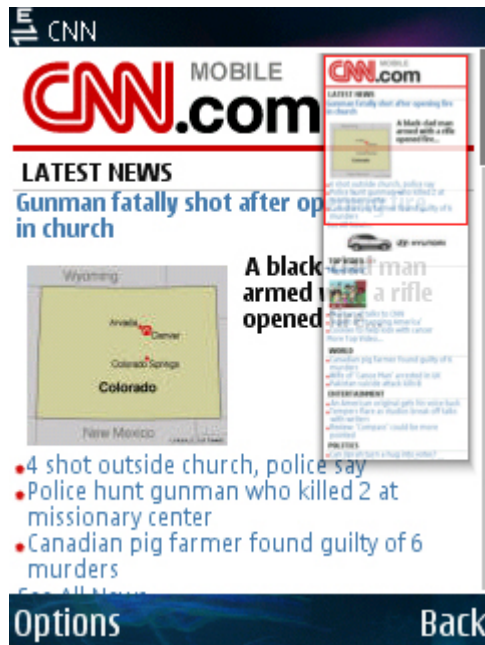


# **Overview + Detail Interfaces**



# Overview plus Details

- Show details of an information space together with an overview

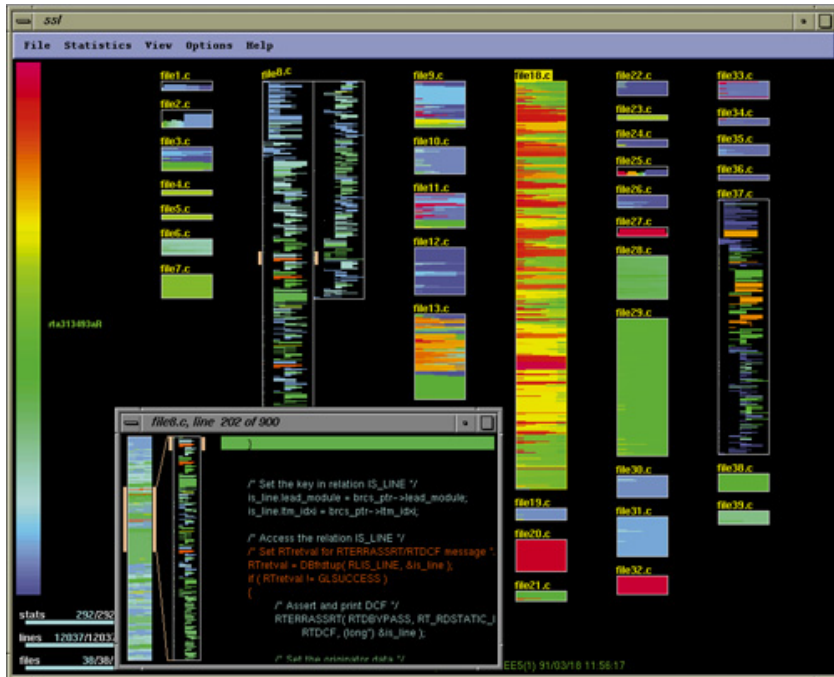


Nokia Browser © pocketnow.com

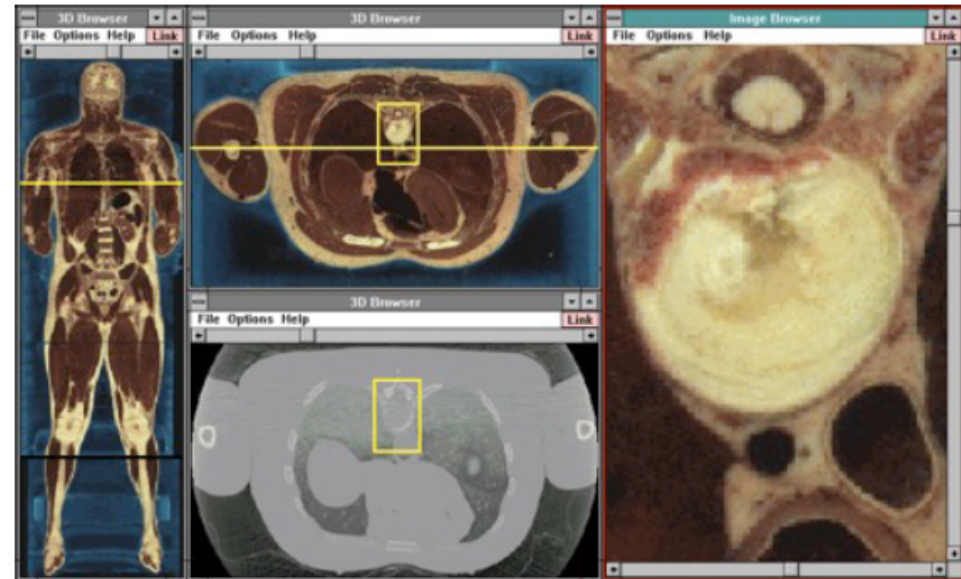


Google Maps

# Overview plus Details



SeeSoft, Eick et al. ,1992 [1]



North & Shneiderman 1997

# Overview plus Details

- Who invented it? No idea!



Dune 2, 1992  
Source: Paranoid/Wikipedia

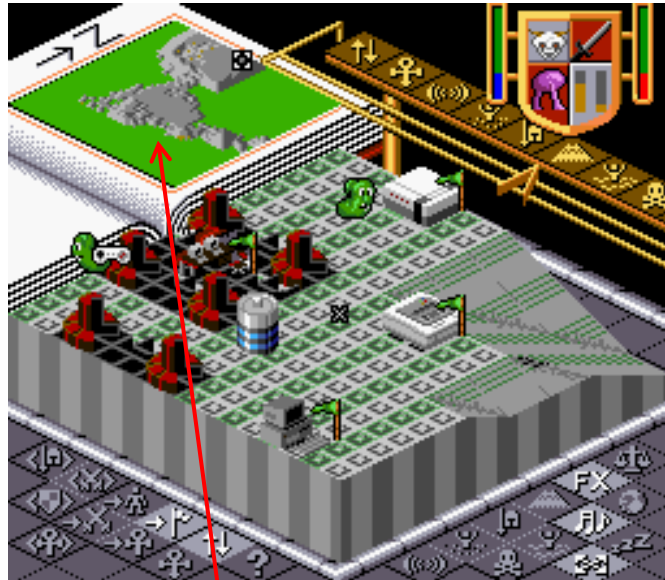


Super Mario Kart, 1992  
Source: Wikipedia

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

- Reminds you of something?



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

# 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)*.