

QR-Vis: Embodied Interaction for Cross-Device Visualization

Niklas Elmqvist

Microsoft Research
Faculty Summit
2015
July 8-9, 2015



VISUALIZATION

“The use of computer-supported, interactive, visual representations of data to amplify cognition.”

— Card, Mackinlay, Shneiderman (1999)









VISION

Leverage new technology.
Convey data using most
effective/natural means.

A collection of various mobile devices, including smartphones and tablets, are scattered on a dark, textured surface. The devices are arranged in a way that suggests they are everywhere. The background shows a window with a view of greenery, suggesting an indoor setting. The text "Devices everywhere..." is overlaid on the image in a white font on a blue background.

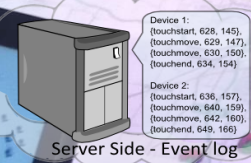
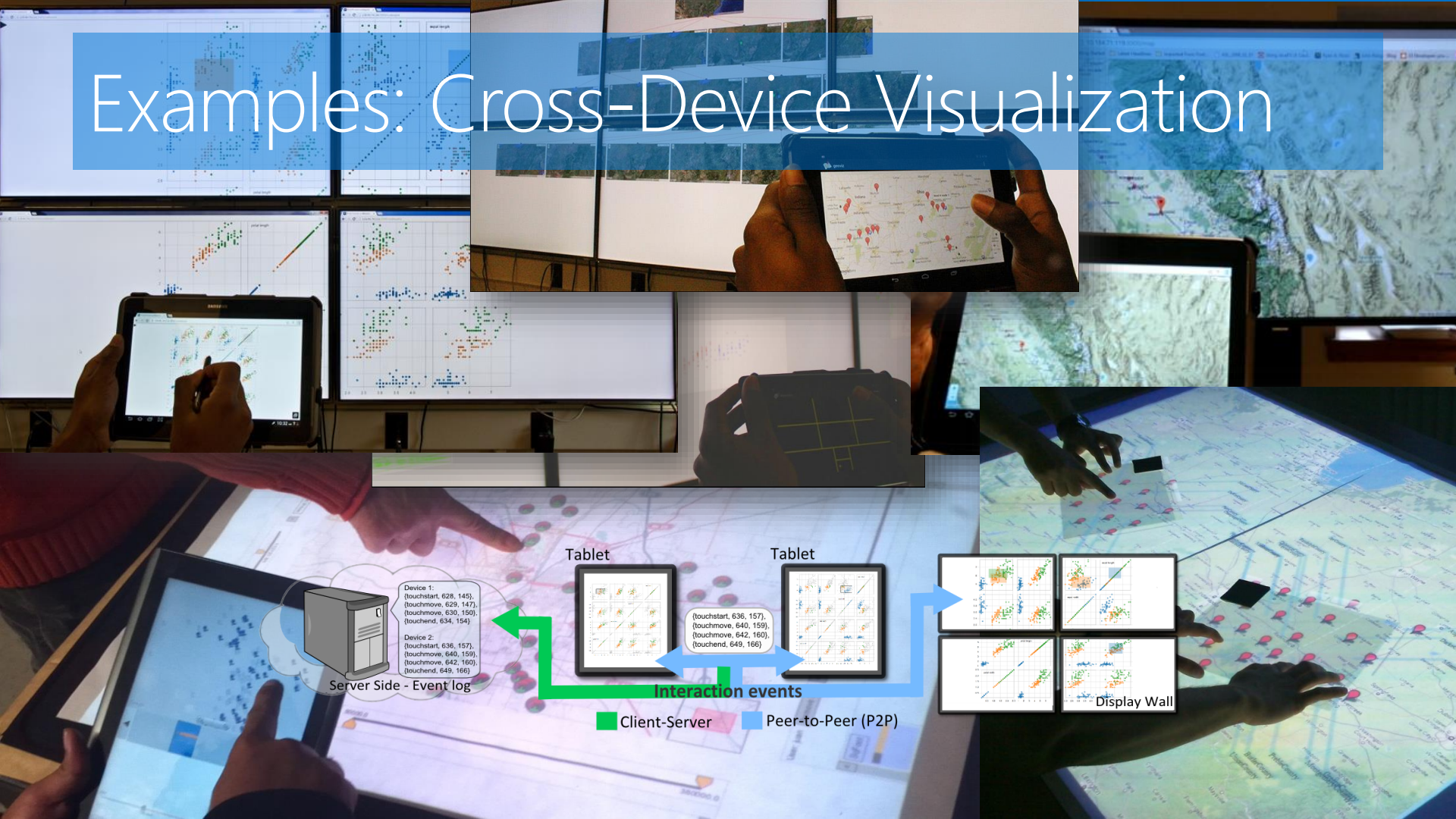
Devices everywhere...



Cross-Device Visualization

Using multiple input and output surfaces on more than one device for visualization.

Examples: Cross-Device Visualization



Device 1:
(touchstart, 628, 145),
(touchmove, 629, 147),
(touchend, 634, 154)

Device 2:
(touchstart, 636, 157),
(touchmove, 640, 159),
(touchmove, 642, 160),
(touchend, 649, 166)

Tablet



Tablet

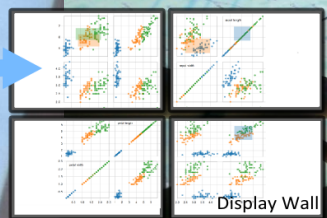


(touchstart, 636, 157),
(touchmove, 640, 159),
(touchmove, 642, 160),
(touchend, 649, 166)

Interaction events

Client-Server

Peer-to-Peer (P2P)



CHALLENGE

discovery + matchmaking





SCAN ME FOR
A GOOD TIME

WE
FIRST

RUB SOME SAUCE ON IT

Best here. Best there.
Download now. It's free!

WEBSITE:
xokin.com
Find yours today @

xokin.com

venmo

venmo

x]cube

HELP

WEBSITE:
xokin.com

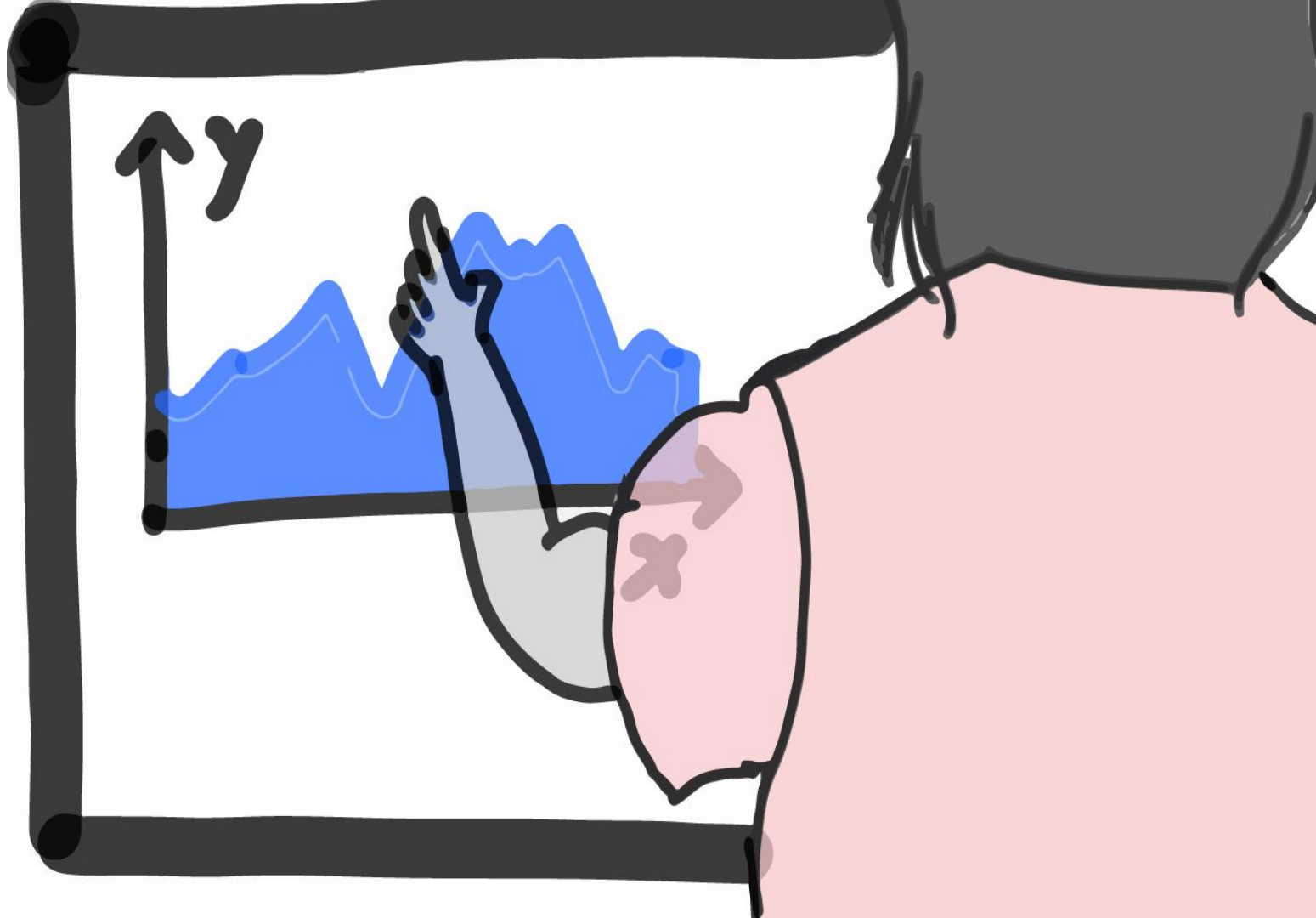
The Beer

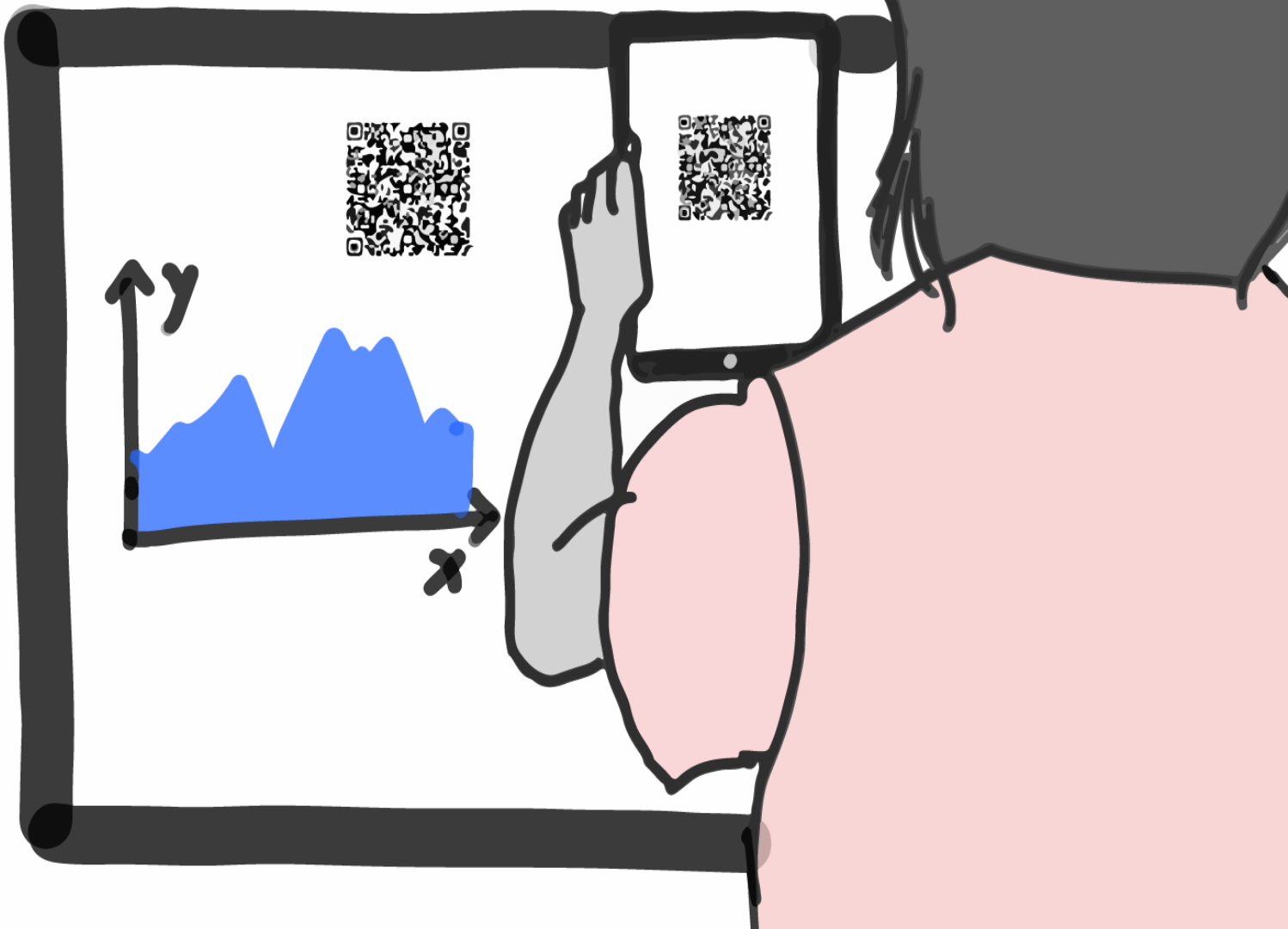
The Beer



QR CODE
A QR CODE is a square black and white matrix barcode that can store a large amount of information in a small space. It is used for quick access to digital content.

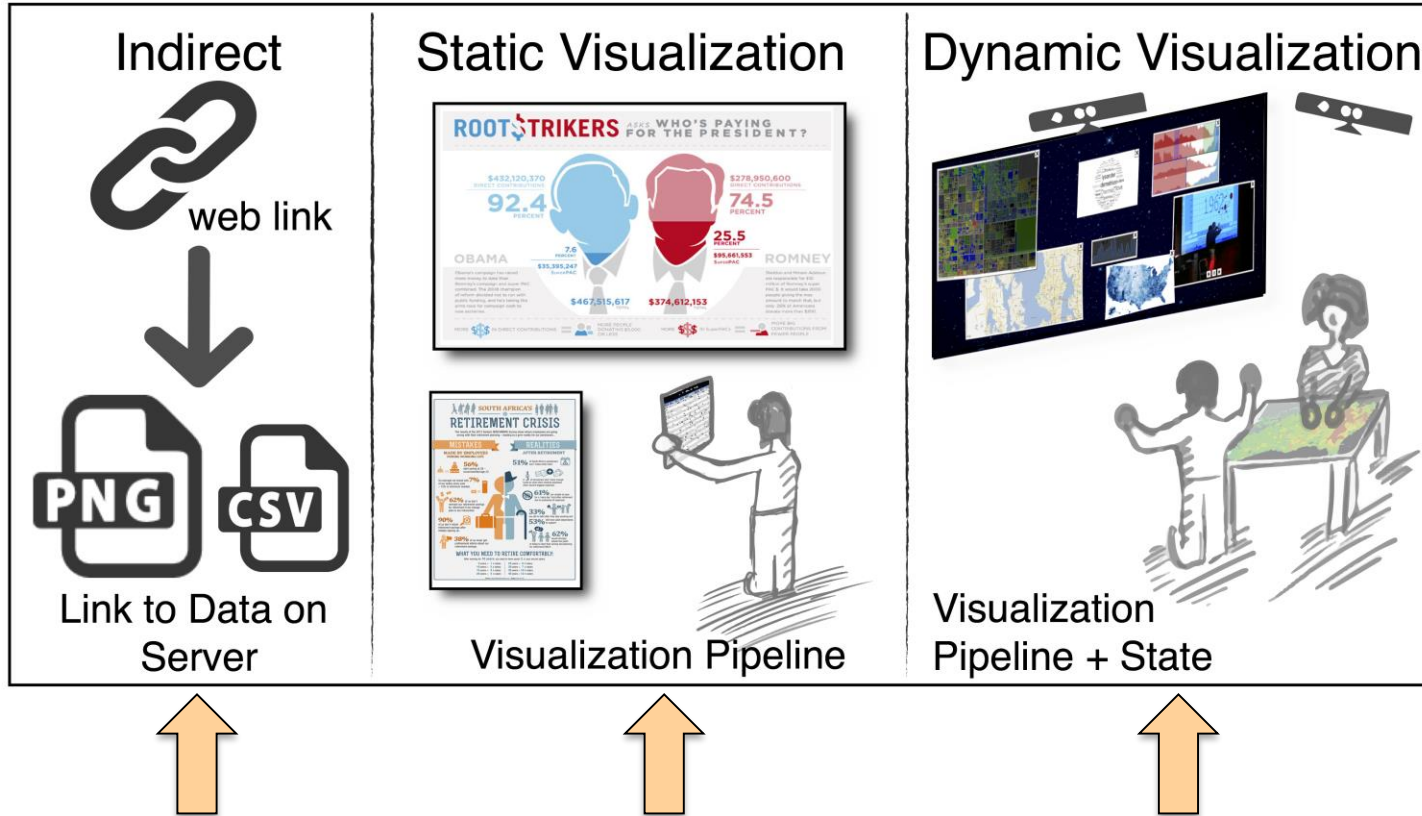


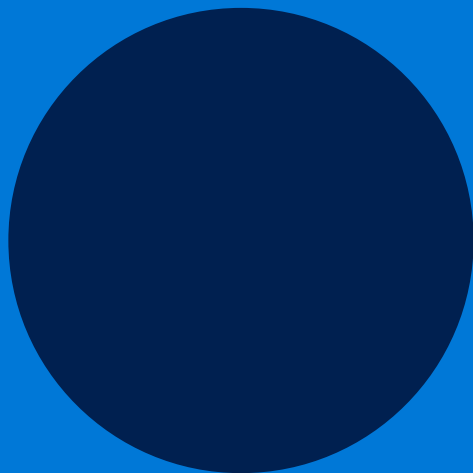


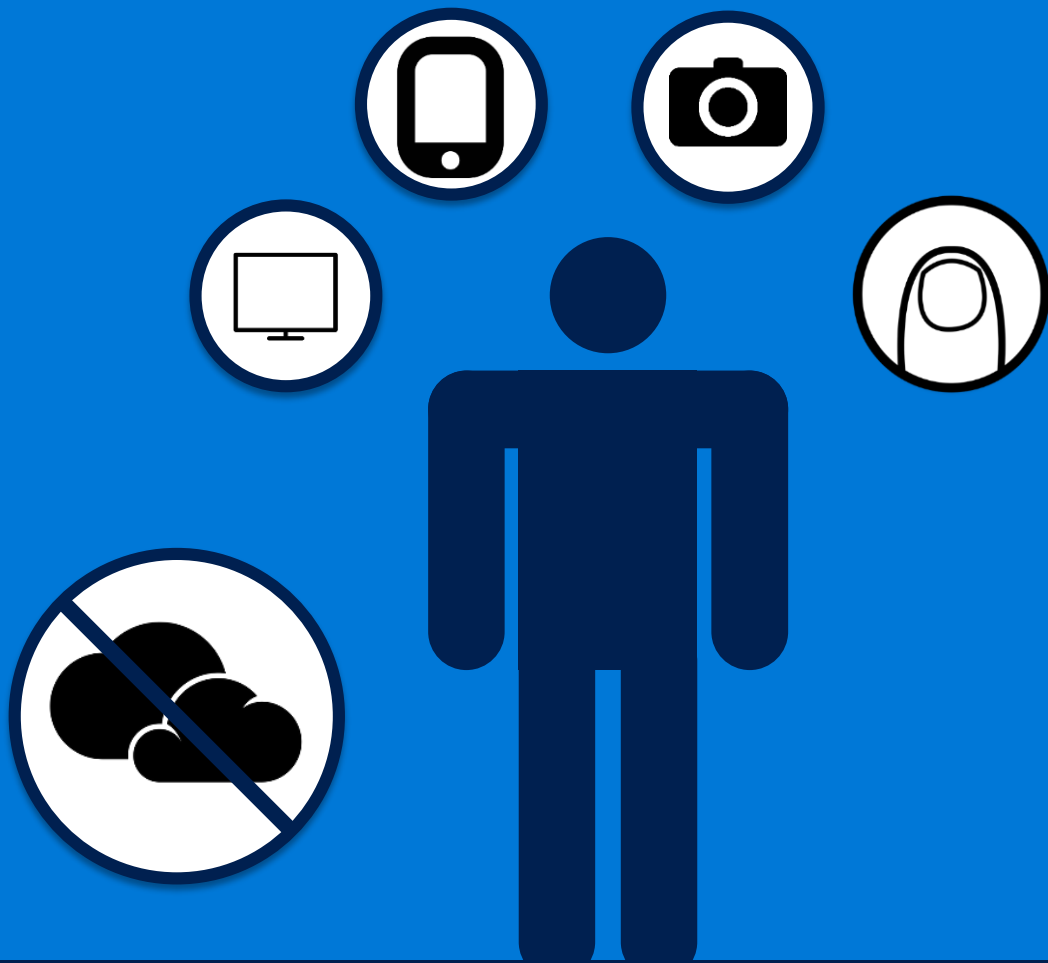




Visualization Content

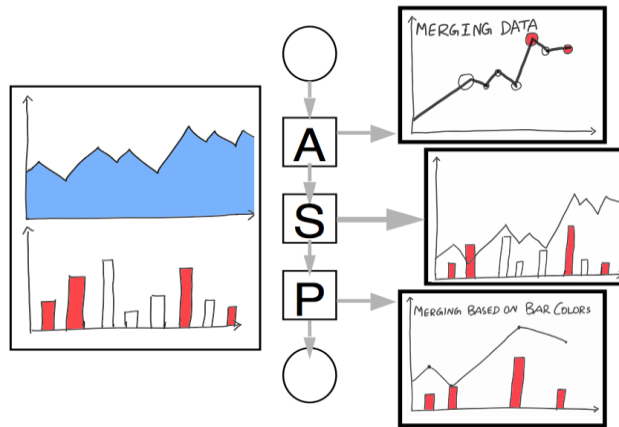






Demo

Conclusion





Niklas Elmqvist

elm@umd.edu | @NElmqvist
<http://sites.umiacs.umd.edu/elm/>

UNIVERSITY OF
MARYLAND

Icons created by designers of the Noun Project.
Photographs distributed under CC BY 2.0.



Work partially supported by NSF grants IIS-1249229, IIS-1253863, TUES-1123108, and DHS grant 2009-ST-061-CI0001.

