„The map is not the territory.“

Alfred Korzybski

http://en.wikipedia.org/wiki/Alfred_Korzybski

Korzybski thought that people do not have access to direct knowledge of reality; rather they have access to perceptions and to a set of beliefs which human society has confused with direct knowledge of reality. Korzybski is remembered as the author of the dictum: "The map is not the territory".

Interface Werkstatt Blockseminar || Day Two

Day Two

LW126

Daten & Geodaten & Karten & Processing, Basics und Touch

data

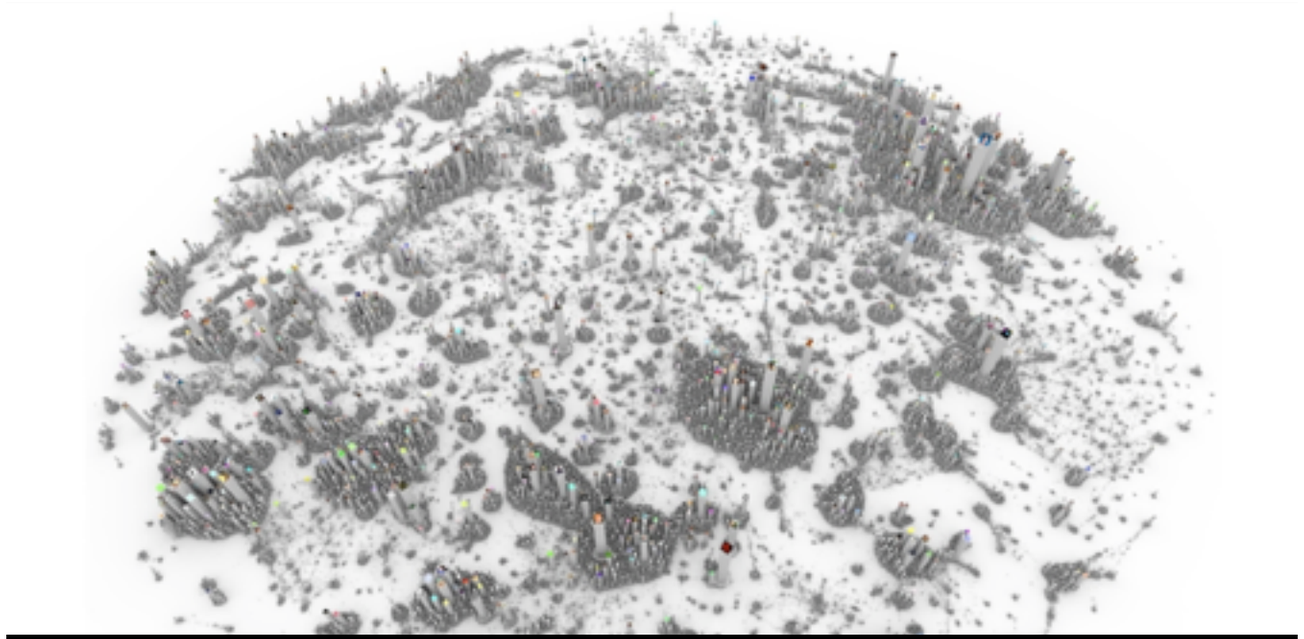
Visualizing the world's Twitter data - Jer Thorp

http://www.youtube.com/watch?v=tI61JjXdo_I

Vizicities

upcoming project http://vizicities.com

Demo London Tube https://vimeo.com/67869313



Ekisto

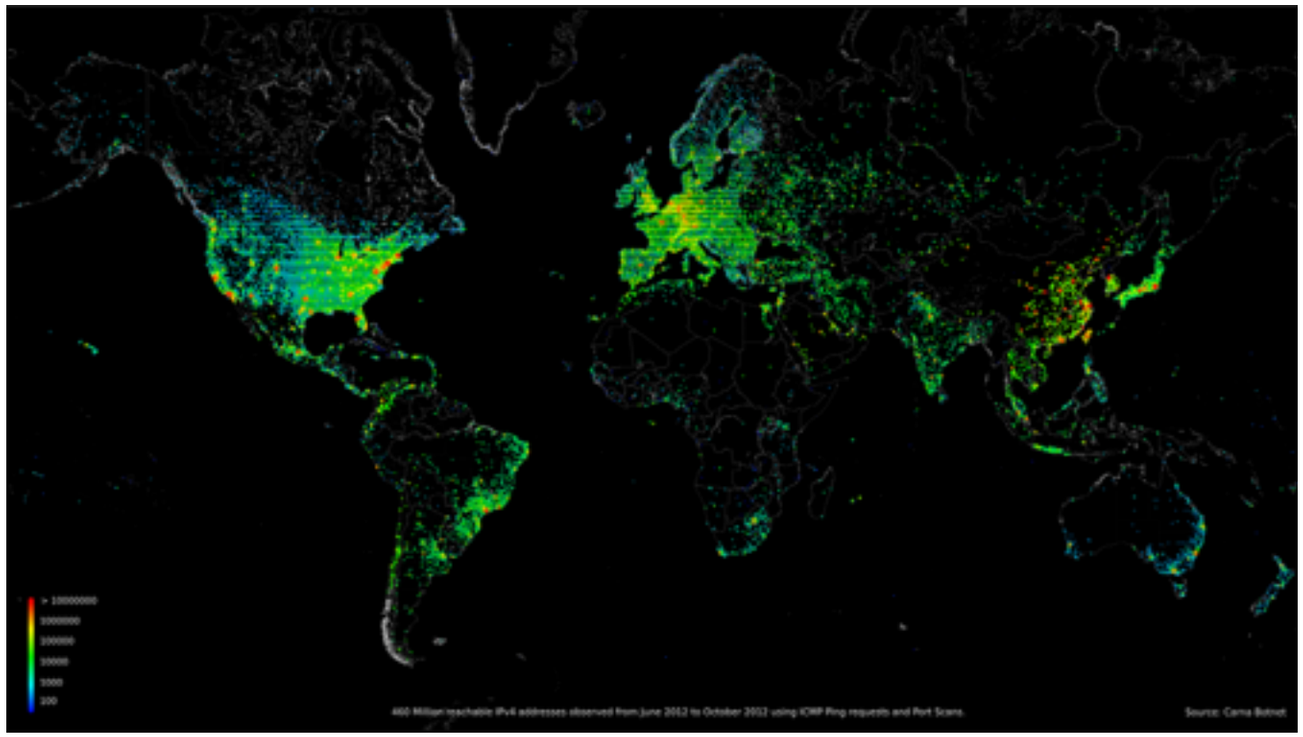
http://ekisto.sq.ro

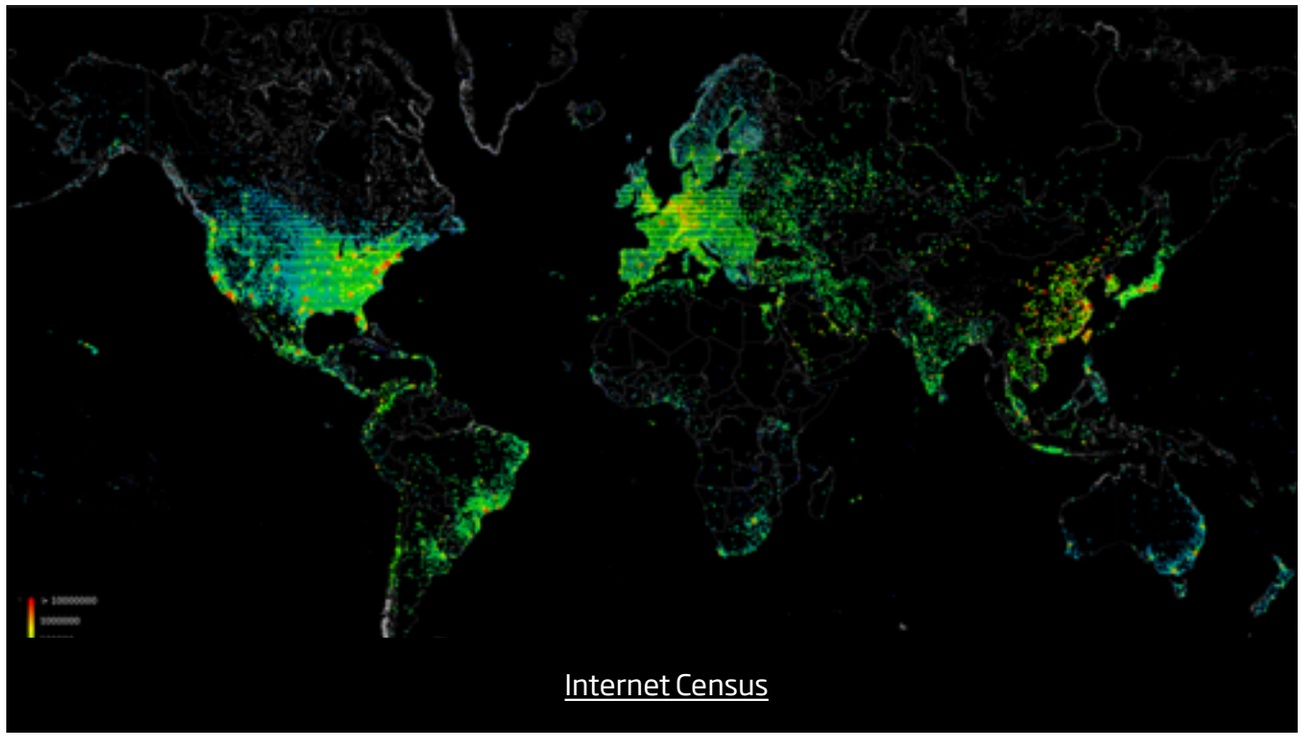
Ekisto is an interactive visualization of three online communities: StackOverflow, Github and Friendfeed. Ekisto tries to imagine and map our online habitats using graph algorithms and the city as a metaphor. Ekisto comes from ekistics, the science of human settlements.

A graph layout algorithm arranges users in 2D space based on their similarity. Cosine similarity is computed based on the tags of posts contributed by users (StackOverflow), collaborate, belong, watch, fork and follow relationships (Github), or based on the followers/following links between users and groups (Friendfeed). The volume of each user represents the normalized value of the user's Pagerank (Github, Friendfeed) or their reputation points (StackOverflow).

Read more about the motivation and design behind Ekisto on my blog.

December 10, 2013 update: newer map and features in the works.


> 10000000
1000000
100000
10000
1000
100
460 Million reachable IPv4 addresses observed from June 2012 to October 2012 using ICMP Ping requests and Port Scans
Source: Carna Botnet



Internet Census

http://internetcensus2012.bitbucket.org/paper.html

Internet Census 2012

Port scanning /0 using insecure embedded devices

Carna Botnet

Abstract

While playing around with the Nmap Scripting Engine (NSE) we discovered an amazing number of open embedded devices on the Internet. Many of them are based on Linux and allow login to standard BusyBox with empty or default credentials. We used these devices to build a distributed port scanner to scan all IPv4 addresses. These scans include service probes for the most common ports, ICMP ping, reverse DNS and SYN scans. We analyzed some of the data to get an estimation of the IP address usage.

All data gathered during our research is released into the public domain for further study.

Data Viz

Es gibt hunderte und tausende grossartige Daten Visualisierungen.

Starte einfach hierhttp://selection.datavisualization.ch

Geo Data

Wir wollen speziell über Geo Daten reden.

NASA Earth Observatory

Grossartige Bilder und Infos im NASA Earth Observatory

GPS

Mindestens 24 Satelliten im 55° Winkel zum Äquator

SPS = Standard Positioning Service (Alle) ca 9 Meter

PPS = Precise Positioning Service (Militär) ca 3 Meter

Latitude & Longitude

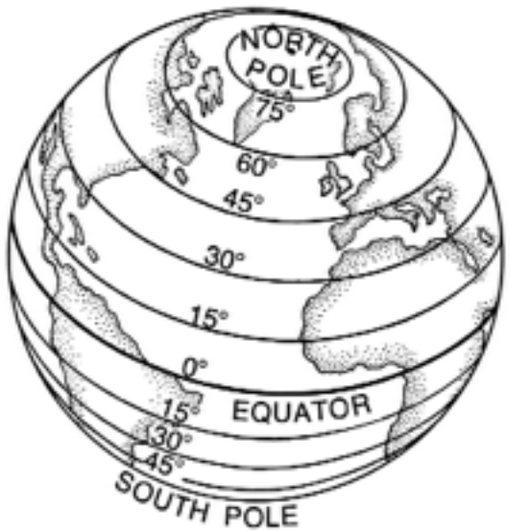
+ Elevation

Die Maßeinheit ist Lat Lon Elevation

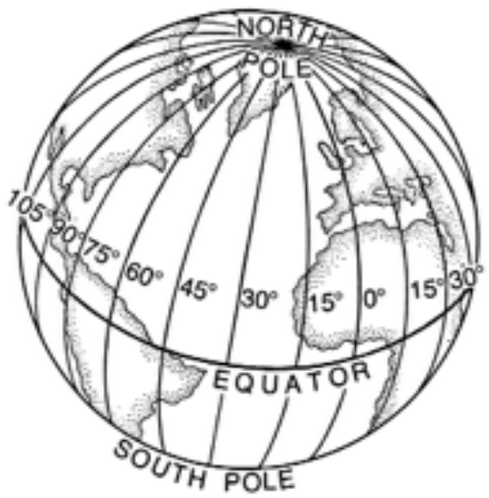
Latitude - Geographische Breite

Longitude - Geographische Länge

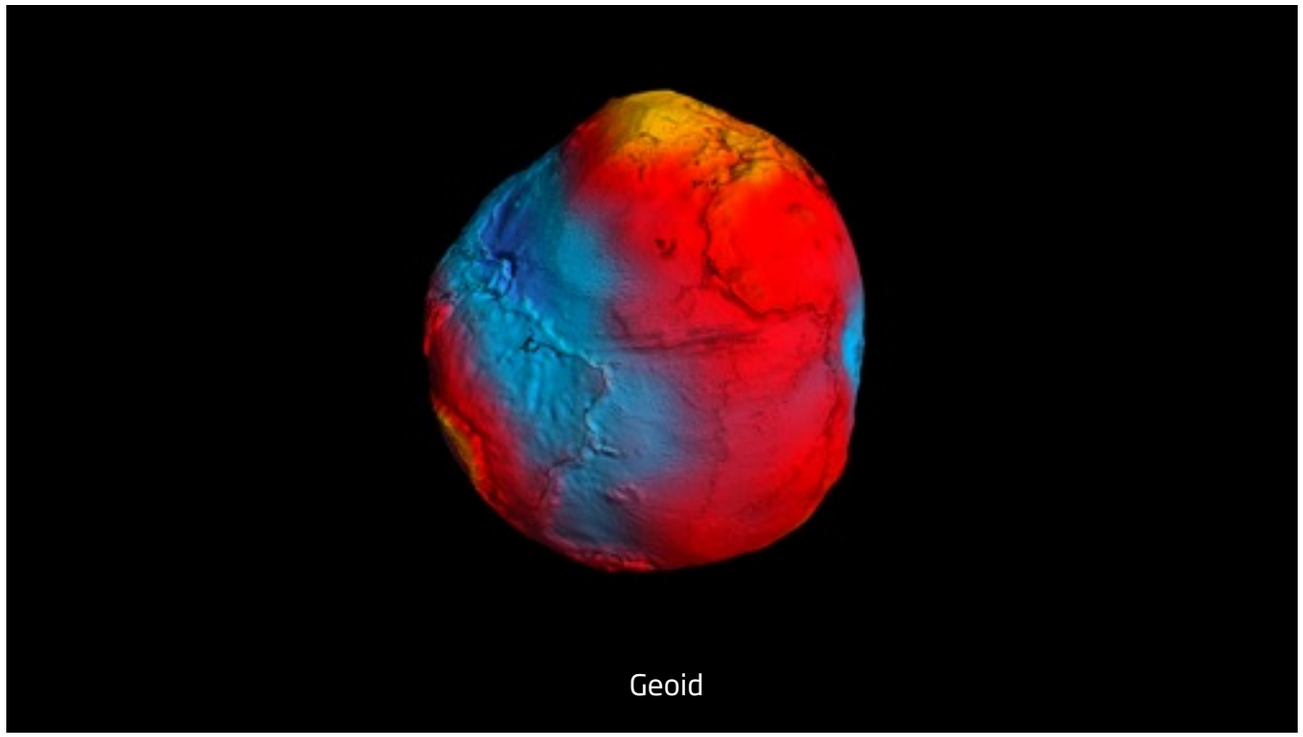
Warum Elevation?



Latitude



Longitude



Geoid

Das Problem ist. Die erste ist keine Kugel

Die Erde ist ein Geoid

Matthäus Seutter

Schon immer stellen wir den Globus als Sphere dar

z.B. Matthäus Seutter 1730

D3 GeoProjections

https://github.com/mbostock/d3/wiki/Geo-Projection

extended —> https://github.com/d3/d3-geo-projection/

D3 - d3js.org

BTW:

Mike Bostock’s D3 JavasScript Library

http://d3js.org

D3.js is a JavaScript library for manipulating documents based on data. D3 helps you bring data to life using HTML, SVG and CSS. D3’s emphasis on web standards gives you the full capabilities of modern browsers without tying yourself to a proprietary framework, combining powerful visualization components and a data-driven approach to DOM manipulation.

equirectangular

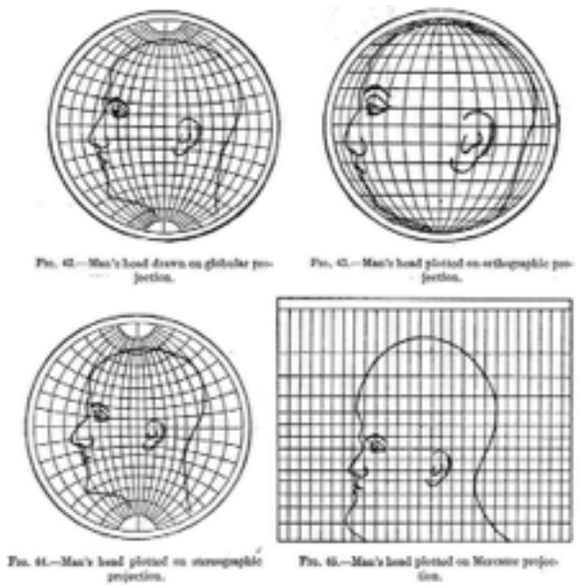


Fig. 42.—Man's head drawn on globular projection.

Fig. 43.—Man's head plotted on orthographic projection.

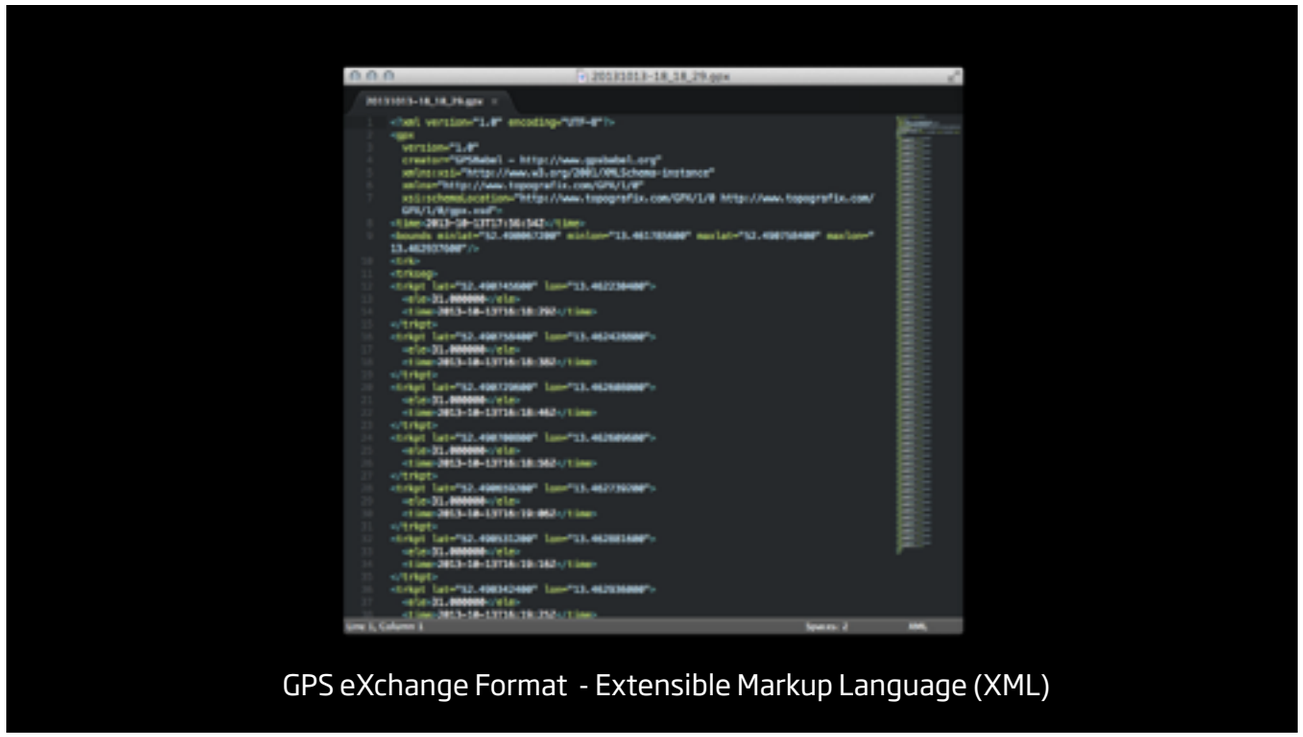
Fig. 44.—Man's head plotted on stereographic projection.

Fig. 45.—Man's head plotted on Mercator projection.

Unterschiedliche Projections Arten. Die geläufigsten sind equirectangular (2:1) und mercator (1:1)

Collect Data

Wie könne wir Daten sammeln



GPS eXchange Format - Extensible Markup Language (XML)

.gpx (ein GPS Exchange Datenformat) basiert auf XML

Extensible Markup Language (XML)

Extensible Markup Language (XML)

zB HTML / KML / KMZ

WBT 202

runkeeper.com

Mobile Application + SmartphOne (Android & iPhOne) und andere zB GPX Master

GSM (Global System for Mobile Communications)

1992 erste Mobilfunk-Geräte auf dem Markt

openpaths.cc

Mobile Application + SmartphOne

gibt CSV / JSON / KML.

Der Vorteil an GSM ist dass es nicht zuviel Strom frisst. Der Nachteil ist es ist ungenauer

johnnycashhasbeeneverywhere.com - Iain Mullan

Geo Coding

See http://www.gpsvisualizer.com/geocoder/

and this tutorial https://vimeo.com/54718822#t=4m26s

Transform Data

gpsbabel.org

gpsbabel.org

Es gibt ein GUI version und eine Kommandozeilen Version

[MAC]: brew install gpsbabel

commandline version von GPSBabel via brew package manager

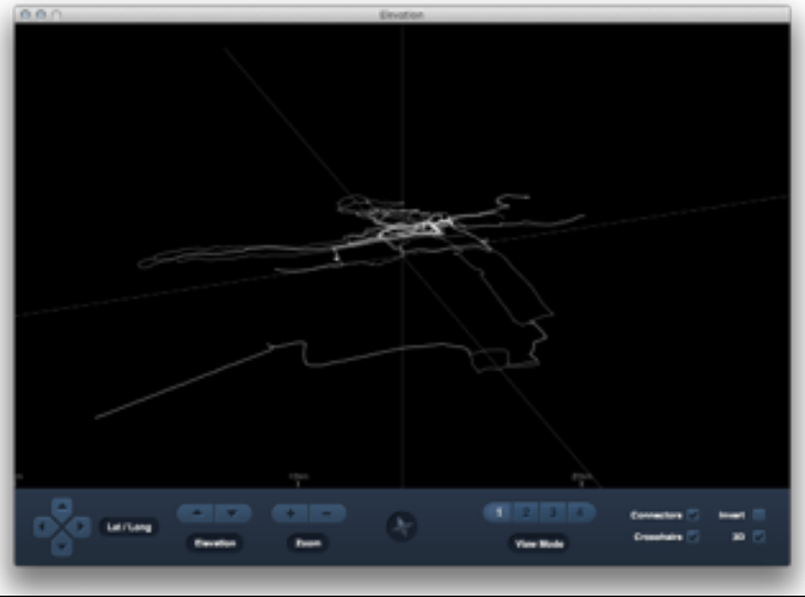
[MAC]: gpsbabel -i kml -f in.kml -o gpx -F out.gpx

commandline version von GPSBabel via brew package manager

gist.github.com/fabiantheblind/6949975

WBT 202 Daten extrahieren

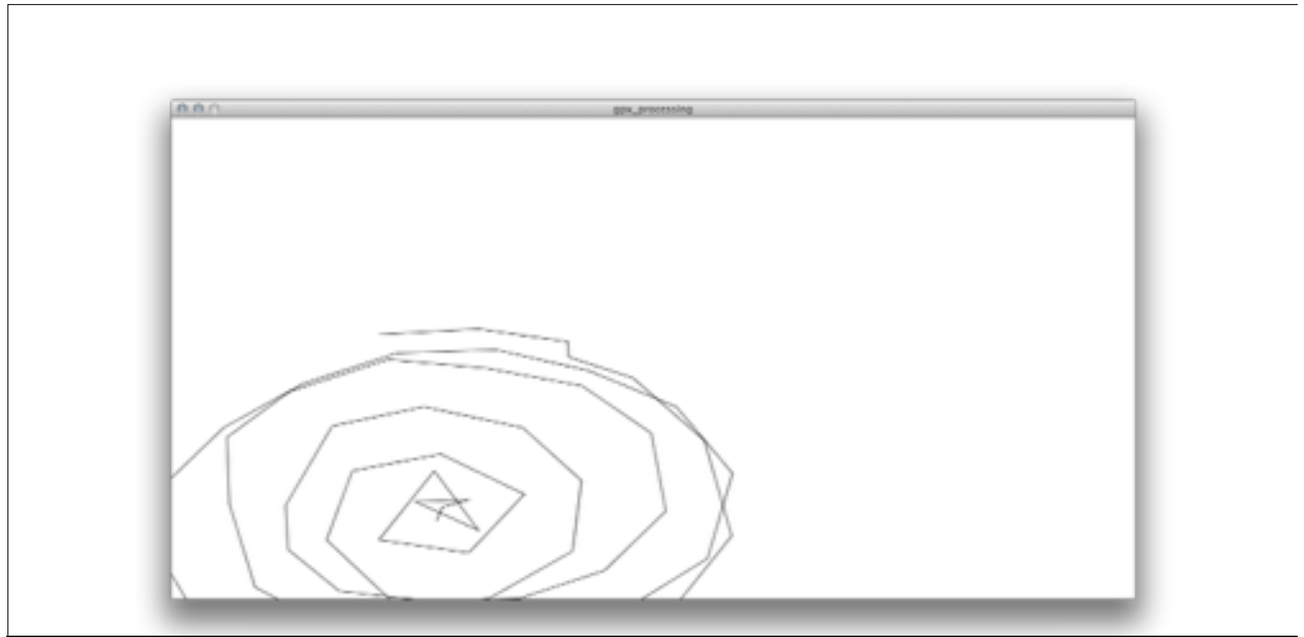
Evaluate Data



exnihilo.mezzoblue.com/elevation/

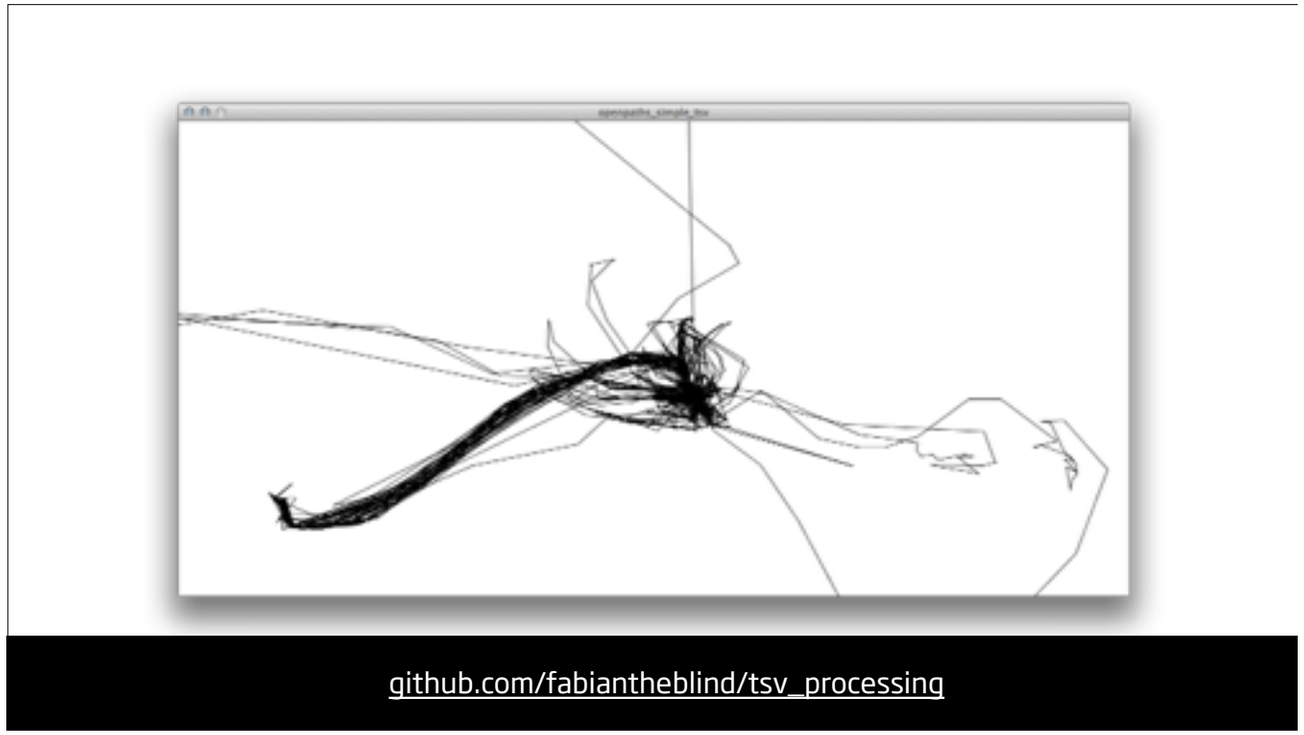
Elevation. Kann auch höhen Daten in gpx darstellen

in Processing geschrieben. (open source auf github)



github.com/fabiantheblind/gpx_processing

Evaluate Data



github.com/fabiantheblind/tsv_processing

Meine Daten der letzten 2 Jahre

github.com/fabiantheblind/json_processing

Meine Daten der letzten 2 Jahre

geocommons.com

Online Application kann CSVs, Shapefiles, KML, RSS, ATOM and GeoRSS lesen und CSV, KML, Shapefiles und GEOJson (trickery) ausgeben

cartodb.com

Online Application kann CSVs, Shapefiles, KML, and GeoJson SQL lesen und

mapschool.io

mapschool

a free introduction to geo. With github repo https://github.com/tmcw/mapschool

?

Multitouch

Heute Steht im Zeichen von Processing & Multitouch

Mehrfingergestenerkennung

multitouch klingt cooler.

kapazitive Touchscreen / resistive Touchscreen

auditive Systeme - saw (surface acoustic wave) grid - Acoustic pulse recognition touch tone

optische Systeme - Infrarot raster - diffuse illumination (computer vision)

Reactable

Reactable - Music Instrument und Installation (2003)

Contact - Felix Faire

http://www.creativeapplications.net/processing/contact-by-felix-faire-turns-any-hard-surface-into-an-interface/

https://vimeo.com/82107250

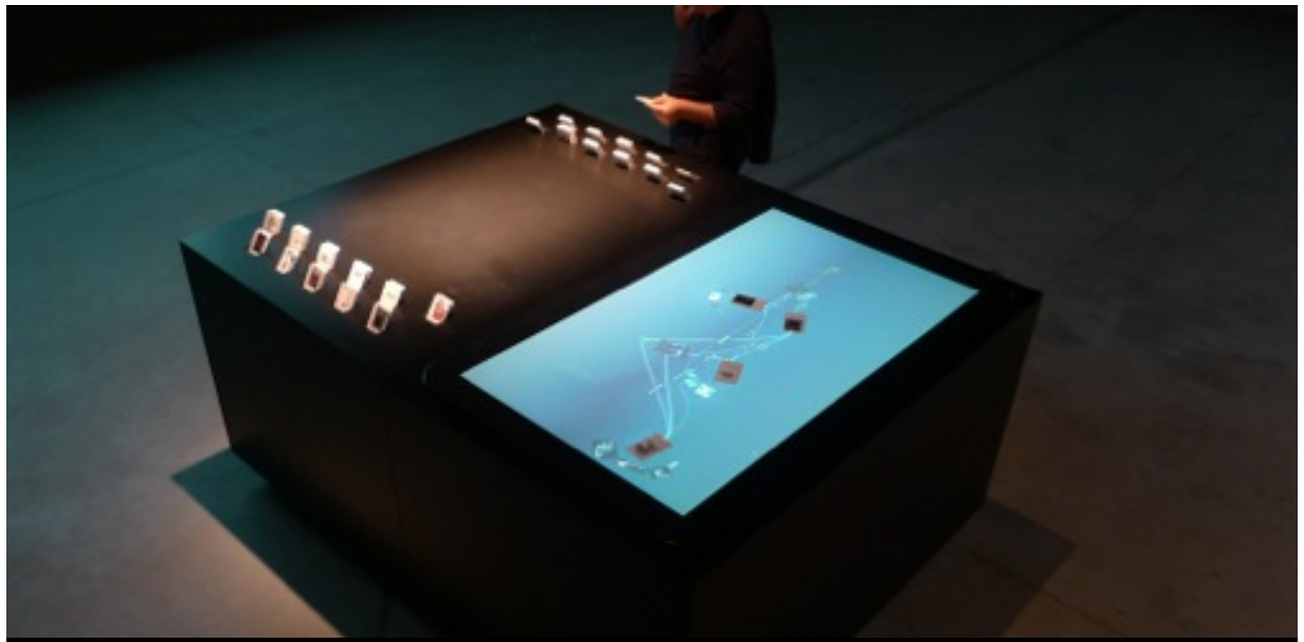
http://felixfaire.com

Multitouch @FHP

MACE / Maeve

zB Seminar Urbane Ebenen bei Till Nagel

CityOfFlow.mp4



Maeve 4 MACE

MACE (Metadata for Architectural Contents in Europe)

Maeve Tisch Projekt Installation Venedig Biennale (2008)

http://mace-project.eu/maeve/index.php

https://vimeo.com/16245192

Angst

Angst - Ängste im europäischen Kontext greifbar macht. (2010)

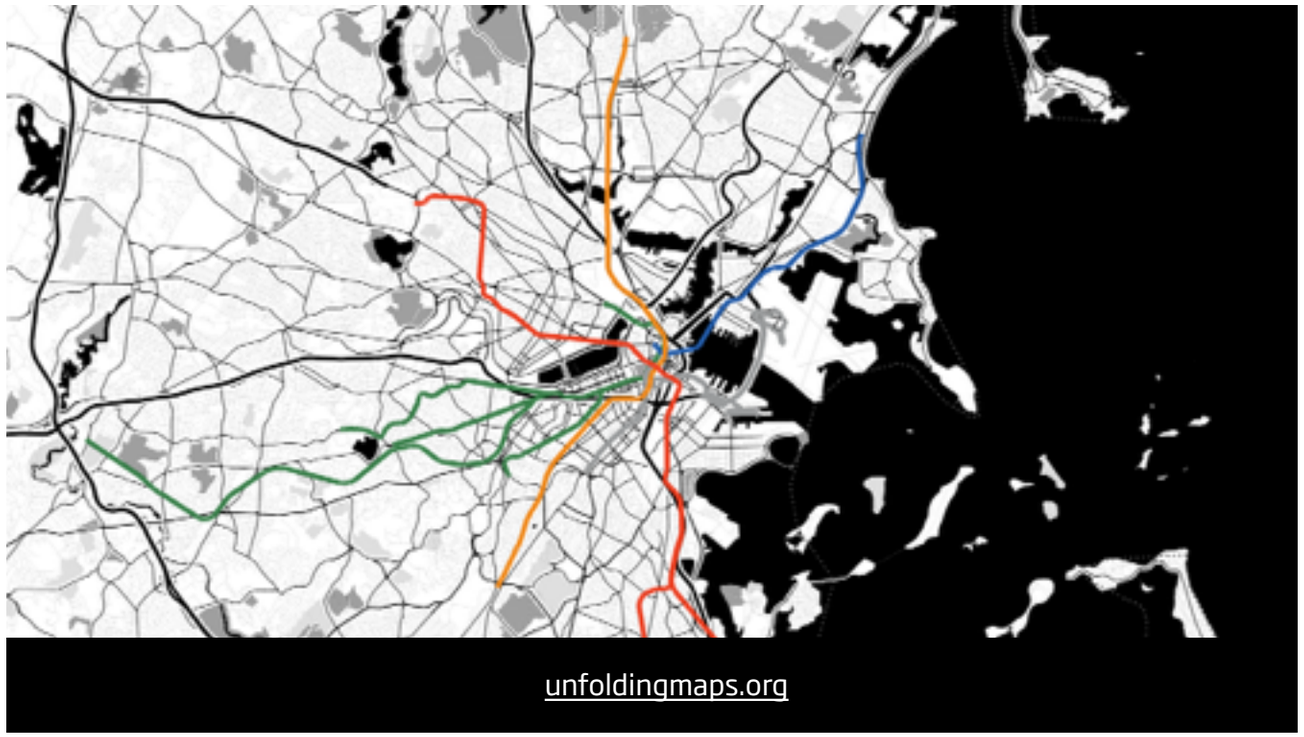
Würfel = bestimmte Angst

Roboter = zeigt Verbindungen auf

http://angstproject.com

Venice Unfolding

Venice Unfolding (2010) is a case study on tangible geo-visualization on an interactive tabletop to enable the exploration of architectural projects in Venice. https://vimeo.com/14033936



unfolding maps Ein Projekt initiiert von Till Nagel jetzt auch für P2* unfoldingmaps.org

Software

Ein Überblick zur uns zur Verfügung stehenden Hardware

reacTIVison

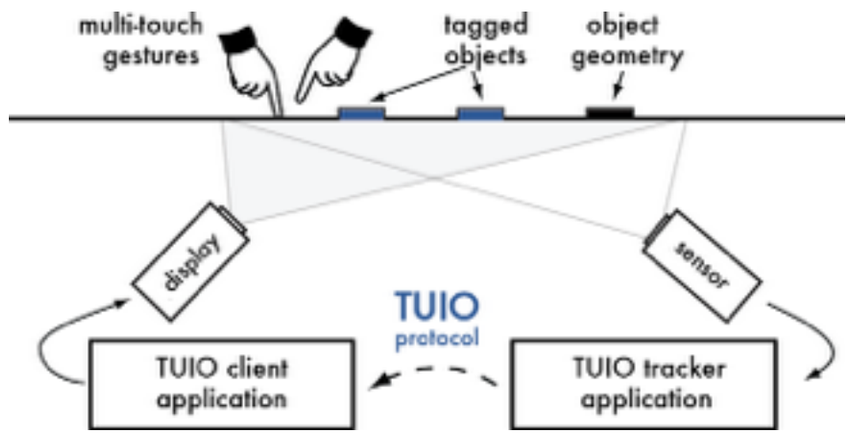
reactivision.sourceforge.net a toolkit for tangible multi-touch surfaces

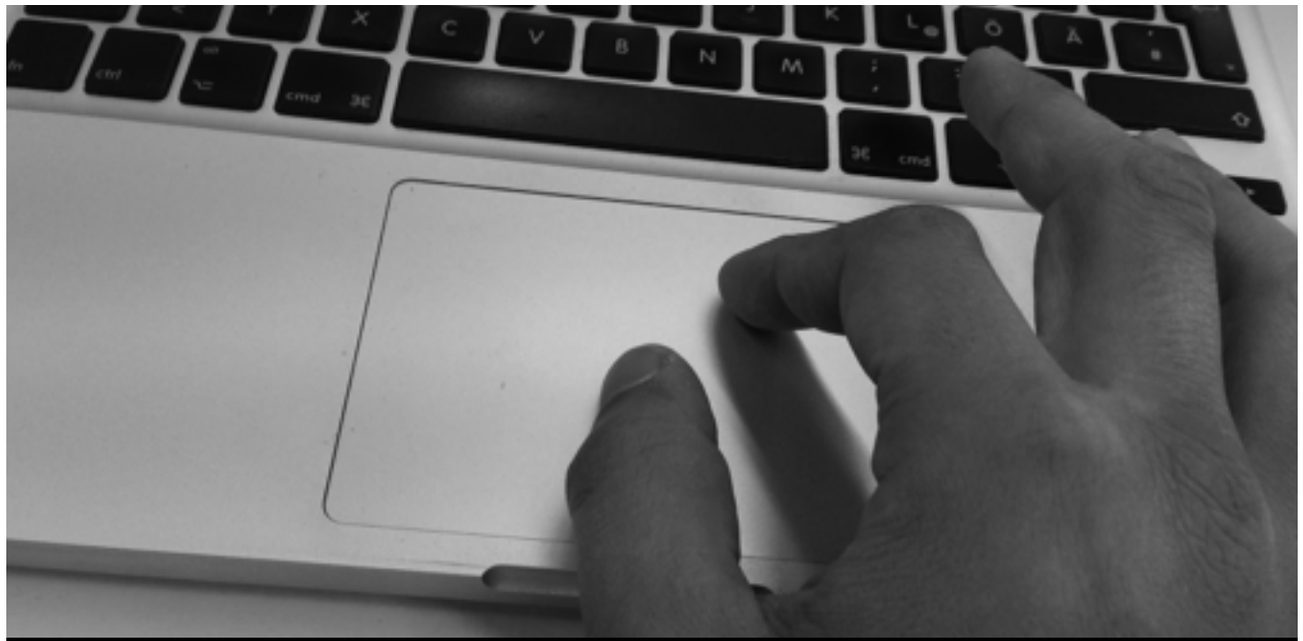
reacTIVision is an open source, cross-platform computer vision framework for the fast and robust tracking of fiducial markers attached onto physical objects, as well as for multi-touch finger tracking.

TUIO

www.tuio.org TUIO Protokoll 2005 veröffentlich teil von reactivision/reactable

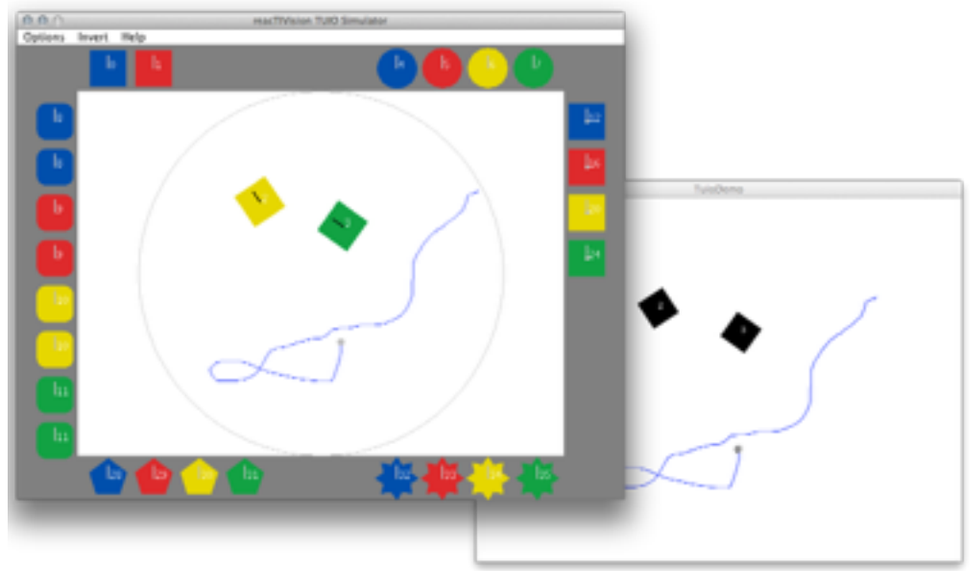
nutzt das OSC Format http://opensoundcontrol.org


multi-touch gestures
tagged objects
object geometry
display
sensor
TUIO
protocol
TUIO client application
TUIO tracker application



[MAC]: tongseng

Tongseng is a TUIO wrapper for Mac OS X multitouch events. Now you can use the multitouch touch pad to send TUIO events to your multitouch application!



TUIO simulator

tuio simulator java cross platform tool zur Entwicklung

http://www.tuio.org/?software

npTuioClient

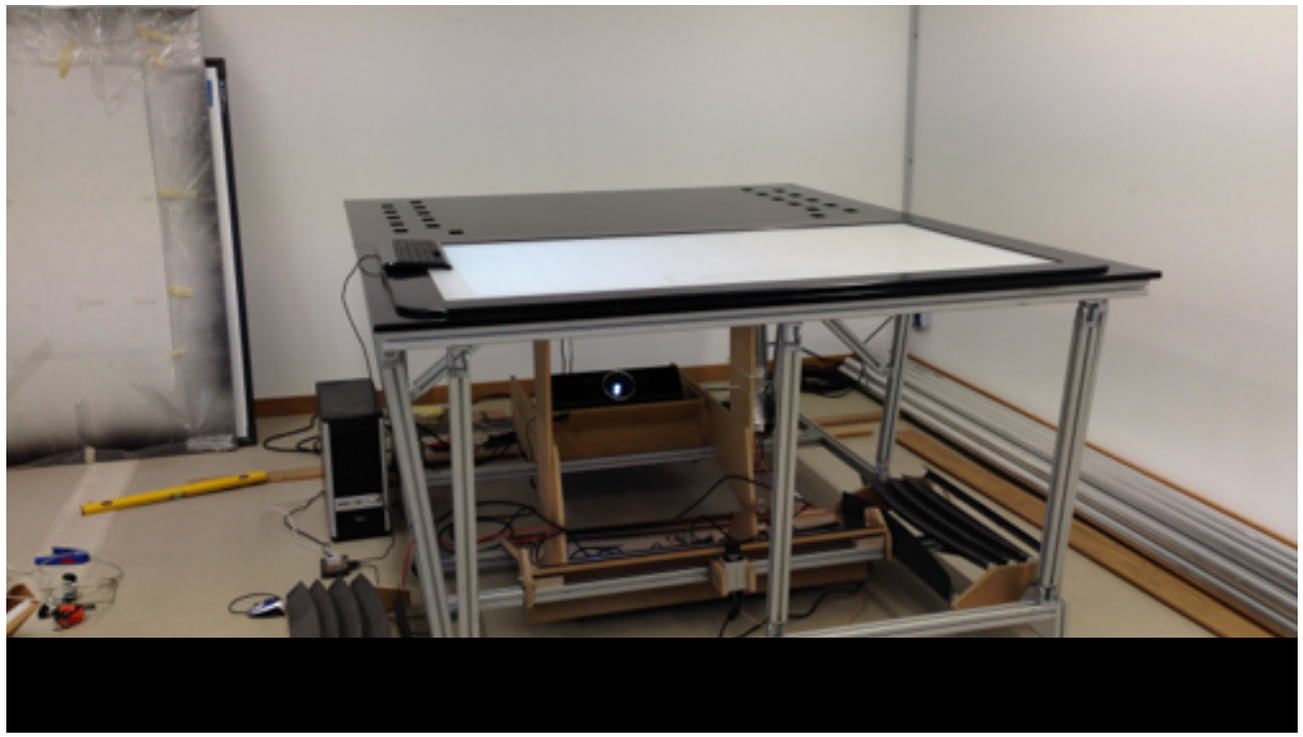
npTuioClient Browser Plugin zum entwickeln mit JavaScript

Älter version auch für win

/Users/[YOU]/Library/Internet Plug-Ins

Hardware

Ein Überblick zur uns zur Verfügung stehenden Hardware



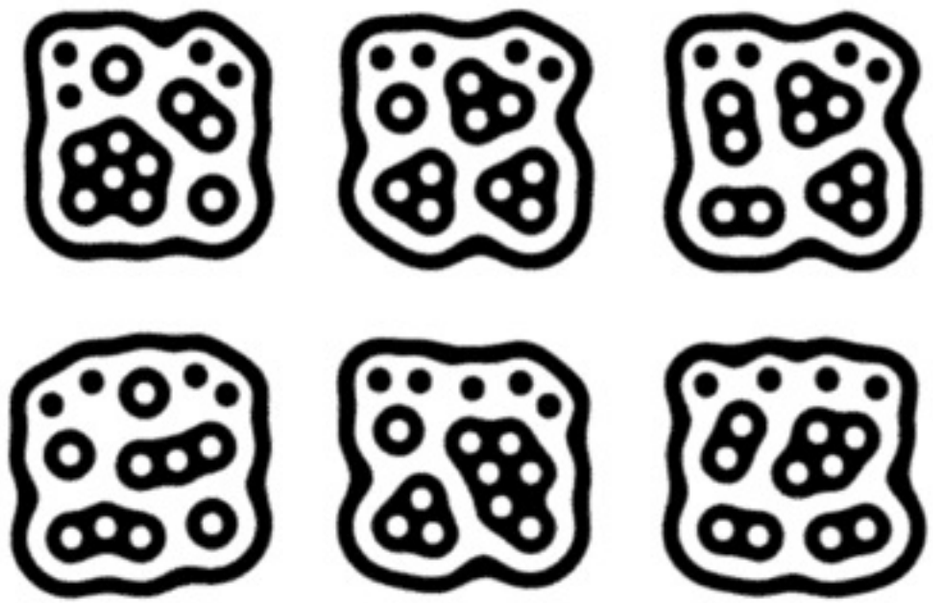
Maeve Tisch Übersicht (reactivision)

Maeve Tisch Übersicht

Diagonalgröße: 64 Zoll (163 cm)

1920 x 1080 px (Full HD) // 34 ppi

Objekt-Tracking mit Marker // Multitouch (eingeschränkt)



Marker Fiducial

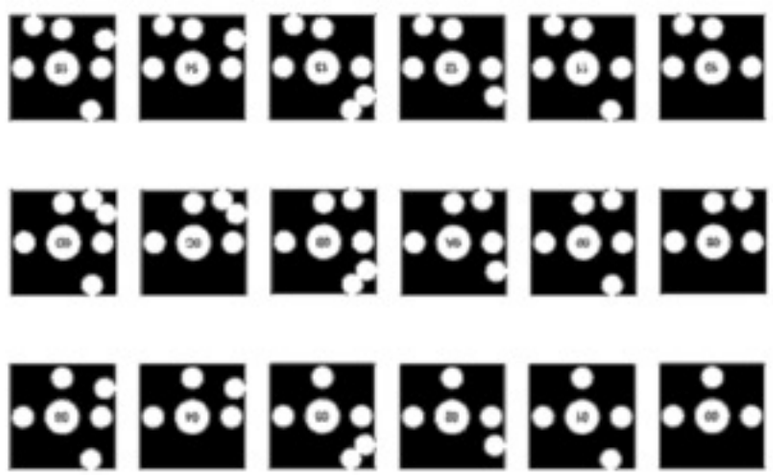
5,3 * 5,3 cm

MS Surface 1.0

Microsoft Surface 1.0 Übersicht (eigenes SDK) Diagonalgröße: 30 Zoll (76 cm) 1024 x 768 px 55 ppi

MultiTouch

Objekt-Tracking mit Markern



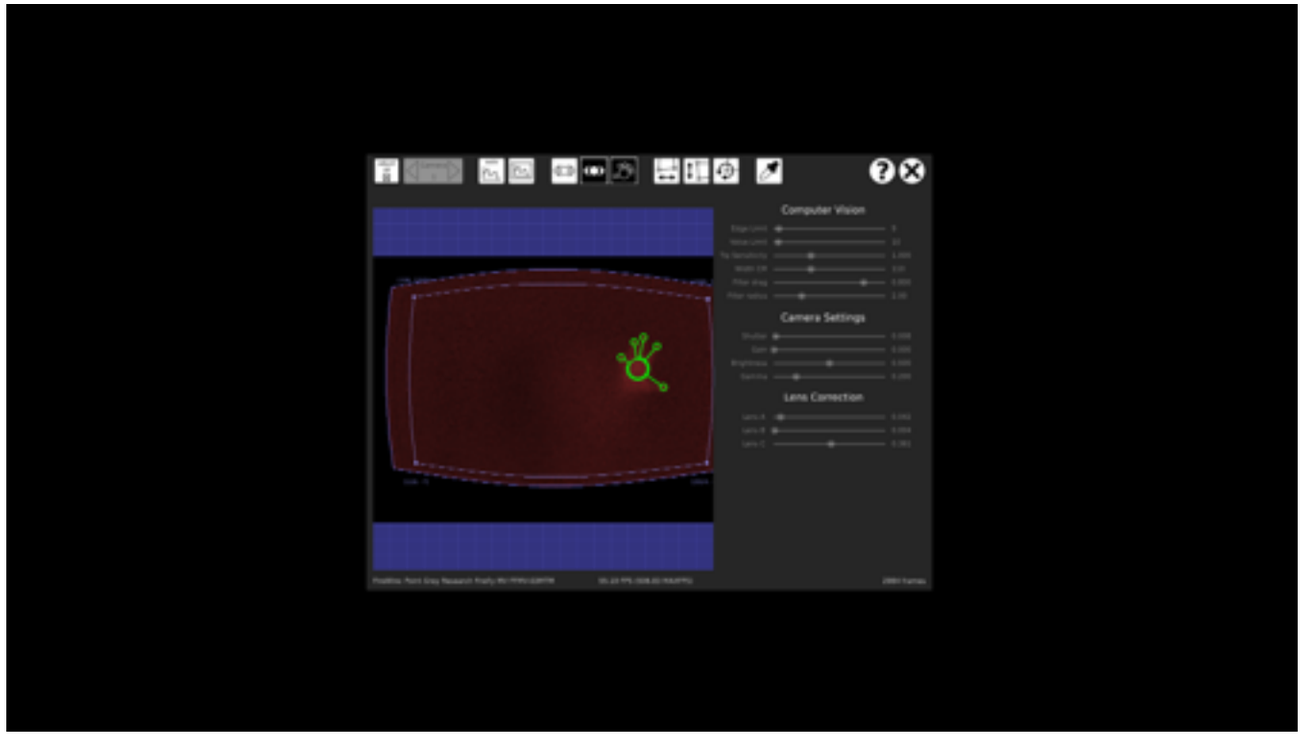
MultiTouch Cell

Multitouch Cell Übersicht (eigenes SDK)

Wand oder Tisch Diagonalgröße: 46 Zoll (116 cm)

1920 x 1080 px (Full HD)

48 ppi Multitouch



Das besondere an diesen Zellen?

Mehrere Zellen können verbunden werden

Die Software kann Hände erkennen

Sony Vaio

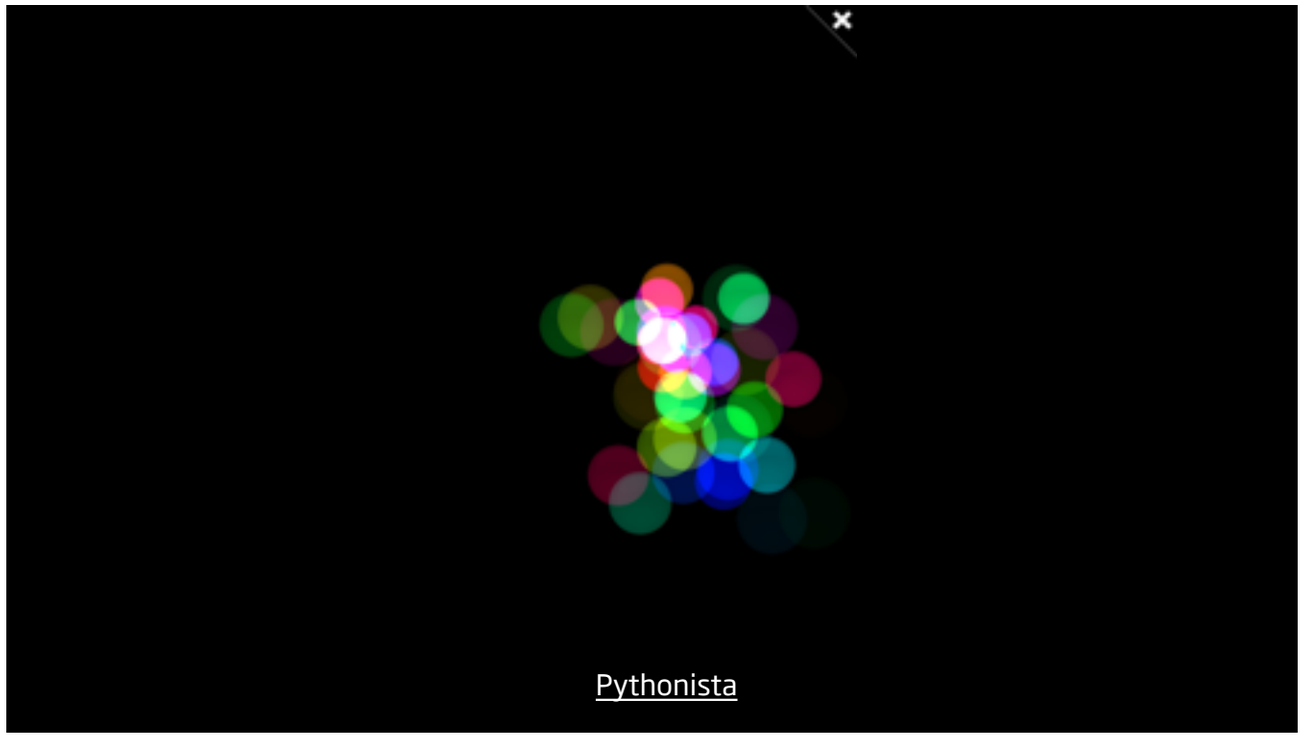
Sony Vaio Monitor Übersicht:

Diagonalgröße: 24 Zoll und 21 Zoll

1920 x 1080px (Full HD)

92 ppi

Zwei Finger Multitouch



iOS App Python einfaches Multitouch

Processing

Android

Und Processing auf Android ist auch eine Möglichkeit

hands on

hands on Touch

Processing Pt. 2

- ProcessingJS?
- map && Array && ArrayList && loops!! for / while && switch ?
- Particle system touch
- Geo data
- Bring your project to the cell

?

Fragen?

Projekt Ideen?