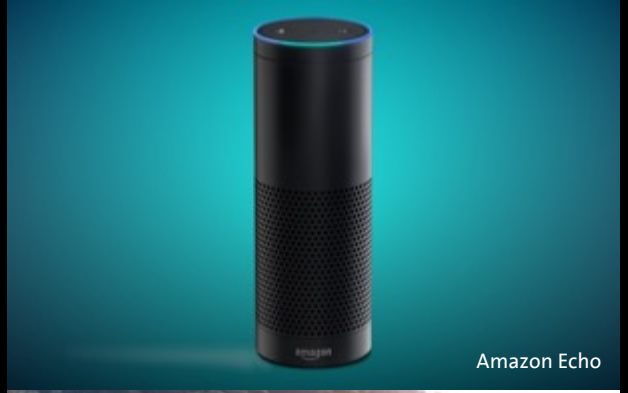
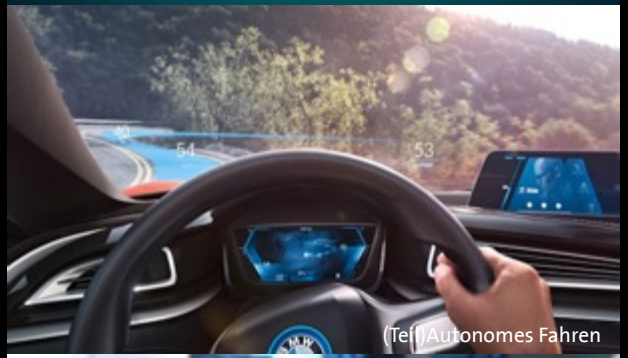
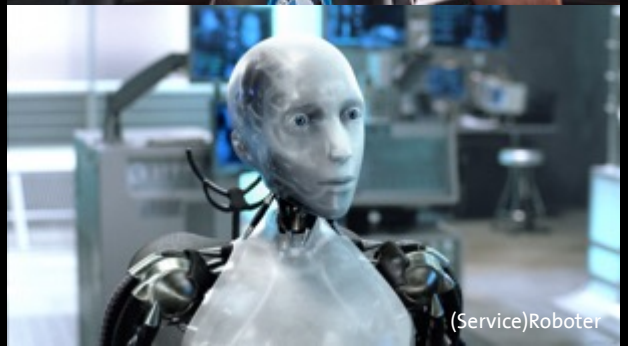

Amazon Echo


(Teil)Autonomes Fahren


(Service)Roboter

Potentiale und Risiken von »smarten« Mensch-Technik-Schnittstellen.

TA16 – Smart New World – Was ist "smart" an smarten Technologien?

Wien | 30. Mai 2016

Frank Heidmann & Anouk Meissner | **University of Applied Sciences Potsdam** | Department of Design | Interface Design Program | design.fh-potsdam.de | heidmann@fh-potsdam.de

»Smarte« Mensch-Technik-Schnittstellen.
Agenda.

(1) **Das Internet der Dinge (die wir nicht brauchen).**
Eine kurze Geschichte »smarter« User Interfaces

(2) **Demo Hour.** Aktuelle Prototypen aus den HCI-Labs

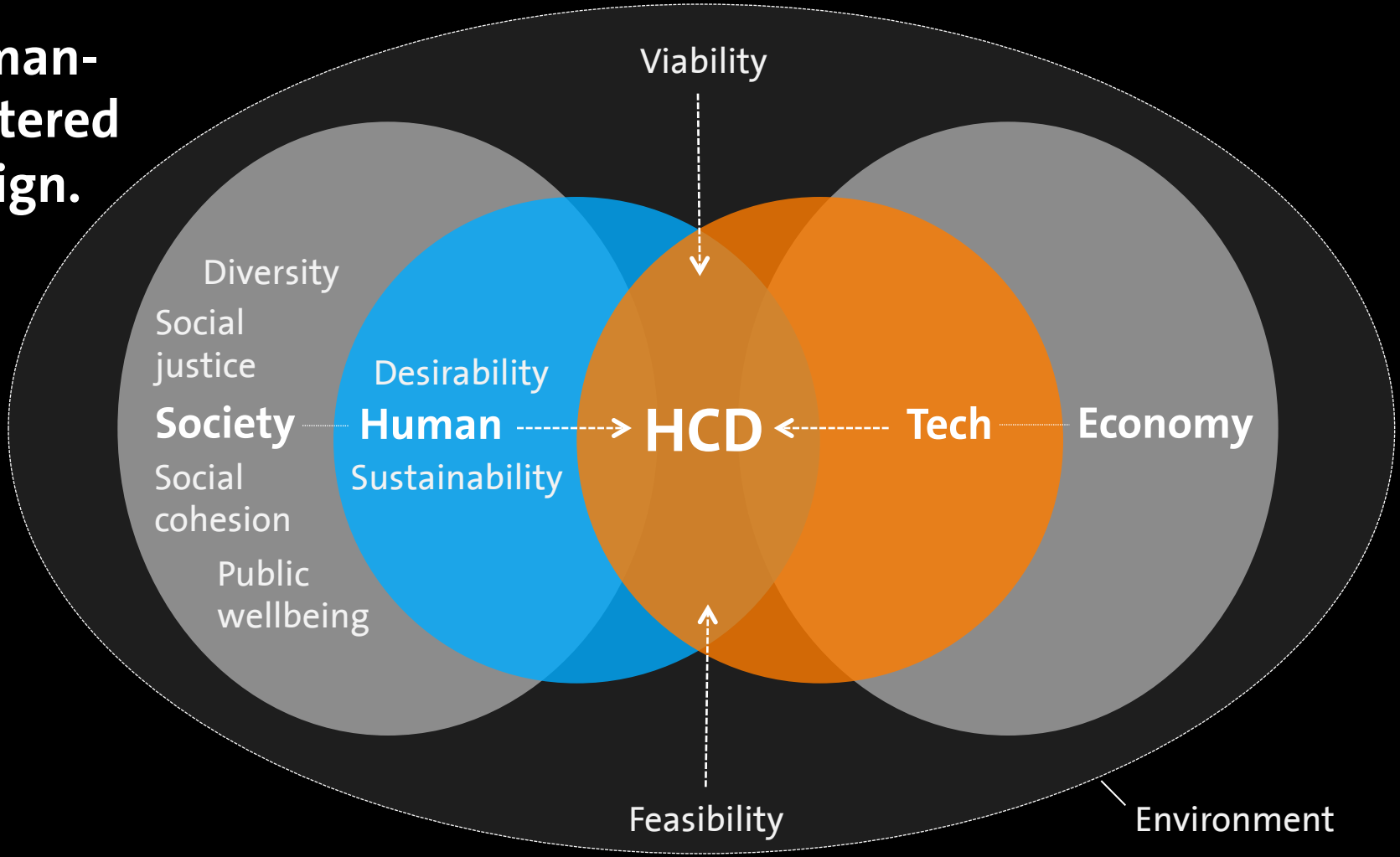
(3) **The City as Interface.** UIs in der »Smart City«

(4) **Real-time City.** Risiken und Ängste

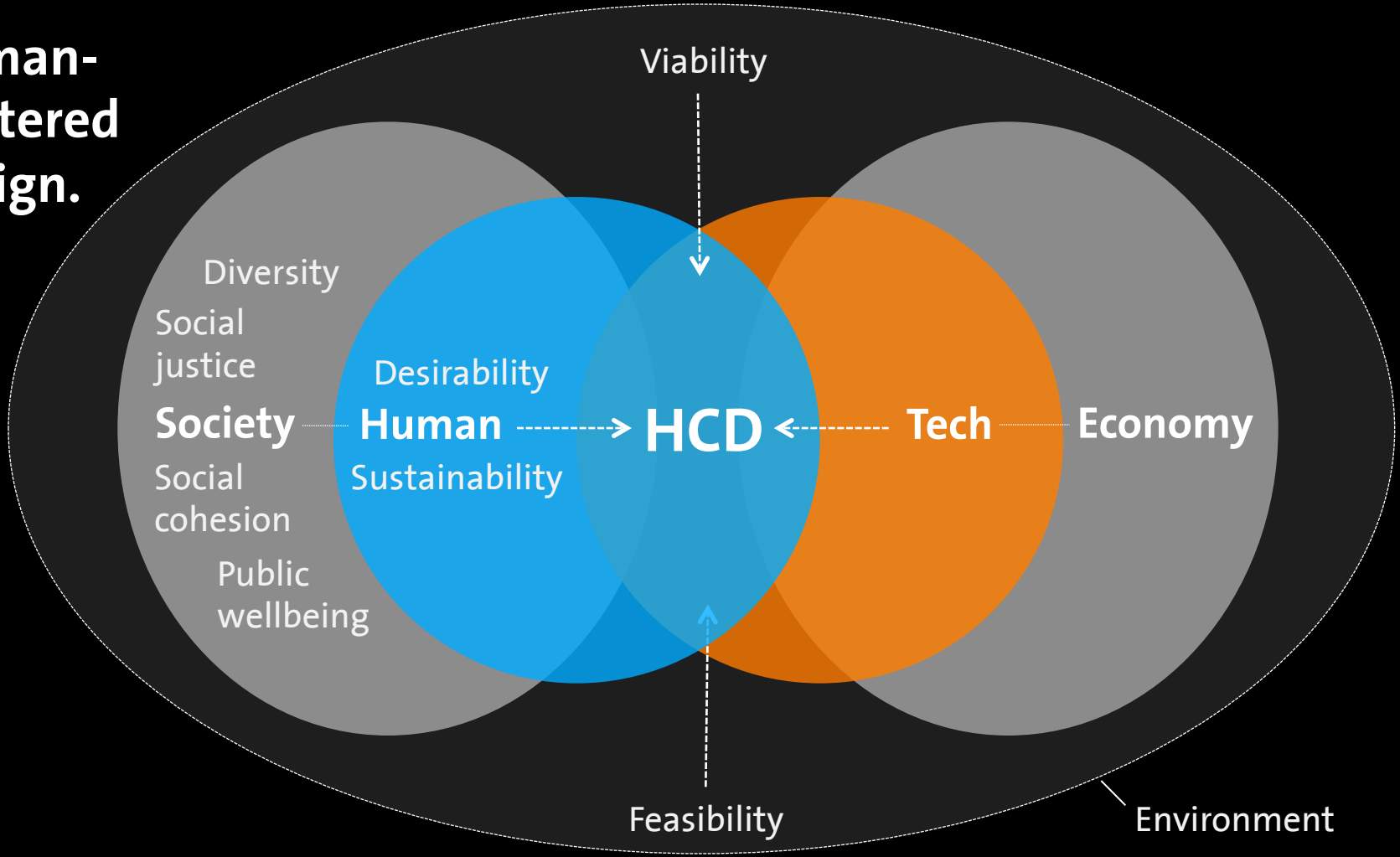
(5) **Post-Smartness.** Humanistic HCI

Oculus Rift

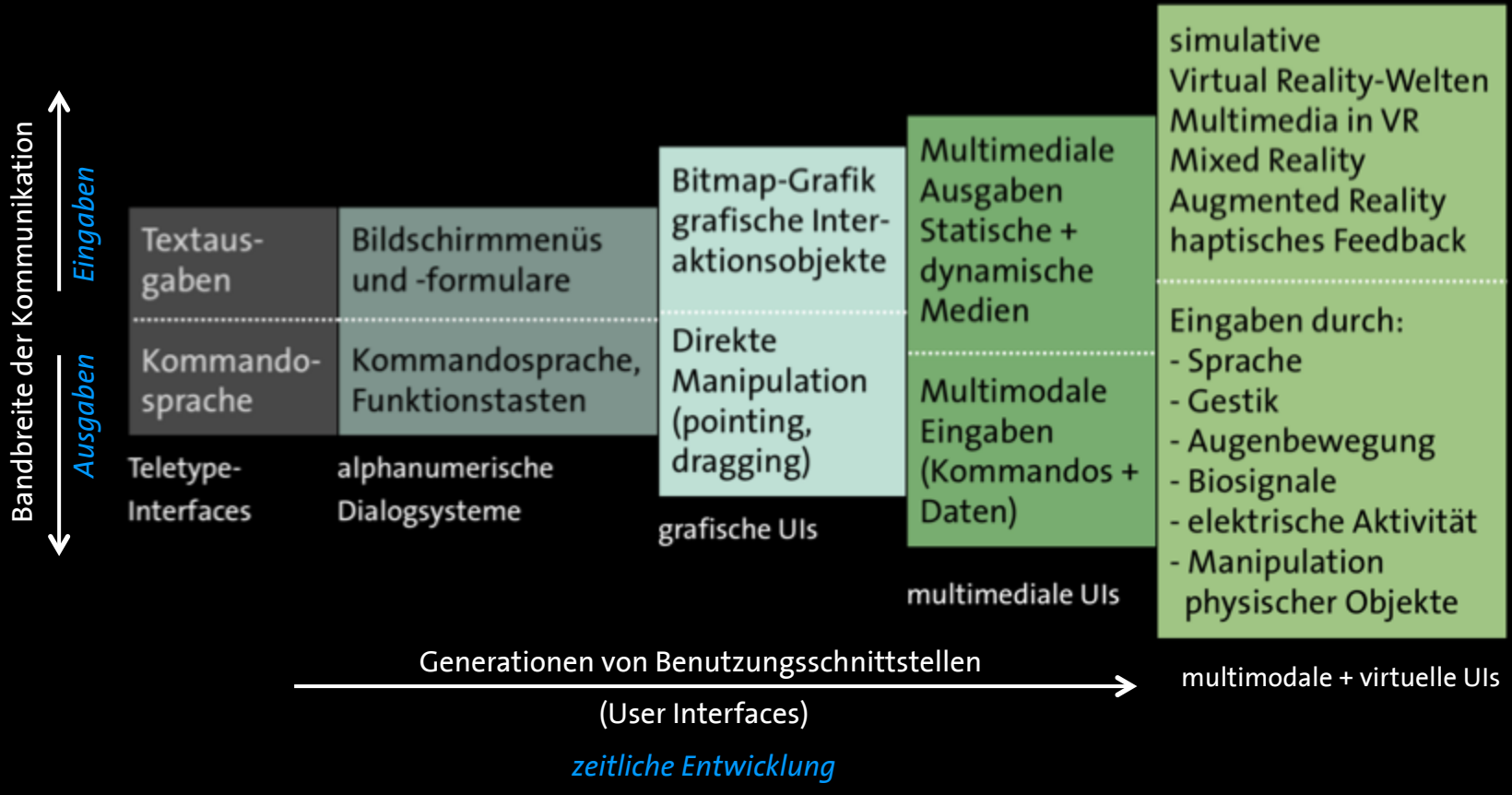
Human-Centered Design.

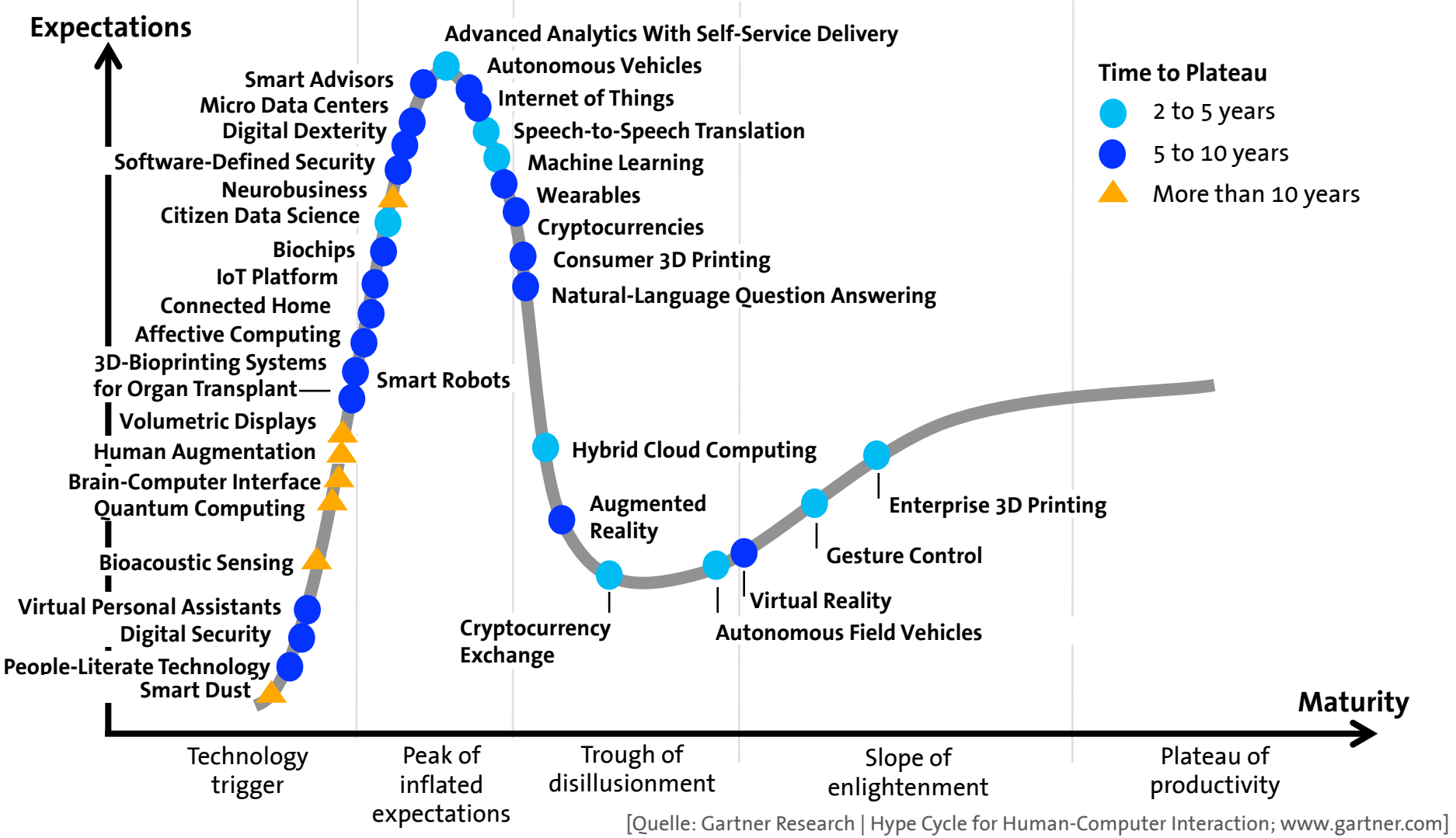


Human-Centered Design.



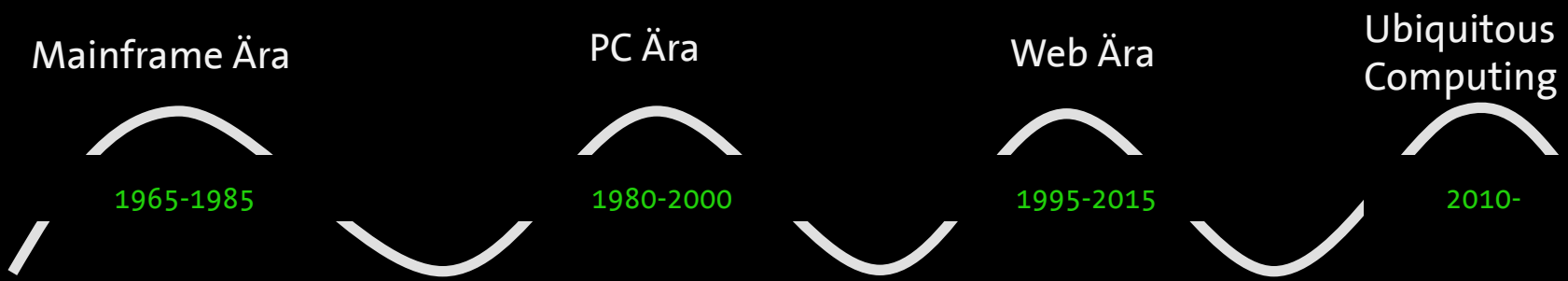
Mensch-Maschine-Schnittstellen.
Erweiterung des Kommunikationskanals zwischen Mensch und System.





[Quelle: Gartner Research | Hype Cycle for Human-Computer Interaction; www.gartner.com]

»Smarte« Mensch-Technik-Schnittstellen.
Eine kurze Geschichte „smarter“ User Interfaces.



Cognitive Science & Human Factors

- Viele NutzerInnen teilen einen Computer
- Nur wenige, ausschließlich ExpertennutzerInnen

Context & Participatory Design

- Ein Computer, ein(e) NutzerIn
- neue Kontexte der Nutzung, größere, heterogene Nutzergruppen

Distributed Computing

- Client-Server-Computing
- PCs und mobile Devices als Web-Clients
- Zunehmend mobile Nutzung

Calm Technology Invisible Comp.

- Neuer Modus des In-der-Welt-Seins
- überall verfügbar
- dabei unauffällig, im Hintergrund
- Smartness

»Smarte« Mensch-Technik-Schnittstellen.
Eine kurze Geschichte „smarter“ User Interfaces.

Ubiquitous Computing

2010-

Calm Technology
Invisible Computing

- neuer Modus des In-der-Welt-Seins
- überall verfügbar
- dabei unauffällig, im Hintergrund
- Smartness Versprechen

Mark Weiser (1952-1997), Director of research at Xerox PARC

Das Versprechen ...

- PCs als aufdringliche Eindringlinge in das Alltagsleben
- deren Funktionen nicht in die Abläufe und Umgebung des Lebens einpasst sind
- bedienbar nur über komplexe grafische Interfaces ...

werden ersetzt durch

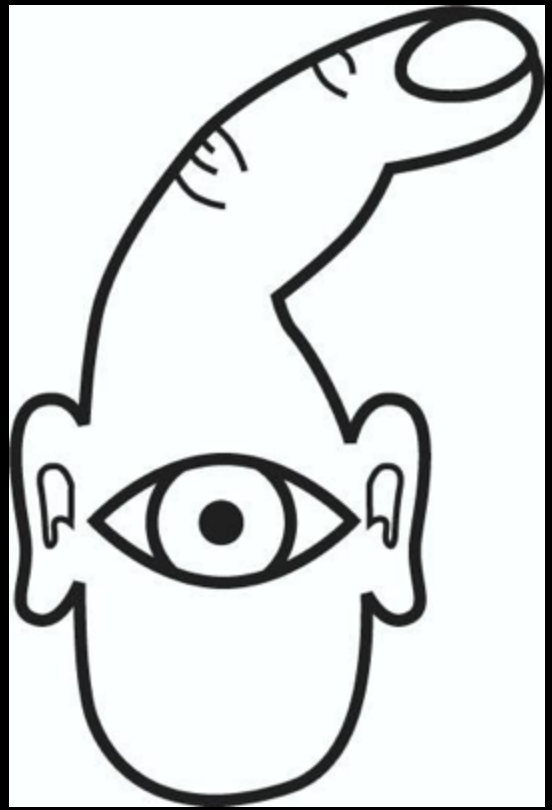
- smarte Objekte mit durchgängiger Konnektivität, jederzeit lokalisierbar und **»imbedded«,** in die Welt eingebettet.

»Smarte« Mensch-Technik-Schnittstellen.

Was sind smarte Mensch-Technik-Schnittstellen?

- **Miniaturisierung**
  IKT-Komponenten werden kontinuierlich kleiner und portabler
- **Einbettung**
  IKT-Komponenten werden häufiger in andere Geräte und Gegenstände des täglichen Gebrauchs eingebettet (Smart Objects)
- **Vernetzung & Konnektivität**
  IKT-Komponenten sind miteinander vernetzt und der Datenaustausch erfolgt drahtlos
- **Allgegenwart**
  IKT wird allgegenwärtig und versieht ihren Dienst immer unauffälliger oder unsichtbar
- **Kontextsensitivität**
  IKT-Komponenten können sich durch drahtlosen Datenaustausch und mittels Sensoren Informationen über ihre Umgebung beschaffen

»Smarte« Mensch-Technik-Schnittstellen.
Eine kurze Geschichte „smarter“ User Interfaces.



How the computer sees us.

[Courtesy Dan O'Sullivan and Tom Igoe (2004). Physical Computing: Sensing and Controlling the Physical World with Computers]

»Smarte« Mensch-Technik-Schnittstellen.
Eine kurze Geschichte „smarter“ User Interfaces.

Sehen

Hören

Tasten

Riechen

Schmecken

https://incom.org/projekt/4789

»Smarte« Mensch-Technik-Schnittstellen.

Demo Hour. An Internet of…. Things.

[Quelle: Mark Curtis 2012, Fjord, http://de.slideshare.net/nataliyesilbahar/mobile-monday-istanbulmark-curtis

»Smarte« Mensch-Technik-Schnittstellen.

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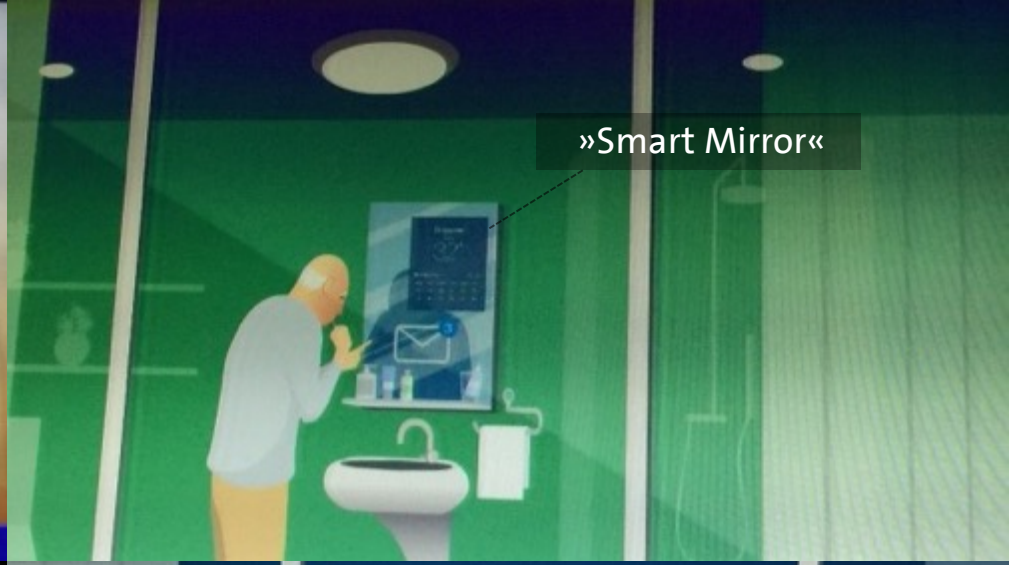
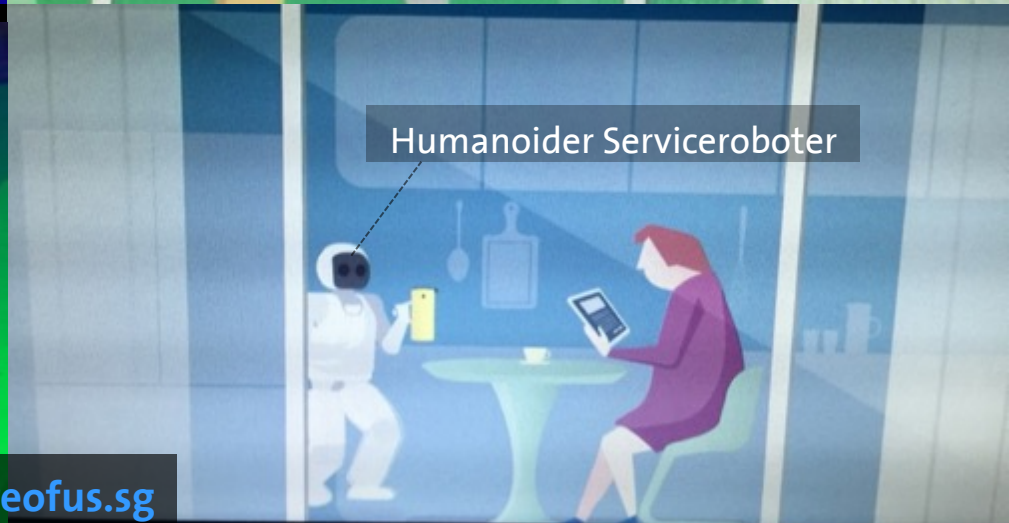




Singapore. The Future of Us. www.thefutureofus.sg

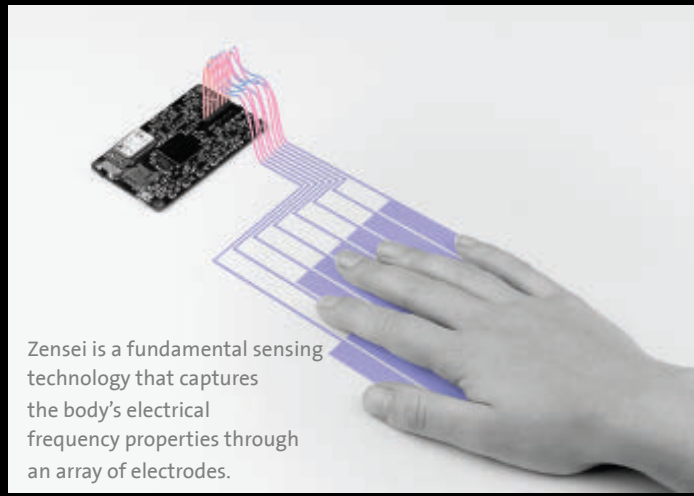
Singapore. The Future of Us.

www.thefutureofus.sg

Singapore. The Future of Us.
www.thefutureofus.sg

»Smarte« Mensch-Technik-Schnittstellen.
Demo Hour.

A Zensei-equipped smartphone instantly recognizes different users through their hands' electrical properties.



Zensei is a fundamental sensing technology that captures the body's electrical frequency properties through an array of electrodes.

Zensei

As interactions with handheld devices and everyday objects become increasingly common, a more seamless and effortless identification and personalization technique will be essential for an uninterrupted user experience.

http://zensei.media.mit.edu/

»Smarte« Mensch-Technik-Schnittstellen.
Demo Hour.

HAPIfork

HAPIfork: Eat slowly, lose weight, feel great!

Eating too fast leads to poor digestion and poor weight control. The HAPIfork is an electronic fork that helps you monitor and track your eating habits

https://www.hapi.com/product/hapifork

HAPIfork

The World's First Smart Fork

https://www.hapi.com/product/hapifork

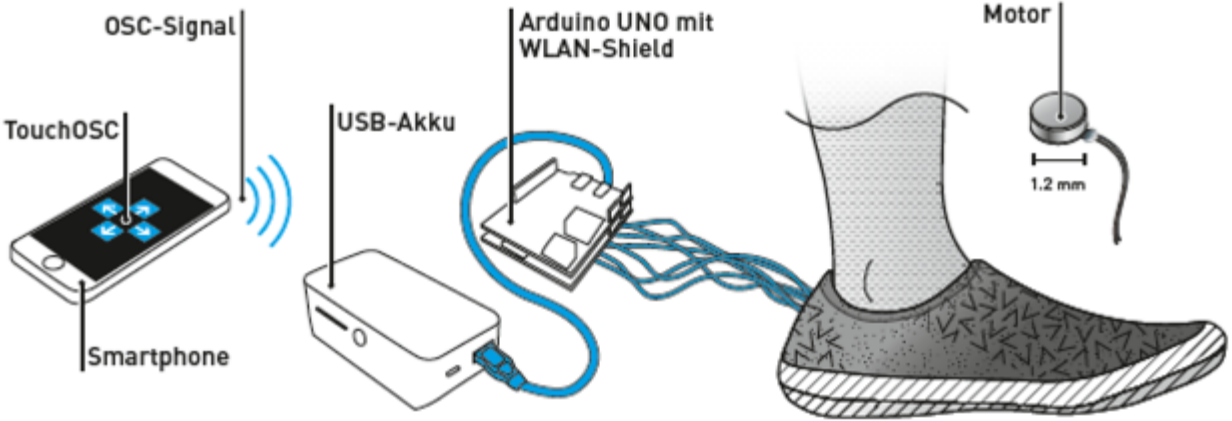
»Smarte« Mensch-Technik-Schnittstellen.
Demo Hour.

Haptic Gaze Interaction

Wearable computing devices are becoming more widely available. These devices present new interaction challenges, as the devices are usually small and the context of use sets limitations on available interaction modalities

http://www.uta.fi/sis/tauchi/ projects/hagi.html

»Smarte« Mensch-Technik-Schnittstellen.
Demo Hour.



Vibrotactile pedestrian navigation

https://incom.org/projekt/4789

Wearable vibrotactile interfaces transmit information via vibration actuators. This interface intends to help the user as a navigation tool and thereby relieve the user's visual sense.

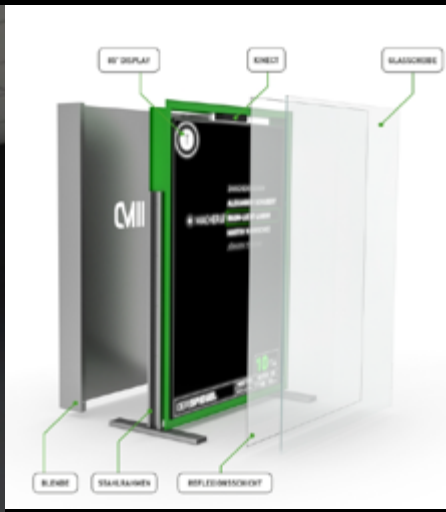
»Smarte« Mensch-Technik-Schnittstellen.
Demo Hour.

Personal Early Breast Wellness Screening

The iTBra™, a comfortable, discrete intelligent wearable technology that provides monthly breast wellness screening in the privacy of your home. Empowering women's breast health awareness is our goal.

http://cyrcadiahealth.com/

»Smarte« Mensch-Technik-Schnittstellen.
Demo Hour.



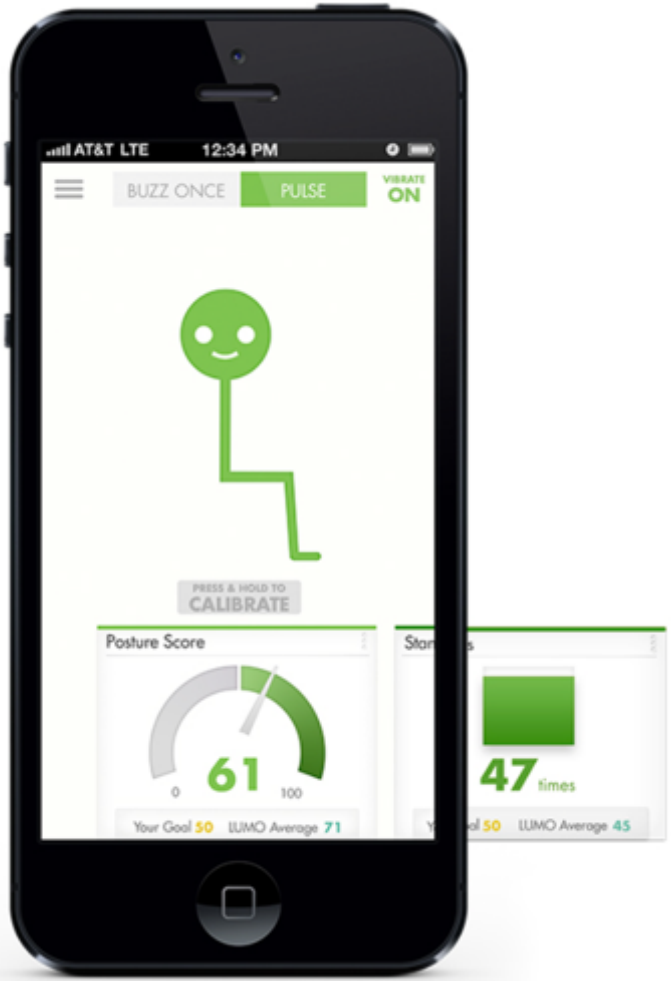
Smart Mirror

Großformatiger Spiegel mit Gestentracking und dynamischer Visualisualisierung für Reha und Fitness.

»Smarte« Mensch-Technik-Schnittstellen.
Demo Hour.

Lumo Back

Stand taller and feel better using the Lumo Back posture and movement feedback system. The sensor provides a gentle vibration when you slouch to remind you to sit or stand straight.



http://www.lumobodytech.com/lumo-back/

»Smarte« Mensch-Technik-Schnittstellen.

Demo Hour. Objects with Intent.

DESIGN DEMONSTRATOR

#1. A bedside lamp that lulls you to sleep

One of our graduate students developed a concept of a bedside lamp that lulls you to sleep. Based on the knowledge that certain types of light stimulate the body to produce melatonin, the lamp sets the right lighting conditions to make you sleepy, dimming the light as the evening progresses. The lamp helps you get to sleep on time by making it easy to dim the light further, and also by making it more difficult to increase the brightness by providing physical resistance in the lighting controller. The way in which the interaction is designed gives you the feeling that if you increase the brightness the light, you go against the will of the lamp. The longer sleeping time is postponed, the more assertive the lamp becomes, and the more forceful it will be in its behavior.

»Smarte« Mensch-Technik-Schnittstellen.

Demo Hour. Objects with Intent.

How to design the expressiveness of objects that are mundane and yet intelligent?

DESIGN DEMONSTRATOR

#2. A jacket that encourages you to calm down

In a research project that explored new applications of wearable technology, we have developed a concept of a jacket that helps veterans who suffer from post-traumatic stress disorder (PTSD) to deal with stress and anxiety in everyday life. Many people who suffer from PTSD tend to avoid public spaces because of the fear or panic triggered by unexpected events, sudden noises, or being exposed to human crowds. The jacket encourages the wearer to calm down in three different ways; by mirroring the stress level of its wearer through biofeedback, by actively helping the wearer to relax through deep abdominal breathing, and by fixating a person when stress levels are too high to control, which may lead to irrational or even aggressive behavior.

»Smarte« Mensch-Technik-Schnittstellen.
Demo Hour. Objects with Intent.

DESIGN DEMONSTRATOR

#3. A ball that invites you to be active

In a design research project that is focusing on how hospitalized children can be stimulated to be active, "Fizzy" was developed. It is a ball that invites young children to get out of bed and move around through the hospital ward. Many hospitalized children remain bedridden unnecessarily because the environment doesn't offer much stimulation and parents feel anxious and protective toward their children. Fizzy is designed as an enthusiastic ball that asks for attention by rolling around by itself, inviting children out of their beds. It likes being followed around and tries not to get caught. It does so by rolling away from the child at speeds that challenge children at an appropriate level, installing a sense of trust in parents and caregivers.

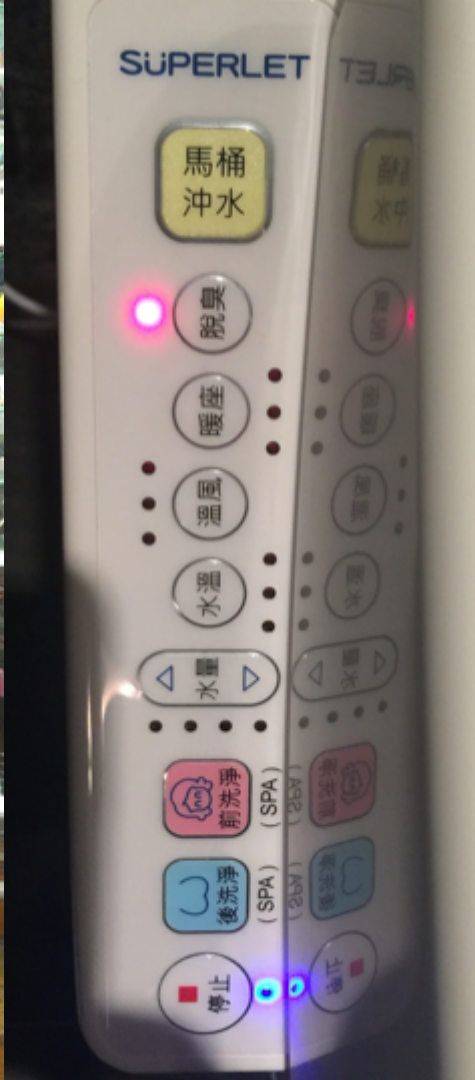
»Smarte« Mensch-Technik-Schnittstellen.

Usability und UX Kriterien für »smarte« Mensch-Technik-Schnittstellen.

Gehorsam auf Fingerzeig

[Quelle: Die ZEIT, No. 10, march, 4 2010]


7
手機通話禮儀
Cell Phone Etiquette
輕聲細語
Speak softly when making phone calls
長話短說
Keep your phone call brief
簡訊傳送
Send a text message instead
優質國民、快樂捷運
Good citizens create a happy atmosphere on the Taipei Metro.
metro


SUPERLET
馬桶沖水

»Smarte« Mensch-Technik-Schnittstellen.
Usability und UX Kriterien für »smarte« Mensch-Technik-Schnittstellen.

Usability und UX (User Experience) Kriterien für smarte Objekte und intelligente Umgebungen fehlen, insbesondere für die übergeordneten Themenfelder

(1) Autonomie vs. Selbstendmündigung

(2) Transparenz vs. Privatsphäre

Dazu kommen Herausforderungen zum Handling

- mehrere miteinander vernetzter Devices, viele ohne Screen
  = Cross-platform design und
- ohne ausreichende Selbstbeschreibungsfähigkeit bzgl. zugrunde gelegter Interaktionsparadigma (Gesten, Touch, Voice, Haptik)
- eingebunden in komplexe Ökosysteme, Fokus der UX liegt auf dem Service
  = Service Design

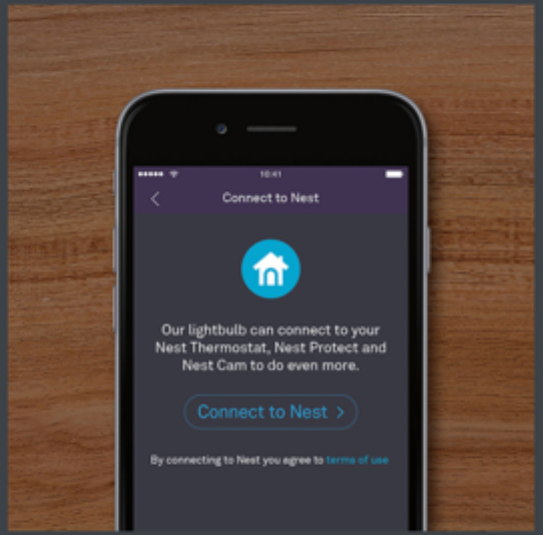
The GlowCaps connected pill bottle lid uses light and sound notifications to remind the user to take medication

Functionality Can Be Distributed Across Multiple Devices With Different Capabilities.

How it works

Start with Nest.

All you need is a Nest Thermostat, Nest Protect or Nest Cam. Add another product, like a light bulb, and they'll start to notice each other, learn from one another, and help you out – all on their own.



Simple, secure setup.

Sign into your light bulb app, tell it to connect to Nest, then verify your Nest Account. It's private, secure, and you're always in control. Learn more ›

It just works.

You don't have to be a tech geek to get things working. Once you connect a product to Nest, it automatically starts doing things for you, without you having to program it.

Department of Energy & Climate Change

Usability testing of smarter heating controls

December 2013 – Final Report

Effectiveness

The effectiveness of each control was a measure of how well users were able to complete the set tasks. An overall task completion rate was calculated for each of the controls. A benchmark of 70% overall task completion rate was chosen as this would represent the majority of tasks being successful while allowing some leniency given it was the first time users had encountered the smarter heating control. None of the controls tested met this benchmark; in fact, performance for all controls was below 50%, indicating that the majority of tasks undertaken with the controls resulted in a failure to complete.

[redacted]

Efficiency

The efficiency of each control measured how long users spent attempting the tasks. Different benchmarks for performance were set at the individual task level in the range of 60 seconds (temporarily turning the heating on) to 240 seconds (setting up a weekly heating schedule for a 2 room house). Benchmarks were established based on the number of steps involved in the task and evaluated by a trained usability practitioner. To benchmark the performance of each control, the sum of total time spent on all tasks for each participant was compared to the sum of the individual benchmark times (900 seconds).

Three of the controls were able to meet the benchmark for efficiency, indicating that users were able to complete the tasks within a reasonable or desirable amount of time. These controls all had simpler wall mounted units and emphasised the use of web based or smart phone based interfaces for more involved tasks such as setting up the initial heating schedule, which may account for their improved efficiency.

[redacted]

Satisfaction

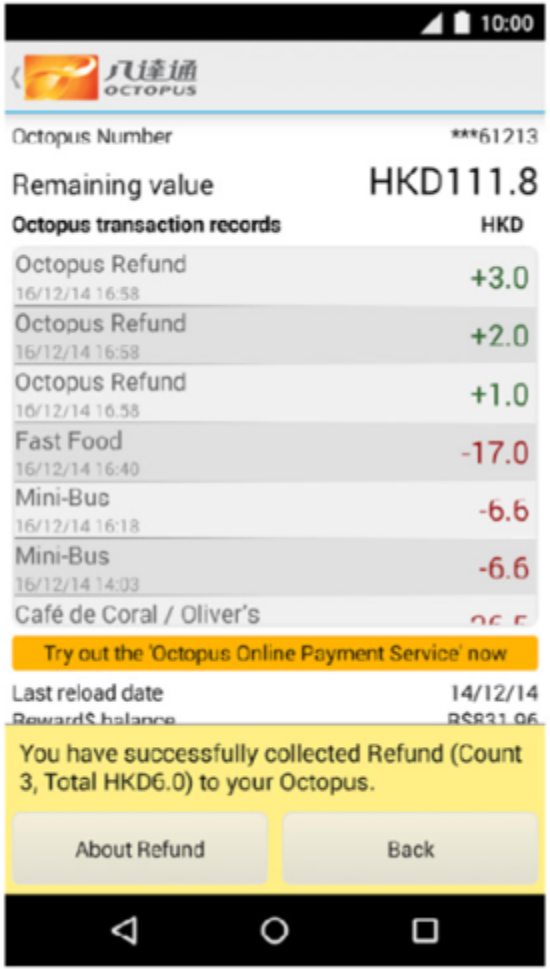
Satisfaction of each control was measured using a subjective assessment of the ease of completing each task. Participants were asked to rate the ease of completing each task on a scale of 1-5, where 1 was the most difficult and 5 was the easiest. A benchmark of 4 out of 5 was established as representing a high level of satisfaction with the control. None of the controls were able to attain the benchmark. This may be the result of participants' frustration regarding the difficulty of some of the tasks which they attempted.

»Smarte« Mensch-Technik-Schnittstellen.

Usability und UX Kriterien für »smarte« Mensch-Technik-Schnittstellen.

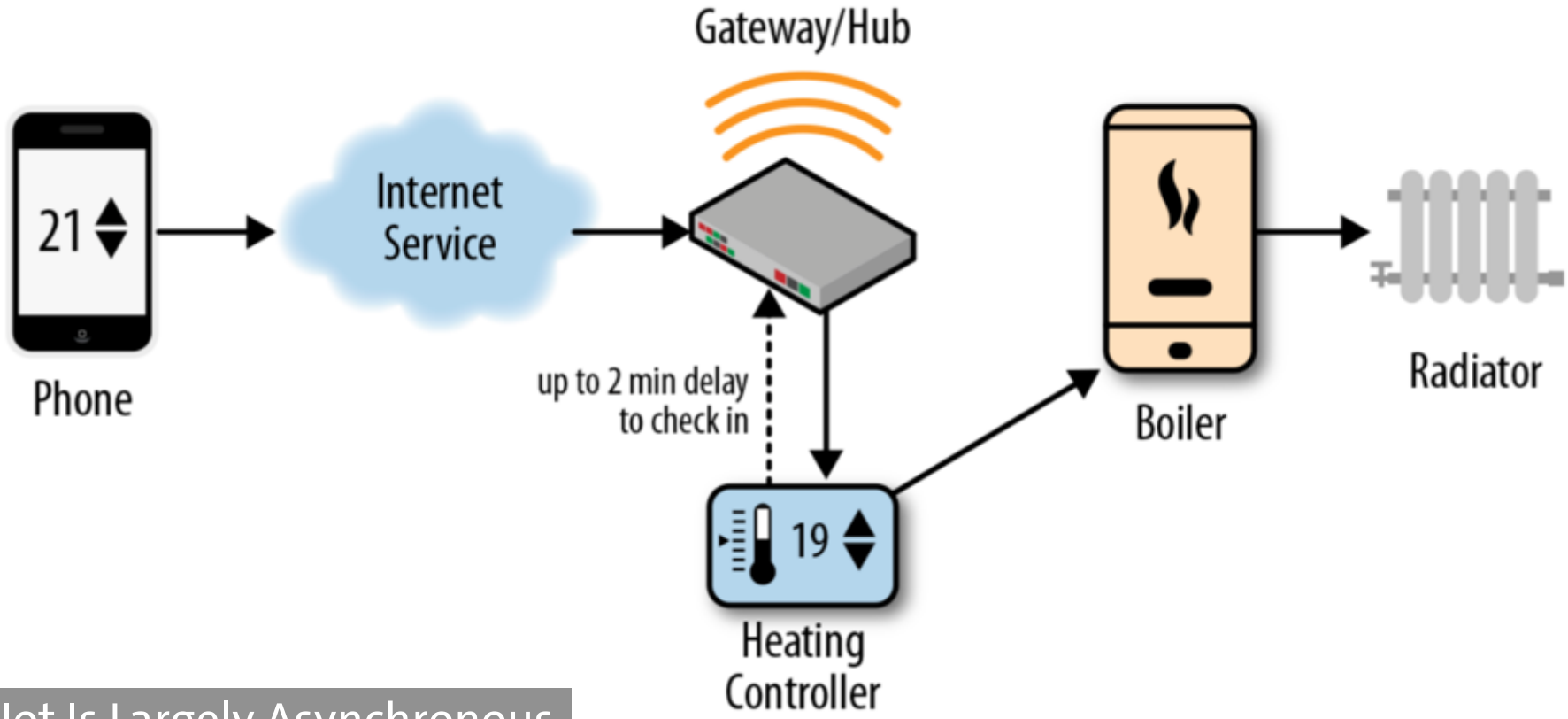
- **Complex setup of schedules.** Initial setup of the controls required multiple steps. The controls did not always clearly indicate necessary steps to participants.
- **Lack of error prevention.** Several controls allowed participants to enter non-valid times and dates when specifying heating schedules. With some controls it was possible for users to edit the schedule without being prompted to save changes.
- **Iconography, labelling and information architecture.** Icons and text labels used in the controls were frequently not clear to participants. The structure of menus and sub-menus often made it difficult for users to identify and find the correct action to take.
- **Affordances and interaction metaphors.** The visual design of some interface elements did not communicate their function to participants, or how participants were supposed to correctly interact with them.
- **Difficulty identifying system state.** Participants were often unable to identify the current state of the heating control, including disambiguating between whether the control was on, the timers were on or the heating itself was on. It was not clear with some controls how continuous heating mode interacted with timers and any thermostatic controls.
- **Lack of confirmatory feedback.** Several of the controls did not provide adequate feedback or reassurance to users that their commands had been registered or applied.

www.gov.uk/government/uploads/system/uploads/attachment_data/file/266220/usability_testing_smarter_heating_controls.pdf


10:00
八達通 OCTOPUS
Octopus Number ***61213
Remaining value HKD111.8
Octopus transaction records HKD
Octopus Refund 16/12/14 16:58 +3.0
Octopus Refund 16/12/14 16:58 +2.0
Octopus Refund 16/12/14 16:58 +1.0
Fast Food 16/12/14 16:40 -17.0
Mini-Bus 16/12/14 16:18 -6.6
Mini-Bus 16/12/14 14:03 -6.6
Café de Coral / Oliver's
Try out the 'Octopus Online Payment Service' now
Last reload date 14/12/14
You have successfully collected Refund (Count 3, Total HKD6.0) to your Octopus.
About Refund
Back


$9.1
$4.6
The Focus Of The User Experience
May Be In The Service.

We Don’t Expect Internet-Like Glitches From The Real World.



Iot Is Largely Asynchronous.

› A project by the Design Lab at the University of Sydney in collaboration with K.U. Leuven.

Andrew Vande Moere, Martin Tomitsch, Monika Hoinkis & Elmar Trefz

neighbourhoodscoreboards.com

Potentiale und Risiken von »smarten« Mensch-Technik-Schnittstellen.
Usability und UX Kriterien für »smarte« Mensch-Technik-Schnittstellen.

The End of Ownership: Personal Property in the Digital Economy

> *“IoT manufacturers and distributors are quietly attempting to shift the rules of ownership.”*

Die Besitz- und Kontrollverhältnisse »smarter« Objekte verändern sich schleichend.

> „Intelligente“ Produktfeatures in IoT-Ökosystemen informieren uns, auf welchen und wie vielen Geräten unsere Musik gehört werden darf.

> Automobilhersteller erheben Anspruch auf XFCD* Daten in unseren Autos (*Extended Floating Car Data).

Data as a New Material for Design.
The Digital Skin of Cities.

[Source: Urbanflow Helsinki. Building an operating system for everyday life. helsinki.urbanflow.io]

Data as a New Material for Design.

Infographics | Information Visualization | Geographic Visualization | Visual Storytelling |

Human-Data Interaction

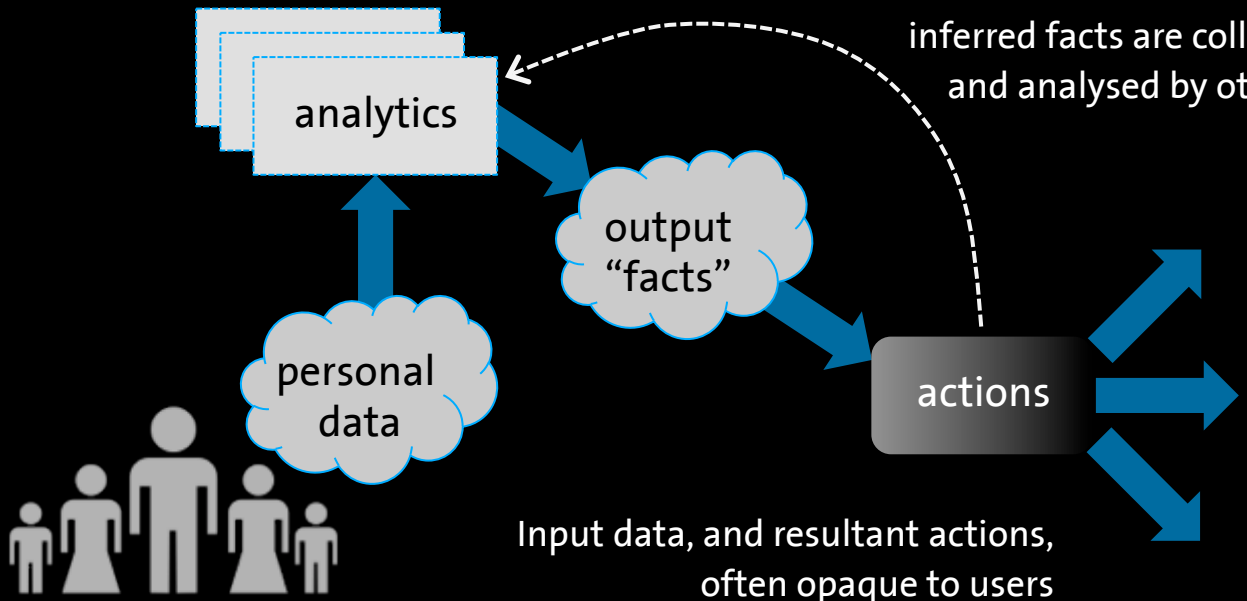
- Engage users to a much greater degree with the collection, analysis, and trade of their personal data, in addition to providing them with an intuitive feedback mechanism.
- Putting the **human at the centre** of the data which requires providing mechanisms for citizens to interact with these systems explicitly.

[Source: Haddadi, H., Mortier, R., McAuley, D., and Crowcroft, J. Human-data interaction. Technical Report 837. University of Cambridge Computer Laboratory, 2013.

- As digital technology becomes ever more tightly embedded in our lives, the ethos around the ways we enable individuals to interact with their digital identities only increases in importance:
- **Visualisation and sense-making**
- **Transparency and audit**
- **Privacy and control**
- **Analytics and commerce**
- **Data to knowledge**

Potentiale und Risiken von »smarten« Mensch-Technik-Schnittstellen.
Human-Data Interaction.

neues interdisziplinäres Forschungsfeld »Human-Data Interaction«



[*Haddadi, H. et al. (2013). Human-Data Interaction. Technical Report Number 837, Cambridge University Computer Laboratory.]

Potentiale und Risiken von »smarten« Mensch-Technik-Schnittstellen.
Human-Data Interaction.

neues interdisziplinäres Forschungsfeld »Human-Data Interaction«

› *“It arises from the need, both ethical and practical, to engage users to a much greater degree with the collection, analysis, and trade of their personal data, in addition to providing them with an intuitive feedback mechanism.”**

NutzerInnen wissen in der Regel nicht, welche Daten, in welcher Qualität und Vernetzung über uns gesammelt werden.

› *“Were you conscious of all the personal data you signed over last time you signed up for a customer loyalty card?”*

› *“We need better mechanisms and tools for explaining and elaborating to users the nature and content of these datasets and algorithms.”**

[*Haddadi, H. et al. (2013). Human-Data Interaction. Technical Report Number 837, Cambridge University Computer Laboratory.]

Potentiale und Risiken von »smarten« Mensch-Technik-Schnittstellen.
Human-Data Interaction.

Die Verarbeitungsmechanismen und Nutzungsroutinen persönlicher Daten sind meistens unsichtbar bzw. werden von den NutzerInnen falsch bewertet.

- *“Do you know the uses to which your data are put?”**
- *“We need ways to enable users to inspect and correct the data held about them and affect the algorithms that are inferring things about them.”**
- *»What would you look for, if you could search through all your data?*
- *“There are thousands of mobile phone contracts, utility tariffs, exercise plans, travel options, fitness regimes and diet plans that we have to choose from throughout our daily lives. Our choices could greatly benefit from novel and intuitive data aggregation, summarisation, analytics and visualisation techniques.”*

[*Haddadi, H. et al. (2013). Human-Data Interaction. Technical Report Number 837, Cambridge University Computer Laboratory.]

Potentiale und Risiken von »smarten« Mensch-Technik-Schnittstellen.
Human-Data Interaction. Future Directions.

Regulierung Datenkonzentration

› and, ultimately, stopping the downward trajectory of economic value in the information age, hence avoiding disproportionate economic power concentrating in the data aggregators.

»Easy-to-use Personal API« für das Teilen von Daten

› realising the potentials for a Personal API , enabling one to voluntarily take part in an information marketplace creation and promotion of novel approaches to use of shared personal data in order to offer insight and information to the individuals and the society as a whole, while respecting their privacy.

Recht auf Vergessen

› understanding the many complex and subtle ethical and legal issues surrounding use of big personal data, giving meaning to mechanisms such as the right to be forgotten.

Lebenslange, geo-soziale Datenkontrolle in NutzerInnenhand

› addressing the broader societal implications of having such rich personal data available at scale, able to be gossiped across the globe in milliseconds; in particular, how we can build geo-social controls over visibility of our data to help people avoid offence, embarrassment and worse.

Big Data für die Smart City.
Im Netz der Dinge.

»Everyware«

IoT
Internet der Dinge
Ubiquitous Computing

- Vernetzung vieler oder aller Dinge durch Chips, Tags, Sensoren
- unsichtbar, miniaturisiert, räumlich verteilt, allgegenwärtig
- kontextsensitiv, smart?, autonom agierend

(5) »Wired wilderness«

»Smart Agriculture« *(2)*

»Industrie 4.0«

»Smart Clothes«
»Fitnesstracker« *(1)*

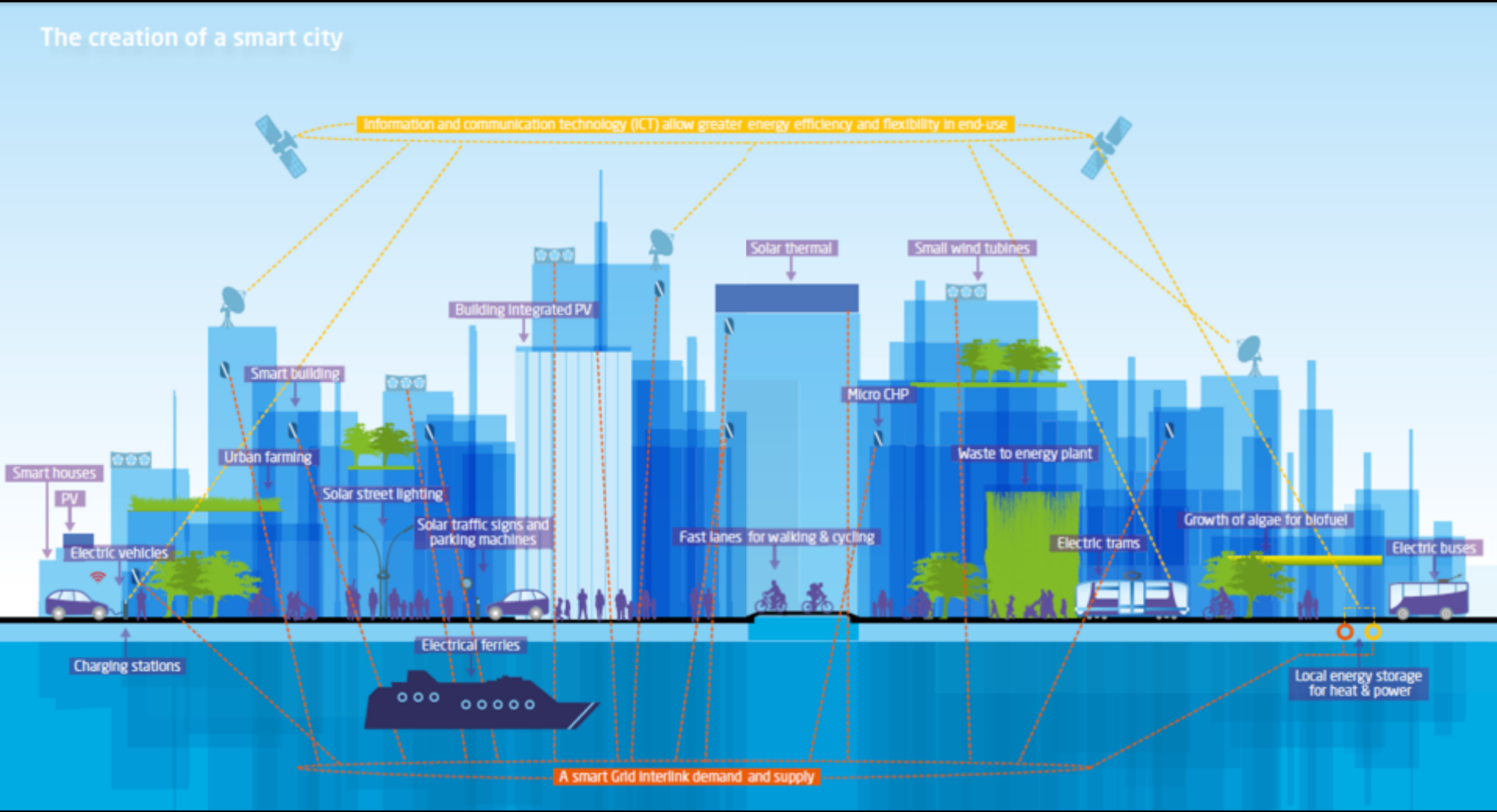
»Smart Homes«
»Ambient Assisted Living«

»Smart City«

»Smart Grid«
(3) »Smart Meter«

»Smart Health«
(4) Telemedizin«

The creation of a smart city



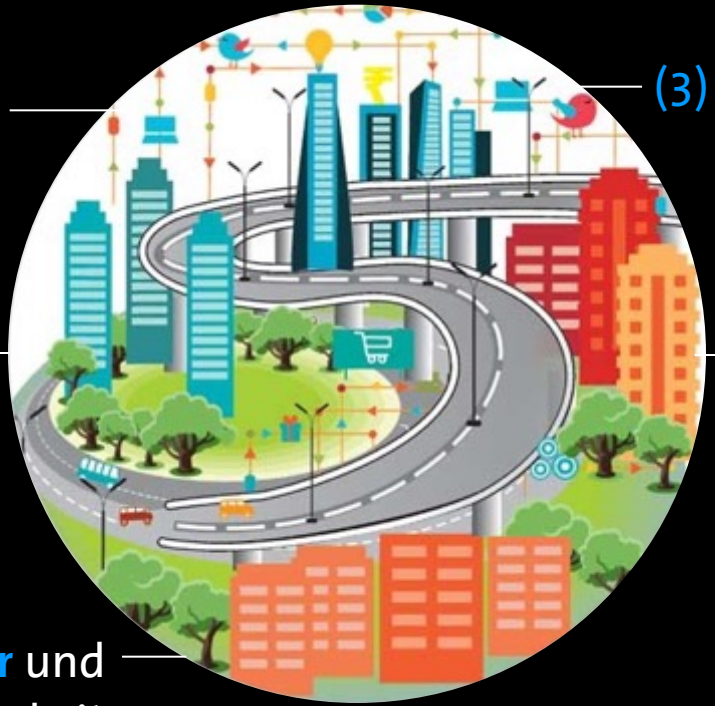
Spannungsfeld Smart City.

Fünf zentrale Charakteristiken von Smart Cities.

(1) umfassende Einbettung von **IKT** in das Stadtgefüge

(2) Ökonomie-getriebene Stadtentwicklung & **neoliberales** Governance-Konzept

(5) Fokus auf **sozialer** und **ökologischer** Nachhaltigkeit



(3) Fokus auf der **sozialen** und **menschlichen** Dimension der Stadt

(4) Intelligente Gemeinde-Agenda mit Programmen für soziales Lernen, Bildung etc. = **Stärkung des Sozialkapitals**

Spannungsfeld Smart City.

Fünf zentrale Charakteristiken von Smart Cities.

Aktivierung von globalem, mobilen Kapital >

Hohe Attraktivität für eine elitäre „kreative“ Klasse >

Top-down, zentralisierte(s) Entwicklung und

... und lokalen, BürgerInnen

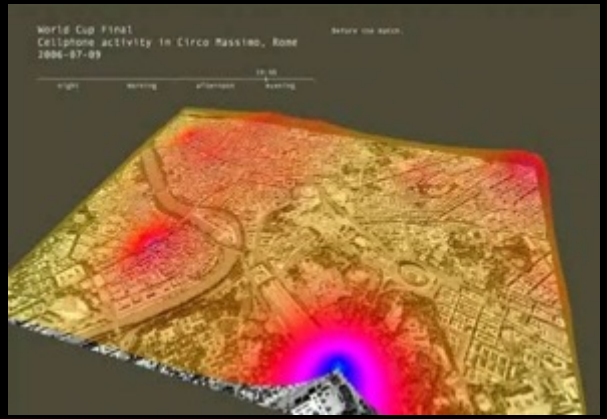
... und alle anderen urbanen Milieus

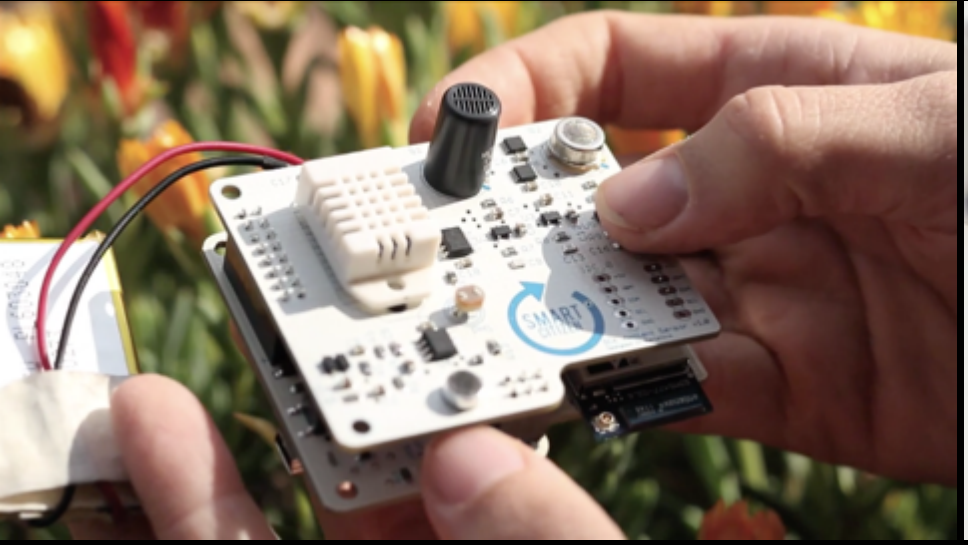
... und Bottom-up, dezentrale,»grass-root« Ansätze

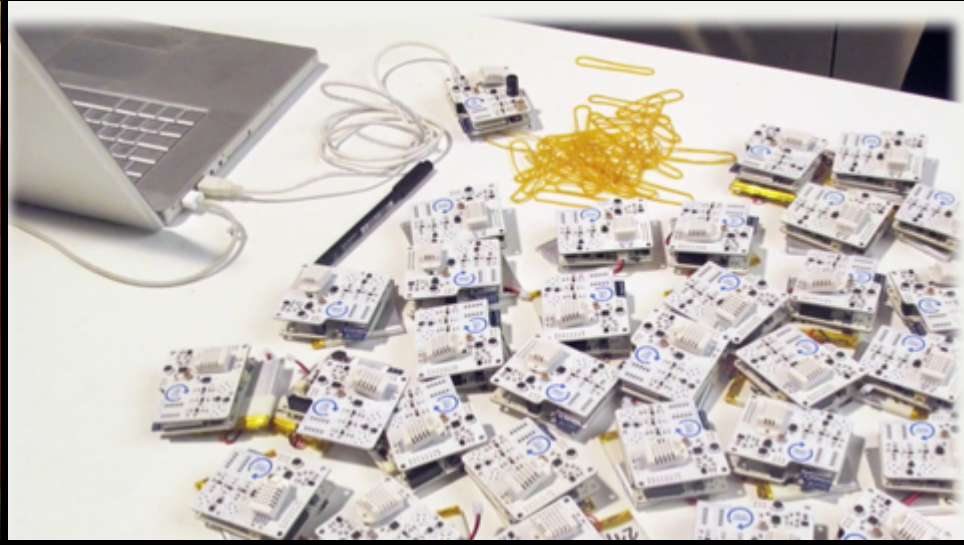
The City as Interface. UIs in der Smart City.
The Digital Skin of Cities.

- The informational City. Cities as expressions of networks and fluxes of information (Castells 1989)
- Informational Landscapes (Graham 1998; Zook 2000)
- Data City (Ciuccarelli, Lupi, Simeone 2014)
- Digital Skin of Cities (Rabari, Storper 2013)

»The widespread implantation of sensors into the urban and household environments, together with ubiquitous mobile broadband communication technologies, will generate enormous amounts of widely-available data to firms, governments and individuals. For convenience, we can call this new technological infrastructure the city's ***digital skin****. «*








Urban sensor kit


SMART CITIZEN
Luka Smart Citizen Kit
Temperature 12ºC
Humidity 78%
Ambient light 70%
Noise 80%
CO 320%
NO2 0.2%
Solar Panel 100br
BARCELONA
Vila Olímpica
La Barceloneta
Raval
Port
Poble Sec
UPDATES
MOST RECENTS
Anonymous plugged a sensor
Guillem posted a new ressource
Annastasia joined the network
Nicola posted a new ressource
The online platform gathers real-time data from users

Find out more >>
coped.ekkehardpetzold.de
BA-Thesis 2015
Ekkehard Petzold

COPED

|'kopæd|

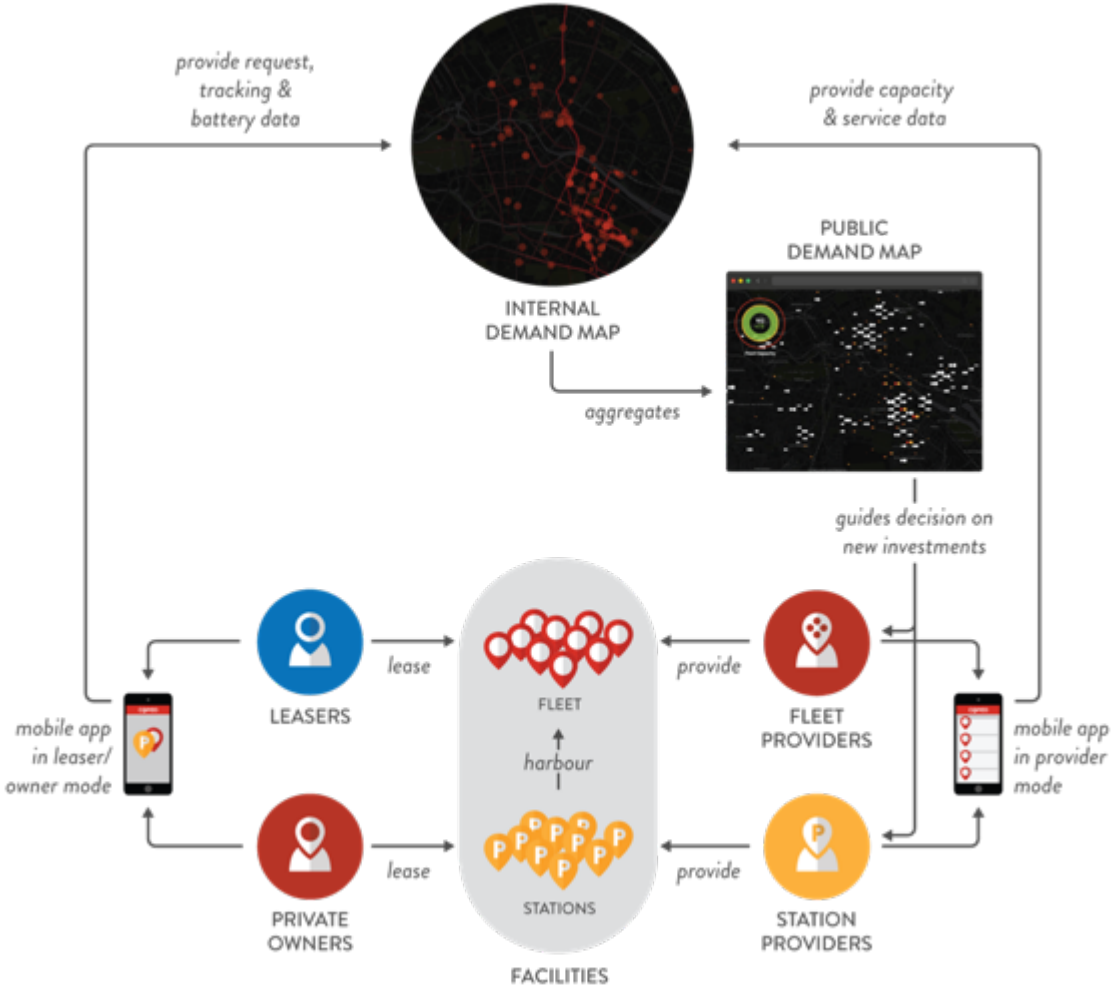
An urban peer-to-peer
E-bike sharing concept based on
the Copenhagen Wheel

Climate change // Stress while driving

Connected things // Smart cities

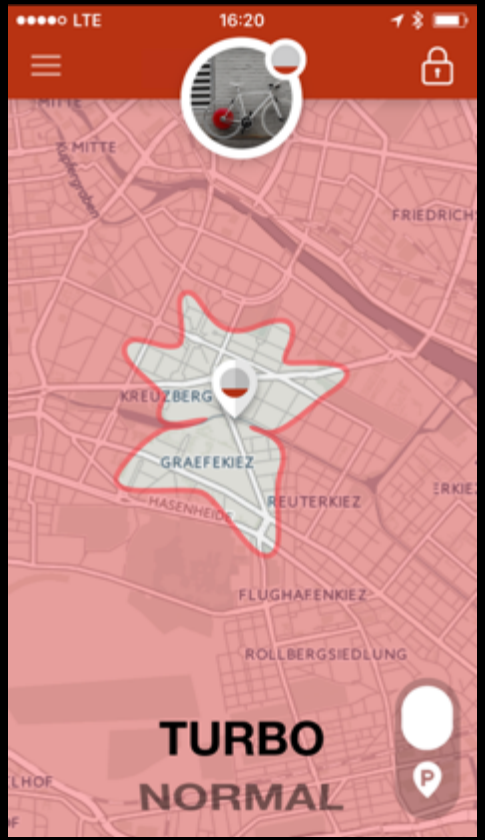
Electric-bicycle boom

Collaborative consumption // Sharing systems



- The COPED concept deals with the question how an urban peer-to-peer E-bike-sharing system with minimal capital expenditure could work ...
- ... based on the announced technology of a connected electric bicycle, the Copenhagen Wheel, as well as existing mobile information systems.
- The concept is based on crowdsourcing the vehicles as well as the charging infrastructure.

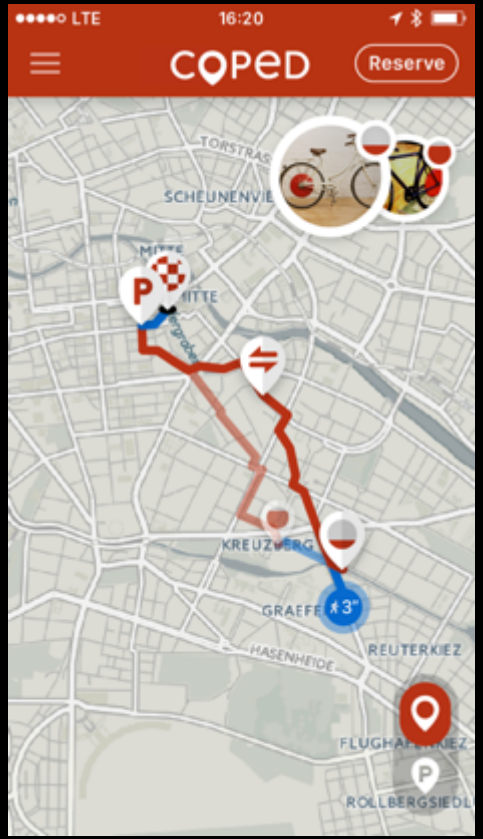
COPED |ˈkopæd|
An Urban Peer-to-peer-E-Bike Sharing Concept.



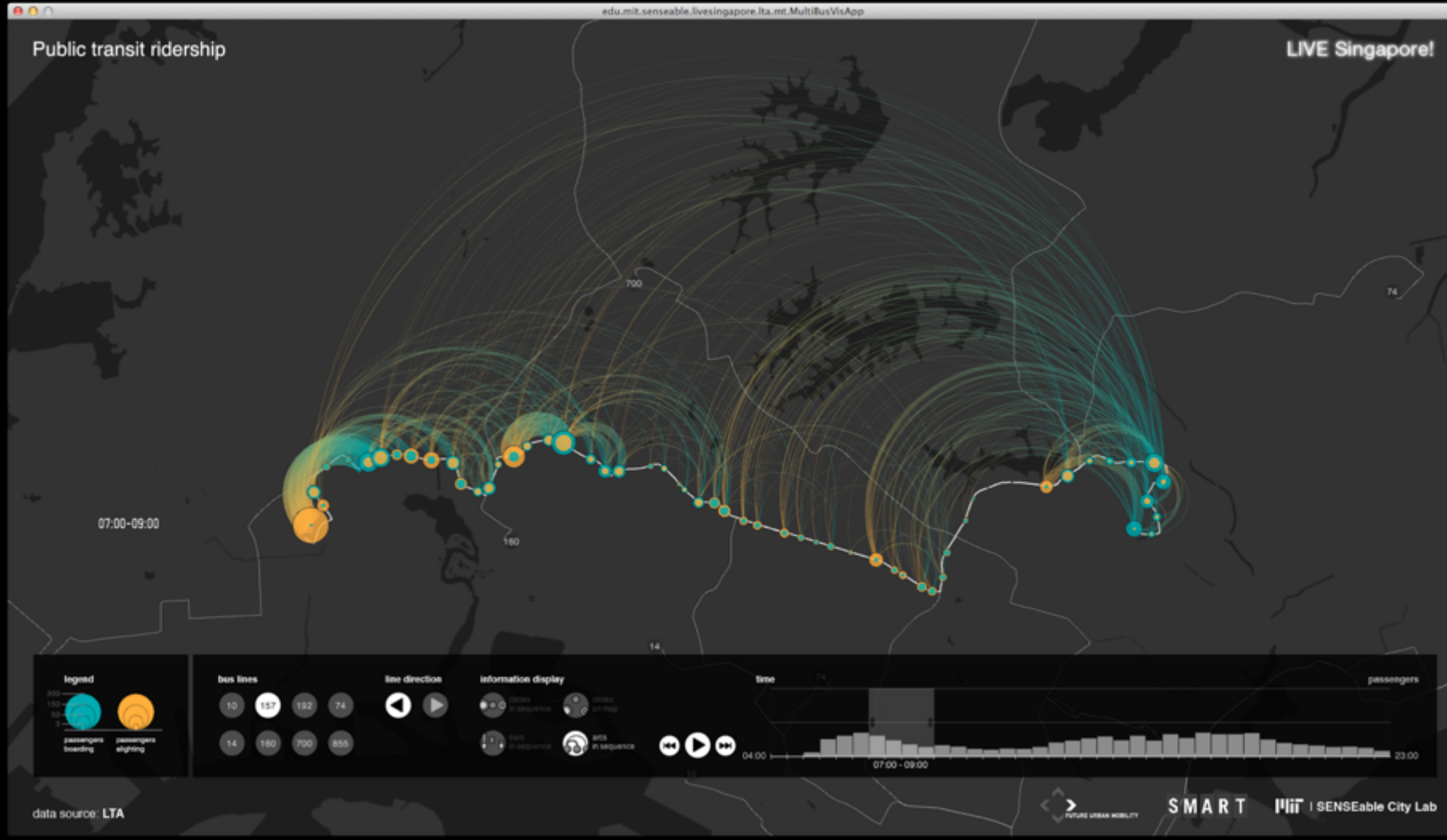
- The control interface in the app lets the user select the assistance level with a picker element.
- A map shows the bike's location and the expected battery range, based on
  - battery level,
  - assistance level,
  - street routing,
  - terrain, and geographic obstacles
- With time, the compound data of Copenhagen Wheel tracking and corresponding battery level can refine these range estimates.

COPED |ˈkopæd|

An Urban Peer-to-peer-E-Bike Sharing Concept.



- Leasers use the bike finder function to lease a bike.
- They can find nearby vacant bikes on a map, select one, see the walking distance and range management for that bike and can reserve it from here.
- They can also plan a journey by dropping a destination pin onto the desired location.
- The journey planner will calculate route alternatives that may involve different walking distances and may or may not include bike swaps due to insufficient battery levels.


edu.mit.senseable.livesingapore.lta.mt.MultiBusVisApp
Public transit ridership
LIVE Singapore!
700
74
160
14
07:00-09:00
legend
passengers boarding
passengers alighting
bus lines
10
157
192
74
14
160
700
855
line direction
information display
time
passengers
04:00
07:00 - 09:00
23:00
data source: LTA
SMART
SENSEable City Lab

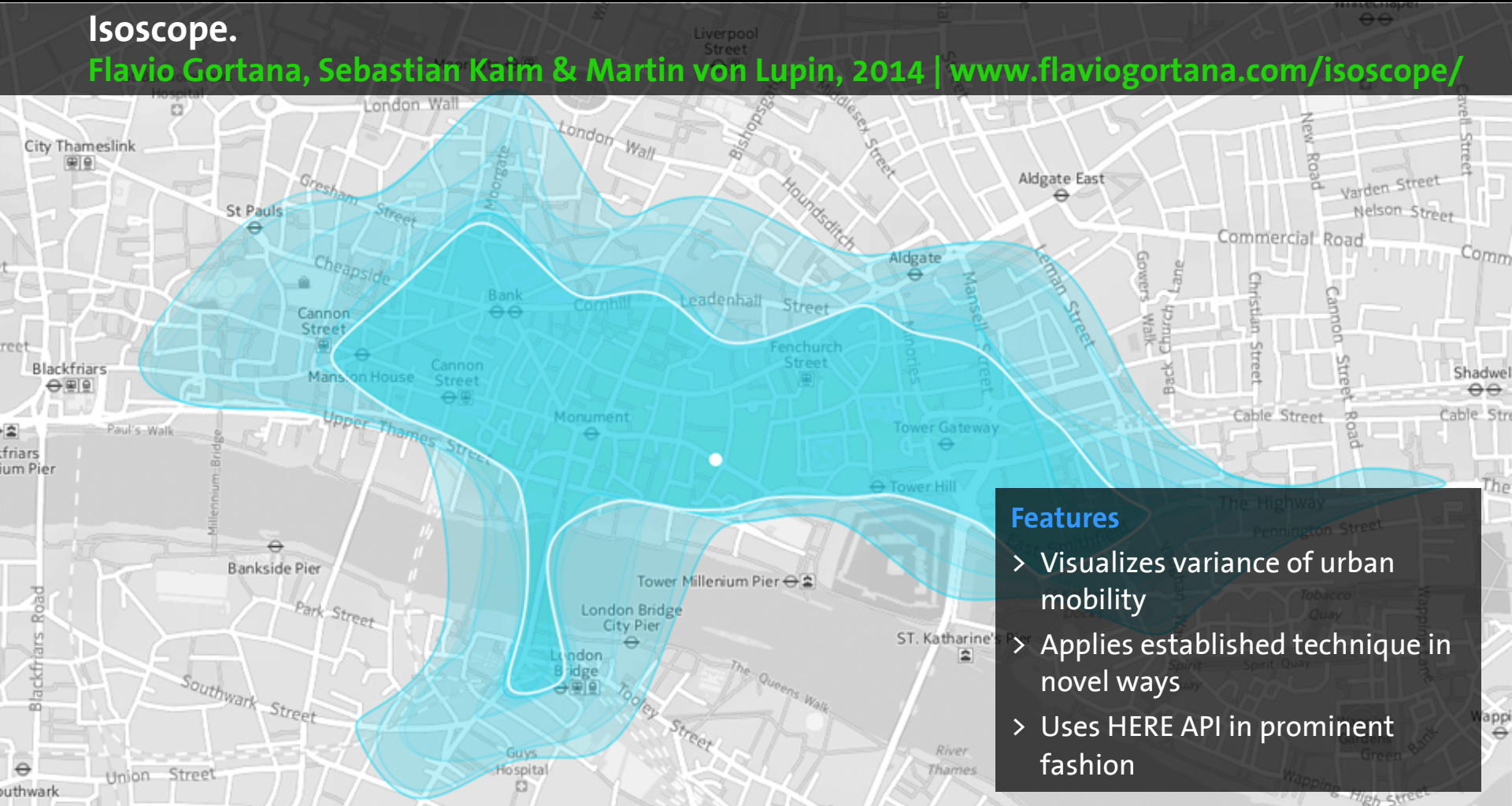
LIVE Singapore! Visual Explorations of Urban Mobility. Touching Bus Rides.

senseable.mit.edu/livesingapore/visualizations.html

Source: www.youtube.com/watch?v=wQpTM7ASc-w

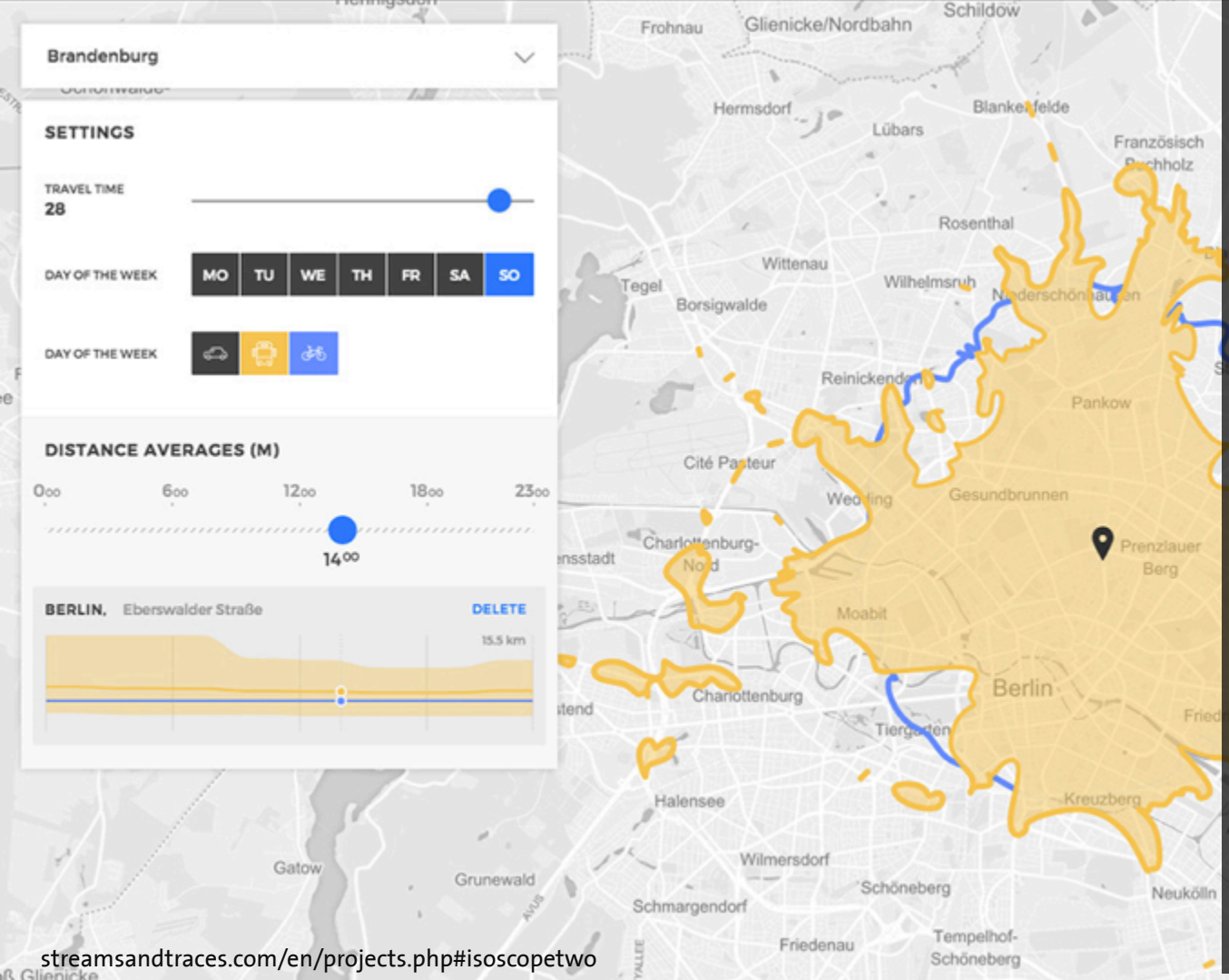
Isoscope.

Flavio Gortana, Sebastian Kaim & Martin von Lupin, 2014 | www.flaviogortana.com/isoscope/



Features

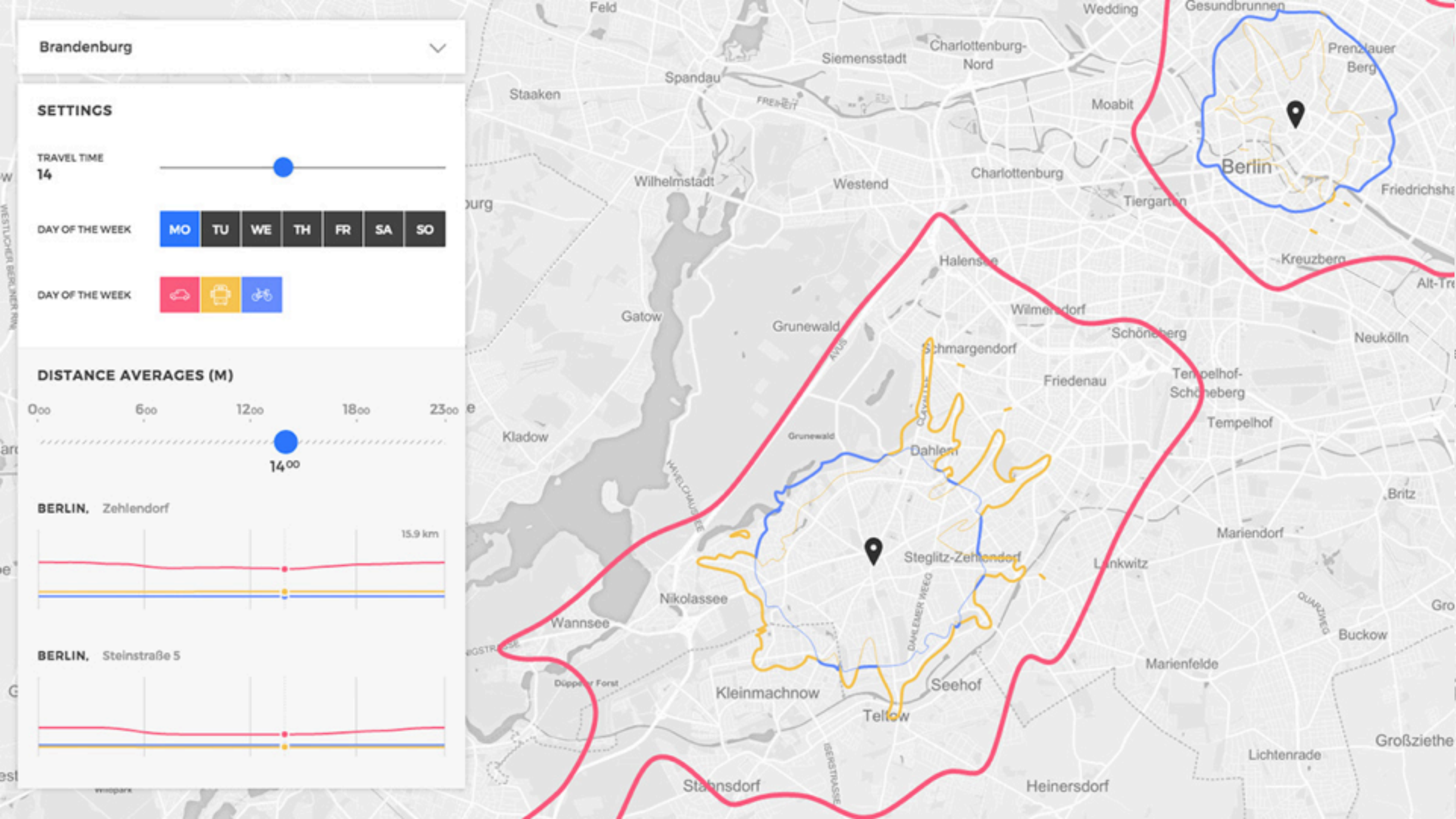
- Visualizes variance of urban mobility
- Applies established technique in novel ways
- Uses HERE API in prominent fashion

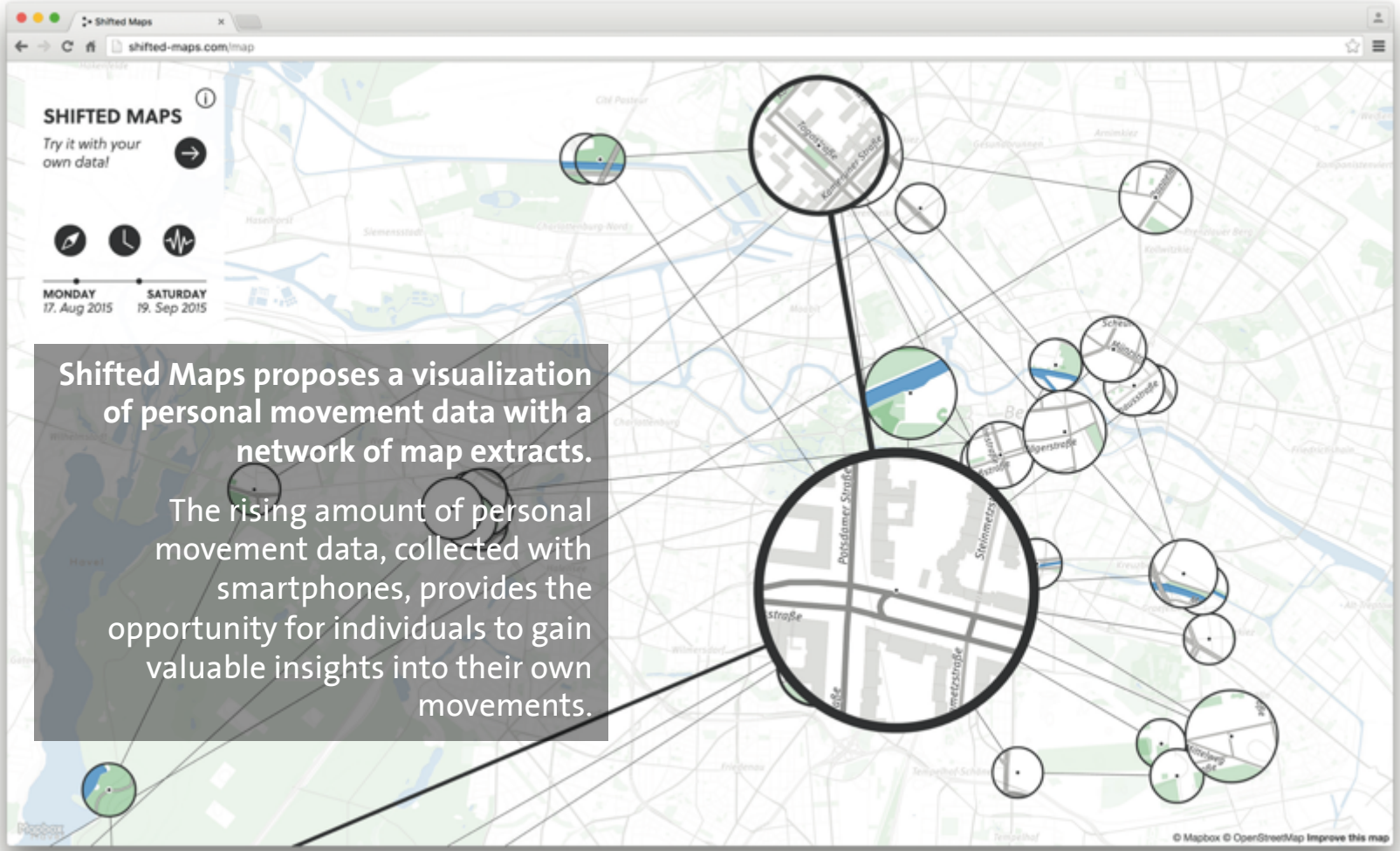


Features

- Isoscope Two maps the time-varying quality of mobility.
- A web-based tool displays reachable areas of different transport modes in a unified visualization with the help of layered isochrone maps.
- The visualization allows comparing how travel patterns change over time, and how spatio-temporal variations affect urban mobility.
- In contrast to conventional isochrone maps which display distances in regular intervals, this project tries out new ways of displaying multiple categories of overlapping isolines at the same time.

streamsandtraces.com/en/projects.php#isoscopetwo

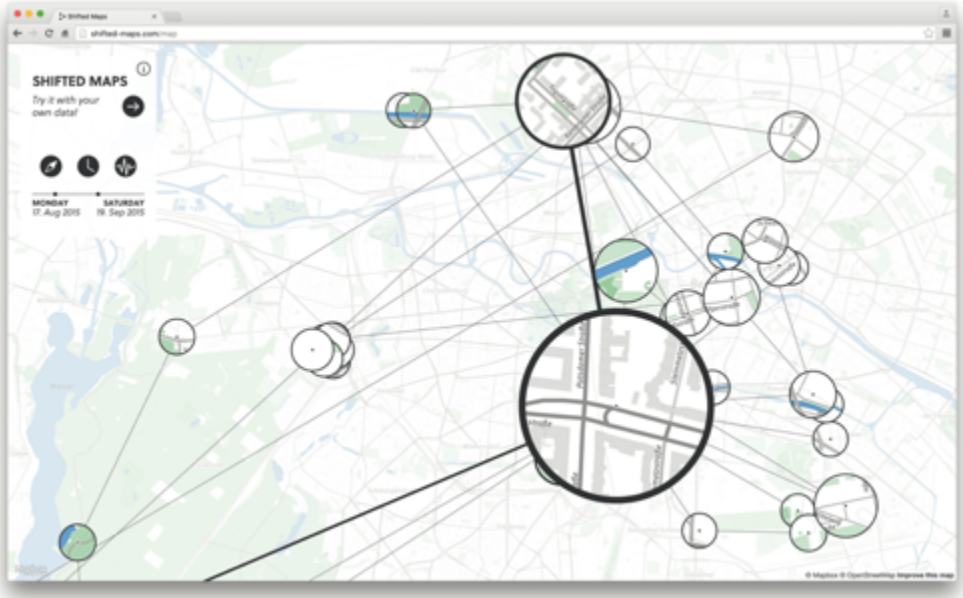

Brandenburg
SETTINGS
TRAVEL TIME
14
DAY OF THE WEEK
MO
TU
WE
TH
FR
SA
SO
DAY OF THE WEEK
DISTANCE AVERAGES (M)
0:00
6:00
12:00
18:00
23:00
14:00
BERLIN, Zehlendorf
15.9 km
BERLIN, Steinstraße 5
Feld
Wedding
Gesundbrunnen
Charlottenburg-Nord
Siemensstadt
Spandau
Staaken
Moabit
Prenzlauer Berg
Berlin
Wilhelmstadt
Westend
Charlottenburg
Tiergarten
Friedrichshain
Halensee
Kreuzberg
Gatow
Grunewald
Wilmersdorf
Schöneberg
Neukölln
Schmargendorf
Friedenau
Tempelhof-Schöneberg
Tempelhof
Kladow
Dahlem
Britz
Mariendorf
Steglitz-Zehlendorf
Lankwitz
Nikolassee
Wannsee
Buckow
Marienfelde
Kleinmachnow
Seehof
Teltow
Großziethen
Lichtenrade
Stahnsdorf
Heinersdorf

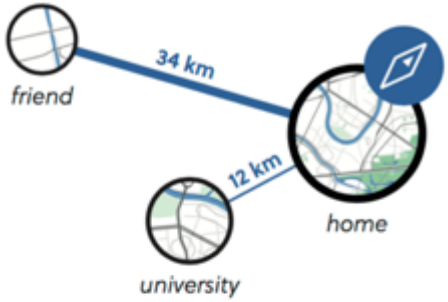

Shifted Maps
shifted-maps.com/map
SHIFTED MAPS
Try it with your own data!
MONDAY
17. Aug 2015
SATURDAY
19. Sep 2015
Shifted Maps proposes a visualization of personal movement data with a network of map extracts.
The rising amount of personal movement data, collected with smartphones, provides the opportunity for individuals to gain valuable insights into their own movements.
© Mapbox © OpenStreetMap Improve this map

_V2.pdf

Shifted Maps.

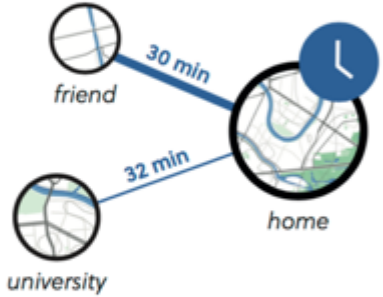
An experimental visualization of personal movement data.





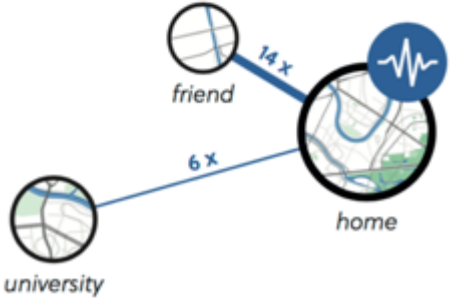
Geographic View

The arrangement of the places corresponds to their spatial distance.



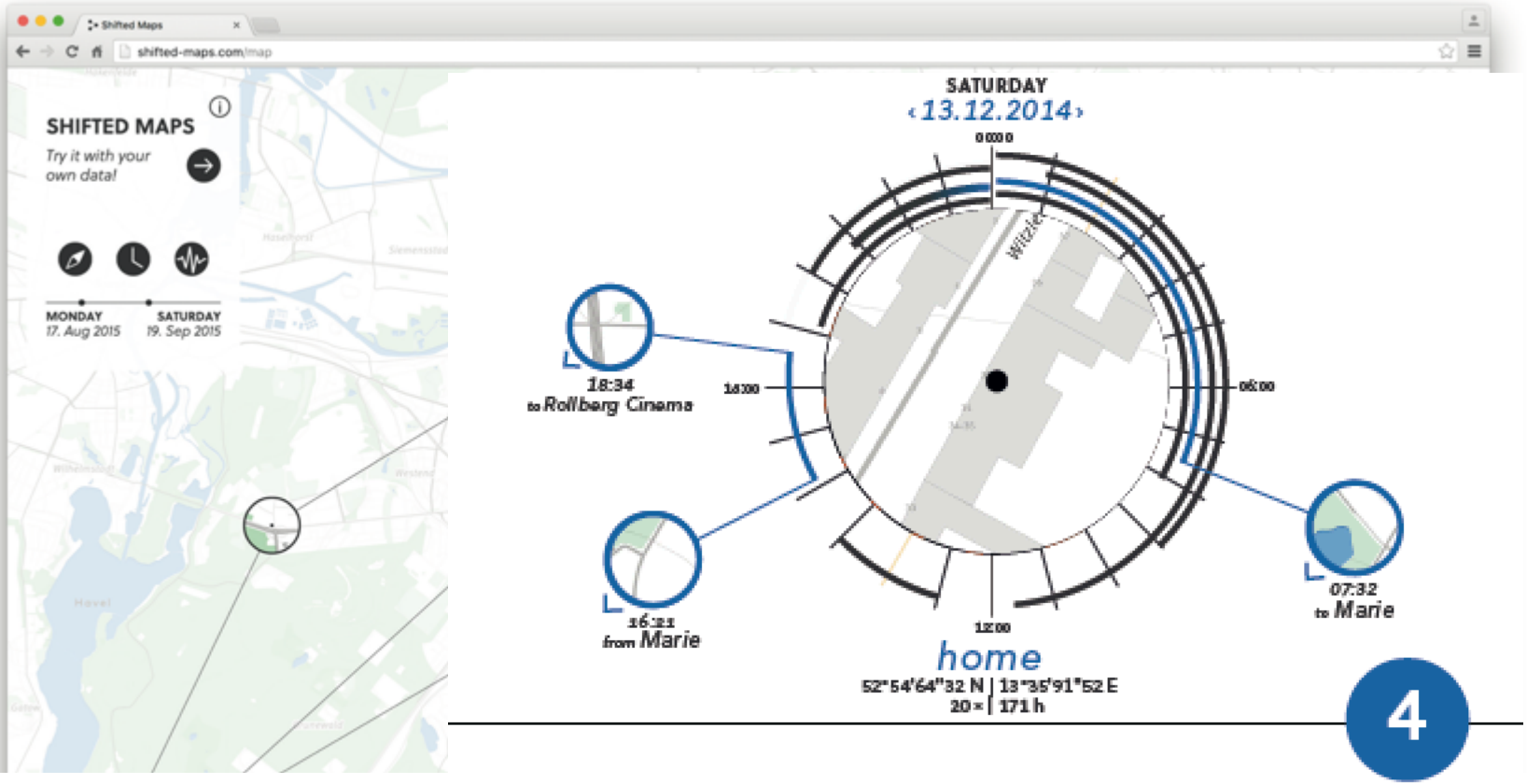
Temporal View

The places are arranged according to the average time it takes to go from one place to another.



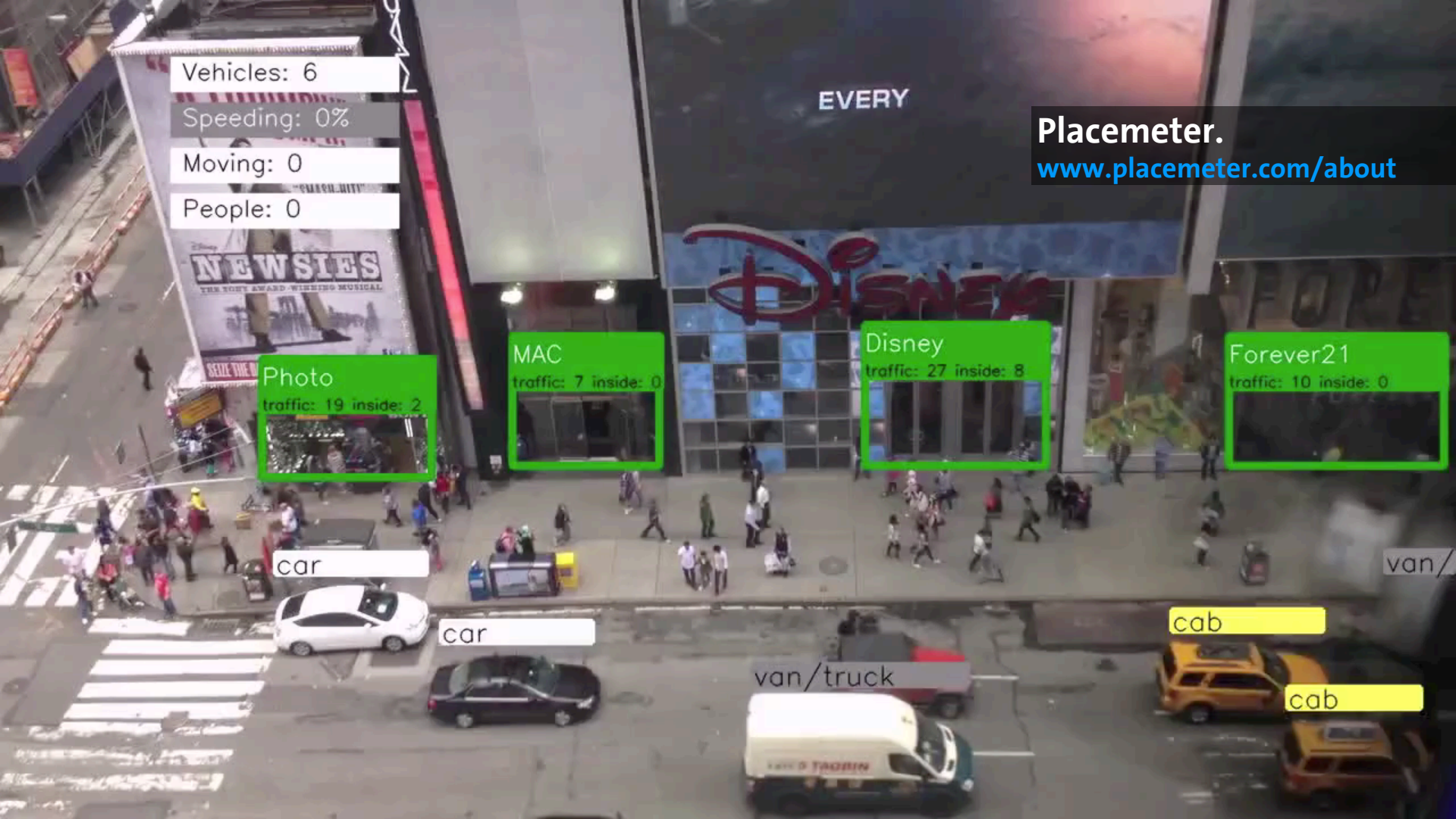
Frequency View

Places connected by more trips are positioned closer to each other than those with fewer trips.



4 On the highest zoom level the duration of stay at individual days and details about connections to other places are displayed.


Critical & Speculative Design.
Drone Aviary.
A near-future city co-habit with ‘intelligent’ semi autonomous, networked, flying machines.
www.superflux.in/work/drone-aviary
Last 15 mins!
Covent Garden
City
GROUP / age: 15-25
type: P20 Student Scene
response: positive
MADISON
Time logged: 12:36:39
14 %


Vehicles: 6
Speeding: 0%
Moving: 0
People: 0
Photo
traffic: 19 inside: 2
MAC
traffic: 7 inside: 0
Disney
traffic: 27 inside: 8
Forever21
traffic: 10 inside: 0
car
car
van/truck
cab
cab
van/
Placemeter.
www.placemeter.com/about

Big Data und Smart City.
Real-time City. Risiken und Ängste.

(1) Technokratische Governance und Stadtentwickkung

Technocratic governance and city development

- Regierung und Verwaltung einer Stadt vorrangig über Informations- und Analysesysteme fördern ein **technokratisches Modell von Governance**, einer »Well-managed City«.
- … das davon ausgeht, dass alle Herausforderungen einer Stadt als technologische Probleme gemessen, überwacht und gelöst werden können.

»*[smart city thinking] betrays a technocratic view that the city is something we might understand in detail, if only we had enough data—like an engine or a nuclear power station—and thus master it through the brute force science and engineering.*«

Hill, D. (2013) On the smart city: Or, a 'manifesto' for smart citizens instead. City of Sound, 1st Feb 2013, http://www.cityofsound.com/blog/2013/02/on-the-smart-city-a-call-for-smart-citizens-instead.html

Big Data und Smart City.
Real-time City. Risiken und Ängste.

(2) Kommerzialisierung und Ökonomisierung

The corporatisation of city governance and a technological lock-in

- Smart City-Governance wird offensiv von den Interessen großer Konzerne geleitet, die häufig gegenläufig zu Bottom-up, Grassroot-Initiativen & alternativen Urbanismuskonzepten sind.
- Die weltweit größten Software- und Hardware-Unternehmen sehen langfristig ein großer Potenzial für Smart City-Technologien, Infrastrukturen und Services.

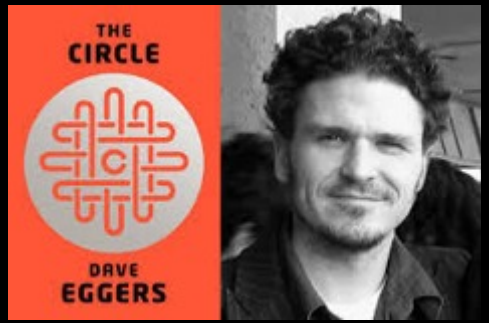
»*Smart city solutions are currently more vendor push than city government pull based*.«

— Schaffers, H. et al. (2011) Smart Cities and the Future Internet: Towards Cooperation Frameworks for Open Innovation. In Domingue, J. et al. (Eds) Future Internet Assembly, LNCS 6656, pp. 431–446.

Big Data und Smart City.
Real-time City. Risiken und Ängste.

(3) Die panoptische Stadt

- Der Grad der gesellschaftlichen und individuellen Überwachung steigt kontinuierlich an.
- Allgegenwärtige Transparenz und Überwachung > Konzentration der Macht auf eine kleine Führungsgruppe.
- Die offensichtlichen Vorteile für Gesundheit, Sicherheit und Stadtmanagement verhindern häufig eine angemessene Balance zwischen Monitoring und Daten-Analyse bzw. Privatsphäre.



»*The level of monitoring has been driven by a growing 'culture of control' that desires 'security, orderliness, risk management and the taming of chance'*.«

Rob Kitchi (2014) The Real-Time City? Big Data and Smart Urbanism. GeoJournal 79(1):1-14.

Big Data und Smart City.
Real-time City. Risiken und Ängste.

(4) The too-Smart City

- Die Frage nach der Zukunft unserer Städte ist eine politische Frage.
- Je mehr Energie Städte in technologische Smartness investieren, desto größer ist die Gefahr, die Lösung grundlegender sozialer Probleme zu vernachlässigen, für die keine technologische Lösungen bereitstehen.
- Auch der technologisch am besten ausgestattete Kontrollraum sieht nur einen Ausschnitt der urbanen Realität.

»*The biggest human issues cities face—like persistent poverty, social injustice, or public education—aren't technological problems with single "best" answers that can be optimized by a system.*«

Courtney Humphries (2013)
GLOBE CORRESPONDENT MAY 19, 2013

Big Data und Smart City.
Real-time City. Risiken und Ängste.

(5) Data Love*

- Big Data ermöglicht die Vermessung des Sozialen … einem Handlungsimpuls der Moderne, der auf Erkenntnis, Fortschritt, besseren Kundendienst und ein leichteres Leben abzielt.
- Big Data ist nicht auf die Feindlogik Bürger-Staat reduzierbar … sondern Ausdruck der Umgestaltung der Gesellschaft … durch Motive wie Geiz, Bequemlichkeit, Narzissmus etc.
- Ästhetik der »Stadt der Ströme» informatisch, generativ und algorithmisch; dokumentiert Effektivität und Effizienz der Beschleunigungsgesellschaft (Hartmut Rosa).

*Roberto Simanowski (2014)
Data Love, Matthes & Seitz, Berlin 2014

»Smarte« Mensch-Technik-Schnittstellen.
Post-Smartness. Humanistic HCI (Human-Computer Interaction).

Humanistic HCI = fasst verschiedene Erkenntnistheorien, Methodologien und Praktiken zusammen, die „humanistische“ Paradigmen in den Mittelpunkt der HCI Forschung und Praxis stellen.

(1) Emancipatory HCI

Participatory Design > systematische Einbeziehung der NutzerInnen in die Produkt-und Systementwicklung > **Co-Design** > **Co-Creation**

(2) Design futuring

Visualisierung alternativer Zukünfte jenseits technologisch und ökonomisch motivierter Mainstream-Szenarien > **Speculative Design** > **Critical Design** > **Design Fiction**

(3) Critical social science > kritische Sozialwissenschaft

(4) Critical discourse analysis > Kritische Diskursanalyse

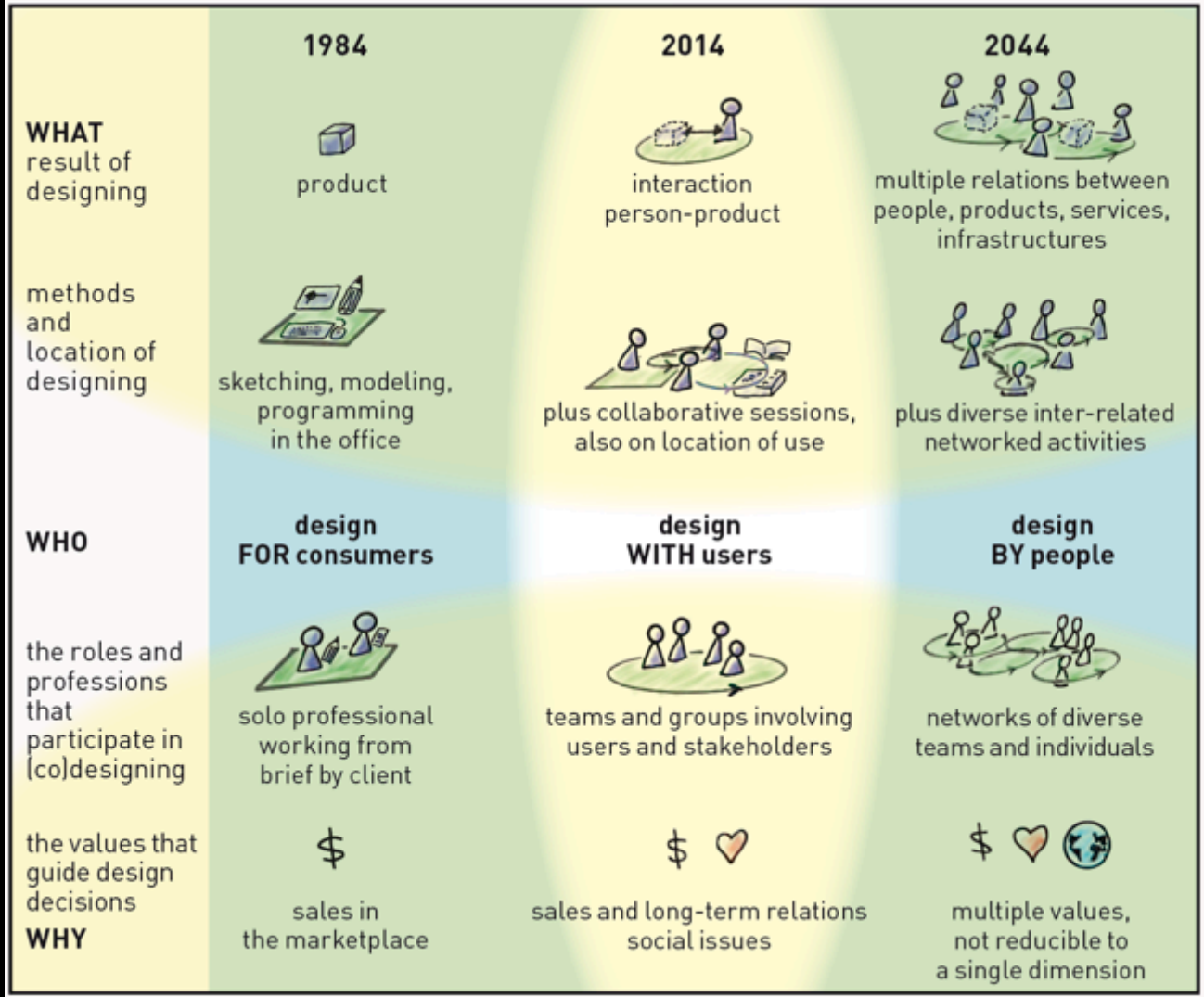
(5) Interaction criticism > Resonanzflächen von HCI und User Experience

[Jeffrey Bardzell & Shaowen Bardzell (2016). Humanistic HCI. How can humanities-based approaches support HCI research and practice? Interactions VOLUME X XI I I .2 pp. 21-30.]

»Smarte« Mensch-Technik-Schnittstellen. Post-Smartness.

Humanistic HCI (Human-Computer Interaction).

From Designing to Co-Designing to Collective Dreaming.



[Sanders, Liz & Stappers, Pieter Jan (2014): From Designing to Co-Designing to Collective Dreaming: Three Slices in Time. Interactions VOLUME XXI, Nov.-Dec. 2014, pp. 25-36.]

»Smarte« Mensch-Technik-Schnittstellen.
Ausblick.

Technologische Lösungen

End-user empowerment

- Bessere Methoden und Werkzeuge, die NutzerInnen ermöglichen, IoT Services zu verstehen, zu konfigurieren, zu personalisieren und zu steuern.

Silicon Valley approach

- Schnellere Fortschritte im Machine Learning, KI und Anpassungswille der Smart Citizens.

Humanistic HCI / Human-Centered Design

Design methods

- Einbeziehung der Nutzer-Innen in Entwicklungs- & Gestaltungsprozesse > Participatory design

Social computing

- NutzerInnen organisieren sich im Netz, entwickeln OpenSource Alternativen, Commuity of Practice ...

Autonomie & Resonanz / »Das gute Leben«

Widerstand & Protest

- Aktiver Widerstand gegen die »smarte« Diktatur (Harald Welzer), das Leben ist analog ... Post-Digitalität
- Konsum von Produkten und Dienstleistungen ist die zentrale Datenquelle: Hören Sie auf online zu kaufen
- Hacken, Manipulieren, CCC

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- Hacken, Manipulieren, CCC

Danke.

Fragen & Antworten

heidmann@fh-potsdam.de