GeoIT Wherecamp Conference 2018

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GeoIT Wherecamp Conference 2018

Opening

President of the Association for Geoinformatics, GeoIT and Navigation e.V.
Prof. Dr. Roland Wagner

Association for
Geoinformatics, GeoIT and Navigation e.V.:
62 personal Members (within 19 Professors)
14 Company Members

Association for
Geoinformatics, GeoIT and Navigation e.V.:

- Events
  - GeoIT Talks, evening, 4 x per year
  - GeoIT Wherecamp, full day, 1 x per year
- Projects, e.g.
  - Publication 2018, e.g. SpringerNature
- Hardware, e.g.
  - Xiaomi Mi 8, Lenovo Project Tango Device

GeoIT Wherecamp Agenda

	09:00	Doors Open				
1	10:00	Opening by GeoIT.org President	Prof. Dr.	Roland	Wagner	Association for Geoinformatics, GeoIT and Navigation e.V.
2	10:15	Welcome by Host	Prof. Dr.	Martin	Kada	IGG TU Berlin
		Session Chair	Dr.	Peter	Ruppel	T-Labs, TU
3	10:30	From ABC to XYZ: location data for non-location developers		Oliver	Fink	HERE Technologies
4	10:50	Data. Insights. Solutions. – crop nutrition on the spot		Carl-Philipp	Federolf	YARA GmbH & Co. KG
5	11:10	Machine Learning for Transport Modelling: the Next Generation of Transport Models		Benno	Bock	civity Management Consultants
	11:30	Coffee Morning Break				
		Session Chair	Dr.	Richard	Süselbeck	HERE, GeoIT.org Tresurer
6	12:00	enviroCar – a Citizen Science platform for Sustainable Traffic	Prof. Dr.	Albert	Remke	52°North Initiative for Geospatial Open Source Software
7	12:20	GeoAI: feature extraction and classification		Peter	Rose	Orbica Ltd
8	12:40	Localization Service Using Sparse Visual Information Based on Recent Augmented Reality Platforms		Javier	Rodriguez Puigvert	Cologne Intelligence GmbH
	13:00	Lunch Break				

GeoIT Wherecamp Agenda

	13:00	Lunch Break				
	13:30					
		Session Chair		Cornelius	Rabsch	BeaconInside GmbH
9	14:00	Progress in indoor navigation		Emrah	Kutlu	MENTZ GmbH
10	14:20	Navigation for Blind or Visually Impaired		Sarper	Silaoglu	Boni Global
11	14:40	Geocode - An intuitive geo location code		Ervin	Ruci	Geolytica inc
12	15:00	Outdoor meets Indoor at Numbered Gateways	Prof. Dr.	Roland	Wagner	Beuth Hochschule für Technik Berlin
	15:20	Break				
		Session Chair	Prof. Dr.	Jan-Peter	Mund	Hochschule Eberswalde
13	15:40	How Future Citizens of Smart Cities Take Benefit from Geofencing Technology	Dr.	Sandro	Rodriguez Garzon	Technische Universität Berlin
14	16:00	Bridge Monitoring in the Internet of Things		Philipp	Engel	Hochschule Neubrandenburg
15	16:20	Drawing your Path: Making Realtime GPS Art for a Creative Exploration in Long Distance Sports		Frederik	Wiehr	DFKI
16	16:40	Smart Multispectral Monitoring System for the Real-Time Estimation of Water Stress in the Crop and Automatic Irrigation (PLANTSENS)		Lukasz	Rojek	Beuth Hochschule für Technik Berlin
	17:00	Closing with Beer & Wine				
17	17:15	GeoIT.org Assemby		GeoIT.org	Members	
	18:00	Dinner at Schleusenkrug				

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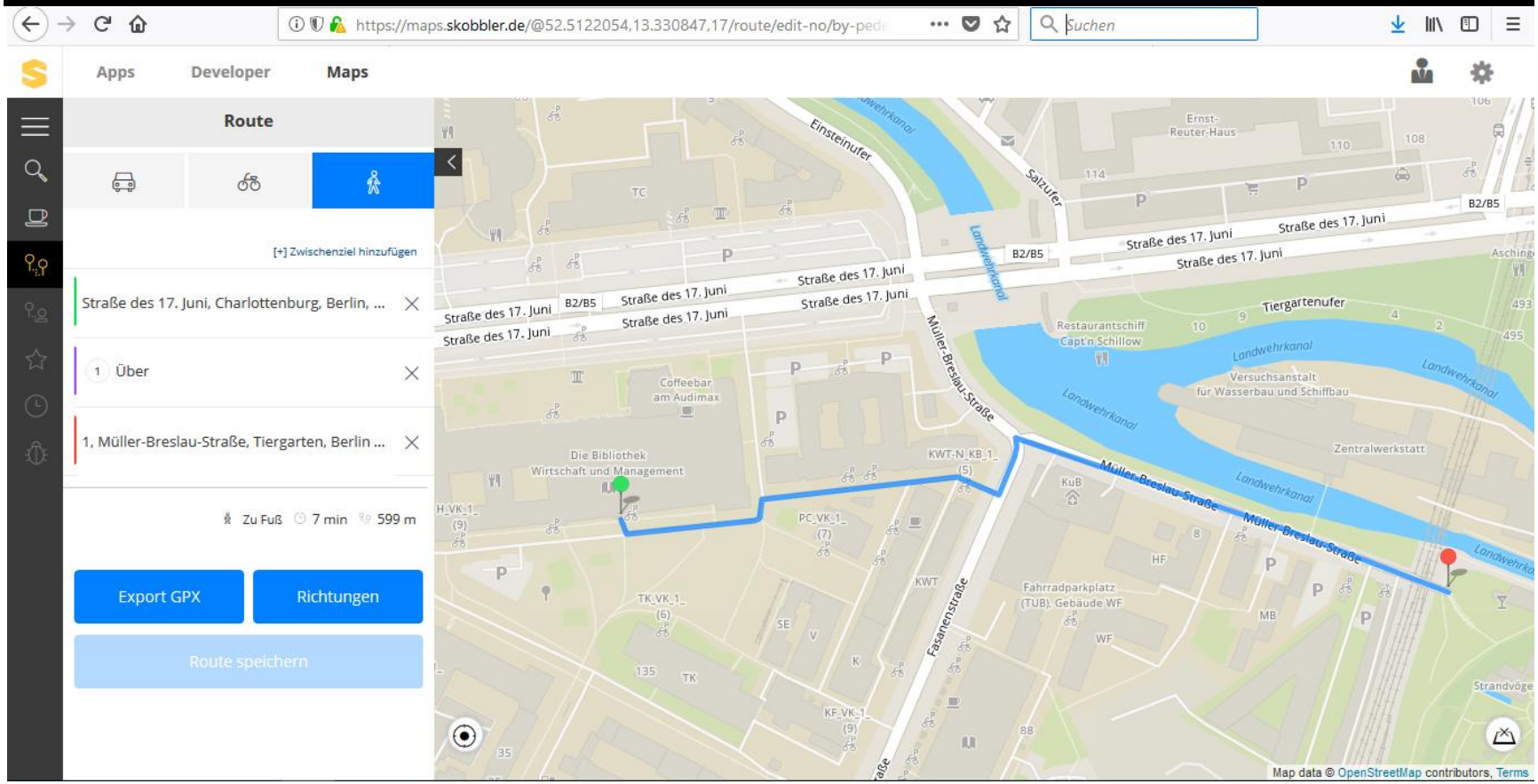
Dinner: Schleusenkrug



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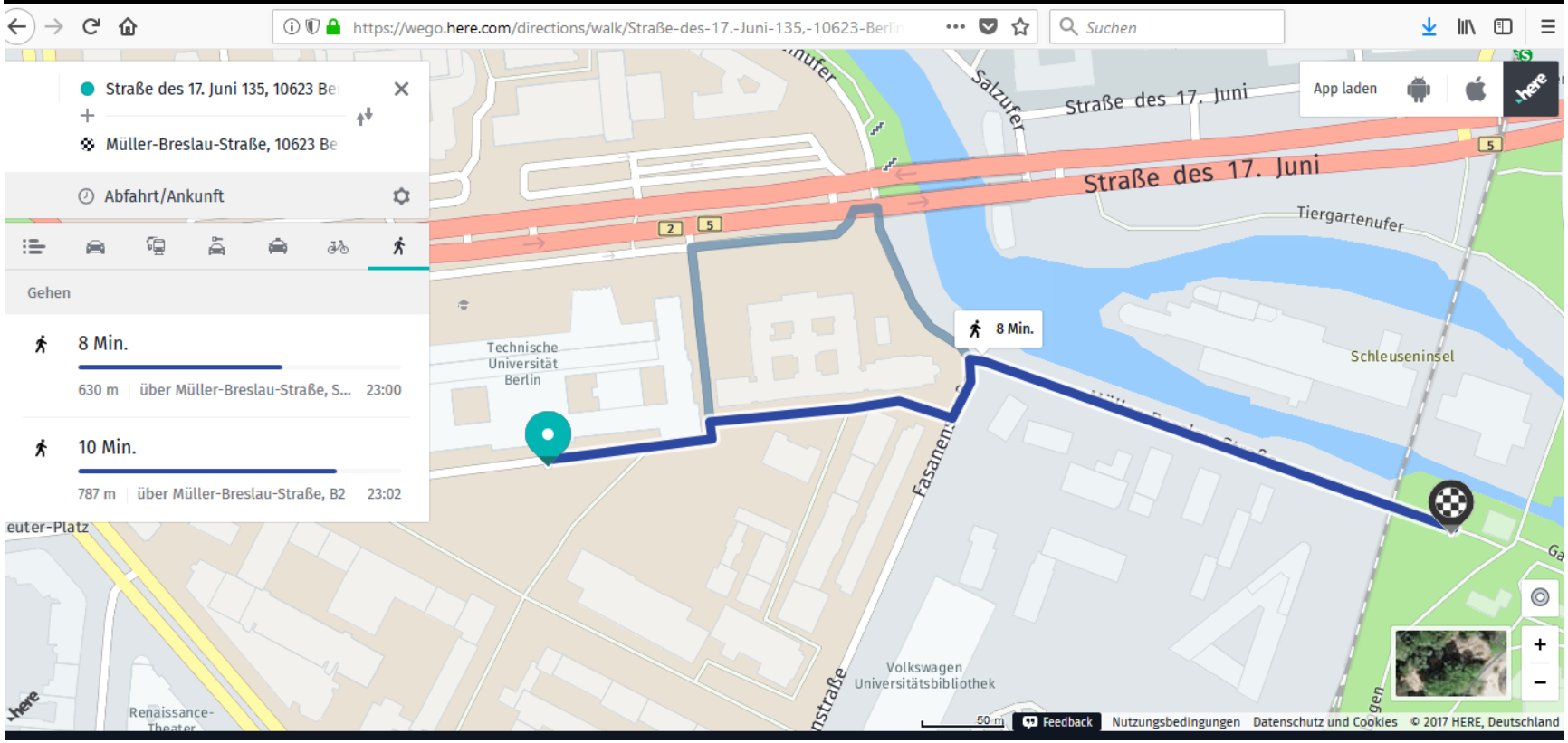
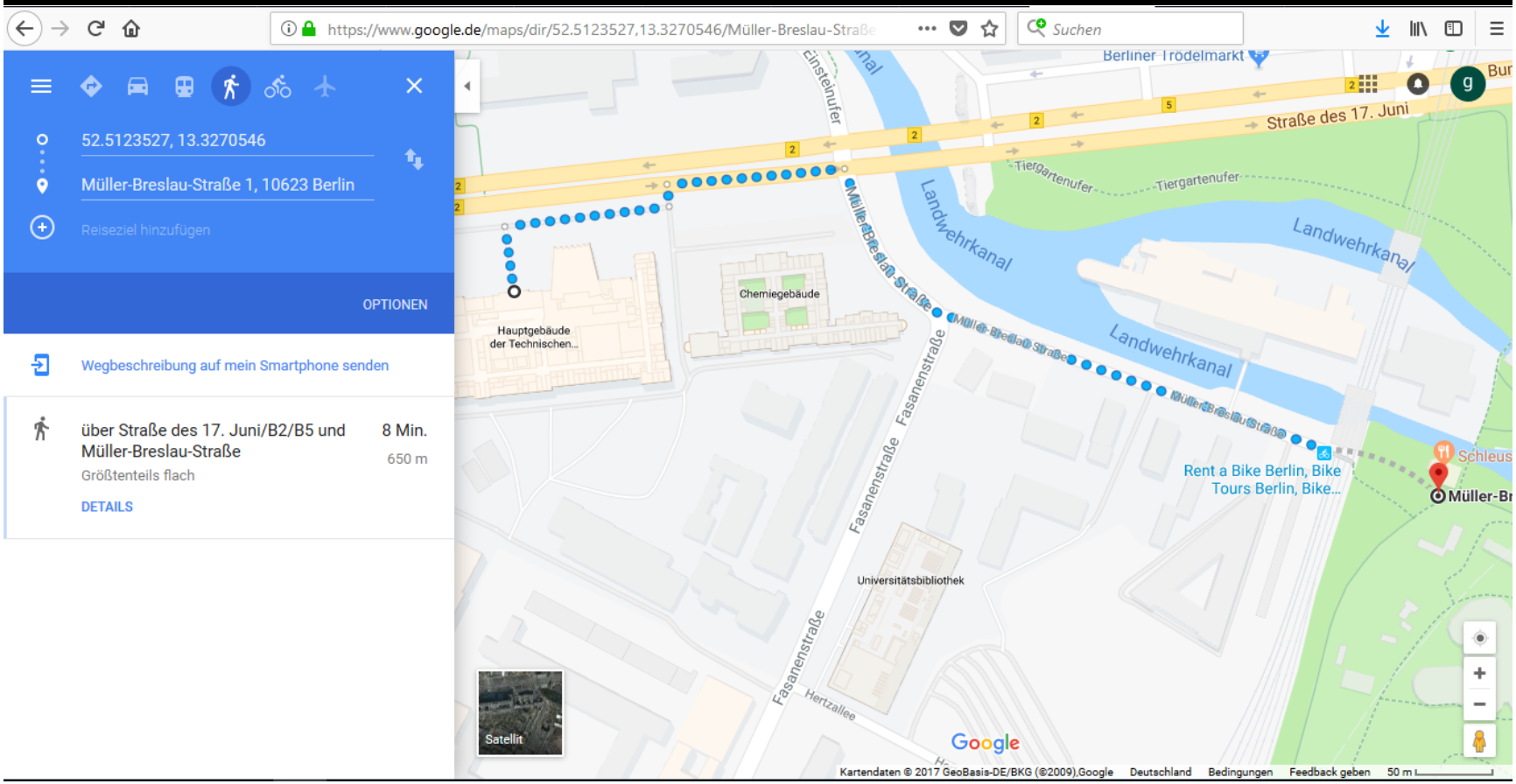
Dinner: Schleusenkrug



GeoIT Wherecamp Conference 2018

Dinner: Schleusenkrug



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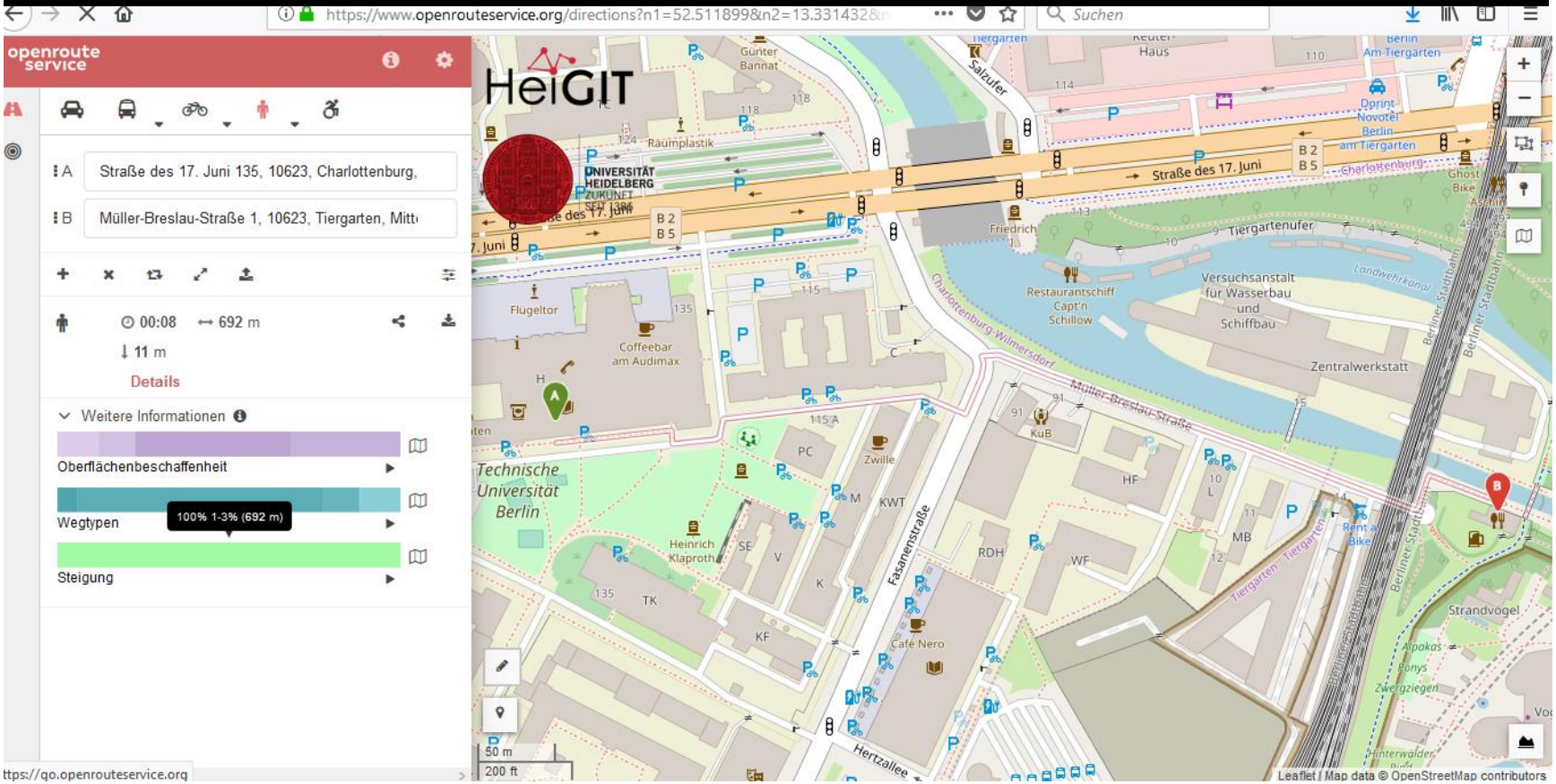
Dinner: Schleusenkrug



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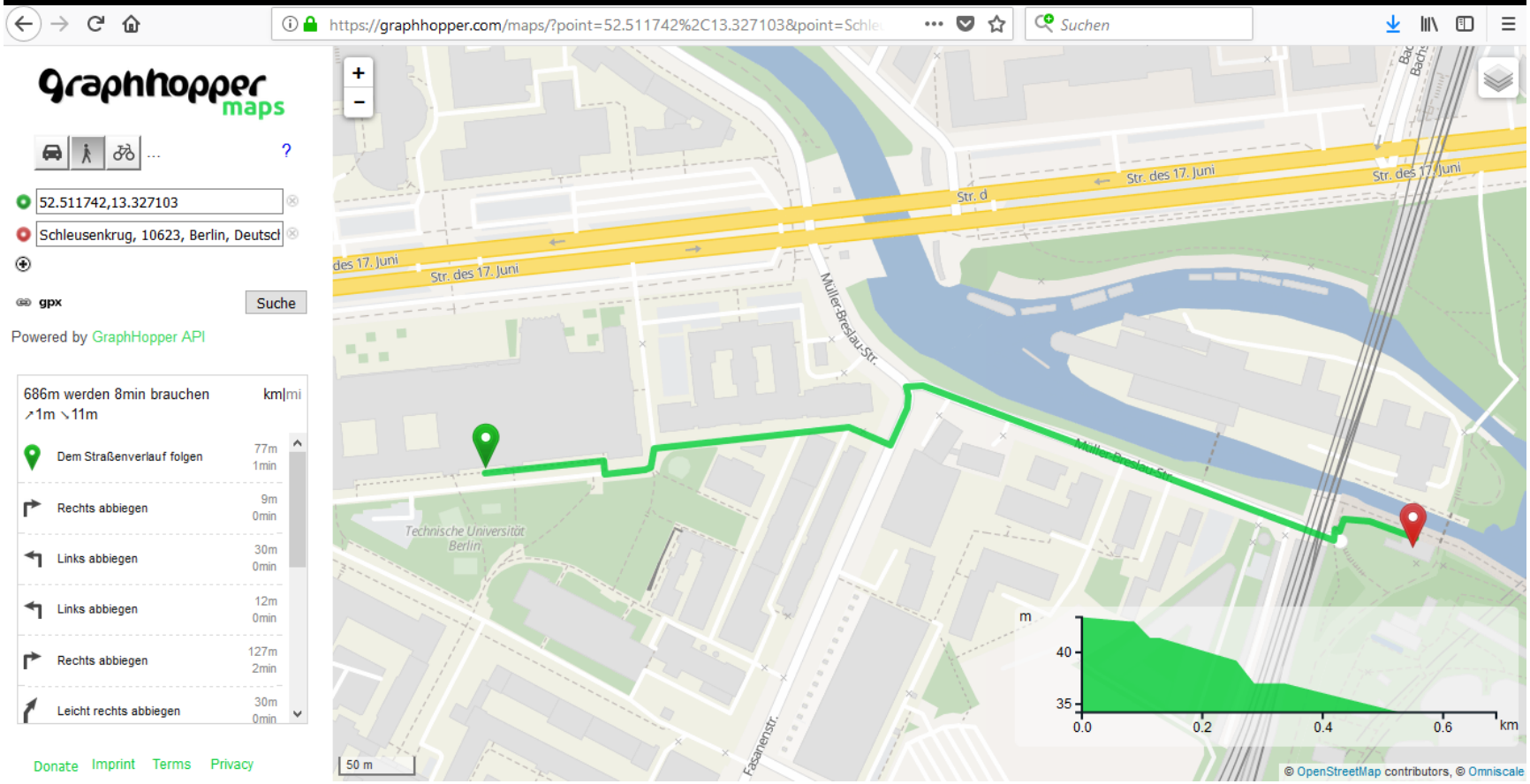

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Observations

President of the Association for Geoinformatics, GeoIT and Navigation e.V.

Prof. Dr. Roland Wagner

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IT/GeoIT Ages

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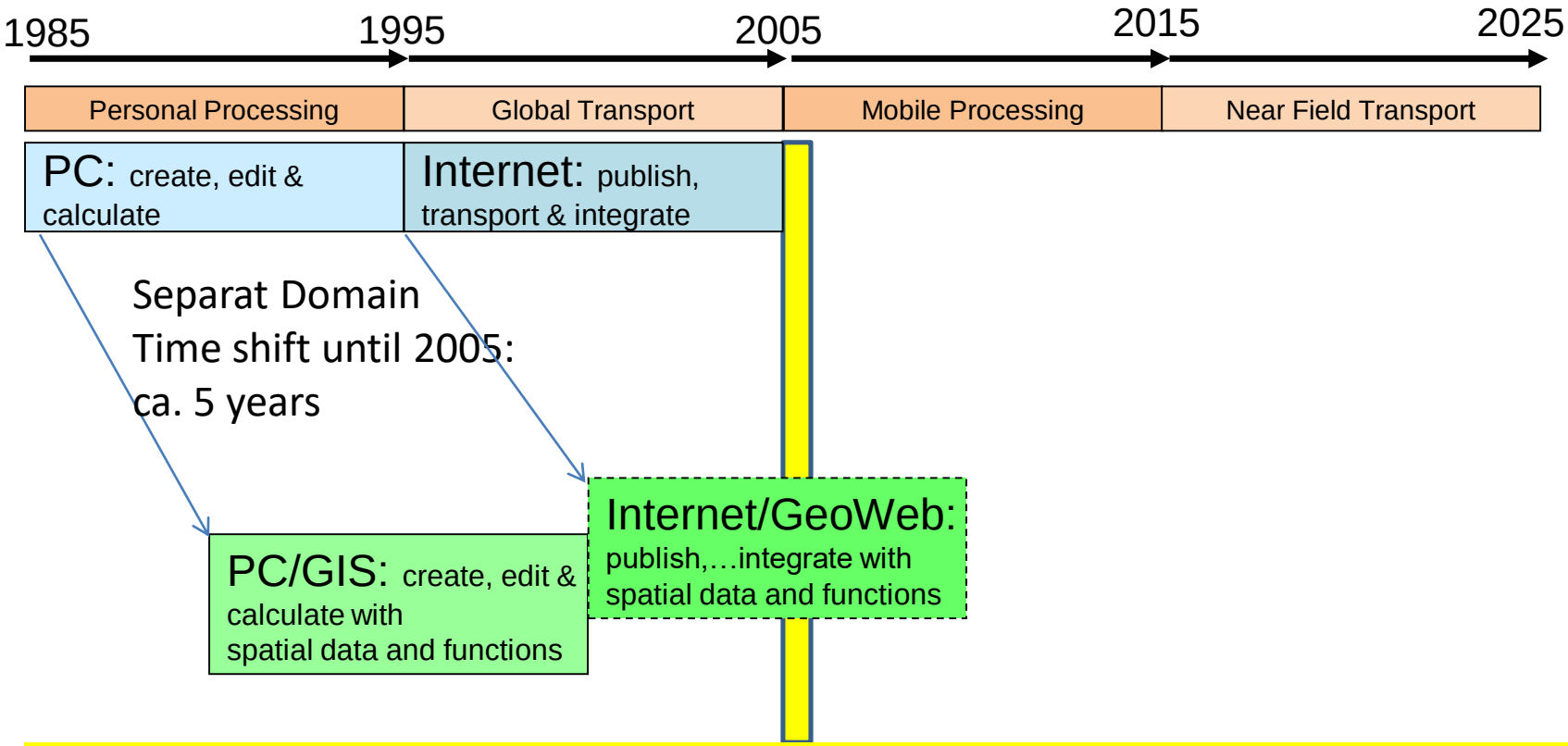
1985	1995	2005	2015	2025
Personal Processing	Global Transport	Mobile Processing	Near Field Transport	
			IoT: ?	
		Mobile: navigate,	2.0	
	Internet: publish, transport & integrate	2.0 or Web 2.0	3.0 or Internet III	
PC: create, edit & calculate	2.0	3.0	4.0	
Software	Service	Hardware	?	

IT/GeoIT

GeoIT Wherecamp Conference 2018

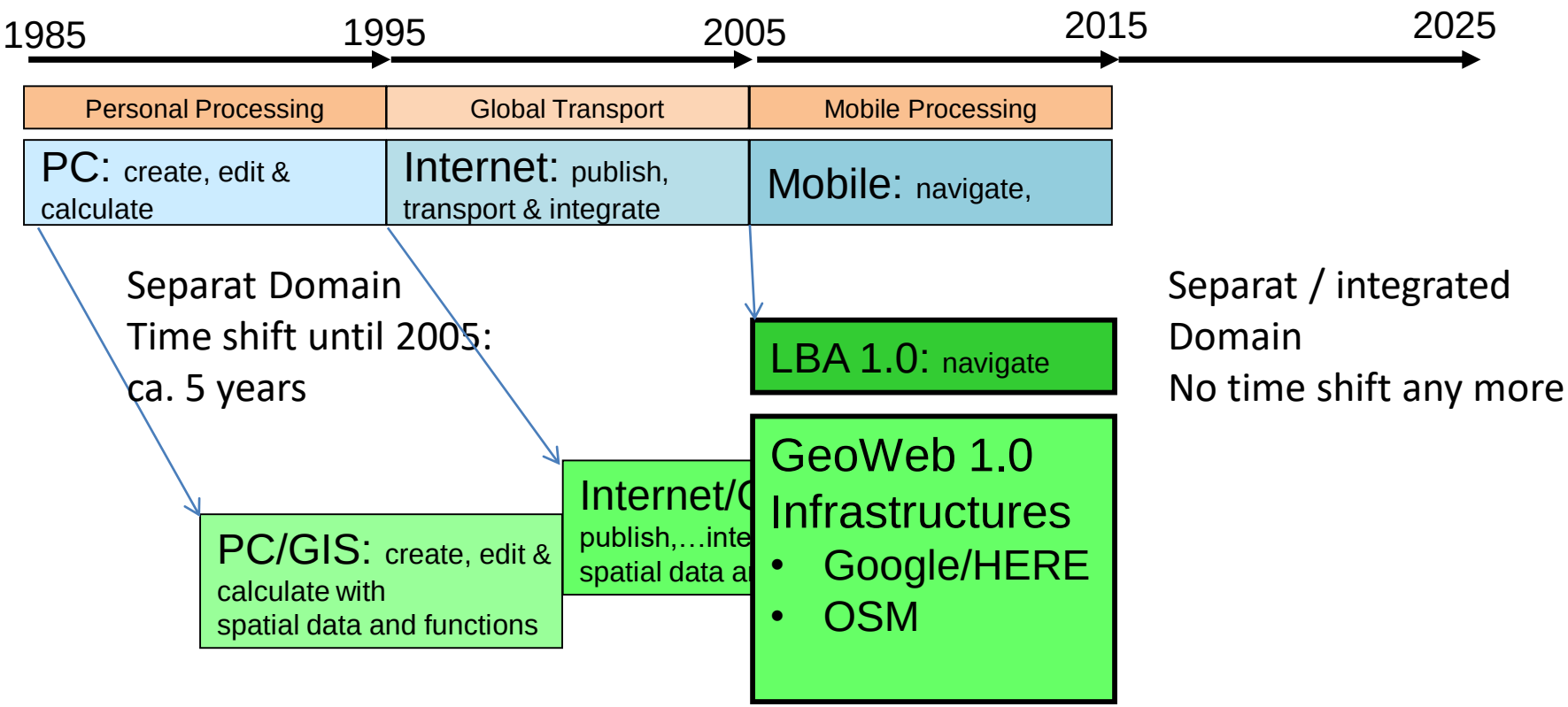
- Serve large number of customers/users, e.g. 500 Million



2005: Game Change with Google Maps and OSM

GeoIT Wherecamp Conference 2018

- Serve large number of customers/users, e.g. 500 Million



Full integration and industrialization to IT/GeoIT

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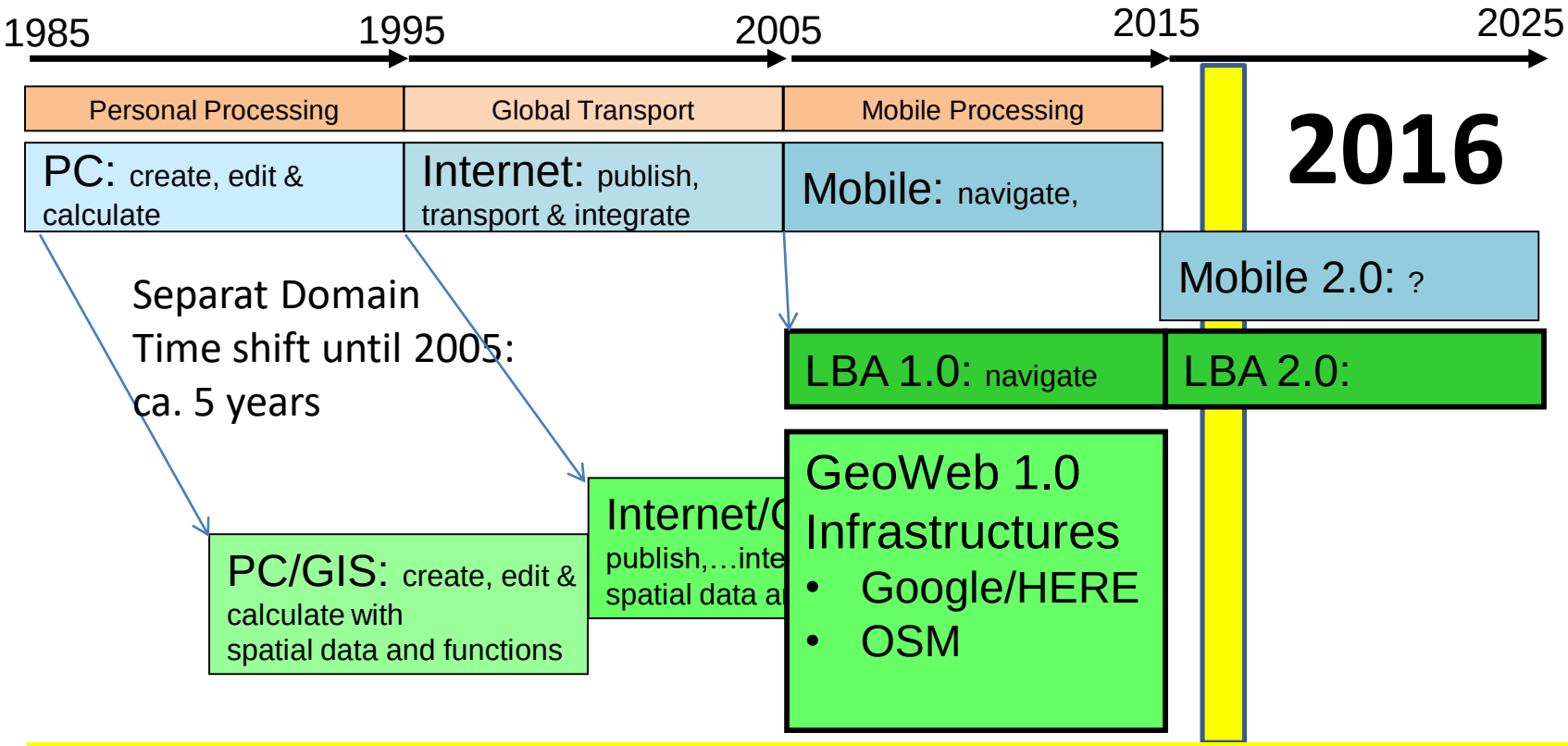
GeoIT Wherecamp 2016

GNSS => outdoor

GeoIT Wherecamp Conference 2018

- Serve large number of customers/users, e.g. 500 Million



Wherecamp 2016: LBA 2.0 Preparations

Mobile 2.0: ?

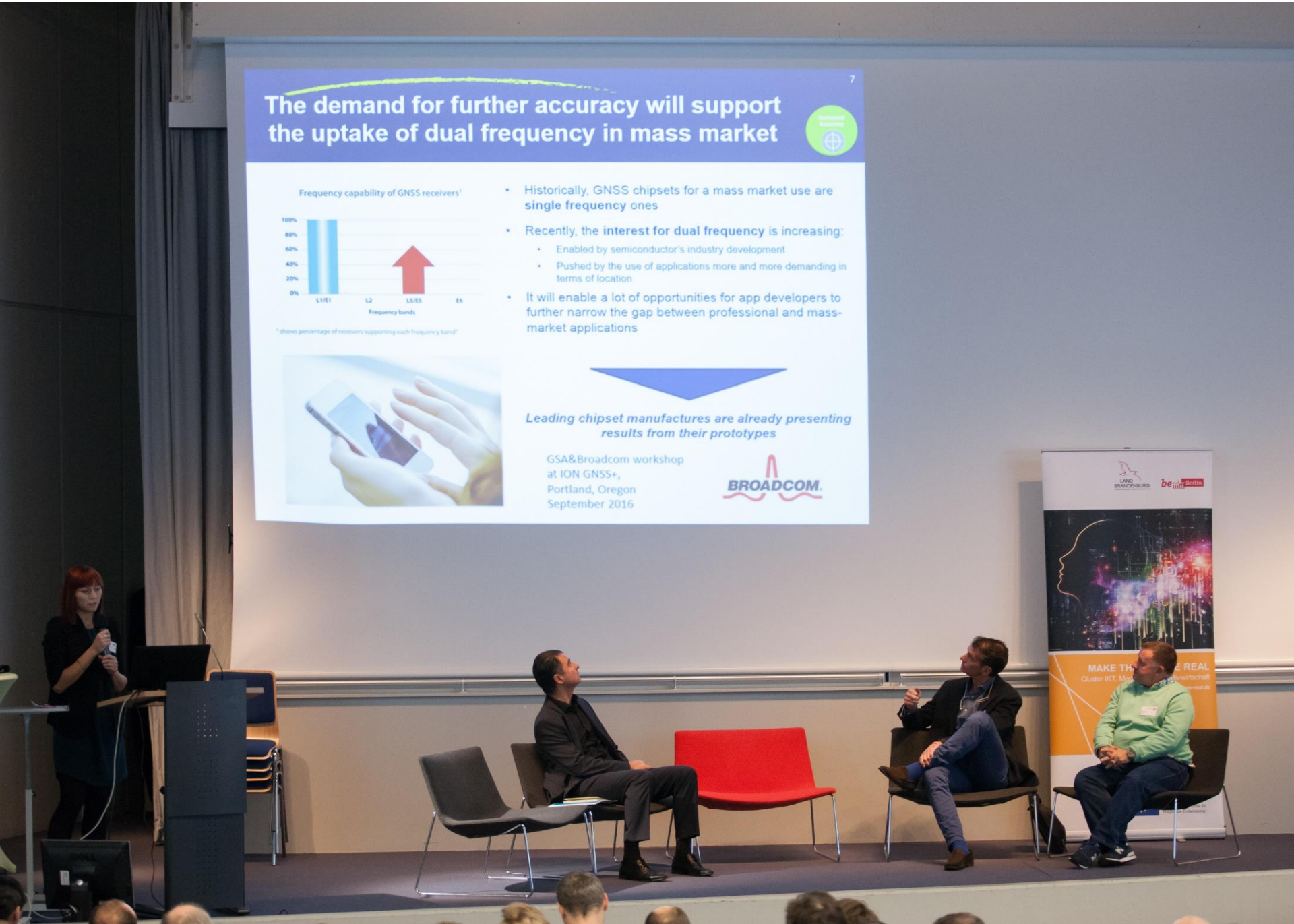
LBA 2.0:

2016

11:10	Tech Trends in Geolocation	Justyna Redelkiewicz	European GNSS Agency (GSA)
11:30	Galileo and other innovation in Qualcomm Snapdragon platform	Nazeman Hamid	Qualcomm
11:50	Dual frequency for consumer applications	Manuel Del Castillo	Broadcomm
12:10	GNSS RAW measurements to develop innovative applications on Android	Ed Parsons	Google Inc.

Wherecamp 2016: LBA 2.0 Preparations

TECHNOLOGY TRENDS
IN GEOLOCATION
Justyna Redelkiewicz Musial
Head of Sector LBS and IoT
European GNSS Agency
Wherecamp Conference
Berlin – November 3, 2016


7
The demand for further accuracy will support the uptake of dual frequency in mass market
Frequency capability of GNSS receivers[1]
100%
80%
60%
40%
20%
0%
L1/E1
L2
L5/E5
E6
Frequency bands
[1] shows percentage of receivers supporting each frequency band
Historically, GNSS chipsets for a mass market use are single frequency ones
Recently, the interest for dual frequency is increasing:
Enabled by semiconductor's industry development
Pushed by the use of applications more and more demanding in terms of location
It will enable a lot of opportunities for app developers to further narrow the gap between professional and mass-market applications
Leading chipset manufactures are already presenting results from their prototypes
GSA&Broadcom workshop
at ION GNSS+,
Portland, Oregon
September 2016
BROADCOM.

Context

Light Multipath environment, real signals: L5/E5 vs L1/E1 position accuracy in the new Broadcom dual frequency test chip

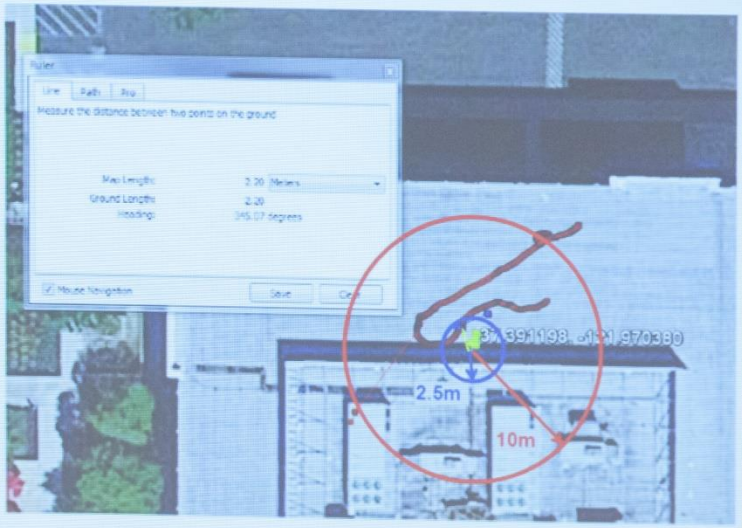
Red dots are L1/E1 only (95% of fixes within 10m):

Red:L1/E1 only
<SKFNAV2> PR 32 GPS_L1 41 56/191 R 5.808 dz -0.760
<SKFNAV2> PR 08 GPS_L1 42 30/307 R 5.785 dz -0.398
<SKFNAV2> PR 10 GPS_L1 44 69/345 R 5.780 dz 0.738
<SKFNAV2> PR 128 GAL_E1 34 76/259 R 36.050 dz 0.887
<SKFNAV2> PR 27 GPS_L1 41 51/264 R 5.788 dz 1.064
<SKFNAV2> PR 129 GAL_E1 33 43/157 R 36.110 dz 2.421
<SKFNAV2> PR 126 GAL_E1 24 40/242 R 3668.210 dz 9.378...

4x more accurate!

Blue dots are L1/E1 and L5/E5 (95% of the fixes within 2.5m):

Blue:L5/E5a only
<SKFNAV2> PR 129 GAL_E5A 29 43/157 R 40.010 dz -3.522
<SKFNAV2> PR 27 GPS_L5 32 51/264 R 5.781 dz -0.387
<SKFNAV2> PR 08 GPS_L5 37 30/307 R 5.781 dz -0.059
<SKFNAV2> PR 10 GPS_L5 36 69/345 R 5.781 dz 0.023
<SKFNAV2> PR 32 GPS_L5 36 56/191 R 5.787 dz 0.662
<SKFNAV2> PR 128 GAL_E5A 30 76/259 R 40.016 dz 3.063
<SKFNAV2> PR 126 GAL_E5A 24 40/242 R 3640.467 dz 16.286...



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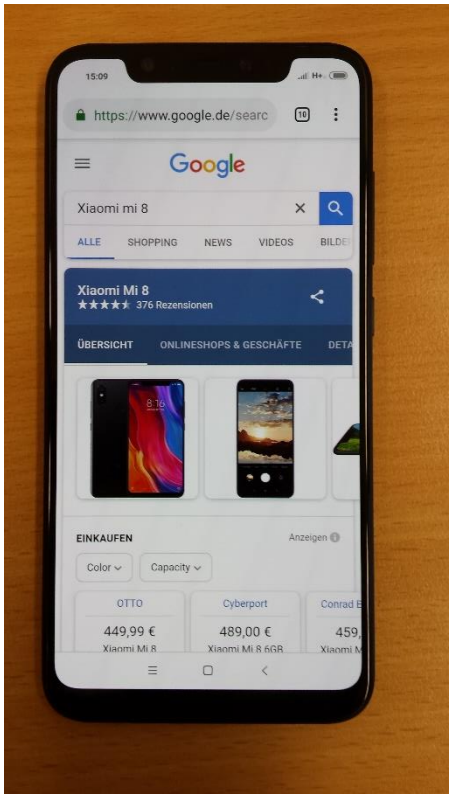
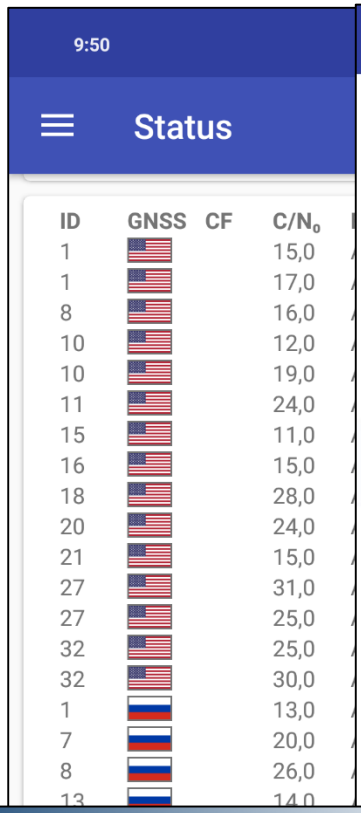
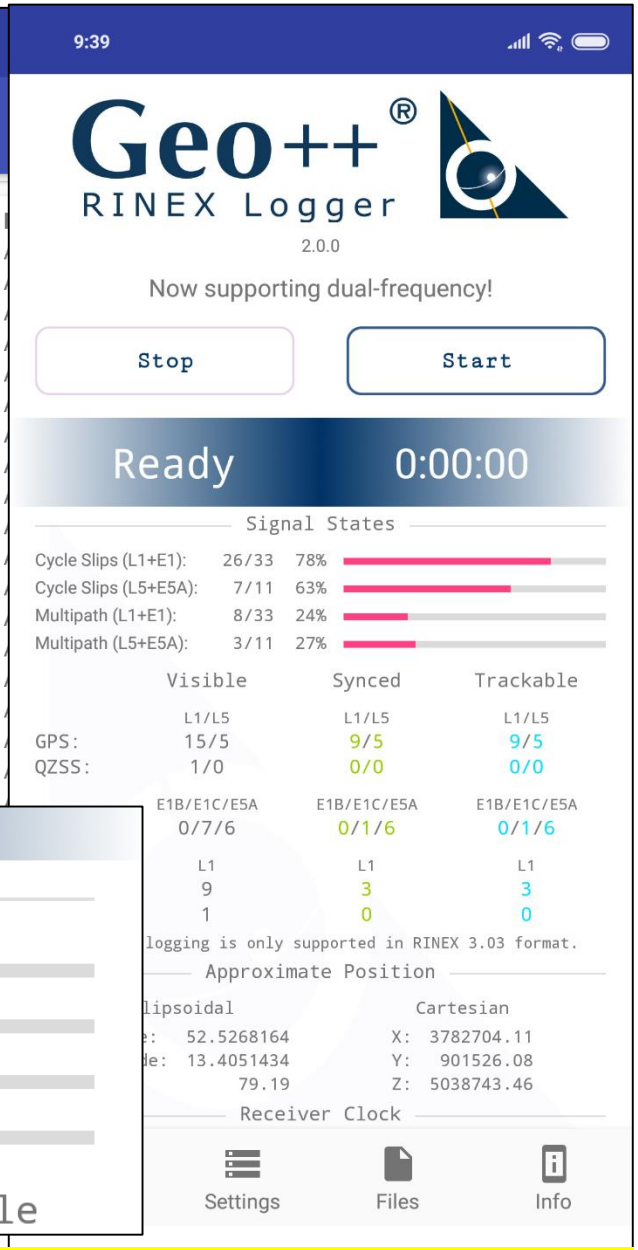


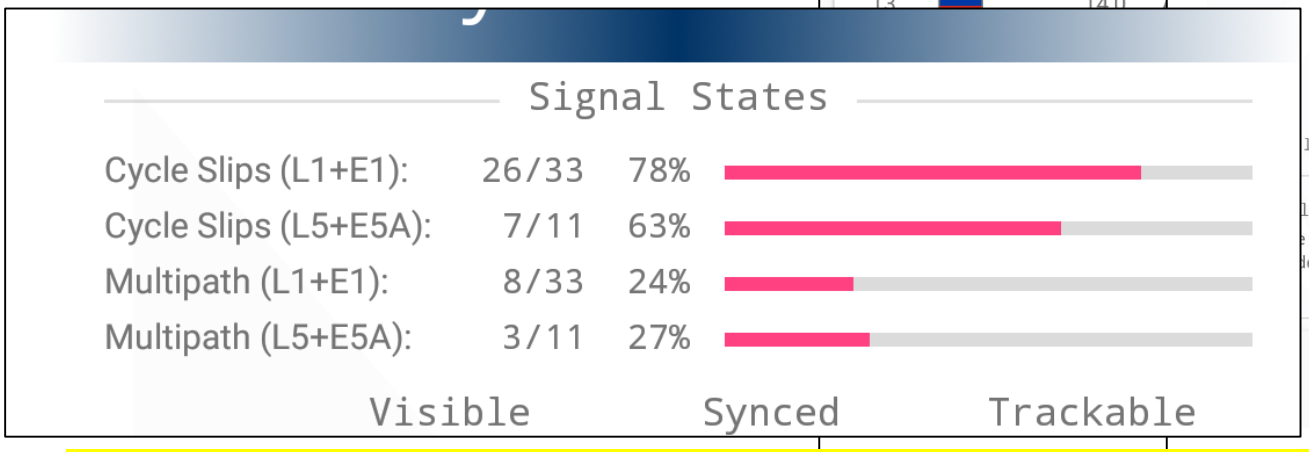
Xiaomi Mi 8
Summer
2018

"Dual GPS
Chip"

Broadcom
Chip







Wherecamp 2018: First devices on Market

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- Serve large number of customers/users, e.g. 500 Million

1985 → 1995 → 2005 → 2015 → 2025

Personal Processing	Global Transport	Mobile Processing	Near Field Transport
PC: create, edit & calculate	Internet: publish, transport & integrate	Mobile: navigate,	IoT:
		Mobile 1.0: navigate,	Mobile 2.0: ?
		LBA 1.0: navigate	LBA 2.0: control?

Read(maps) => Write (maps)
earth drawing()?

Read to write?

GeoIT Wherecamp Conference 2018

- Serve large number of customers/users, e.g. 500 Million

1995 → 2005 → 2015 → 2025

Global Transport	Mobile Processing
Internet: publish, transport & integrate	Mobile: navigate,
Internet: Web 1.0	Web 2.0

read to write (text and graphics)

Mobile 1.0: navigate,	Mobile 2.0: ?
LBA 1.0: navigate	LBA 2.0: control?

read to write (maps)

Read to write: recall web 1.0 to web 2.0

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- IoT vs. GeoIoT ?

1985 → 1995 → 2005 → 2015 → 2025

Personal Processing	Global Transport	Mobile Processing	Near Field Transport
PC: create, edit & calculate	Internet: publish, transport & integrate	Mobile: navigate,	IoT:
		Mobile 1.0: navigate,	
		LBA 1.0: navigate	
	Internet/G publish,…inte spatial data a	GeoWeb 1.0 Infrastructures • Google/HERE • OSM • SDI?	
PC/GIS: create, edit & calculate with spatial data and functions			

Separat Domain
Time shift until 2005:
ca. 5 years

- Wearable
- Smartwatches
- GeoIT AI
- Smart Home
- AutoDrive?

- Main Methods?
- GeoIoT Methods?

IoT/GeoIoT

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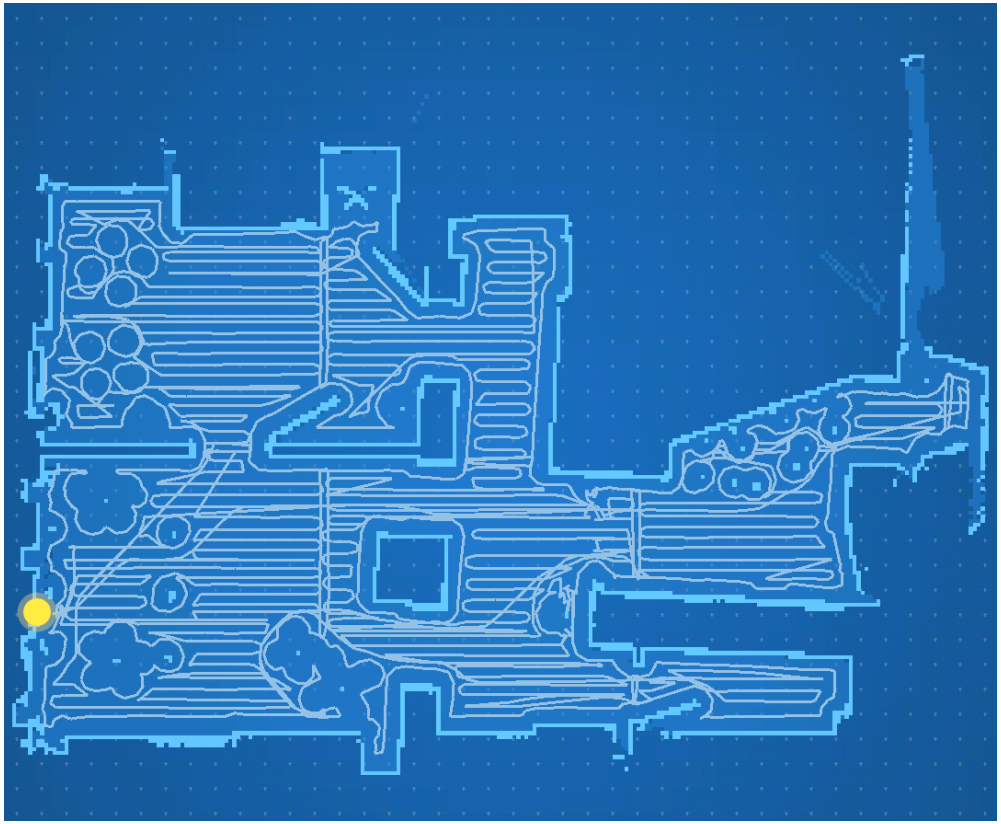

Vacuum robot in our GeoIT-Lab:

- Scanner
- SLAM
- Navigation => Control

IoT/GeoIoT: Technology mapped to usefulness

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- Serve large number of customers/users, e.g. 500 Million

1985 → 1995 → 2005 → 2015 → 2025

Personal Processing	Global Transport	Mobile Processing	Near Field Transport
PC: create, edit & calculate	Internet: publish, transport & integrate	Mobile: navigate,	IoT:
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PC/GIS: create, edit & calculate with spatial data and functions	Internet/G publish,…inte spatial data a	GeoWeb 1.0 Infrastructures • Google/HERE • OSM • SDI?	GeoWeb 2.0 Infrastructures • ?

Separat Domain
Time shift until 2005:
ca. 5 years

Full integration and industrialization to IT/GeoIT

GeoIT Wherecamp Conference 2018

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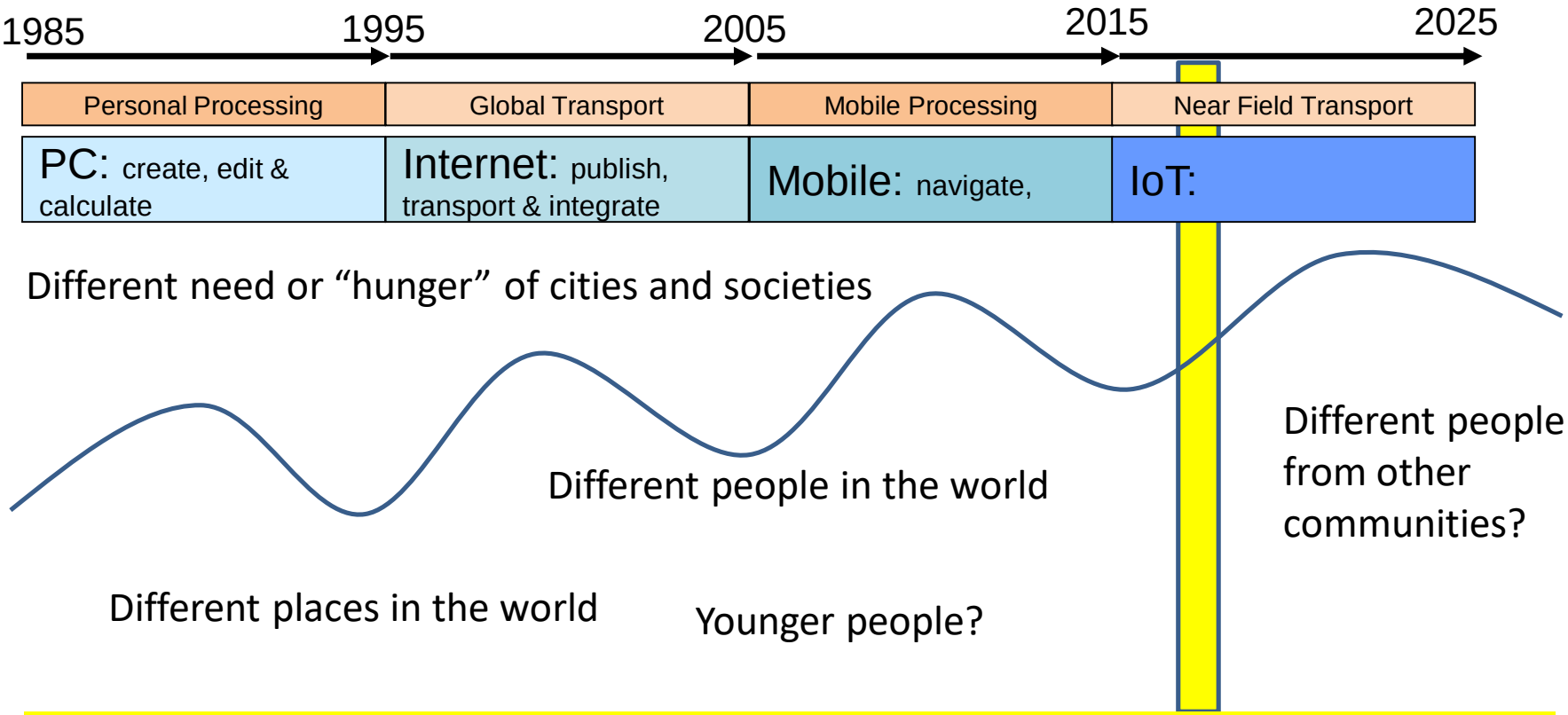

2018: up & downs, new but still weak trends?

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And your thoughts?
Let's talk about that at the Wherecamp!

President of the Association for Geoinformatics, GeoIT and Navigation e.V.
Prof. Dr. Roland Wagner