EasyGoing

AN APPROACH TO IMPLEMENT COST-EFFECTIVE AREA WIDE DATA SOURCES FOR THE PEDESTRIAN NAVIGATION IN GERMANY –

A FEASIBILITY STUDY

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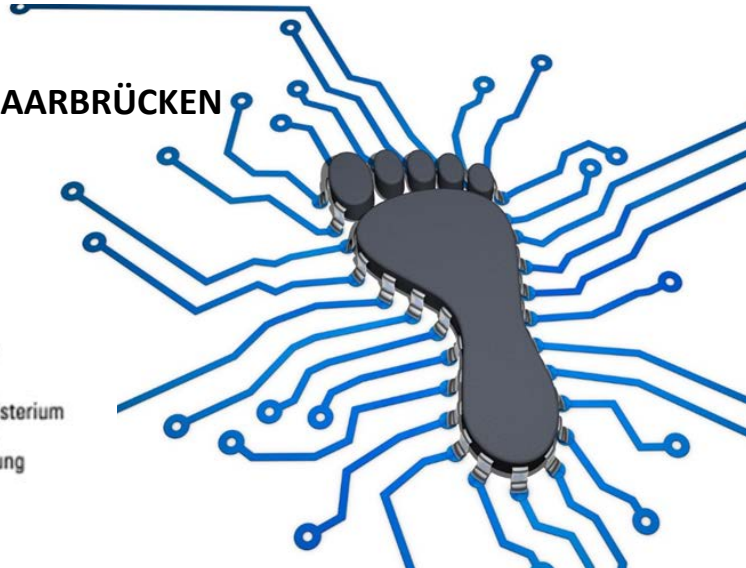

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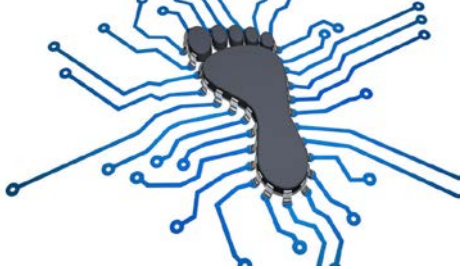
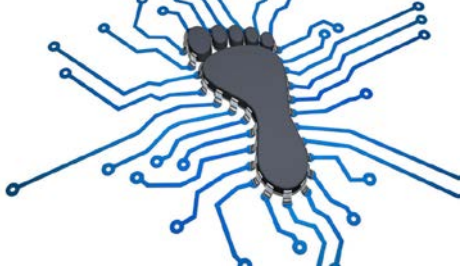
Content



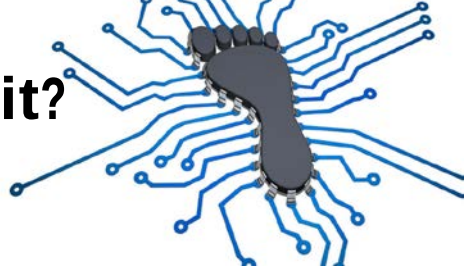
- Problem description and motivation
- Who is „the“ pedestrian?
- Evaluation of results
- Which information is needed for the pedestrian navigation?
- How do I get to this information?
- Conclusion

Initial Situation



- The impacts of demografic change
- Promotion of the UN Convention on the Rights of Persons with Disabilities by 2022 : Accessibilty is a fundamental right to ensure an independent lifestyle and social participation in all aspects of life for persons with disabilities through a barrier-free environment (Art. 4, 9, 21).
- Smooth mobility chain
  - Indoor-Outdoor Navigation
  - Last mile
- There are currently a large number of isolated applications

Pedestrian Navigation – What is so special about it?



- Mobility at low speed
- Main focus on the orientation
- Orientation by the use of landmarks
- It ensures a great freedom of movement

Who is „the“ Pedestrian?

Characteristics

- Without disabilities
- Reduced mobility
- Motor impairment
- Visual impairment
- Hearing impairment
- Mental disabilities
- Analphabets

Devices

- (Power) wheelchair
- Walker-rollator
- Other devices

Pedestrians

Requirements

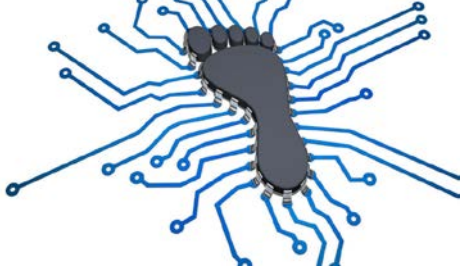
- Security
- Accessibilty (incl. buildings)
- Social participation
- Temporary hindrances
- Time-disctance-economy

Motivation

Leisure
- Culturel activities
- Sightseeing
- Shopping

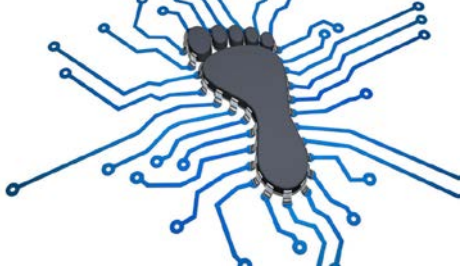
Business trip

Qualitative Survey of potential users



- Qualitative interviews (n=11)
- Guideline with items to determine…
  - which geographical data are relevant for pedestrians,
  - the reasons for the use of technology,
  - description of experiences made with systems currently available on the market,
  - personal details.
- Evaluation through content analysis

Qualitative Survey
- Results I -

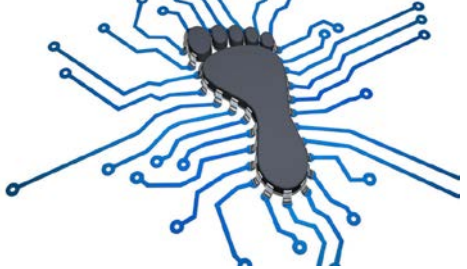


Typical characteristics?

- Programme: Google Maps
- Typical: the route planning is first made on the PC,

  if one wants to be on the safe side, a smartphone is taken along the way

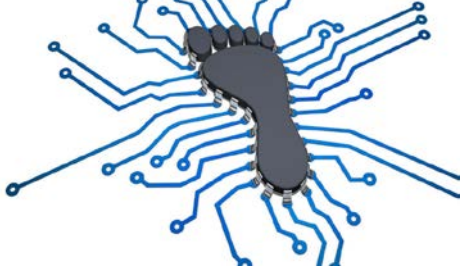
Qualitative Survey
- Results II -



Technical Solutions for the use of pedestrian navigation (away from an entire smartphone solution)

- specific user requirements (visual impairment/reduced mobility/motor impairment)
  - voice guidance
  - vibration
  - smartWatch
  - intelligente clothes
  - augmented Reality (additional information/gamification)
  - man-implants interface
  - intelligent white stick

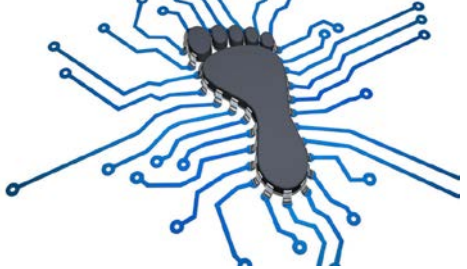
Qualitative Survey
- Solutions III -



Technical problems that have to be solved!

- the battery power dwindles too fast due to GPS-tracking and mobile data use
- how should we deal with the large amount of data resulting from the complexity of maps in future?
- how should the user requirements friendly data filtering look like?
- smooth transition from outdoor to indoor-navigation (administrative bodies, rail stations, airports, etc.)

Qualitative Survey
- Solutions IV -



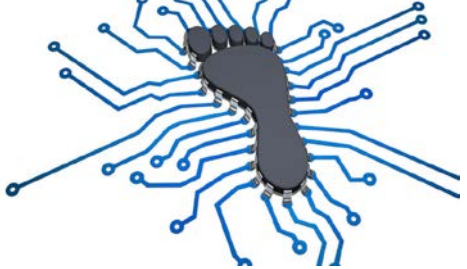
Social participation/independency

- navigation system as a mean for persons with disabilities
- increasing of independency and the feeling of autonomy
- not to be dependent on others

Multimodale journey (beyond national borders)

- Different transportation option can be offered in one single route (board walk, public tranjsport, taxi, car, plane)
- several action alternatives during navigation(restaurant, shopping, meeting friends)

Qualitative Survey
- Solutions V -



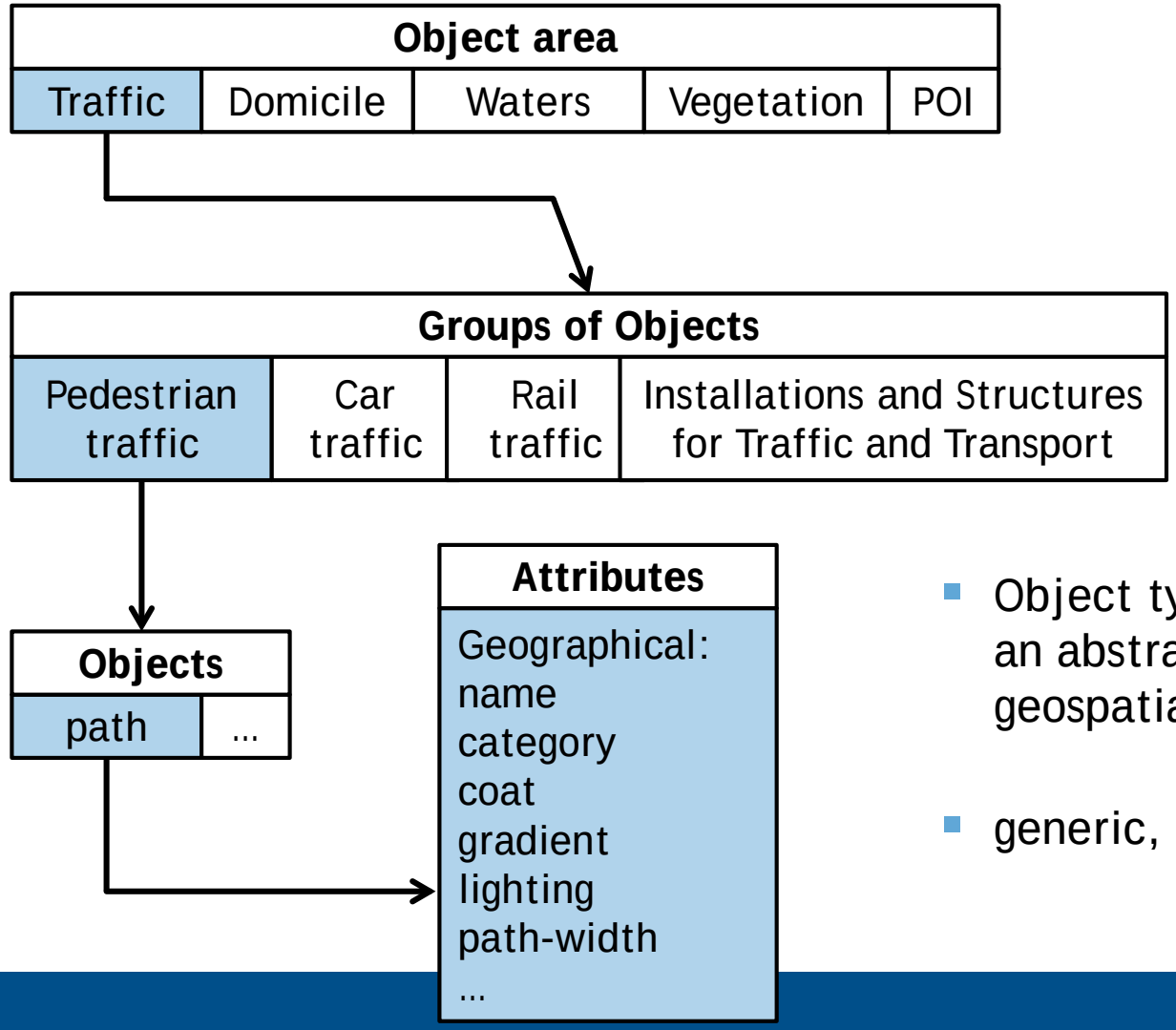
Protection of personal data and transparency

- inadequate knowledge of the saving of appropriate data, the duration and what provider should do with the data
- parties: can not be changed/ can not be accepted

Willingness to pay for pedestrian navigation

- The willingness to pay can only be increased through attractive additional functions / new technical solutions / accurate positioning

Object type catalogue for the pedestrian navigation



- Object type catalogue as an abstraction to geospatial reality
- generic, scalable, modular

Analysis of broadways | Main characteristics

Street names

path-width

tunnel

category

bridge

coat

guidance system for the blind

gradient

competence

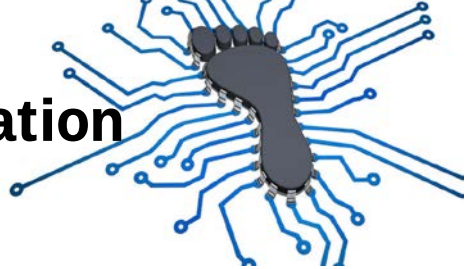
access

lighting

cycling

www.wikipedia.org/wiki/Gehweg

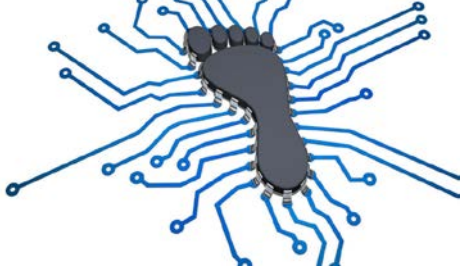
Object type catalogue for the pedestrian navigation



Analysis of the paths | *Main characteristics*

Category	Coat	Lighting	Competence	Cycling	Guidiance system for the blind
• pavement • footpath • trail • passage • pedestrian zone • garden paths • …	• Asphalt • cobblstone • beton • metal • wood • dense surface • gravel • pebble • sand • open soil • gras • …	• lighted 24/7 • Partially lighted • no lighting	• public • private	• allowed • not allowed	• available • not available

Conclusion



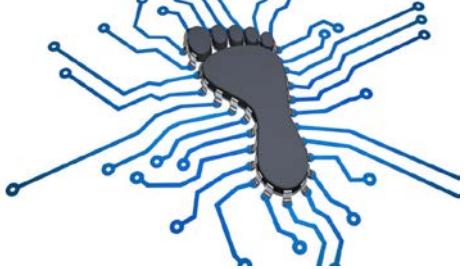
- Results
  - Only isolated solutions are available
  - Heterogeneous data collection
  - Non-existing guidelines and solutions to create data
  - Non-appropiate data set for pedestrian navigation

- Standards for object types and methods for recording are to be developed

- For optimal routing, a high degree of individualisation in filtering data is crucial

- Automation of processes and methods to gather data, to processing data and to updating data for a cost-effective data set

Contact



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