

EXPLORING SEAMLESS AND ATTRACTIVE TRANSFERS TO PUBLIC TRANSPORT STATIONS WITH DIGITAL TACTICAL URBANISM

mobil.TUM 2024 Session D3 Public Transport

Heike Marquart, Benjamin Heldt, Christian Wolf, Rita Cyganski
DLR Institute of Transport Research, Berlin, Germany



Background

- Public transport, walking and cycling are cornerstones for the transition towards a sustainable mobility system
 - combing them is desired
- Only 53% of total travel time is within public transport mode, 47% is walking to, at or from the stop or waiting and changing at the station (Hillnhütter 2016)
- ❓ To improve public transport usage, a walkable environment regarding access to, waiting at and transfer within public transport systems is important

Background

But: Complex **navigation/ wayfinding** and unattractive **quality of the walking environment** at public transport stations hinder **pleasant experience**, can **lead to stress reactions** and can affect **overall opinion** of transit system

(Merzoug and Jarass, 2022; Ferri and Popp, 2023; Yang et al. 2023)

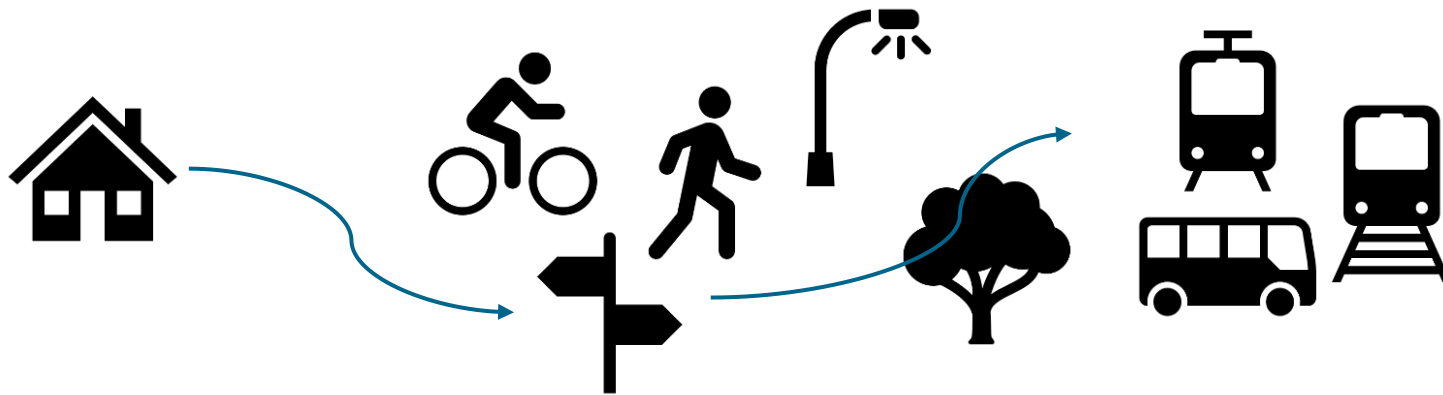


Source: own picture

Aim

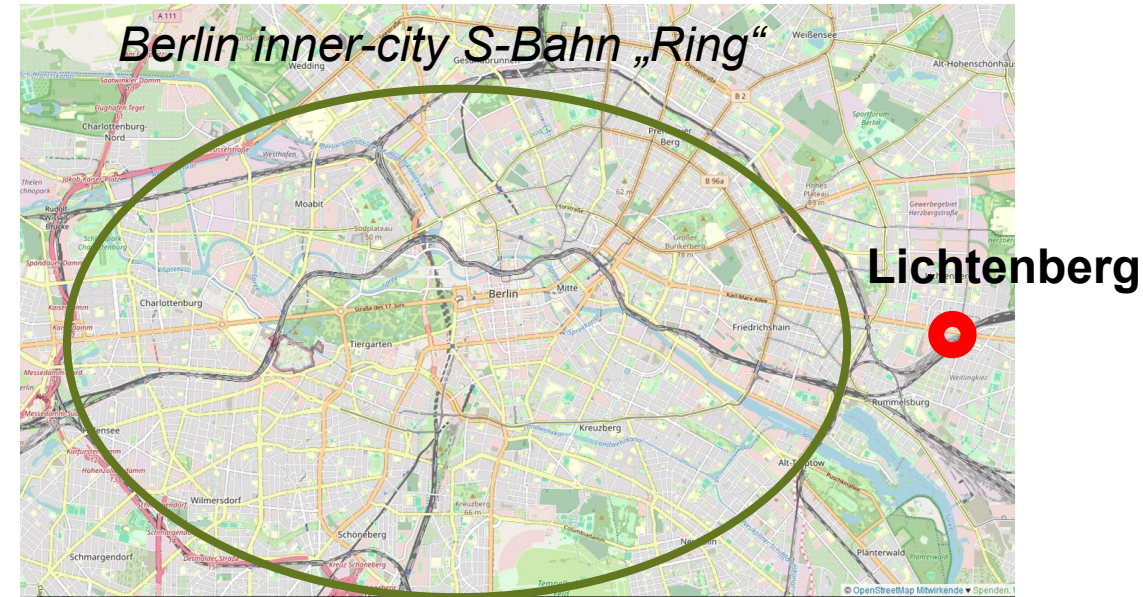
Exploring how to improve the **navigation and wayfinding** and **quality of walking environment** of public transport through:

- Attractive **access** for pedestrians and cyclists (incl. sharing options)
- Attractive **connections** between different modes of transport (incl. sharing options)



Case study station

- **Berlin Lichtenberg:** Major mobility hub
- Regional train, S-Bahn, U-Bahn, bus, tram, sharing hub (e-scooter, bike, motorscooter, car)



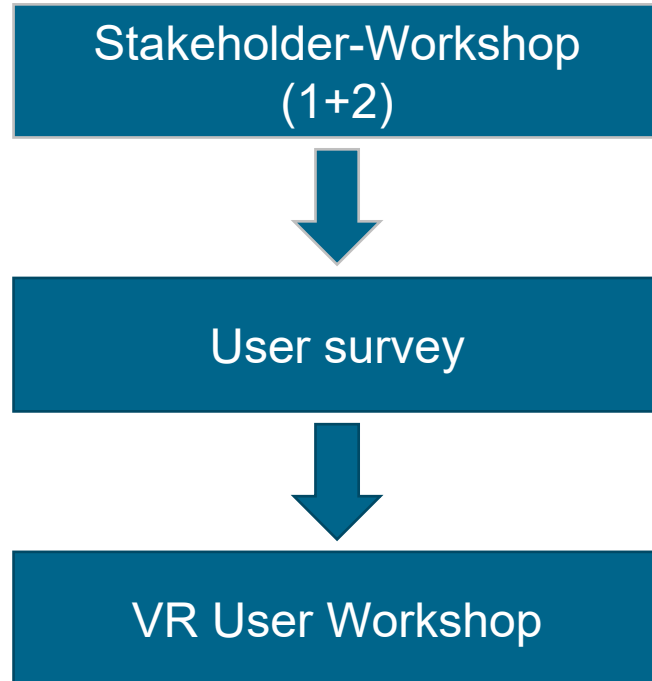
Source: modified OSM map



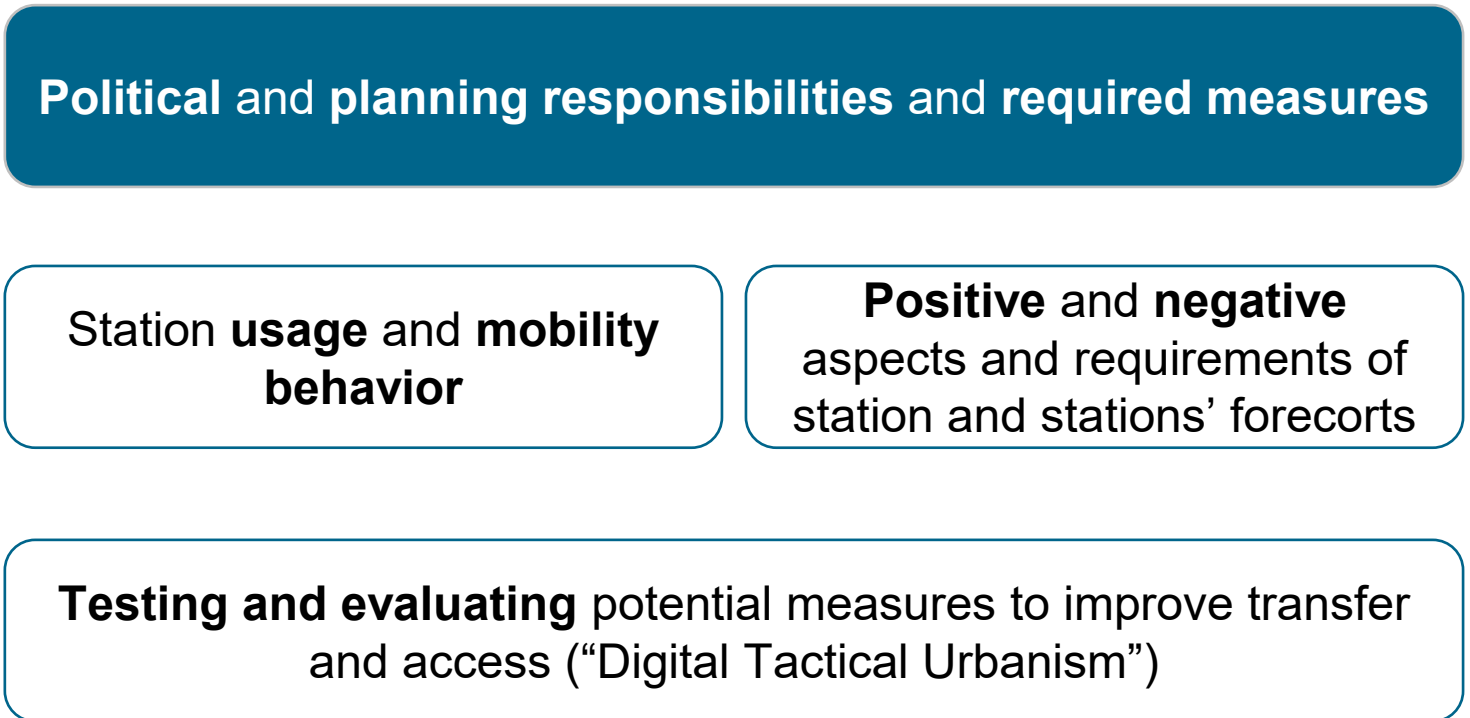
Source: own pictures

Study design

Methods

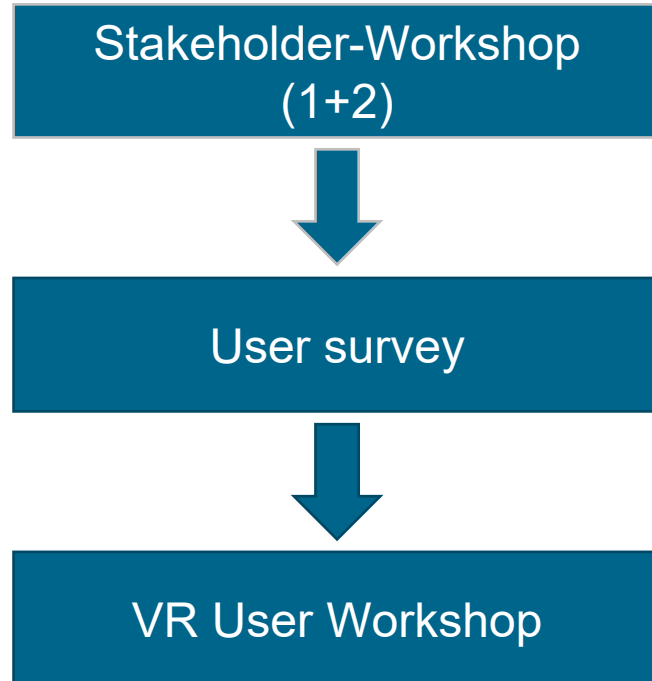


Research aims and topics

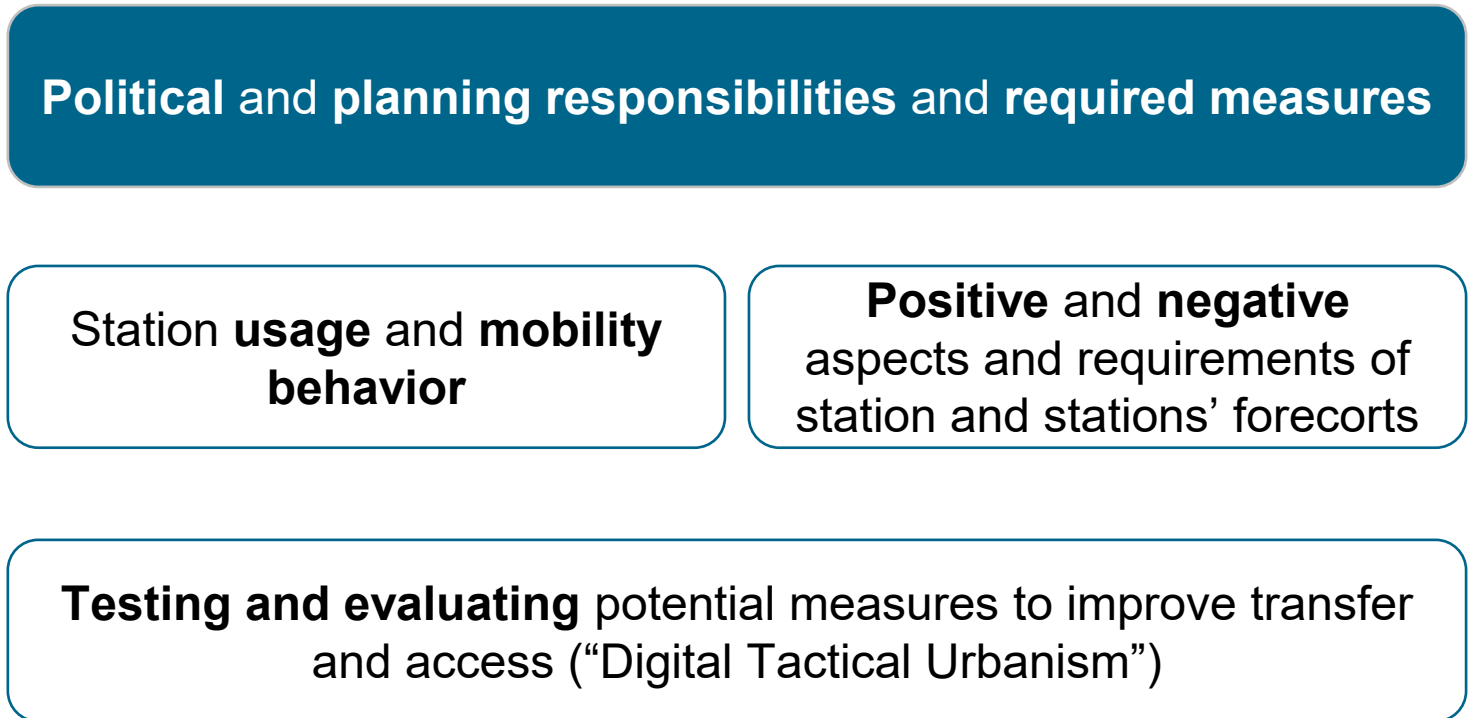


Study design

Methods



Research aims and topics



- Workshops with 5-8 stakeholders (planners, municipality, public transport providers, sharing providers, initiatives) in 2022 and 2023
- Status-quo of planning and future requirements of station Lichtenberg, discuss potential to implement tactical urbanism measures

Originally planned: Tactical Urbanism



Source: <https://www.kylezick.com/tacticalurbanism>

- targets long-term change through short-term interventions: *"an approach to building and activating neighborhoods through short-term, low-cost, and scalable interventions and actions."* (Lydon & Garcia, 2015)

Results

- Responsibilities of planning stations' forecourts unclear
- Implementing physical tactical urbanism measures require high effort

Originally planned: Tactical Urbanism



Source: <https://www.kylezick.com/tacticalurbanism>



Applied: Digital Tactical Urbanism

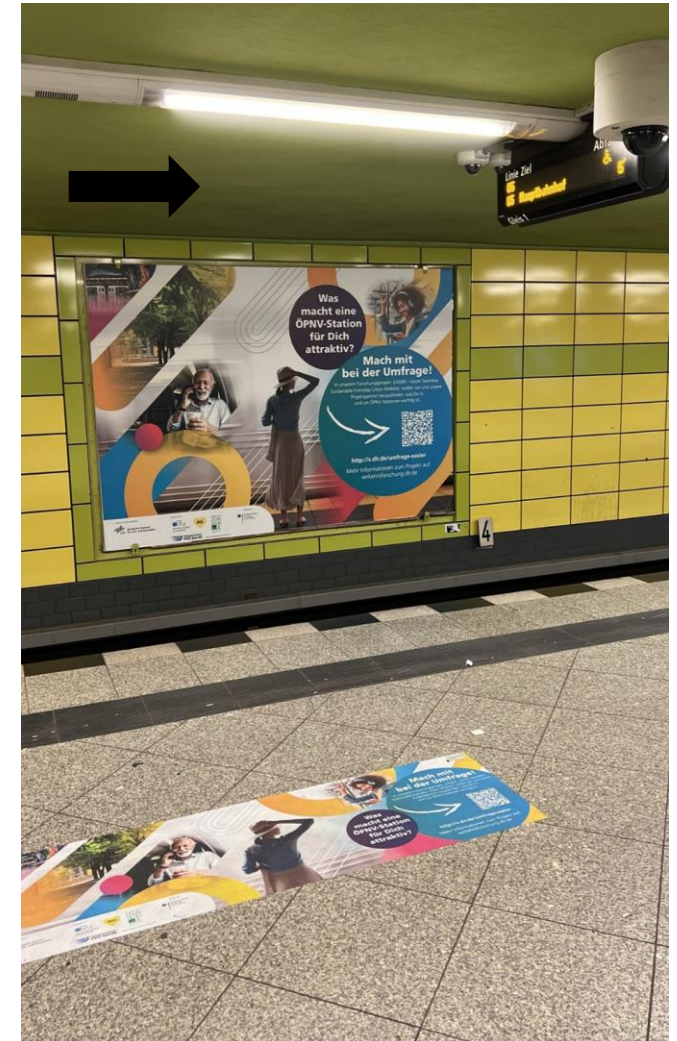


Source: DLR

Method and approach

- “Bottom-up approach” of Tactical Urbanism through:
- Online user survey (July – September 2023)
 - Recruitment: Flyer, newsletter, advertisement in the station
 - N=250
 - Results used for creating elements for Digital Tactical Urbanism

User survey



Source: own pictures

Method and approach of Digital Tactical Urbanism

VR-user workshop

VR workshop: Digital Tactical Urbanism (Dec. 2023)

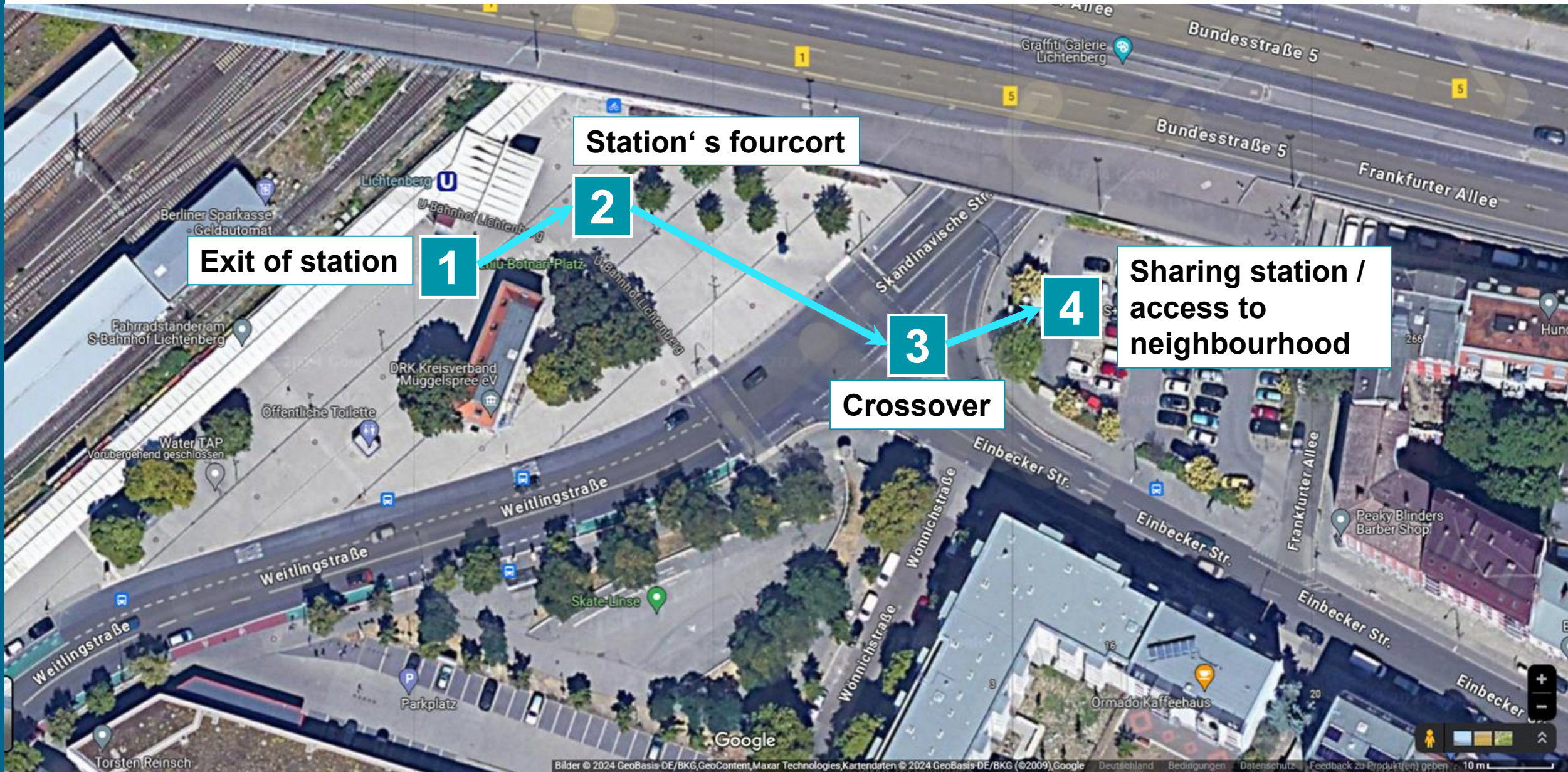
- Participants explore 360° pictures with VR: Current forecourt with/without 3D-elements of Tactical Urbanism measures based on survey
- While being interviewed ('Digital Walking Interview')
- 19 participants

New methodological approach:

- Can people develop ideas/visions based on VR?
- Usability of VR based interventions



Source: own pictures



Exit of station

1

Station's fourcourt

2

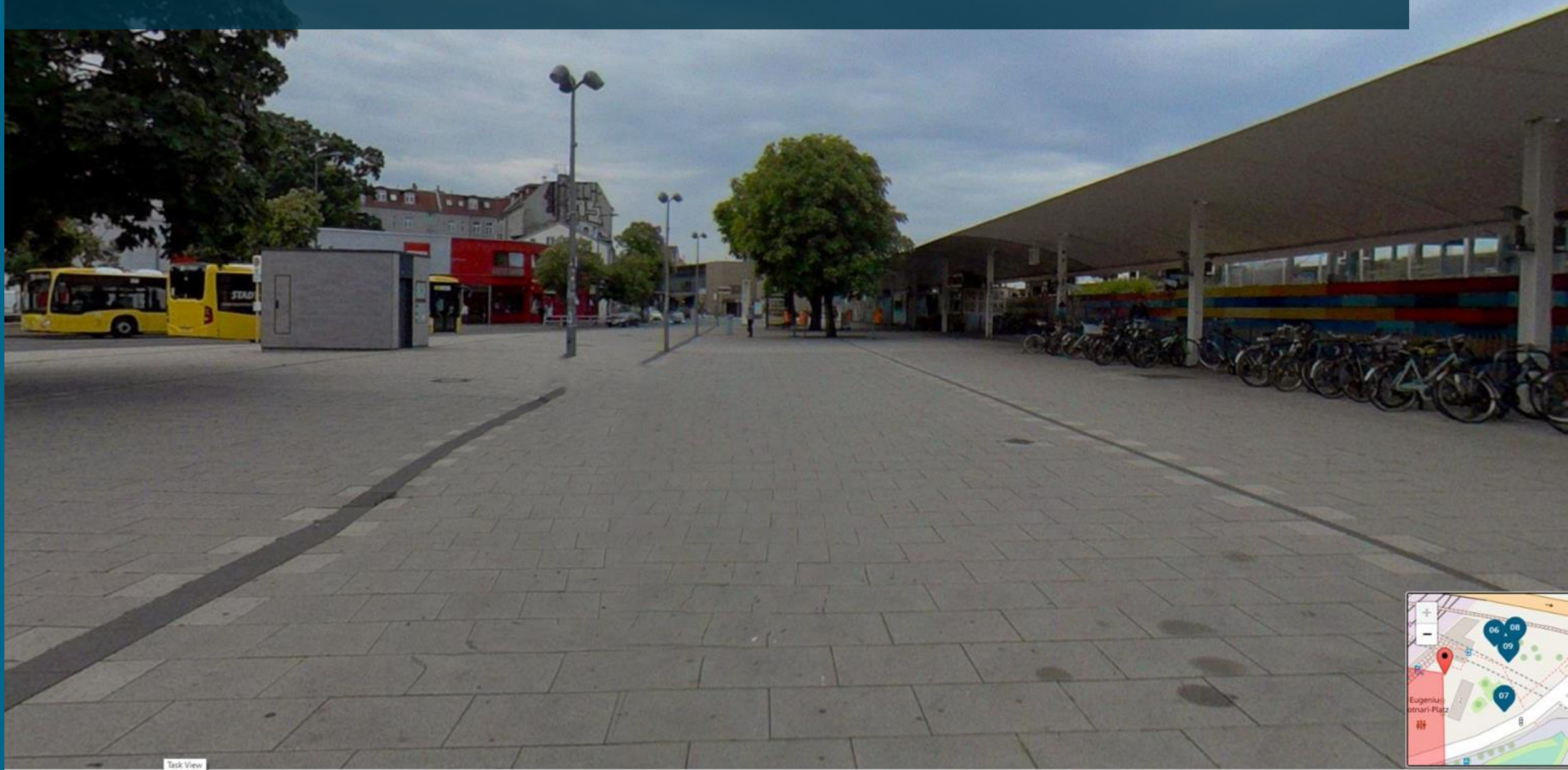
Crossover

3

**Sharing station /
access to
neighbourhood**

4

1



1



*Implementation VR Elements: Chignola 2023, DLR / EOC / Science
Communication and Visualization
Design VR-Elements: Katja Pfeiffer (Architect)*

0

2



5m

Image: 02
distance: 65.8m



2



*Implementation VR Elements: Chignola 2023, DLR / EOC / Science
Communication and Visualization
Design VR-Elements: Katja Pfeiffer (Architect)*

2



*Implementation VR Elements: Chignola 2023, DLR / EOC / Science
Communication and Visualization
Design VR-Elements: Katja Pfeiffer (Architect)*






*Implementation VR Elements: Chignola 2023, DLR / EOC / Science
Communication and Visualization
Design VR-Elements: Katja Pfeiffer (Architect)*

Results

With interventions: Activities

- Social interaction / making use of public space
- Only short term usage: waiting or meeting someone
- Rest and spent time



*“That you can then get into **conversation with the neighbourhood**, maybe make **contact** somehow. So I think that's a really good idea.”*

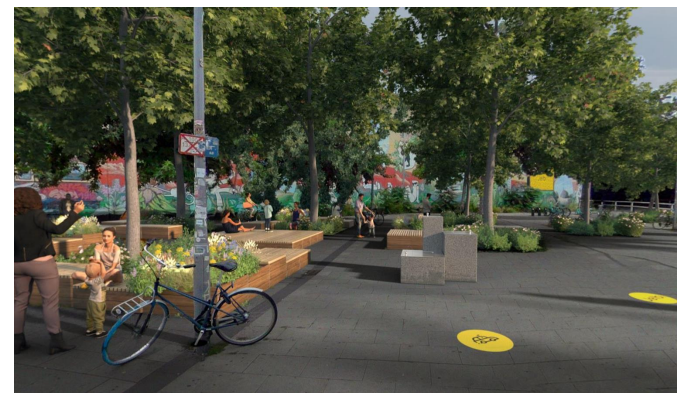
*P2: That would actually be something where I'd say, ‘[...] **just read the other book for yourself or chat as a couple**, that's also very nice now.*

*“If I had ten minutes to **wait for the bus**, I'd sit down and read the paper until it came. **But I wouldn't even leave my flat to go here and sit down and then go home again**. I still wouldn't do that.”*

Results

With interventions: Familiarity and memories

- Unkept appearance / vandalism
- Everyday route which needs to be taken

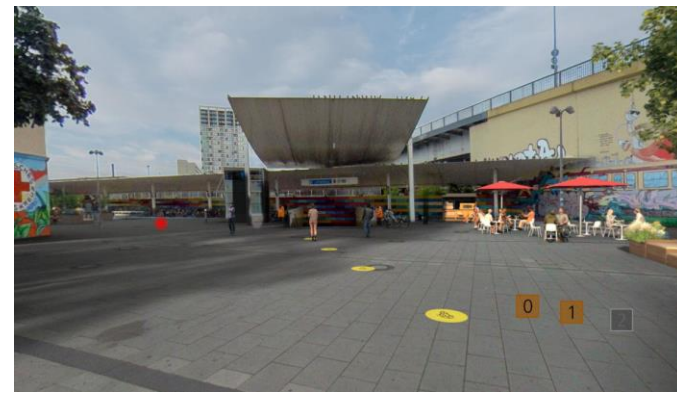


*“But I’m pretty sure that if there were no cameras and no security, that **the destruction would happen very quickly and that everything would be destroyed**, except maybe that cafe there, because there is someone there.”*

*“Well, I might sit here a bit more often with a friend, but not particularly much. I **actually go to the station for practical reasons.**”*

Results

With interventions: Wayfinding



- Easy interventions like Pictograms positive for wayfinding
- Use sharing station more attractive because of pleasant environment

“Well, instinctively [I would go] to the one [sharing station] here on the forecourt. Simply because it passes so many beautiful things.”

Results

Usability and benefits of methods

- Positive user experience throughout the interviews



Source: own pictures

*“It is a great **fun factor**, if you think about it, in comparison to normal interviews.”*

*“Yes, it's new, **but you get into it quickly**. It's amazing. [...] It's already great what you can do there. **I'm impressed**. At first I thought maybe it would be a dizziness or I would fall over [something]. But it wasn't. **So it really works.**”*

Digital Tactical Urbanism:

- Cost- and time saving alternative to physical implementation of measures
- Potential to adapt virtual environment easily
- Make future development tangible, change of perspective
- Motivation to take part in research

Conclusions

- Mobility hubs and forecourts can become places to **meet and stay if planned according to wayfinding and quality**
- ☐ **Increase usage** - „rather this station than a closer one“

But:

- **Social problems** – coexistence with people on-site ☐ how to deal with social safety related aspects at stations?
- **Maintenance, cleanliness and security**
- What is the role of public transport forecourts? Places to stay/ rest or just places to pass?

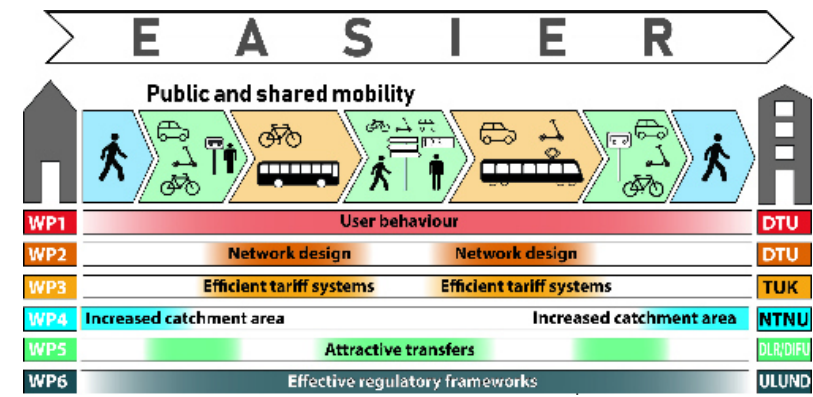
Thank you.

Heike Marquart

DLR Institute of Transport Research, Berlin, Germany

Mail: heike.marquart@dlr.de

The research is part of the project EASIER:



Project partners:



SPONSORED BY THE



Federal Ministry of Education and Research

