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Exploring Seamless and Attractive Transfers to Public Transport Stations with Digital Tactical Urbanism

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This work addresses the following topic(s) from the Call for Contributions:
(Please check at least one box)

- Placemaking to integrate urban spaces and mobility
- Promoting sustainable mobility choices in metropolitan regions
- Governing responsible mobility innovations
- Shaping the transition towards mobility justice
- System analysis, design, and evaluation
- other: _____

Extended Abstract

Problem statement

For tackling societal, health and environmental challenges, it is desirable to increase the share of people who use public transport combined with walking, cycling or shared vehicles. Thus, it is important to make transfers to and within public transport stations by foot but also by bicycle or shared vehicles attractive and seamless. To ensure that individuals actually enjoy walking, a pedestrian-friendly environment is an important precondition. However, taking public transport in urban areas can be challenging: the built environment and wayfinding outside of public transport stations often lacks consideration and needs improvements to ensure pleasant walking or cycling to the station. Previous work has shown that, for example, the design of the environment at a bus stop has an influence on the extent to which journeys to and from the stop are made on foot or by bicycle, and what distance to the stop or waiting times at stops are considered acceptable (Hillnhütter, 2016). To explore possible improvements of walking environments, Tactical Urbanism (TU) can be applied as a participatory, low-cost instrument to intervene in urban space, involving both residents and established stakeholders such as municipalities (Webb, 2018).

Research objectives

The present contribution delivers insights into an ongoing study that explores which factors are important for an attractive transfer to a public transport station by focusing on a major transport hub in Berlin, Germany: Berlin-Lichtenberg, which is a big regional train station with U-Bahn (subway), S-Bahn (urban railway) and regional train service (“Regionalbahn”) as well as buses in a densely populated area. The study aims at investigating what a public transport station’s surrounding should look like in order to attract people to walk or cycle or take shared vehicles to reach the station, specifically focusing on TU measures.

Methodological approach

The research design originally planned to implement TU measures in the forecourt of the public transport station jointly with residents, after conducting a stakeholder-workshop with municipal decision-makers. However, the stakeholder workshop has shown that such implementation faces high bureaucratic barriers: every measure needs to be justified based on mobility data. This would require a lot of time as well as access to data from mobility providers. Hence, Digital Tactical Urbanism (DTU) was established as an alternative to actual, physical TU

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measures, with which a possible redesign of the public transport station's forecourt could be made visible and explorable in a fast, efficient and immersive way. The resulting research design comprised first an online survey to explore the needs, requirements and experiences of people who use the respective public transport station. The online survey was announced by posters and floor graphics in the public transport station, newsletters, flyers and online platforms. It took place from June 2023 – September 2023. The online survey identified which characteristics and services within and outside of the public transport station are important for the respondents. Moreover, the respondent's intermodal mobility behavior and experiences of walking to/from the respective station was surveyed. Second, the results from the online survey were used as an input to build a 3D-model of TU measures, in collaboration with an architect and the DLR Earth Observation Center (EOC), Science Communication and Visualization department. The 3D TU measures were placed in four 360° pictures of the stations' surroundings. By wearing Virtual Reality glasses, the stations' actual forecourt enriched by 3D-models of interventions can be explored in an immersive way (**Figure 1**).



Figure 1: 360° picture of the Digital Tactical Urbanism measures as can be experienced when wearing Virtual Reality glasses (source: Chignola 2023, DLR / EOC / Science Communication and Visualization)

Thirdly, two workshops are planned in autumn 2023 where participants can explore the station's forecourt wearing the VR-glasses. Meanwhile, a semi-structured interview guideline is applied with which the interviewer can accompany the participant through the virtual world: a 'digital walking interview' is conducted.

(Expected) results

The results of the survey data (n=333) showed that PT users want the PT stations' surroundings to be clean and safe, with a high quality of the walking environment: features such as greenery, seating options, aesthetics, security personnel, light, toilets, drinking fountains and good shops/gastronomy were desired the most. Furthermore, the access from the station to other modes of transport (e.g. bus or sharing options) and to the neighborhoods should be short and safe. These aspects have been incorporated into the virtual reality environment: greenery and seating options have been added as well as a food truck with possible seating options. For increasing safety in the area, a place for interaction (table tennis and a boule area) has been added. Moreover, pictograms and signs to the nearest bus stop and sharing options ('Jelbi-Station') have been incorporated (**Figure 1**). The digital walking interview with the DTU measures will be applied in autumn 2023. Using DTU is specifically interesting for areas with unclear planning responsibilities or municipal authorities, who are difficult to reach (e.g. due to time/resource restrictions or different priorities). The usually long-lasting decision processes and the need to gather mobility data to argue for the implementation of physical TU measures can be overcome by applying DTU. Thus, changes in the urban environment can be made tangible, both for laypersons and for decision-makers, in a low-cost and fast way without physically engaging in the environment. Therefore, future scenarios and possible measures for an attractive public transport station's surrounding can be experienced and hence, can give an impulse for redesigning urban spaces according to the user's needs.