

# Do you plan virtually safe?

Recommendations for a VR application that enables the evaluation of the perceived safety of bicycle infrastructure for urban planners

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## Motivation

Urban planning and participation processes often prioritize laws and regulations over user experience, leading to lower acceptance and usage of completed infrastructure projects, particularly in cycling infrastructure. Evaluating completed projects is typically not included in the project scope, making it challenging to identify and address any issues and learn from them for future projects. However, the use of innovative technologies like virtual reality can help assess infrastructure measures in terms of subjective safety in a more efficient and cost-effective manner.

## Method

A requirements analysis was carried out in the form of a 6-phase, 2,5 hour workshop based on a structured guideline. Also, a demonstration of an VR application was included.  $N = 7$  experts in urban planning and citizen participation were involved in the study. The subjects were directly acquired from the city administration of Chemnitz. Participants had at least five years of working experience in the field of urban planning.

## Results – Problems in urban planning and participation processes



### No evaluation of planning and participation processes

Due to a lack of resources and skills, there is no evaluation of planning and participation processes. As a consequence, it remains unclear whether the final infrastructure project is well-received by its target audience and utilized as originally intended.



### Participation processes are often unattractive and complex

Participation processes usually reach only a small part of the population, some parts (young people, people with migration background) are rarely represented. Formats are often analogue and not citizen-centred.



### Vulnerable groups are rarely given full consideration

Vulnerable citizens, including those with mobility impairments and children, are often only considered through general regulations in infrastructure planning. Infrastructure and participation procedures are usually not tailored to local characteristics.

## Solution

We developed a VR application based on these discoveries and are currently collaborating with the city of Chemnitz to assess its effectiveness. The app is able to:

- conducting and evaluating surveys in VR
- visualizing existing infrastructure and planning views in an easy way
- considering accessibility aspects (different visual filters, perspective of wheelchair users, etc.)
- comparing different planning models
- is easy to use by planners and citizens



### Citizens

- explore content freely
- no time limit
- "Thinking aloud"
- technology is intuitive
- technology is attractive

Please rate how safe you think the presented infrastructure feature is for cyclists.



### Planner

- encourages verbalization
- is able to adjust surveys and content in an easy way
- collects feedback in an intuitive way

## Literature

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