

Assessment of pre-boarding and on-boarding information preferences

You are invited to participate in a research study entitled "**From A to B with Ease: User-Centric Interfaces for Shuttle Buses**". The purpose of this project is to research the impact of user interfaces (UIs) offering real-time updates, route guidance, and personalized notifications on the user experience of shuttle bus passengers. The study aims to enhance passengers' efficiency, convenience, and overall satisfaction using shuttle bus services by providing them with improved navigation tools and timely information. The Eindhoven University of Technology (TU/e) and the University of Stuttgart are responsible for processing your personal data within the scope of the research. The study is being conducted by Shadab Alam (m.s.@tue.nl), Prof. Marieke H. Martens, Dr. Pavlo Bazilinskyy, Department of Industrial Design, Eindhoven University of Technology, The Netherlands and Thirumanikandan Subramanian, Prof. Wolfram Remlinger, Institute for Engineering Design and Industrial Design, University of Stuttgart, Germany.

* Indicates required question

Instructions

To participate in this study, you must be at least 18 years old. Your participation in this research project does not involve any physical, legal or economic risks. Participation in this research project is voluntary: the decision to take part is up to you. Before you decide to participate, we would like to ask you to read the following information so that you know what the research project is about, what we expect from you, and how we will deal with processing your personal data. You may, of course, always contact the investigator at the above email address if you have any questions.

This research project was assessed and approved by the ethical review committee of TU/e. If you have specific questions about the handling of personal data, you can direct them to the data protection officer of TU/e by sending an email to functionarisgegevensbescherming@tue.nl. Furthermore, you have the right to file a complaint about general questions with the Dutch data protection authority: the Autoriteit Persoonsgegevens. Finally, you have the right to request access, rectification, erasure or adaptation of your data. Submit your request via privacy@tue.nl.

The information collected in the experiment is anonymous. Participants will not be personally identifiable in any research papers arising from this study. If you agree to participate and understand that your participation is voluntary, then continue. By answering "Yes" to the first question below, you acknowledge the following:

1. I am sufficiently informed about the research project through a separate information sheet. I have read the information sheet and have had the opportunity to ask questions. These questions have been answered satisfactorily.
2. I take part in this research project voluntarily. There is no explicit or implicit pressure for me to take part in this research project. It is clear to me that I can end participation in this research project at any moment without giving any reason. I do not have to answer a question if I do not wish to do so.
3. I consent for my data to be processed according to the information provided in this information letter.

1. Do you consent to participate in this study in the way that is described in the information shown above? *

Mark only one oval.

☐ Yes

☐ No

2. Have you read and understood the above instructions? *

Mark only one oval.

☐ Yes

☐ No

3. What is your gender? *

Mark only one oval.

☐ Male

☐ Female

☐ Prefer not to say

☐ Other: _____

4. What is your age? *

5. Which country are you currently in? *

Description of a shuttle bus

Now, please get familiar with the description of the **shuttle bus**, which is the object of the rest of this survey.

A shuttle bus is a type of bus that travels a shorter route compared to most regular bus routes, typically operating between two points such as airports, campuses, or tourist destinations. These buses are designed to transport groups of people efficiently and are often used to bridge the gap between major transportation hubs and final destinations.

Shuttle bus



Experience of traveling from office to shuttle bus station

In this study, you will be shown a series of scenes that simulate a journey from leaving your office to reaching the shuttle bus station. As you watch these scenes, please imagine yourself in the situation and think about how you would interact with the various features and information presented. After viewing the scenes, you will be asked to provide your preferences and feedback based on your experience.

Step 1: Departure from office

You will begin your journey by leaving the office at departure time.

Step 2: Initial screen of the mobile application

Upon accessing the mobile application, you are greeted with an initial interface that displays your current location and home address, providing familiar and relevant information.

Step 3: Route options

The application offers various route options to your residence, considering factors such as traffic conditions and estimated travel times.



Good evening.....
It's 1700 hours now.
Let's begin our journey back to home.....



Step 4: Location of an e-scooter

Once a route is selected, the application directs you to a nearby e-scooter, with its location conveniently displayed on the interface.

Step 5: Reaching the rental e-scooter

Upon reaching the rental scooter, you are prompted to unlock the device using a unique four-digit code generated by the application, streamlining the transition from virtual navigation to physical transportation.

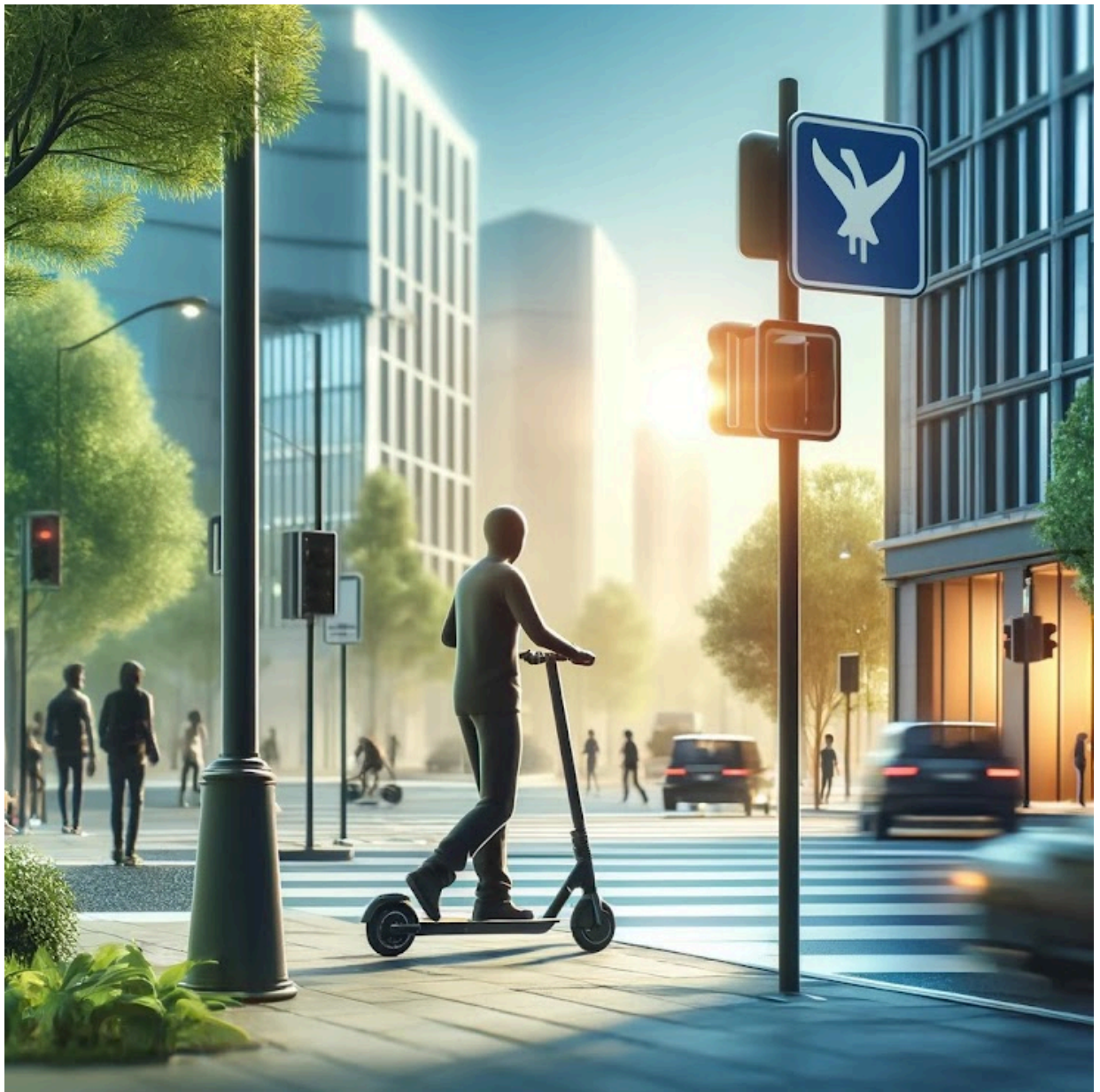
Step 6: Unlocking the e-scooter

You unlock the e-scooter and ride to the designated shuttle bus station, reflecting real-world multi-modal commuting scenarios.



6. How often do you use micro-mobility options (such as e-scooters, bicycles, or e-bikes)? *

Note: Micro-mobility refers to small, lightweight transportation solutions designed for short-distance travel, typically less than 8 km (5 miles).



Mark only one oval.

- ☐ Everyday
- ☐ 4 to 6 days a week
- ☐ 1 to 3 days a week
- ☐ Once a month to once a week
- ☐ Less than once a month
- ☐ Never

Step 7: Shuttle bus station

At the shuttle bus station, the application presents multiple shuttle bus options tailored to your preferences, whether for a quick refreshment break or a restroom visit.



7. How many times a week do you usually travel by bus? *

Mark only one oval.

- ☐ 0 times
- ☐ 1–2 times
- ☐ 3–4 times
- ☐ 5–6 times
- ☐ 7 or more times

Step 8: Shuttle bus options

The application offers a viewing assistance feature, which is particularly advantageous in unfamiliar environments where language barriers may pose challenges.

Step 9: Viewing assistance

By providing precise guidance on optimal station positioning, the application empowers you to navigate public transportation systems with confidence and ease.



Viewing assistance activated

As shown below, a green glow appears on the screen once you request viewing assistance.



8. Do you think the viewing assistance feature (shown in the image directly above) is essential for navigating new places or overcoming language barriers? *

Mark only one oval.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Neither disagree nor agree
- ☐ Agree
- ☐ Strongly agree

Step 10: Arriving at the platform at the shuttle bus station

You have successfully reached the bus platform to catch your shuttle bus.

Step 11: NFC technology for the confirmation of the shuttle bus

The application integrates Near-Field Communication (NFC) technology to enhance convenience, allowing you to confirm your chosen shuttle bus with a simple tap. This feature helps mitigate potential confusion, especially in instances where buses with identical numbers operate in the same direction.



9. Do you find the NFC necessary for navigating unfamiliar environments or overcoming language barriers? *

Mark only one oval.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Neither disagree nor agree
- ☐ Agree
- ☐ Strongly agree

Selecting information for different screens

In this section, you will be shown various scenes that simulate a journey where you need to choose the information displayed on different screens. As you view these scenes, imagine yourself in the situation, considering what information you find most useful on public displays, personal screens, and your mobile phone. You will be asked to provide your preferences for the information you want to see on each screen.

Pre-boarding experience



10. What kind of information would you prefer to receive **in a mobile application** before boarding **the shuttle bus**? The arrow in the image shows where the display is located. *

Please select all that apply.



Check all that apply.

- ☐ Route details to the shuttle bus stop
- ☐ E-ticket/boarding pass
- ☐ Real-time traffic updates
- ☐ Shuttle bus schedule
- ☐ Shuttle bus location tracking
- ☐ Departure countdown
- ☐ Accessibility routes
- ☐ Safety guidelines
- ☐ Announcements
- ☐ Local map

11. Is there any other information that you would like to be shown **in a mobile application** for boarding a shuttle bus?

12. What kind of information would you prefer to receive **on the public display** before boarding the shuttle bus? The arrow in the image shows where the display is located. *

Please select all that apply.



Check all that apply.

- ☐ Route details to the shuttle bus stop
- ☐ E-ticket/boarding pass
- ☐ Real-time traffic updates
- ☐ Shuttle bus schedule
- ☐ Shuttle bus location tracking
- ☐ Departure countdown
- ☐ Accessibility routes
- ☐ Safety guidelines
- ☐ Announcements
- ☐ Local map

13. Is there any other information that you would like to be shown **on the public display** at the shuttle bus station?

During the journey in a shuttle bus

You have access to three types of screens. The first screen is a public display visible to all passengers. The second screen is your personal display provided on the shuttle, and the third is your mobile phone screen for personal use and operation.

Note: The secondary screen provided by the shuttle bus can be integrated into your mobile phone.



14. What kind of information would you prefer to receive while travelling on the shuttle bus **on the public display** (visible to all passengers)? The arrow in the image shows where the display is located.

Please select all that apply.



Check all that apply.

- ☐ Route information
- ☐ Next stop information
- ☐ Public transportation connections
- ☐ Mobile ticketing
- ☐ Weather updates
- ☐ Safety information and protocols and emergency call option
- ☐ Messages and notifications
- ☐ Language translator
- ☐ Personalised recommendations
- ☐ Accessibility information

15. Is there any other information that you would like to be shown **on the public display** (visible to all passengers)?

16. What kind of information would you prefer to receive while travelling on the shuttle bus **on the** **secondary display** (installed at your seat in the shuttle bus)? The arrow in the image shows where the display is located.

Please select all that apply.



Check all that apply.

- ☐ Route information
- ☐ Next stop information
- ☐ Public transportation connections
- ☐ Mobile ticketing
- ☐ Weather updates
- ☐ Safety information and protocols and emergency call option
- ☐ Messages and notifications
- ☐ Language translator
- ☐ Personalised recommendations
- ☐ Accessibility information

17. Is there any other information that you would like to be shown **on the** **secondary display** (installed at your seat in the shuttle bus)?

18. What kind of information would you prefer to receive while travelling on the shuttle bus **in a mobile application**? The arrow in the image shows where the display is located. *

Please select all that apply.



Check all that apply.

- ☐ Route information
- ☐ Next stop information
- ☐ Public transportation connections
- ☐ Mobile ticketing
- ☐ Weather updates
- ☐ Safety information and protocols and emergency call option
- ☐ Messages and notifications
- ☐ Language translator
- ☐ Personalised recommendations
- ☐ Accessibility information

19. Is there any other information that you would like to be shown **in a mobile application**?

20. Would you be interested in using an application that integrates micro-mobility options with public transportation? *

Mark only one oval.

- ☐ Not at all interested
- ☐ Not interested
- ☐ Neutral
- ☐ Interested
- ☐ Very intersted

Feedback

We appreciate your participation in this study. Please provide any feedback on the questionnaire and share any additional information or features you would like to see in the shuttle bus experience.

21. Do you have any comments on this questionnaire?

22. What kind of features would you like to see during the shuttle bus experience?

Google Forms