Enhancing User Experience in Sustainable Shared Mobility Services through Guiding 3D Audio Interaction

Introduction:
The dominance of private car usage in urban travel has shaped our cities significantly. However, vehicles, once a symbol of freedom, now contribute to urban issues like congestion, noise pollution, and environmental degradation. Innovations aim to retain mobility access while reducing vehicles on roads, addressing congestion, pollution, and reclaiming urban spaces. However, emerging solutions such as autonomous vehicles and shared mobility often shift planning responsibilities to users, potentially impacting user experience, especially for individuals with disabilities. It’s vital to ensure inclusive and seamless interactions in innovative mobility services.

Project Background:
Building upon "Sonic Interaction in Intelligent Cars (SIIC)”, exploring sound’s role in enhancing user experience in automated vehicles, this project extends these concepts. Shifting focus to headphone-based 3D audio, we seek to integrate this technology into sustainable shared mobility services. The goal is to create safer, more accessible, and engaging experiences, particularly while guiding users on foot through traffic to the vehicle and from the car to their destination.

Objectives:
This project's core objective is to integrate headphone-based 3D audio technology into shared mobility services, simplifying usage and enhancing appeal. Emphasis lies on creating immersive audio environments to guide users seamlessly while walking through traffic to and from vehicles, ensuring safe and engaging navigation. The project aim is to find a generic solution for a greater population while specifically targeting visually impaired as primary users.

Challenges and Key Questions:
The primary emphasis of the project revolves around guiding users while walking through urban environments, utilizing 3D audio cues. The project will focus on the following pivotal aspects:

1. Identifying optimal scenarios for effective user guidance using 3D audio within mobility services, especially while navigating on foot through congested areas.
2. Designing intuitive and secure audio interactions to enhance the walking journey to and from vehicles, ensuring a seamless and engaging experience throughout.

Since this is an explorative field, we are open to consider alterations to this description in future discussion with potential students.