**RESEARCH INSTITUTE FOR SUSTAINABLE URBAN DEVELOPMENT (RISUD)**

**News Article for RISUD Emerging Frontier Area (EFA) Scheme**

| | | Name | Department |
|---|---|---|---|
| 1. | **Principal Investigator**: | Dr. Xintao LIU | LSGI |
| 2. | **Name of EFA:** | 3D Digital Twin for Smart Mobility | |
| 3. | **Project Title:** | Towards a Digital-twin System for Smart Mobility for People with Disabilities (PwDs) Using Multi-data Sensing and Big Data Analytics | |

4. **Annual Progress/Achievement**

**Walk this way: Visualizing accessibility and mobility in metro station areas on a 3D pedestrian network**

Accessibility and mobility are positioned differently at the heart of transportation planning – the former is defined as ease of getting to destinations or activities, whereas the latter regards the ease of travelling along transport networks. A transportation system with high accessibility will not necessarily be able to support high mobility. The importance of policy–performance translation from accessibility planning to mobility realization has been hitherto recognized. City planning enhancing accessibility or mobility would have different strategies, and therefore, a comparison of these two measurements for a system could provide a guide for policy actions.

In this work, we evaluated and visualized the accessibility and mobility of pedestrian networks around the metro station areas in Hong Kong. By using the newly released 3D pedestrian network datasets released by the Hong Kong Government (2020), we have created visualizations to compare the 500-m walking coverage area and reachable area with a 10-min walking distance that reflects the accessibility and mobility around metro station areas, respectively. The comparison highlights the need for policy actions that consider both accessibility and mobility to create a well-balanced transportation system that caters to the diverse needs of all users, including the elderly and people with disabilities. The work provides valuable insights for city planning and underscores the importance of translating accessibility planning into tangible mobility realization to achieve a more inclusive and efficient urban transportation system.

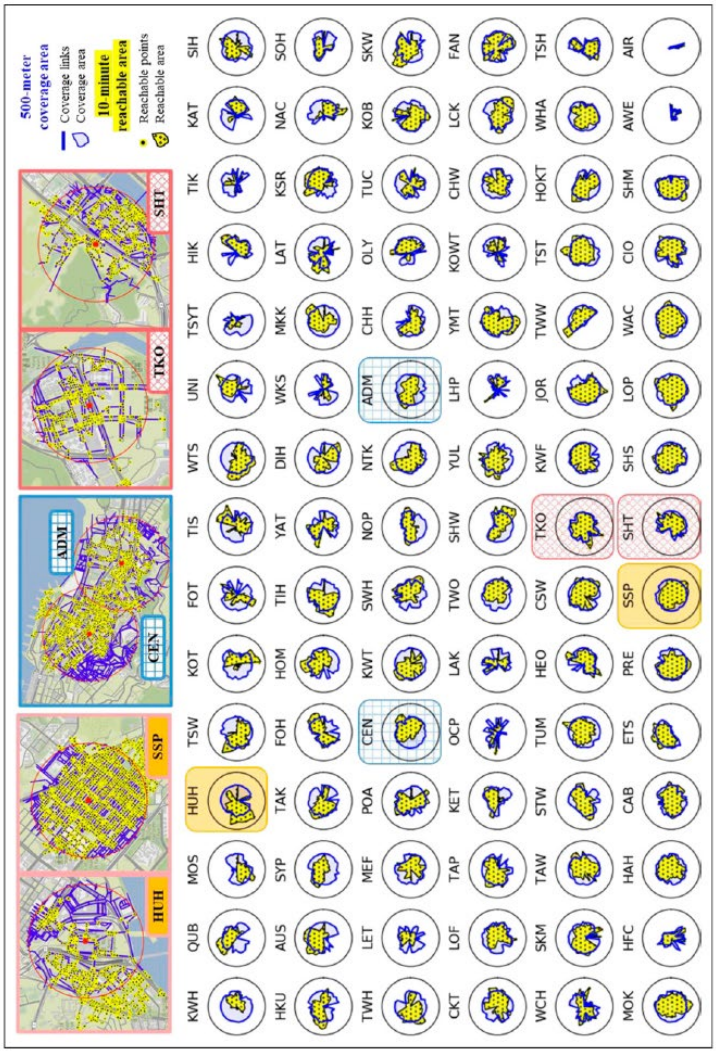


Figure 1. 500-m walking coverage versus and 10-min reachable area for 90 MTR stations in Hong Kong.

## Comprehensive multi-data sensing VGI platform

The developed platform successfully integrating the latest 3D pedestrian road network data from the Hong Kong government and voluntary geographic information (VGI) sources. This integration of diverse data sources has contributed to the creation of a comprehensive digital model for the Smart Mobility Digital Twin, providing a holistic representation of the city's urban environment. Notably, the platform includes both desktop and mobile applications (Figure 2), enabling real-time data collection and updates from anyone, promoting citizen participation and crowdsourced data contributions. This inclusive approach ensures valuable inputs from people with disabilities, capturing firsthand experiences of accessibility and mobility challenges. The platform's versatility allows handling heterogeneous data formats, including text, image, and voice data, for a comprehensive understanding of the urban environment and travel patterns. With dynamic and real-time data updates, the platform remains up-to-date and adaptable to changing urban conditions and

mobility requirements. As the project progresses, this platform will play a pivotal role in realizing the vision of a Digital Twin System for Smart Mobility, supporting personalized and adaptive solutions to enhance the travel experiences and quality of life for people with disabilities in Hong Kong.

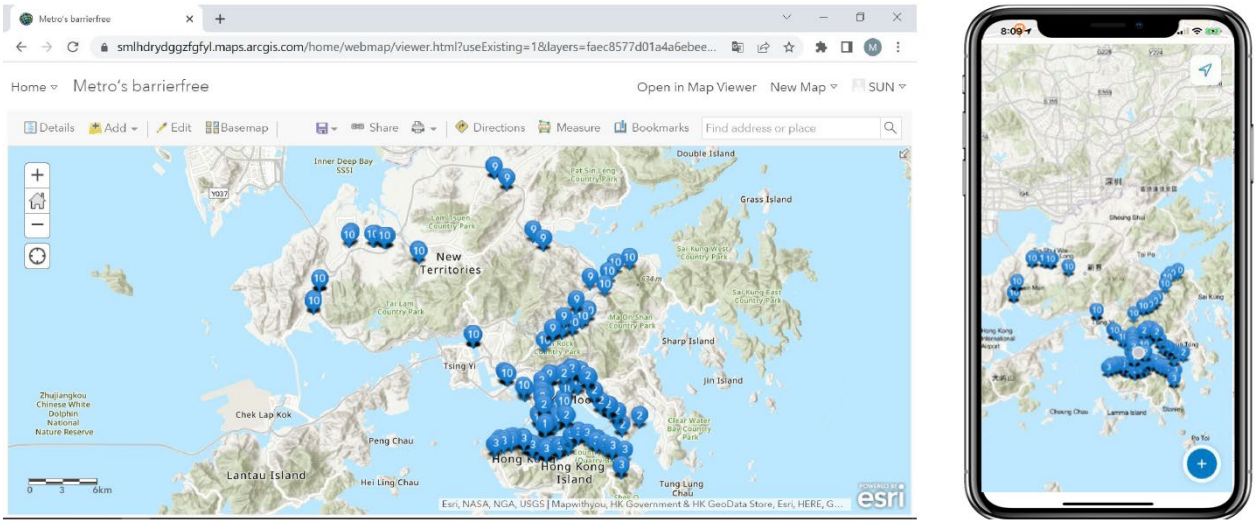


Figure 2. Open data collection platform (both desktop and mobile applications)