

## Tote Board – Enabling Lives Initiative

### Grant Call 4a: Accessibility and Mobility

#### Problem Statement

Despite advancements in assistive technology (AT) development, the environment – both virtual and physical – remains inaccessible to persons with disabilities. In addition, depending on the type of disabilities (physical, sensory or cognitive), the barriers experienced by persons with disabilities differ.

As technology advances, there are increasing opportunities to leverage on smartphones and their applications, and the Internet of Things (IoT)<sup>1</sup>, to benefit persons with disabilities. With contextual consideration and appropriate integration, innovative solutions can be developed to overcome environmental barriers and allow persons with disabilities to be able to travel independently, or access to information in the virtual environment.

This grant call seeks to support projects that will improve the accessibility of the physical and virtual environments to provide persons with disabilities with a higher level of independence and empowerment to navigate both spaces.

#### Challenges

Persons with disabilities face multiple challenges in their daily lives with regard to accessibility and mobility. While there are existing AT devices and accessible infrastructure to support persons with disabilities, there are still gaps to be filled to help persons with disabilities get around with greater ease and confidence. These gaps include, but are not limited to, the following:

- Lack of accessibility
- Lack of information
- Lack of feedback

#### Lack of accessibility

Persons with disabilities require documents to be accessible at work and in school. While employers and lecturers are encouraged (but not obliged) to provide accessible materials, in many instances, they may not do so. The onus falls on persons with disabilities to rely on their own assistive technology devices and workarounds to access the materials. Access to real time information is another barrier that persons with disabilities have to overcome on a daily basis.

Category	Accessibility Issue
Lectures/Presentations	<ul style="list-style-type: none"><li>• How can I make sure that I get what is presented?</li><li>• How can I take notes during the meeting/class and review them at a later time efficiently?</li></ul>

<sup>1</sup>“General idea of things, especially everyday objects that are readable, recognisable, locatable, addressable, and/or controllable via the Internet, irrespective of the communication means.”

<https://www.ida.gov.sg/~media/Files/Infocomm%20Landscape/Technology/TechnologyRoadmap/InternetOfThings.pdf>

	<ul style="list-style-type: none"> <li>• How can I communicate efficiently with other members/participants?</li> <li>• How can I easily get other participants to help me to understand the lectures/presentations?</li> </ul>
Group discussion/Meetings	How can I ensure that I can capture what is being discussed?
Searching for online information	How can I easily access web content that are not compliant with Web Content Accessibility Guidelines?

### Lack of information

Planning is an important aspect of a person with disabilities' travel. Persons with disabilities need to be assured that the places that they are travelling to have reasonable accommodations to meet their needs. In addition, they would need to make sure that there is a way to travel to and navigate around the destination. Without sufficient, relevant and accurate information, they may not have the confidence to make the trip.

Category	Type of Information
Information on the destination	<ul style="list-style-type: none"> <li>• How can I get accurate information on accessibility features at the place that I am travelling to?</li> <li>• How can I understand the layout of the place or get help/information so that I can get around easily when I arrive?</li> <li>• How can I be updated on the changes to the environment upon arrival? (E.g., area under construction or new barriers)</li> </ul>
Route planning	<ul style="list-style-type: none"> <li>• Where can I get to a disability-friendly crossing?</li> <li>• How can I plan an accessible and cost-effective route to the destination?</li> </ul>

### Lack of feedback

Persons with disabilities rely on instantaneous feedback to help them navigate and overcome unforeseen changes on their regular route to work or school. These changes could be areas cordoned off for works, damaged accessibility features etc. Without sufficient notice, these changes would disrupt their travel routine. Feedback can be haptic, aural or visual.

Category	Type of Feedback
Using pedestrian crossing	<ul style="list-style-type: none"> <li>• How can I cross the road safely?</li> <li>• How can I be alerted to danger heading my way?</li> </ul>
Public announcements	<ul style="list-style-type: none"> <li>• How can I make sure that I can receive the public announcements?</li> <li>• How can I be alerted to a need for emergency evacuation?</li> <li>• How can I be informed about the various emergency routes?</li> </ul>
Navigation	<ul style="list-style-type: none"> <li>• How can I make sure that I am still on the correct route to my destination?</li> <li>• How can I orientate myself and get around after I reach my destination?</li> </ul>
Taking public transport	<ul style="list-style-type: none"> <li>• How do I know when my bus is arriving at the bus-stop?</li> <li>• How do I know that I am arriving at my destination?</li> </ul>
Tracking	<ul style="list-style-type: none"> <li>• How can I make sure that my caregivers know where I am in case I need help?</li> </ul>

## Considerations

Applicants are welcome to submit proposals that address one or more of the needs highlighted in the previous section. Do consider the following when you are conceptualizing your project:

- Strive for universal design to enhance mobility and accessibility for everyone;
- Persons with different disabilities have different needs. It is acceptable that no single solution is able to meet all the different needs; and
- Focus on developing solutions that meet the needs of persons with disabilities in their daily living.