

Background

The NSW Small Business Innovation & Research (SBIR) program is an initiative of the NSW Government that provides competitive grants to small and medium-sized enterprises (SMEs) to find and commercialise innovative solutions to well-defined problems for NSW Government agencies. Further information about the SBIR program is available on the Office of the NSW Chief Scientist & Engineer website. This document sets out the Hyperlocal Navigation Challenge for the 2021 SBIR program.

Challenge summary

Transport for NSW is seeking hyperlocal navigational technology solutions to assist customers with vision impairment using the public transport network.

Technology solutions might include, but are not limited to:

- Bluetooth beacons, Wi-Fi access points or other technologies to provide hyperlocal data in real time of station features and allow it to be provided in context to a user's location
- Data visualisation for service disruptions, station works and platform changes, LiDAR or similar technologies to create accurate maps of stations to effectively and safely guide customers.

Overview of challenge

Navigation in and around public transport facilities and during journeys can be challenging for customers with accessibility needs, particularly those with vision impairment. Signage currently provides navigational information for customers with little information provided to customers with vision impairment. Some tools such as audible signage have previously been trialled. The Australian Disability Standards for Accessible Public Transport 2002 (DSAPT) set out minimum accessibility requirements for public transport providers and ensure that people with a disability have equivalent access to public transport services.

To assist customers with impaired vision and other accessibility needs, we need technology solutions to help them navigate stations and access services, including where service disruptions, platform changes and construction works occur. This challenge addresses the need for accessibility and equality of customer information in real time, via open data, customer-facing apps and digital products.

Solution requirements

The solution should deliver cost-effective technology for the highly accurate location of customers, facilities and obstacles within public transport interchanges, as well as wayfinding and information – sharing services to help customers with visual impairments to navigate the public transport network.

Proposals must:

- demonstrate the scientific basis of the technology to address the problem
- demonstrate that the technology:
 - can reliably identify customer location (ideally within 30cm)
 - if necessary, can effectively use existing infrastructure and data (such as CCTV)
 - integrates highly accurate maps and wayfinding capabilities

- integrates other information relevant to customers such as service disruptions, platform changes and construction works
- can communicate information to customers with visual impairment
- is cost-effective and scalable
- is highly automated, requiring little to no human input
- produces reliable, repeatable and consistent results.
- consider how data that is created from the project will pass a Privacy Impact Assessment for publication on the Transport for NSW Open Data Hub
- deliver sharable, reliable and useful data.

This challenge is agnostic to the type of technology used and is seeking the most effective and efficient technology and methodology. Applicants may propose a single technology or device, or a suite of integrated technologies and devices.

Proposed solutions that can also be used by non-English speaking customers will be highly regarded.

Benefits of the solution

Visual impairment is common. In 2010, the World Health Organisation reported that 285 million people have moderate or severe visual impairments, of whom 39 million are blind. The Australian Disability Standards for Accessible Public Transport 2002 (DSAPT) requires public transport providers to ensure that people with a disability have equivalent access to public transport services – this includes signage and information that is available on display. Similar standards exist in other countries.

Products and services that assist people with visual impairments to access public transport services are essential to ensure equal and safe access. While the solution may be applied initially to major interchanges in the Transport for NSW network, the technology could be applied to numerous other public and private buildings, and environments in Australia and overseas.

The solutions could also be applied to other tangential business cases, further expanding the total addressable market. For example, aggregated analysis of user movements and congregation for service optimisation or emergency requests with accurate location information in enclosed environments.

How to apply

For more information please visit www.chiefscientist.nsw.gov.au/sbir