NSW SBIR 2022

School Zones Alerting System Challenge

2022 NSW Small Business Innovation & Research program

Background

The NSW Small Business Innovation and Research (SBIR) program is a NSW Government initiative that provides competitive grants to small and medium-sized enterprises (SMEs) to find and commercialise innovative solutions to well-defined challenges identified by NSW Government agencies. This document sets out the School Zones Alerting System Challenge for the 2022 SBIR Program.

Challenge summary

Transport for NSW (TfNSW) is seeking innovative solutions to improve the existing School Zones Alerting System (SZAS) to further improve road safety around schools.

Technology solutions might include, but are not limited to:

- A novel Sign Controller that can standardise all types of signs and integrate to new wireless telecommunications offerings including 4G/5G and LEO Satellite connectivity solutions network
- An advanced software management system that can provide more backend functionality for remote diagnostics, control and management features, including asset maintenance and management, real-time data gathering and analytics from local infrastructure with sensors and opportunities to develop an integrated Internet of Things platform that is scalable to expand safety use cases in school zones.

Challenge details

The SZAS controls the school zone flashing lights to alert motorists to slow down when they approach a 40 km/h school zone. This is a critical road safety measure to improve the safety of children around school zone, and its incorrect operation could result in safety risks. NSW's SZAS has been in operation since 2011 and comprises over 6800 operational devices distributed across the state.

The current system has some challenges and opportunities for improvement:

- There are 12 types of school signs available from suppliers and there is a need for a new 'sign controller' that is interoperable with all types of school signs
- Technology has been in operation for more than 10 years in most cases and obtaining electronic spares is challenging when aging assets reach their end-of-life
- There are opportunities to improve functionality and features such as remote diagnostics, management, and configuration
- The system must be compatible with new wireless telecommunications systems, including 4G, 5G and LEO Satellite connectivity solutions

Solution requirements

The solutions should deliver cost-effective technologies or methodologies to improve the existing SZAS.

Proposals must:

- Demonstrate the scientific basis of the technology to address the problem
- Demonstrate that the technology could meet below requirements:
    - Design and provide an Edge controller to function as a new sign controller, which can:
        - be used to standardise all existing sign types (12 types and four suppliers)
        - incorporate a 4G/5G/satellite modem for network integration
        - provide onsite and backend diagnostics
        - consolidate the current configuration of multiple hardware modules onto one design (including modem) to reduce maintenance costs, repair time and cost of ownership
    - From reviewing current Central Management Computer (CMC) system, design and deliver a new management software solution that can:
        - provide more back-end functionality, including being able to set, configure and diagnose the signs remotely
        - meet TfNSW cybersecurity and operational technology requirements
        - be incorporated within the TfNSW transport operational technology ecosystem, allowing for further integration of other network assets and opening the data to other TfNSW stakeholders.

This challenge is agnostic to the type of technology used and is seeking the most effective and efficient ways to improve the CMC systems for SZAS.

Applicants may propose a single technology or device, or an integrated suite of technologies and devices.

Benefits of the solution

The solution will have an immediate market to upgrade over 6,800 TfNSW school sign assets if proven technically and commercially viable. This could also be applied more widely across TfNSW operational technology applications for other asset types. The sign controller and software management system could be designed to allow for multi-use with different end assets such as various speed zones, alerting systems and dynamic sign applications by TfNSW.

This technology also has broader applications for dynamic signage, such as fire danger, flooding warning and roadwork signage, which requires the ability to monitor conditions and adjust remotely, in addition to the assistance remote diagnostics could offer. This technology could also have wider potential outside NSW for other transport agencies facing similar challenges with their school zone alerting systems and dynamic signage.

How to apply

Applications to the NSW 2022 SBIR Program will be made through the smartygrants platform, online applications forms can be found at https://chiefscientist.smartygrants.com.au/SBIR2022Round.

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