

in partnership with

 

Second Call for Expressions of Interest

To Participate

Satellite-Based Augmentation System (SBAS) Testbed

Demonstrator Projects

September 2017

**Objective**

The Cooperative Research Centre for Spatial Information (CRCSI) is seeking Expressions of Interest from organisations operating in Australia and New Zealand and wishing to be involved in demonstrating the benefits of a satellite based augmentation system (SBAS) for delivering accurate, real-time position information. The objective of the demonstrator projects is to identify and quantify the benefits of SBAS technology to inform future Australian and New Zealand Government policy decisions.

In April 2017, the CRCSI received 65 EOI submissions from the first call from a wide range of sectors. Several gaps have been identified and we are seeking projects in specific sectors for the second call. **Submissions from the following sectors are: agriculture (horticulture), construction, consumer, resources and utilities.** Proposals received from the aviation, road, rail and maritime sectors will not be considered. Submissions by multiple agencies, research institutions and private companies are encouraged.

The first phase of the SBAS Testbed Project will be submission of expressions of interest from which shortlisted proponents will be asked to develop more detailed and costed proposals. The demonstrator projects from the second call are expected to run in the period late 2017 to January 2019.

**Closing Date**

Interested parties are asked to register their expression of interest in conducting an SBAS testbed demonstrator project with CRCSI (jmitchell@crcsi.com.au) by Friday September 29th 2017, by submission of a 3-5 page summary using the attached template.

Further detail on the EOI process can be found at [www.crcsi.com.au/sbas](http://www.crcsi.com.au/sbas). For details about the SBAS testbed visit the Geoscience Australia website [www.ga.gov.au/scientific-topics/positioning-navigation/positioning-for-the-future/satellite-based-augmentation-system](http://www.ga.gov.au/scientific-topics/positioning-navigation/positioning-for-the-future/satellite-based-augmentation-system)

##### OVERVIEW

### background

The Australian and New Zealand Governments have jointly invested in a two-year program to evaluate future positioning technology options. A collaborative project, being jointly run by Geoscience Australia (GA), Land Information New Zealand (LINZ), and the Australia and New Zealand Cooperative Research Centre for Spatial Information (CRCSI) will deploy a Satellite-Based Augmentation System (SBAS) to evaluate benefits across a range of industry sectors. SBAS utilises a combination of space and ground-based infrastructure to improve the accuracy, integrity and availability of basic Global Navigation Satellite System (GNSS) signals, such as those currently provided by the Global Positioning System (GPS).

Successful SBAS testbed demonstrators will evaluate the applications and benefits of SBAS technology that could provide future safety, productivity, efficiency and environmental gains across a range of industry sectors including, but not limited to, agriculture, aviation, construction, resources, maritime, rail, road, spatial, utilities and consumer. Contestable funding is available to assist projects successfully demonstrate the use of the SBAS services and identify the benefits accruing from them.

The SBAS test bed will provide access for demonstration purposes to the following signals:

1. SBAS L1 Legacy: A positioning service equivalent to what is currently provided by EGNOS in Europe and WAAS in the USA, but without certification for aviation use. Achievable accuracy will be in the sub-metre range.
2. SBAS L1/L5 Dual-Frequency Multi-Constellation (DFMC): A new dual-frequency service integrating data from both GPS and Galileo. The use of more satellites in the solution improves system performance, while employing both the L1 and L5 frequencies allows enhanced mitigation of ionospheric errors. No other SBAS in the world is currently offering the DFMC option. Achievable accuracy will be in the sub-metre range.
3. Precise Point Positioning (PPP): Offering navigation corrections where decimetre level accuracy at user level is expected after solution convergence.

Where necessary, demonstrator teams will be provided with equipment and technical support to undertake the demonstrator projects. The exact equipment needed will depend on the type of signal being tested:

1. For L1 Legacy signal testing an L1 SBAS DO-229D compatible receiver able to receive SBAS Message Type 0.
2. For DFMC and PPP testing a dual frequency L1/L5 receiver will be required that is able to receive and decode the DFMC and PPP messages on the L5 frequency, along with a laptop/tablet running GMV field software.

If such receiver is not available, then an additional frontend along with a software receiver will be required to capture and decode these signals. The software receiver will also be running on the supplied laptop/tablet and will be feeding in the correction data into the GMV field software.

Technical specifications that describe the hardware requirements can be downloaded from [www.crcsi.com.au/sbas/](http://www.crcsi.com.au/sbas/)

### Objectives of the Call for Expressions of Interest

This Call for Expression of Interest (EOI) aims to identify individuals and groups interested in demonstrating the use of SBAS technology in their industry. This EOI call also includes projects that inform the technical requirements of a future operational system. Responses to the EOI will help to:

* Shortlist projects so that more detailed and costed proposals can be developed
* Ensure a spread of demonstrators across different industry sectors
* Ensure demonstrators consider both the common and unique aspects of the Australian and New Zealand sectors
* Refine proposals to ensure that the benefits can be clearly captured
* Consolidate smaller and/or similar proposals
* Plan and schedule demonstrators to ensure availability of hardware and technical support

### Project Requirements & Evaluation Criteria

Expression of Interest submitted in response to this call will be evaluated against the following criteria:

* Strong alignment with the objective of the SBAS testbed (i.e. to identify benefits of SBAS technology to inform future Australian and New Zealand Government policy decisions)
* Degree of innovation in the application of the SBAS testbed technology offerings
* Timely demonstration and quantitative evidence of benefits
* Scalability of the proposed demonstration across the sector
* Potential transferability of application and benefits to other sectors
* Quality, expertise, breadth and track-record of the project team
* The identification and pursuit of novel research questions
* Realistic timeframe and budget
* Level of co-contribution

### EOI and Application Process & Timeline

The process for evaluating Expressions of Interest and subsequently seeking full project proposals will include the following steps:

1 Sep 2017 Second Call for Expressions of Interest released

29 Sep 2017 Proponents submit EOI to CRCSI (jmitchell@crcsi.com.au) by 5:00 pm AEST through submission of a 3-5 page summary (see attached template)

Oct 2017 Responses will be reviewed and ranked by an expert Panel based on the above criteria. Consultation with highly ranked project teams to refine details and potentially bring some teams together. Successful proponents invited to submit full proposals.

Nov-Dec 2017 Full proposal assessed

Dec 17 – Jan 18 Successful projects notified and invited to proceed. Contracts put in place and projects commence.

### Example Demonstrator Areas

Below is a list of sample projects, provided for illustration purposes only. The list is not exhaustive and is not intended to limit responses.

|  |  |
| --- | --- |
| **Sector** | **Example areas** |
| Agriculture | Precision machinery monitoring, spray applications, fertilising, top dressing, and yield mapping. |
| Aviation | Drone applications (beyond LOS), precision landing and navigation to land (Performance Based Navigation), data (e.g. image/LiDAR) acquisition, |
| Construction | Building Information Management (BIM), precision guidance, drone applications. |
| Maritime | Boat tracking, navigation, under-keel clearance, cable protection zones/exclusion areas, compliance of fisheries/parks. |
| Utilities | Drone asset management and inspection, electrical network synchronisation, |
| Spatial | Underground Services, people movement and pedestrian navigation, enhanced search and rescue, mapping. |
| Resources | Resource Supply Chain, exploration, mine operations tracking (signal integrity). |
| Rail | Management systems, rail line mapping and integrity monitoring, vehicle tracking. |
| Road | Autonomous cars, connected cars, vehicle tracking, asset and road furniture management, traffic flow monitoring, tolling (off-road), truck/fleet management, urban canyon/multipath effects comparison, route planning and turn-by-turn instructions based on GNSS positioning. |
| Consumer | Geo marketing and advertising, Mobile workforce management and tracking, Sport and well-being tracking, Games and gaming. |

**Enter project title**

**SBAS Expression of Interest Proposal**

Please limit your summary to five pages.

**Please direct responses to, or questions about, this call for Expressions of Interest to:**

Julia Mitchell

SBAS Testbed Program Manager

CRC for Spatial Information

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# **Project overview[[1]](#footnote-1)**

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| --- | --- | --- | --- | --- | --- | --- |
| **Project Leader(s)** | |  | | | | |
| **Project Title** | |  | | | | |
| **Industry Sector(s)** | |  | | | | |
| **Start Date** | |  | | | **Finish date** | |
| **Project partners** | | Confirmed | | | Desired | |
|  | | |  | |
| **Project summary** | | | | | | |
|  | | | | | | |
| **Rationale** | | | | | | |
|  | | | | | | |
| **Approach** | | | | | | |
|  | | | | | | |
| **Outputs** | | | | | | |
|  | | | | | | |
| **Benefits** | | | | | | |
|  | | | | | | |
| **Indicative Budget (total)** | **Request (cash)** | | **Partner support**  **(cash)** | **Partner support**  **(staff in-kind)** | | **Partner support**  **(other in-kind)** |
| **$ 0** | $ 0 | | $ 0 | 0 FTE | | $ 0 |

**Guide to Completing the Expression of Interest**

**Project Leader(s)**

Name the project leader or leaders who will be responsible for managing and executing the project. Include a one-page Curriculum Vitae for each project leader, emphasising track record in successfully conducting collaborative technology projects.

**Project Title**

Provide a succinct and descriptive title for the project.

**Industry Sector(s)**

Identify which of the following target sectors will be the focus of the project: Agriculture; Construction; Utilities; Resources; Consumer.

**Start Date / Finish date**

Provide estimates of the project start (not before December 2017) and end (no later than January 2019) dates.

**Project partners**

List theConfirmed or Desired project partners, including the lead organisation. Multi-partner, cross-sectoral collaboration is encouraged. These can include: companies, industry organisations, community sector organisations, local governments, state and territory governments, research bodies, statutory authorities or government enterprises, Regional Development Authorities or Regional Organisations of Councils.

**Project summary**

Provide a plain language summary of what the project is about and what it will achieve.

**Rationale**

Provide background and justification for the project, including its objectives.

**Approach**

Outline the planned approach, including equipment needs, field trials, team contributions and research questions to be addressed. Provide detail regarding the positioning methods you currently use in your specific application and the accuracy required.

**Outputs**

Detail the planned outputs resulting from the project.

**Benefits**

List expected social, environmental and economic benefits resulting from the availability of SBAS technology. Explain how these benefits will be measured.

**Financials**

Describe the overall budget request, including in-kind and cash contributions from participants. Please note this information must be provided for our evaluation panel to review your submission.

1. See attached Guide to Completing the Expression of Interest [↑](#footnote-ref-1)