Overview of the Australian and New Zealand SBAS Testbed

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SUMMARY

Australia and New Zealand are conducting a two year Satellite Based Augmentation System (SBAS) testbed trial in order to assess the use of the technology in the region and put forth a benefits case for the governments of the respective countries for a permanent system. SBAS is a mature technology that allows instantaneous sub-metre positioning by augmenting GNSS signals with additional orbit and clock corrections via a geostationary communications satellite. Apart from the accuracy improvements, SBAS also comes with an integrity message informing the users of the quality of the position.

Cooperative Research Centre for Spatial Information (CRCSI) along with Geoscience Australia (GA) and Land Information New Zealand (LINZ) are coordinating over 30 projects across various industry sectors such as aviation, agriculture, road, rail, maritime, construction, utilities, resources, spatial and consumer. SBAS was designed and is generally operated as an aviation technology but in this testbed we really want to go beyond the aviation sector and explore the suitability of SBAS for other current and future applications, such as automated vehicles.

Apart from a traditional single-frequency L1 SBAS, two more services are being trialled during the course of the testbed. The first is a second generation Dual-Frequency Multi-Constellation (DFMC) SBAS. Compared to L1 SBAS, DFMC has a number of advantages including significantly less ground infrastructure to produce the same level of service, improved positioning in difficult environments by having access to more satellite constellations and the use of dual frequency to mitigate the effects of the ionosphere. This testbed is the world's first test of DFMC technology.

Finally a Precise Point Positioning (PPP) service is also being tested, which allows to achieve decimetre positioning accuracies after a period of convergence.

This paper will provide the overview of the testbed and the demonstrator projects that are being conducted.