

A Next Generation Datum for Australia

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ABSTRACT

Within the coming decade it is anticipated that Global Navigation Satellite System (GNSS) technology will be capable of providing pseudorange-based positioning services with an uncertainty (1-sigma) of 3 cm (open sky) and 15 cm (tree covered) while carrier-phase positioning services supported by GNSS ground networks with an inter-station spacing of 100-200 km should achieve uncertainties of 1-2 cm in real time. These capabilities will improve business processes and national productivity but are also likely to encourage spatial-data collection by a broad community of users, including those without strong spatial expertise. From a spatial-data management perspective, a challenge will emerge in that these new global services will support positioning in the International Terrestrial Reference Frame (ITRF), which is a dynamic and time dependent coordinate system, and not directly in any individual national datum, including the Geocentric Datum of Australia 1994 (GDA94). GDA94, established in the 1990s, has relatively poor internal accuracy, weak linkages to the ITRF, and is held static at an epoch date nearly two decades ago. Recognising that GDA94 will be incompatible with these future positioning capabilities and that the national datum will need to directly serve a wider community of users, the Intergovernmental Committee on Surveying and Mapping (ICSM) - Permanent Committee for Geodesy (PCG) in collaboration with the Cooperative Research Centre for Spatial Information (CRCSI) is currently examining options for revision of the datum. This presentation gives an overview of the drivers for further developing Australia's datum, initial concepts and indicative timeframes for implementation.

KEYWORDS: Datum, geocentric, Australia, ITRF, GDA94.