Australian Government

Department of Industry, Innovation, Science, Research and Tertiary Education

GNSS Activity in Australia

Space Policy Unit

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Space Activity Coordination in Australia

- Responsibilities for civil space activity in Australia are spread across a number of organisations, including: Geoscience Australia, the Bureau of Meteorology and the CSIRO (research organisation).
- The role of the Space Policy Unit (within the Department of Industry, Innovation, Science, Research & Tertiary Education) is to coordinate civil space activities across Government.
- The current focus of the work of the Space Policy Unit has been the development of a national space policy for Australia, including the better utilisation of GNSS.
- GNSS matters are dealt with by both Federal and State governments in Australia, with significant involvement from academic and research organisations.

Development of national space policy

- The development of a national space policy recognises Australia's dependence on space-based systems for our ongoing social and economic wellbeing
- In 2011, the Australian Government's *Principles for a National Space Industry Policy* were released to provide a framework for the development of the national space policy
- The policy is likely to be titled *Australia's Satellite Utilisation Policy*. It is expected to be publicly released in early 2013.
- A key element of the policy is the development of a *National Positioning Infrastructure (NPI) Plan* to fully realise the benefits of GNSS and PNT applications
- Position, Navigation and Timing (PNT) applications are considered a key space-related contributor to Australia's economic prosperity.

Principles for a National Space Industry Policy

- Focus on space applications of national significance
- Assure access to space capability
- Strengthen and increase international cooperation
- Contribute to a stable space environment
- Improve domestic coordination
- Support innovation, science and skills development
- Protect and enhance national security and economic well-being

Further information on the Principles and the development of Australia's national space policy can be found at www.space.gov.au

Importance of GNSS to Australia

- Australia has a large land-mass (7,617,930km^2), with extensive maritime responsibilities, and a relatively small population (23m, 2.8 people per km^2), which is highly urbanised (89% of population).
  - Exacerbating transport and infrastructure issues/costs
  - Requiring appropriate environmental management

- The Australian economy has a significant focus on Mining and Agriculture, with these two sectors contributing 10% of GDP and providing over 50% of exports.

- PNT applications and the sophisticated use of GNSS data is integral to addressing the challenges of the Australian environment. GNSS allows us to ‘do things smarter’, meeting the perpetual need to improve productivity and adapt to changing circumstances.

Economic Benefits of Precision GNSS

- Agriculture: use of GNSS machine guidance in grain cropping and to a lesser extent in the sugar, cotton and horticultural sectors. Main applications in controlled-traffic farming and inter-row sowing.
  - Improvement in yields and reductions in operating costs
  - Only 30% of grain crops using GNSS and less than 15% using precision GNSS, significant potential for growth

- Construction: GNSS machine guidance and surveying increasingly crucial to civil engineering activities. Significant time savings and reductions in costs, as well as increasing on-site safety.

- Mining: precision GNSS used for a variety of tasks including surveying, grading, dozing, drilling, collision avoidance, and fleet management.
  - Productivity increases of as much as 30% by adopting RTK-GNSS
  - Rio Tinto ‘mine of the future’

National Positioning Infrastructure Plan

- The National Positioning Infrastructure (NPI) Plan is a draft internal government document which identifies how to improve Australia's positioning infrastructure.

- The NPI Plan recognises the need for a coordinated strategy to better utilise the benefits of GNSS and deliver reliable, fit-for-purpose positioning across Australia.

- The development of an NPI Plan for Australia has been driven by identified needs for,
  - Enhanced coordination and cooperation across the positioning sector, focused on mitigating barriers to the use of precise GNSS information
  - A focused approach to capability development through appropriate investment in required infrastructure
  - Cooperation on standards to enhance interoperability and sustainability
  - Acknowledgement of the limitations of GNSS-based positioning

National Positioning Infrastructure Plan

- The NPI considers leveraging existing Federal and State positioning infrastructure, as well as networks operated by the private sector. Additional capability, both in technology and infrastructure, would also be required in the development of the NPI to extend it to all areas of Australia.

- Key aspects of a possible national infrastructure may include,
  - A uniform network of GNSS ground stations, providing a national framework for State & Territory systems
  - Harmonised data analysis capabilities, underpinned by effective communications infrastructure
  - Endorsed standards
  - Diversification of GNSS sources beyond GPS

Ongoing GNSS Activity in Australia

- The next steps for the NPI will be focused on refining the draft document and creating appropriate governance structures across Federal and State governments.
- Australia's expertise in GNSS and PNT applications will continued to be encouraged, with Australia's location near the 'GNSS hotspot' seen as an opportunity to be at the forefront of the development of multi-GNSS applications.
- Australia will continue to host ground stations for GNSS constellations and will endeavour to maintain spectrum certainty for these operations.
- The importance of GNSS and its role in supporting critical infrastructure is being recognised. Prompting consideration of the vulnerabilities of GNSS and how they can be addressed.

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