

International Member Regional Update Australia

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Satellite Utilisation Policy

- National satellite utilisation policy outlines Australia's space aims and capabilities;
- Aims to ensure ongoing, cost effective access to space capabilities for Australia;
- Called for Infrastructure Plans for Earth Observation and for PNT.



(Source: Andrews for Space Coordination Office, IGNSS 2013)

State of Space Report

- 2014 Report covers implementation of the Australian Satellite Utilisation Policy with its 7 Principles;
- Contributions by Australian Government agencies involved in civilian space activities that make up the Space Coordination Committee (SCC), which is overseen by Department of Industry's Space Coordination Office;
- Other members include:
 - The Australian Communications and Media Authority;
 - Attorney-General's Department;
 - The Bureau of Meteorology;
 - Commonwealth Scientific and Industrial Research Organisation (CSIRO);
 - Department of Communications;
 - Department of Foreign Affairs and Trade;
 - Department of Infrastructure and Regional Development;
 - Geoscience Australia.



(Source: State of Space Report - www.space.gov.au)

State of Space Report ~ PNT Topics

- Department of Foreign Affairs and Trade progressing Transparency, Oversight and Compliance (TOC) regime, which aims to create a regulatory framework for ground based civil space infrastructure (relevant to hosting of GNSS Monitor Stations);
- Australian Communications and Media Authority spectrum review an opportunity to go beyond GPS spectrum protection and potentially extend to Multi-GNSS;
- The Space Coordination Office and Attorney-General's Department established a Space Community of Interest (CoI) in the Trusted Information Sharing Network (TISN) for Critical Infrastructure Resilience (relevant to recognition of GNSS role in Critical Infrastructure);
- Geoscience Australia continuing to develop National Positioning Infrastructure.
- The Bureau of Meteorology is working with Geoscience Australia to improve latencies in analysis of CORS data for atmospheric meteorological applications;
- Many PNT related developments across Aviation, Rail, Road and Maritime Transport.

Space Community of Interest



TISN
FOR CRITICAL INFRASTRUCTURE
RESILIENCE

Attorney-General

Critical Infrastructure Advisory Council (CIAC)

Sector Groups

Expert Advisory Groups

Banking & Finance
(AGD)

Health
(DoH)

Food & Grocery
(DoA)

Transport
(DIRD)

Resilience
(AGD)

Communications
(DoC)

Water Services
(AGD)

Energy
(DoI)

Space Community
of Interest
(DoI)

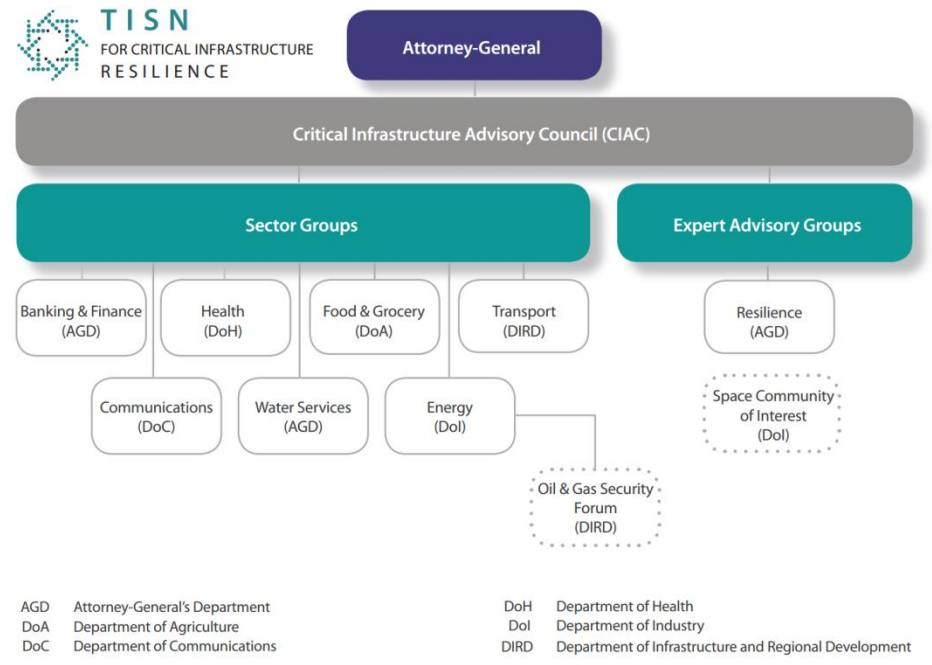
Oil & Gas Security
Forum
(DIRD)

AGD Attorney-General's Department
DoA Department of Agriculture
DoC Department of Communications

DoH Department of Health
DoI Department of Industry
DIRD Department of Infrastructure and Regional Development

Space Community of Interest

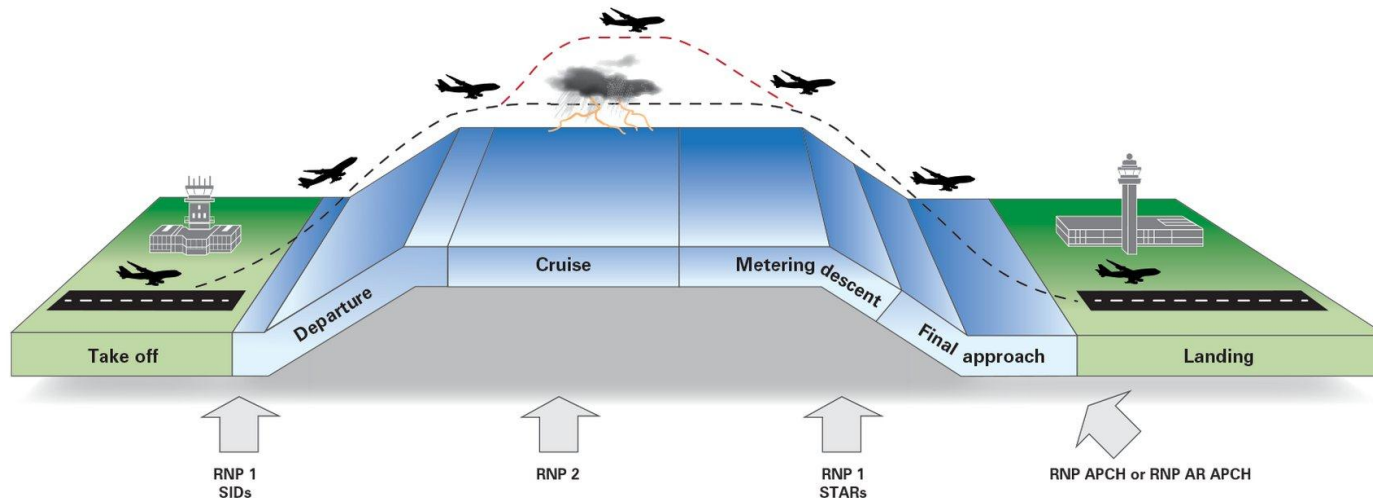
- The Space Community of Interest (SCoI) has been formed to recognise the essential services provided by space-based systems and technologies, and the potential impacts across all critical infrastructure sectors from a major disruption to these systems;
- The SCoI is developing a comprehensive risk matrix based on the ISO 31000 standard;
- The matrix is to examine the three key satellite information areas of focus (Communications, Earth Observation and PNT) to identify the links to other critical Australian infrastructure and the likely impact of loss of space-related facilities;
- The risk matrix is expected to be completed early in 2015.



(Source: Space Coordination Office and Australian Attorney General's Department)

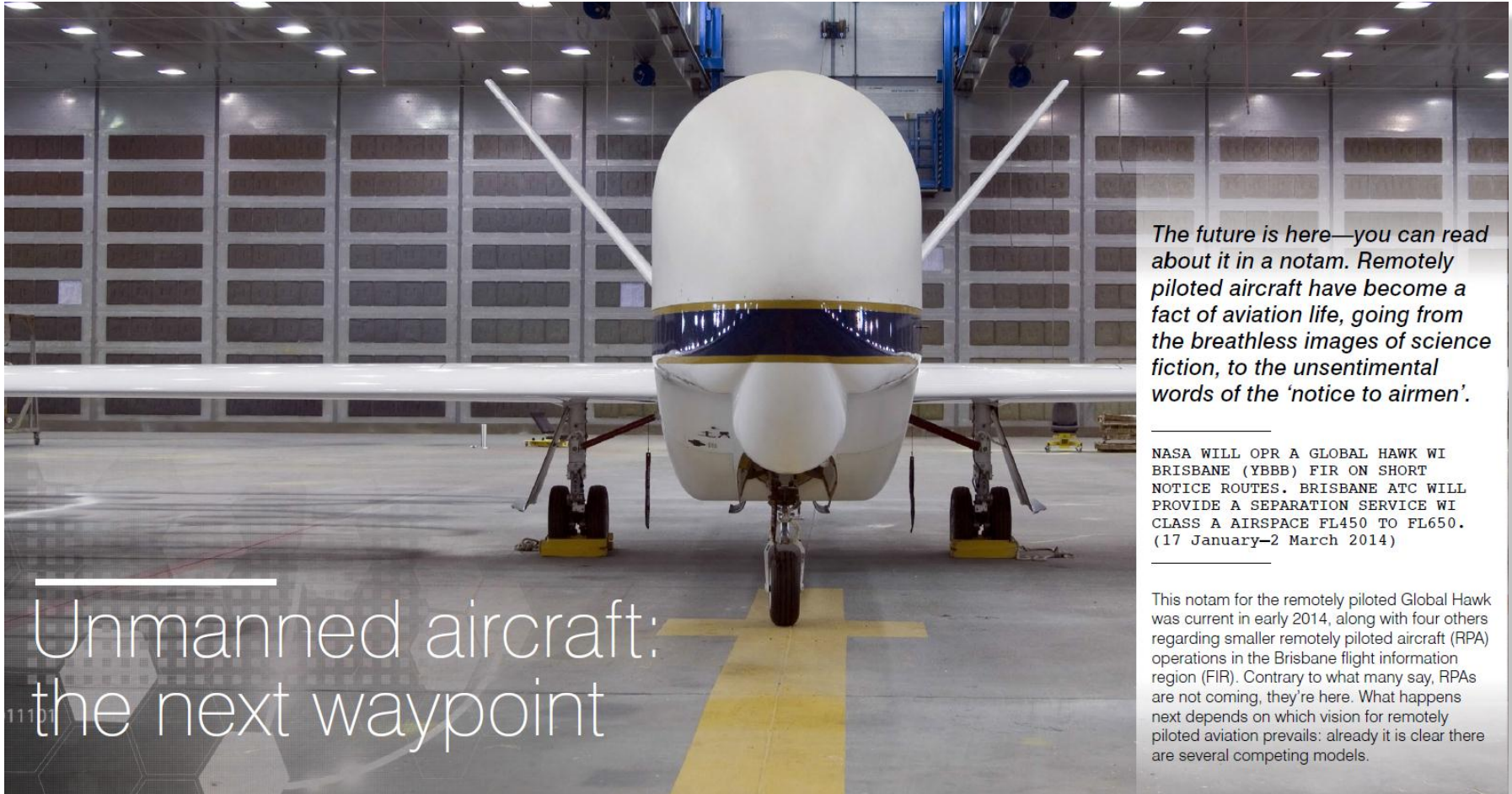
Aviation

- GBAS under the name “SmartPath” has been brought into service at Sydney Airport ~ the first of its type in the southern hemisphere. Airservices Australia is working with the airline industry to encourage fitment of SmartPath-capable avionics.
- Airservices has also made a major capital investment in the nation-wide Automatic Dependent Surveillance – Broadcast (ADS-B) surveillance network;
- The Civil Aviation and Safety Authority has put in place a number of GNSS based surveillance and navigation mandates that come into effect progressively from December 2013 until February 2017;



(Source: State of Space Report, Airservices and CASA)

Unmanned Aerial Systems



Unmanned aircraft:
the next waypoint

The future is here—you can read about it in a notam. Remotely piloted aircraft have become a fact of aviation life, going from the breathless images of science fiction, to the unsentimental words of the 'notice to airmen'.

NASA WILL OPR A GLOBAL HAWK WI BRISBANE (YBBB) FIR ON SHORT NOTICE ROUTES. BRISBANE ATC WILL PROVIDE A SEPARATION SERVICE WI CLASS A AIRSPACE FL450 TO FL650. (17 January–2 March 2014)

This notam for the remotely piloted Global Hawk was current in early 2014, along with four others regarding smaller remotely piloted aircraft (RPA) operations in the Brisbane flight information region (FIR). Contrary to what many say, RPAs are not coming, they're here. What happens next depends on which vision for remotely piloted aviation prevails: already it is clear there are several competing models.

(Source: Flight Safety Australia Magazine, March–April 2014)

Rail



ATMS: Advanced Train Management System

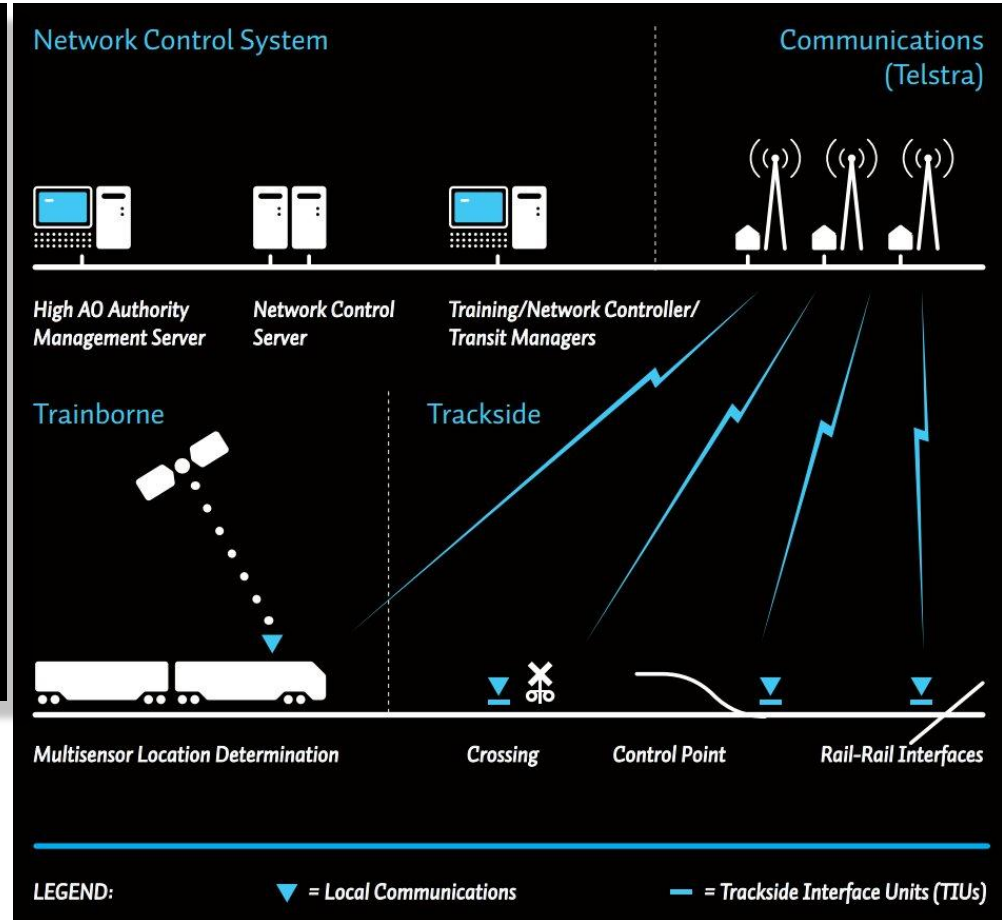
Many of the conventional signalling systems and switching systems in Australia have reached the end of their service life.



Department of Infrastructure and Regional Development recognises the importance of PNT services for Rail Transport.

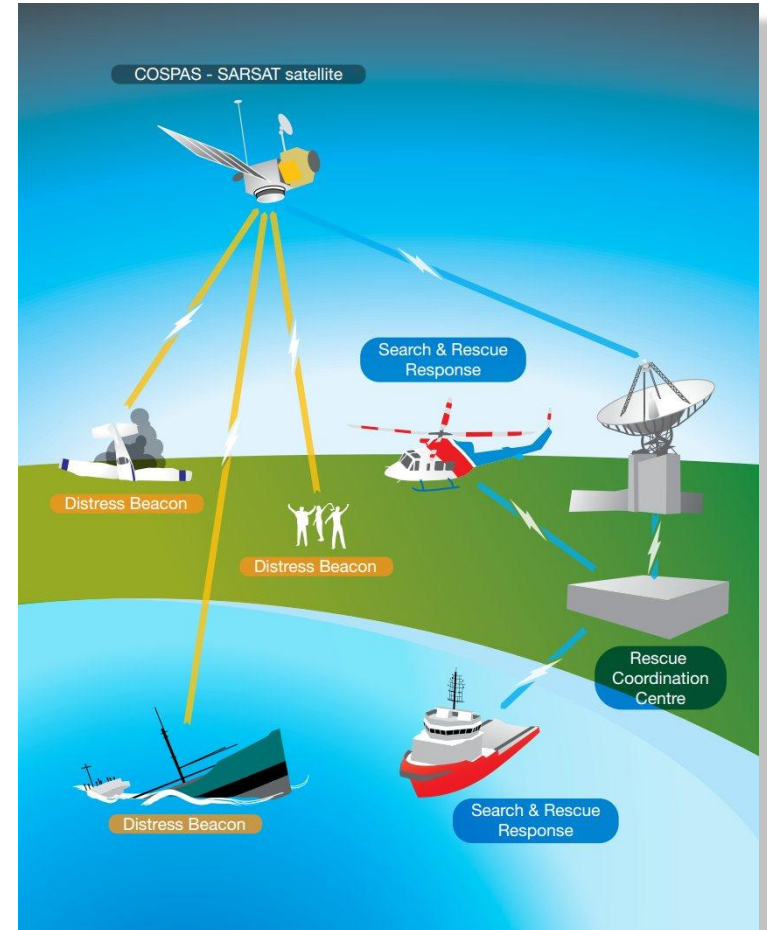
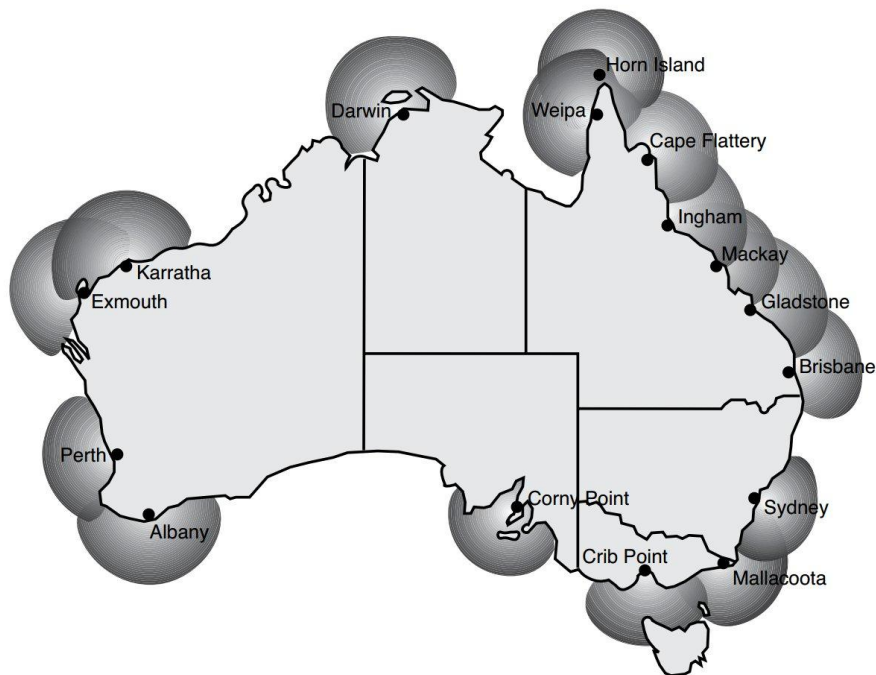
(Source: State of Space Report and Australian Rail Track Corporation)

US PNT Advisory Board - December 2014 - Higgins



Maritime

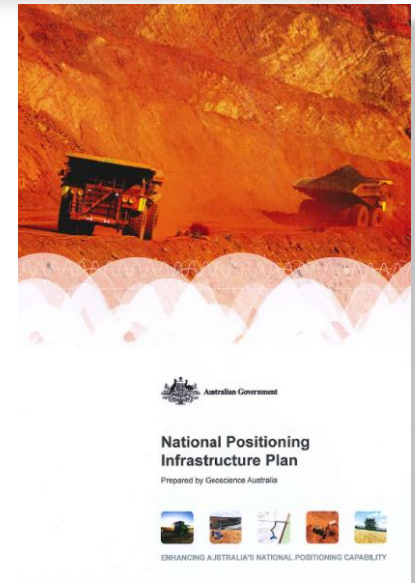
Australian Maritime Safety Authority provides services for navigation, vessel tracking, oil spill response and search and rescue, all of which rely heavily on GNSS;



(Source: State of Space Report and AMSA)

National Positioning Infrastructure

- Geoscience Australia operates Regional GNSS Network ~ extended under the AuScope initiative to over 130 stations;
- Development of GNSS Analysis Centre ~ sovereign capability to augment GNSS constellations producing significant enhancements to positioning accuracies, and monitoring of system integrity;
- Governance arrangements for National Positioning Infrastructure are being established to allow collaboration across sectors;
- Development of NPI is focussing on multi-modal flexibility recognising the need to service applications that need high accuracy as well as those that need high integrity and the growing number of applications that need both;
- NPI seen to also include mechanisms for Satellite Delivery of corrections and integrity information into remote areas;
- Actively seeking engagement with all GNSS and RNSS System Providers (Monitor Stations, Augmentation Cooperation, etc).



(Source: Geoscience Australia and State of Space Report)

International Cooperation



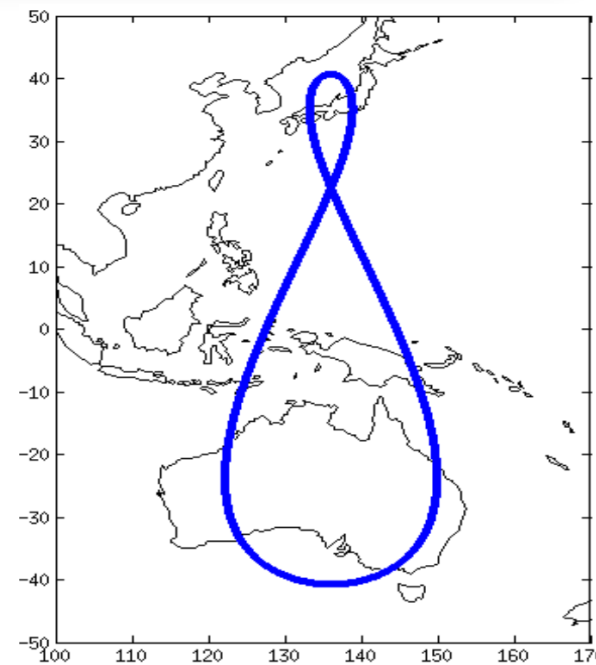
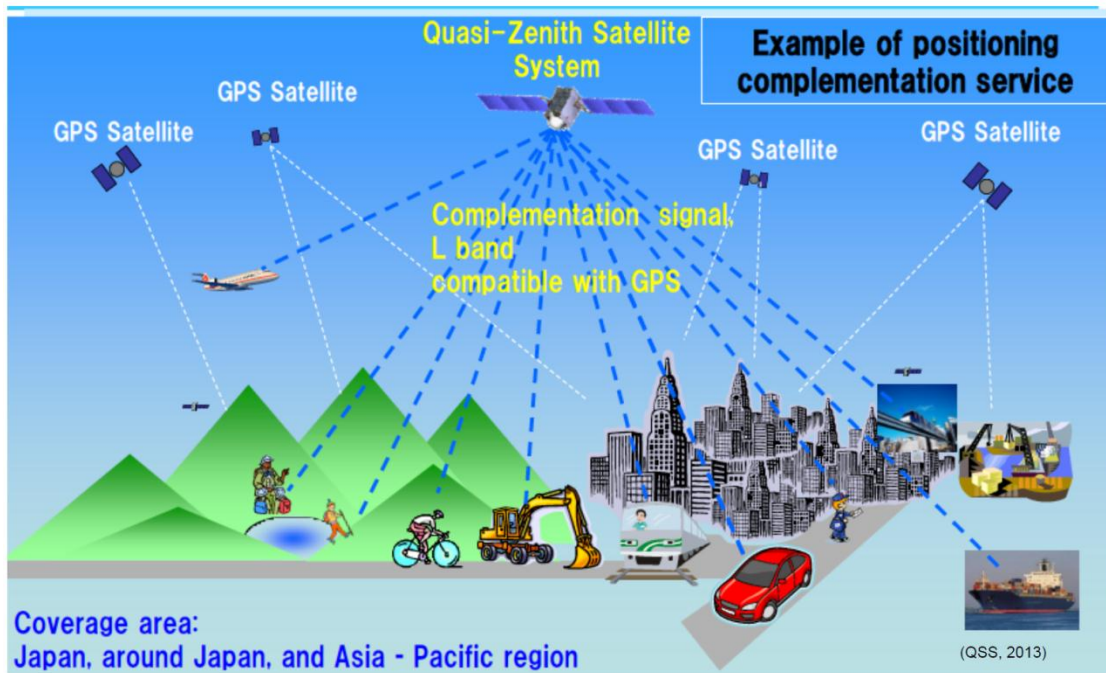
PRIME MINISTER
OF AUSTRALIA
THE HON TONY ABBOTT MP

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JOINT STATEMENT WITH PRIME MINISTER ABE - SPECIAL STRATEGIC PARTNERSHIP FOR THE 21ST CENTURY

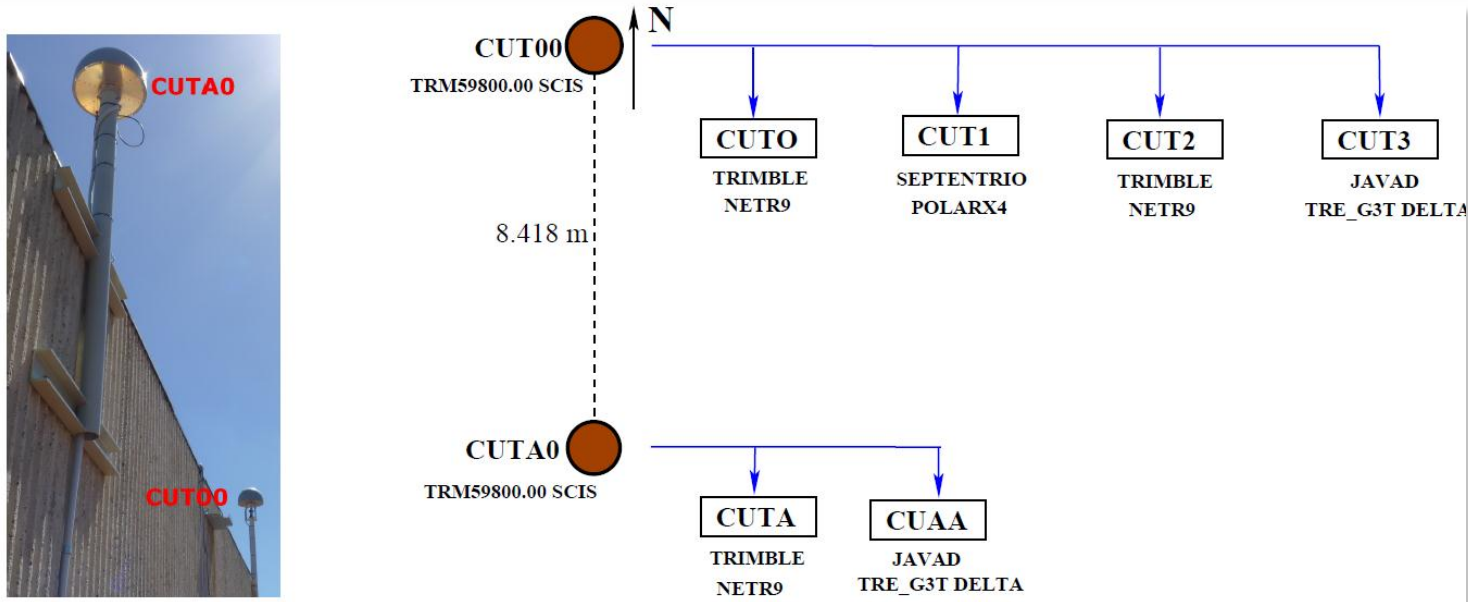
The two leaders will strengthen cooperation in the areas of space and Information and Communications Technology (ICT), establishing an officials' ICT policy dialogue. They will also strengthen cooperation for the promotion of Geospatial Information Project using the Japanese Quasi-Zenith Satellite System (QZSS).

Continued interest in QZSS Augmentation Capabilities



- Two R&D projects with JAXA currently running until March 2015:
 - One on Real Time Precise Point Positioning (RT-PPP) to test QZSS LEX signal, facilitated by the Cooperative Research Centre for Spatial Information (CRCSI);
 - Another through RMIT on QZSS L1-SAIF for disaster alert messaging.

BeiDou Development



- Following from Curtin Uni's BeiDou work presented here last year... a so-called 'mixed-receiver BeiDou intersatellite-type bias' has been identified $\sim \frac{1}{2}$ cycle bias in phase data when mixing BeiDou MEO/IGSO data with BeiDou GEO data across receiver types;
- Brought to the attention of the receiver manufacturers and RTCM SC104 working group, which has developed a procedure to make different receiver types mutually consistent with respect to this bias. Important for mixed receiver ambiguity resolved positioning;
- This issue shows that there are devils in the details of the Multi-GNSS era.

IGNSS 2015

Gold Coast, Queensland, Australia

14th to 16th July 2015

www.ignss.org



Thanks for your attention - matt.higgins@qld.gov.au

