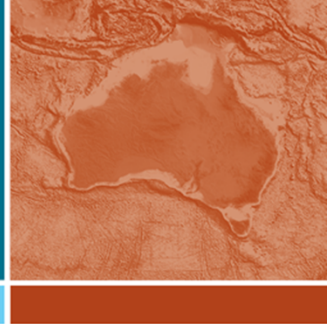




Australian Government
Geoscience Australia

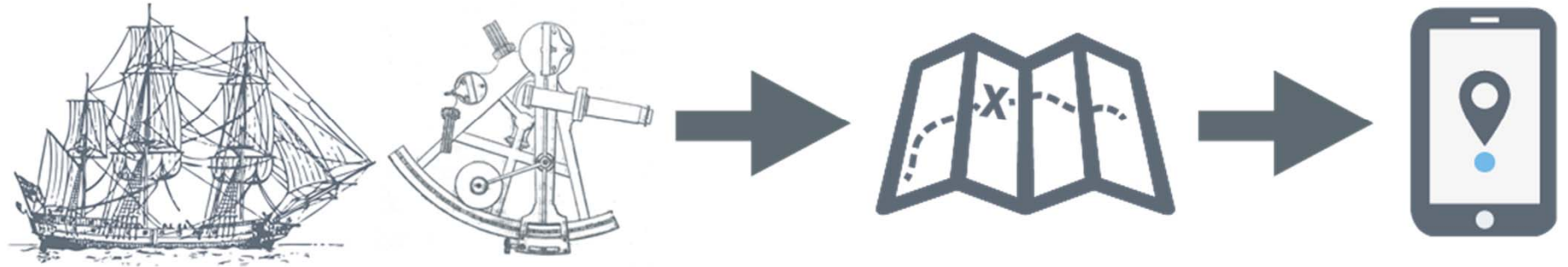


Satellite-Based Augmentation Testbed

Dr John Dawson, Section Leader Positioning



Positioning, Navigation and Timing (PNT)



Challenges



NATIONAL COVERAGE VIA SATELLITE



AUSTRALIA'S NETWORK OF
GNSS GROUND STATIONS



Positioning – different users, different needs

Accuracy

- How close is my Position to the ‘truth’?

Integrity

- Can I trust my Position?

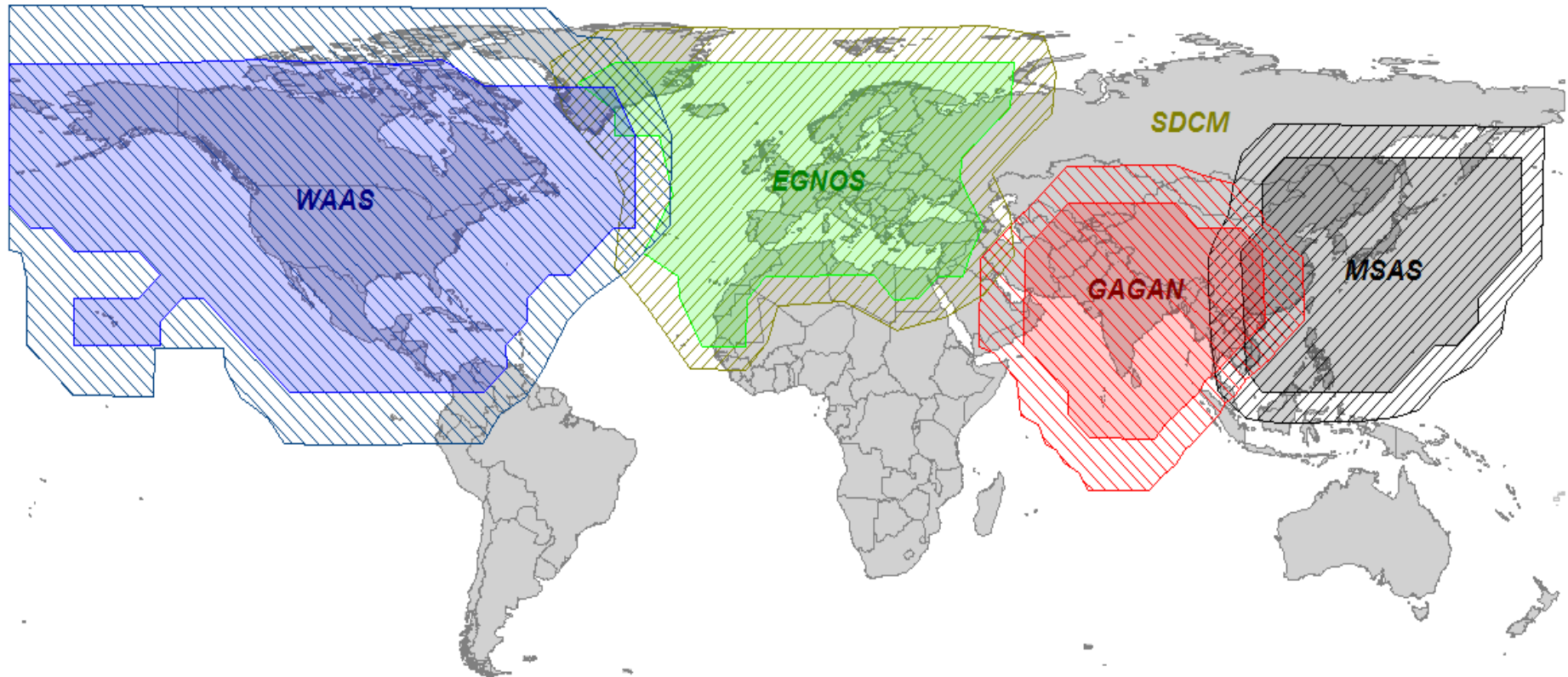
Accessibility

- Where can I receive corrections to improve my Position?
- Is it cost prohibitive? Is it supported by user equipment?

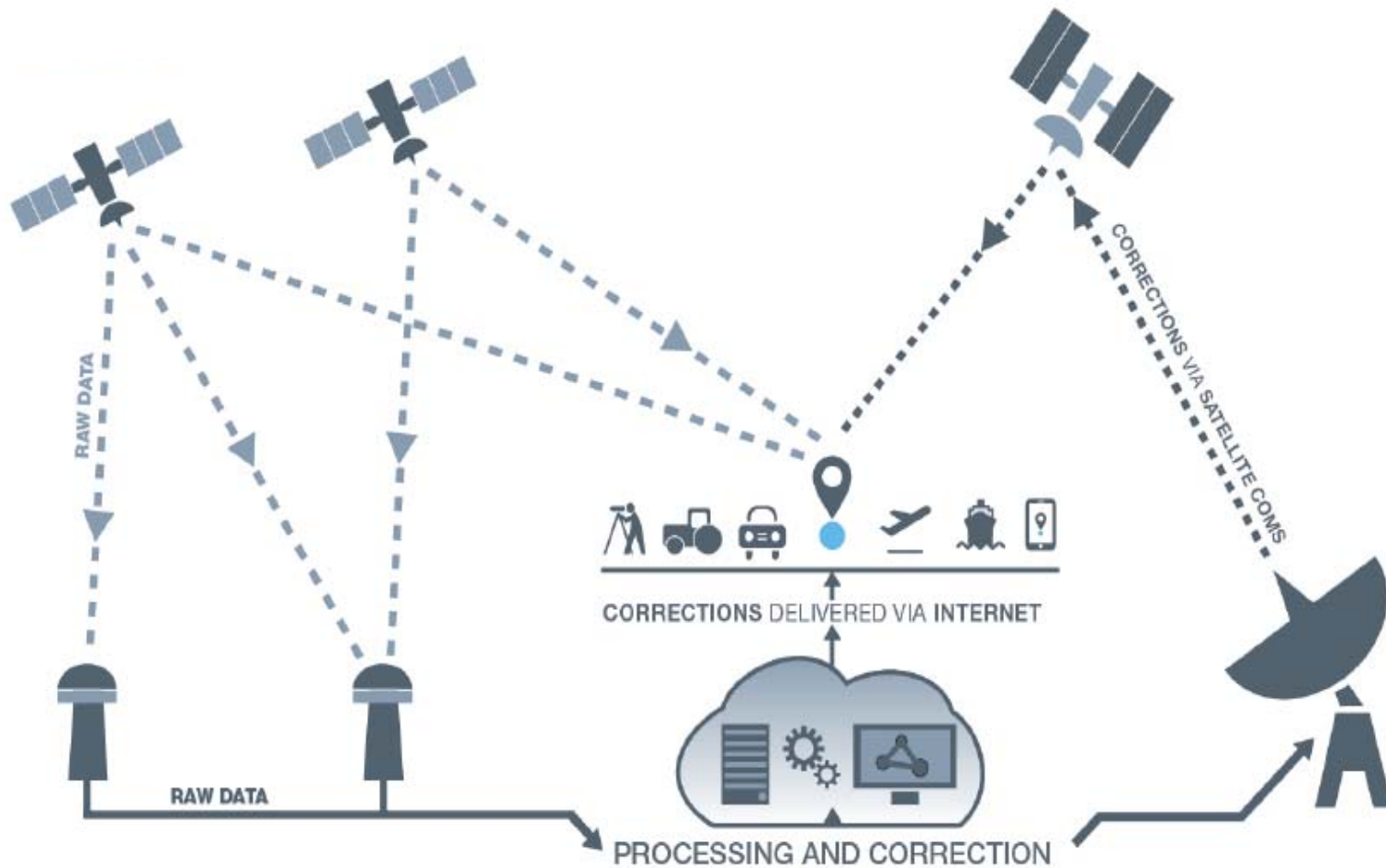
Resilience

- Can I rely that Position is available when I need it?
- How susceptible is it to spoofing and jamming?
- Should Australia have some sovereign control?

Positioning, Navigation and Timing (PNT)



Satellite-Based Augmentation System (SBAS)



2011 SBAS Review Recommendation

- The main finding of the review is that at this time ... it is difficult to justify the significant investment involved in establishing SBAS in Australia to cover aviation operations at smaller aerodromes*



- Consideration of any future investment in SBAS would need to be a part of a whole of Government approach with the significant cost considered against potential benefits across a range of industries*



NPI NATIONAL POSITIONING
INFRASTRUCTURE CAPABILITY



AUSTRALIA'S NETWORK OF
GNSS GROUND STATIONS

1. Upgraded national network
2. GNSS software and products
3. Encourage open data access



1. SBAS Test-bed
2. SBAS benefits analysis
3. Investment in SBAS?



 Listen **A- A+**

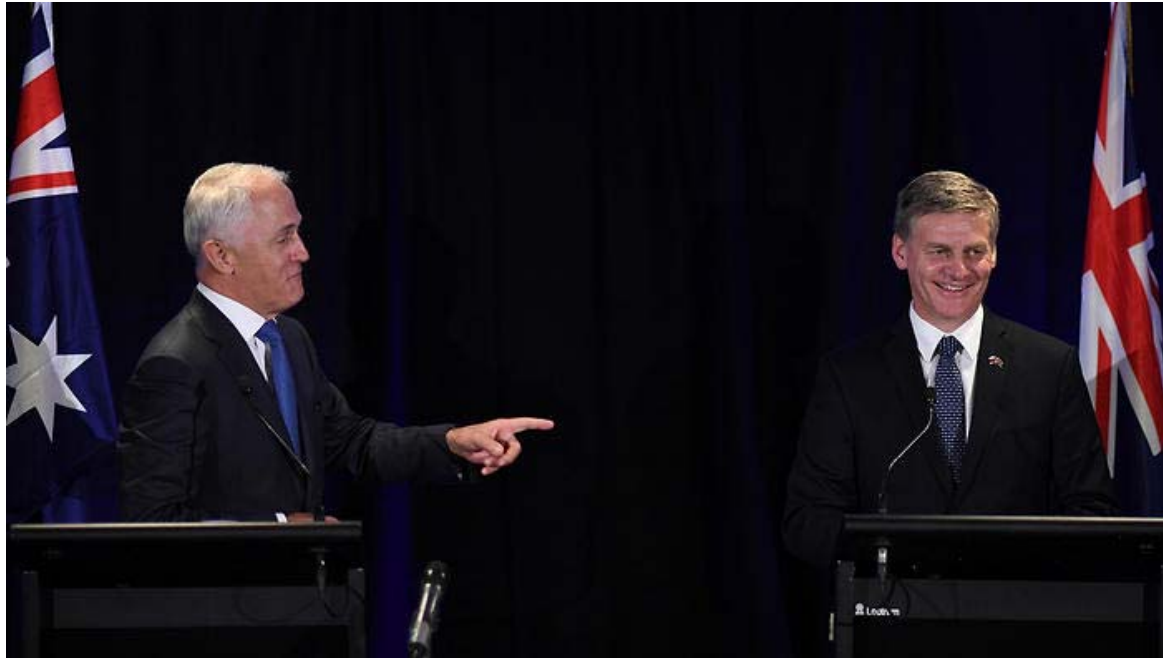
- **Testing of Satellite Based Augmentation Systems (SBAS) to be undertaken**
- **Future applications for all four major modes of transport in Australia**
- **Potential safety, productivity, efficiency and environmental benefits**

From using Google Maps on your smartphone to emergency management and farming, most Australians use and benefit from positioning technology every day without realising it.

DC010/2017
17 January 2017

JOINT RELEASE WITH:
Matthew Canavan
Minister for Resources and
Northern Australia

Australia and New Zealand Cooperation



“The Prime Ministers welcomed the signature today of the Australia New Zealand Science, Research and Innovation Cooperation Agreement. Agreed to ... test a second-generation Satellite-Based Augmentation System in both countries.”

Joint Statement by Prime Ministers the Rt Hon Bill English and the Hon Malcolm Turnbull MP, 17 February 2017

SBAS Trial - Partners

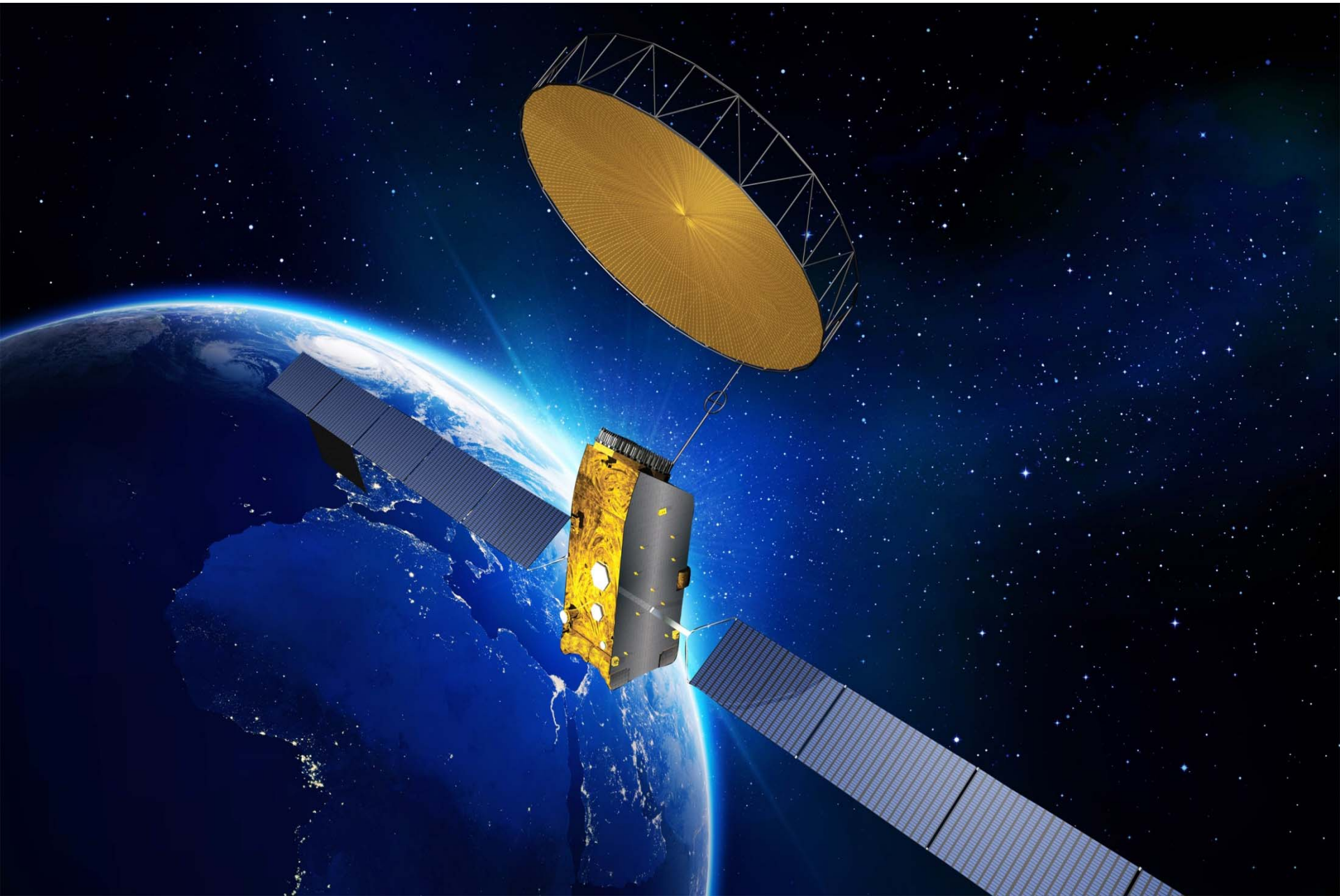


Australian Government

Geoscience Australia



SBAS: Inmarsat 4F1 GEO Satellite



SBAS: Ground Station



Australian and NZ GNSS networks



What we're testing

SBAS

- L1 SBAS
- GPS only



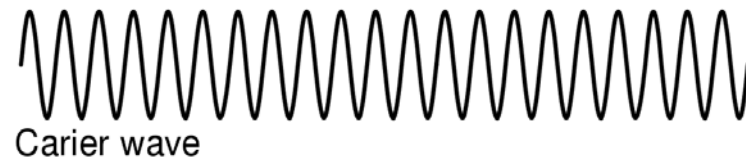
DFMC SBAS

- L1/L5 and E1/E5a SBAS
- GPS and Galileo

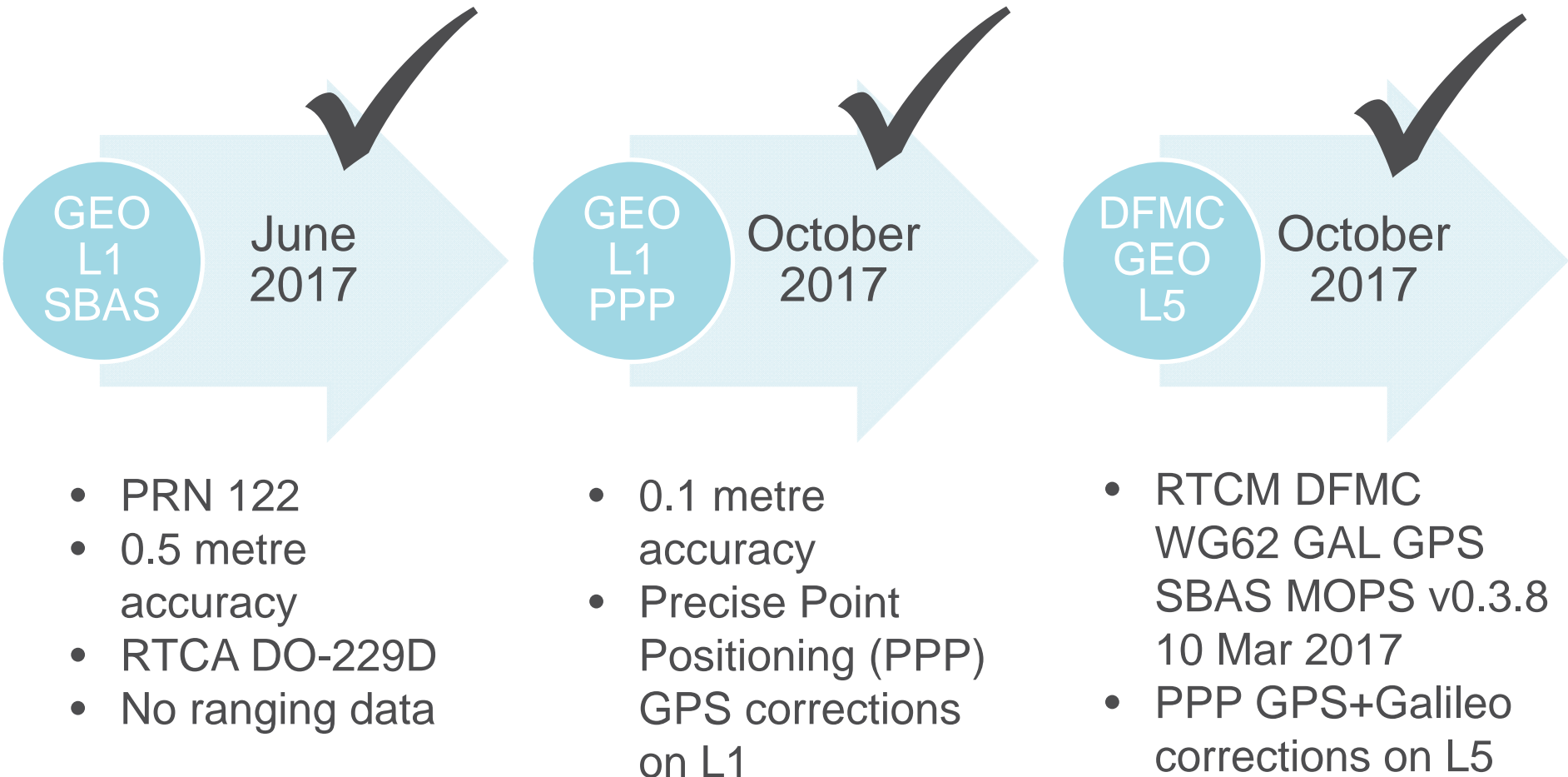


Precise Point Positioning (PPP)

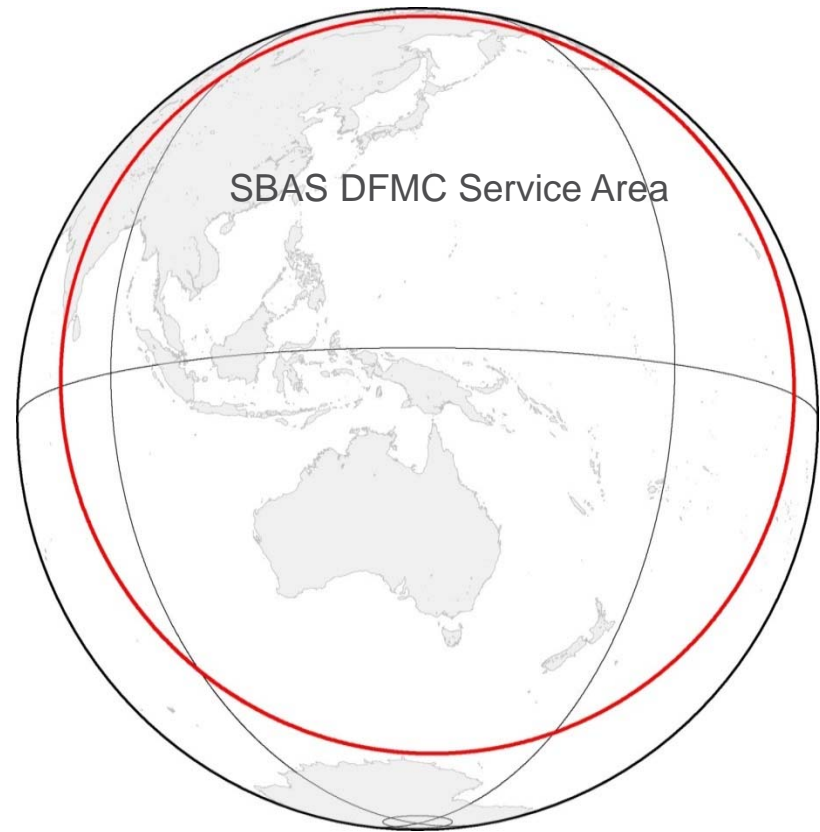
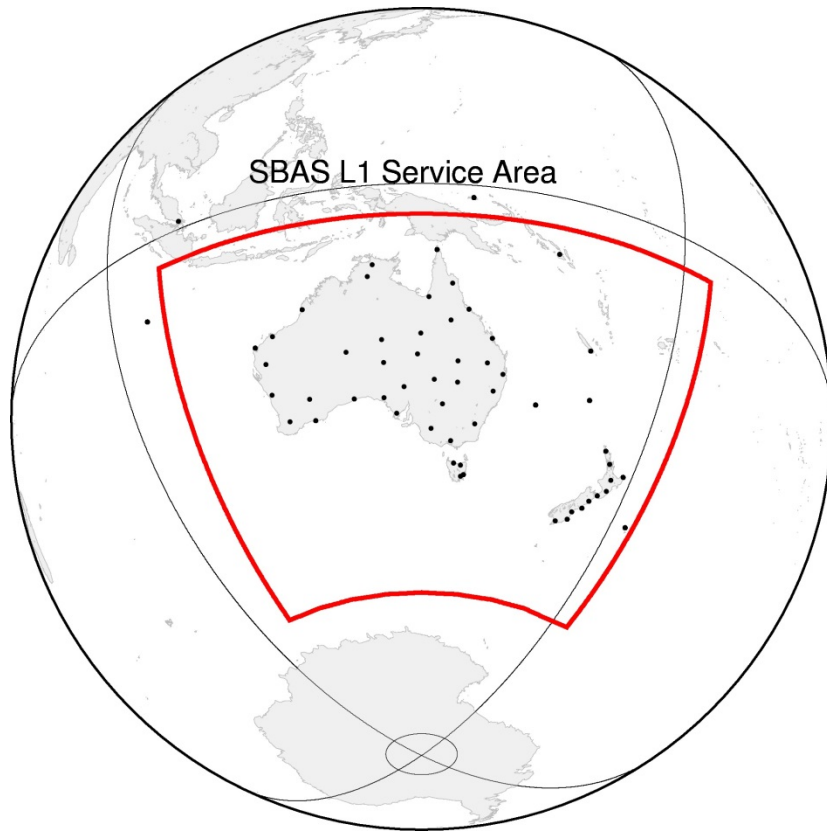
- GPS Precise Satellite Clocks and Orbits, L1
- GPS and Galileo Precise Satellite Clocks and Orbits, L5



SBAS Test-bed Signal Status



SBAS – coverage and service areas



- SBAS L1 service area extended to the East to cover Chatham Islands, NZ
- Additional ground stations added to address performance issues in NZ and Darwin

SBAS – Industry Demonstrators



- Australia and New Zealand
- Agriculture, aviation, construction, maritime, mining, rail, road, spatial, utilities and consumer
- Testing coordinated by CRC for Spatial Information
- Call for Expressions of Interest
 - 90+ multi-institutional proposals
 - Public + private; Federal + State; Academia
 - 32 successful projects
- Economic analysis to be undertaken by EY

<http://www.ga.gov.au/sbas>
[Email: npi@ga.gov.au](mailto:npi@ga.gov.au)

