

Update on GNSS Activities in Australia

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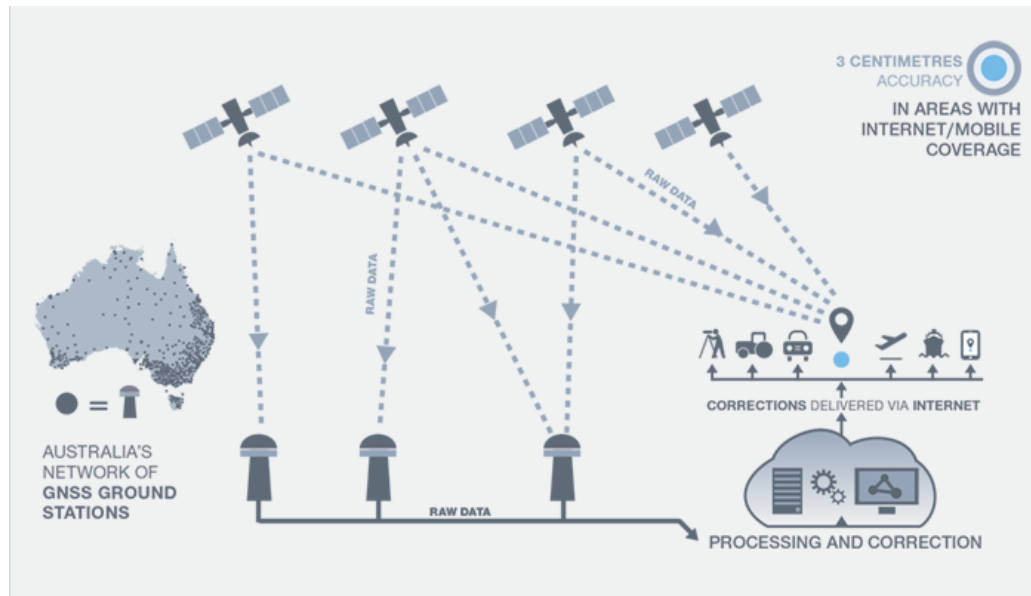


Presentation Outline

- National Positioning Infrastructure
 - Based on Information from Geoscience Australia, which is the lead agency for National Positioning Infrastructure in the Australian Government;
 - Last week the Australian government released its annual budget statement ~ two funding measures with a total value of AU\$225 million over 4 years (approx. US\$170m);
- Australian Space Industry
 - Federal budget also contained AU\$41.0 million (approx. US\$30m) over four years from 2018-19 to grow the Australian space industry.



National Positioning Infrastructure (NPI) ~ Part 1

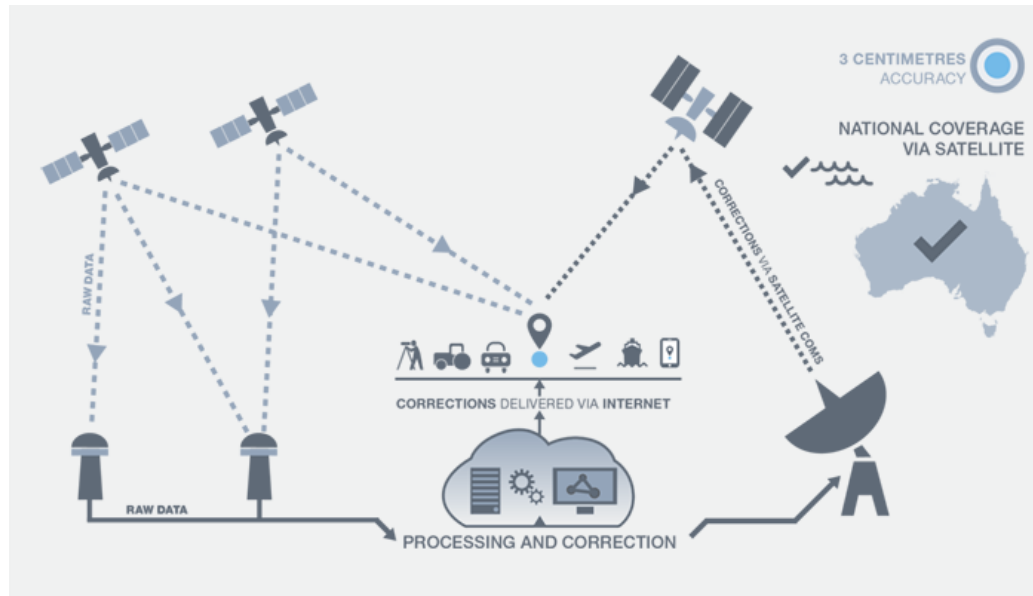


**AU\$64million
over 4 Years
(US\$48m)**

- Upgrade and densification of the National GNSS network to approximately 200 stations;
- Establishment of open data access to next tier of GNSS sites (potentially 500 -700);
- Development of GNSS analysis package to provide 3cm augmentation via the internet in areas with mobile phone coverage. GA hope to become a full Analysis Centre in IGS;
- Also funding for better coordination of GNSS activities within Australia;
- Allocation for operations funds for array of radio telescopes used for Very Long Baseline Interferometry (VLBI) rather than research grant funding that has been used to date.



National Positioning Infrastructure (NPI) ~ Part 2

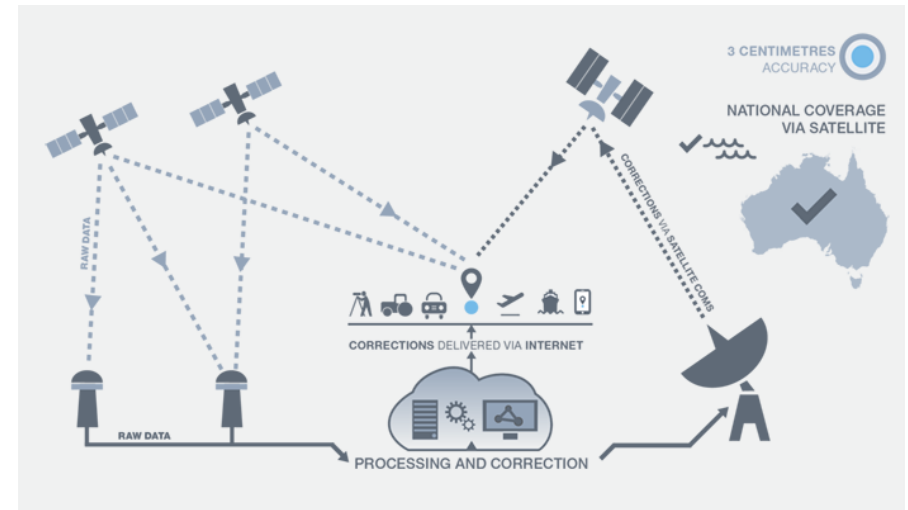
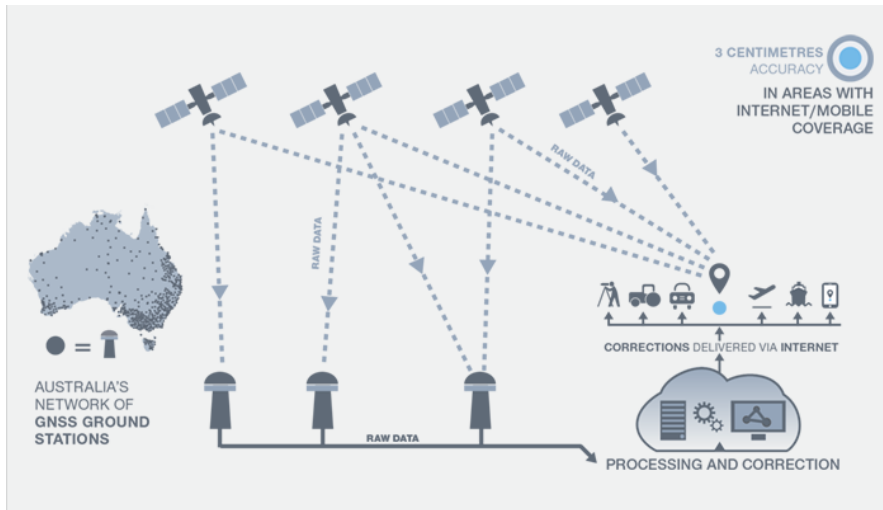


**AU\$161million
over 4 Years
(US\$120m)**

- National Coverage with Satellite Delivery of 3 levels of service:
 - GPS Single frequency standard SBAS ~ better than 1 metre accuracy;
 - Dual Frequency/Dual Constellation SBAS (L1, L5 ~ GPS/Galileo ~ 30cm accuracy with high integrity levels;
 - Precise Point Positioning (PPP) ~ better than 10 centimetres (for areas not covered by 3cm service via mobile phone).
- Budget also contains annual operational funding of approximately AU\$50M for both parts.



National Positioning Infrastructure (NPI)



“The justification to government for this funding was based exclusively on economics, efficiency in industry, safety and innovation. Interestingly we ended up achieving widespread support from many ministers because the positive impact of precise positioning on so many sectors of society was compelling.”

(Source: Gary Johnston from Geoscience Australia, May 2018)

Australian Space Industry



- AU\$26.0 million over four years from 2018-19 to establish a National Space Agency, which will coordinate domestic space activities for Australia, and;
- AU\$15.0 million over three years from 2019-20 to establish the International Space Investment project, which will provide grants to strategic space projects that generate employment and business opportunities for Australians.

