



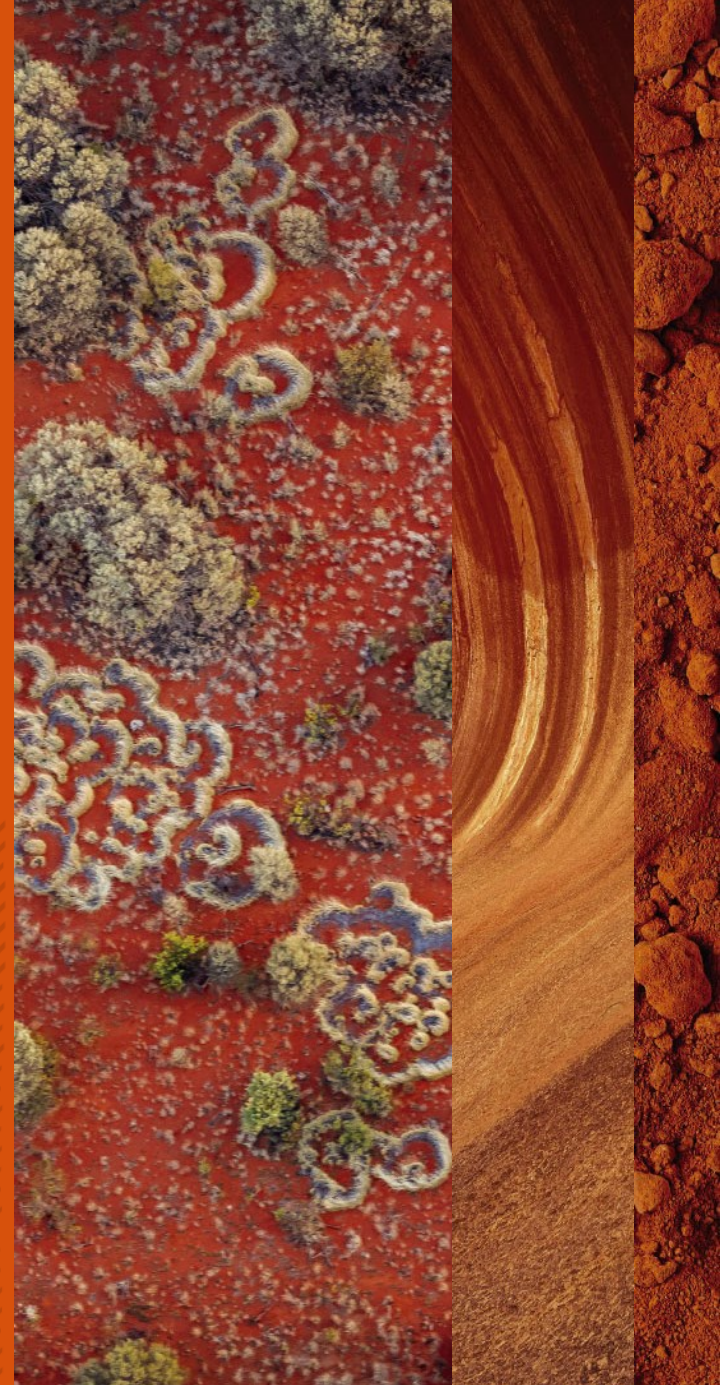
Australian Government  
Geoscience Australia



POSITIONING  
AUSTRALIA

# Positioning Australia

Ryan Ruddick





# How did you arrive today?



> Mobile mapping application?



> Ride sharing service?



> QF713 Canberra to Adelaide?



# Mission

We exist to **enable** Australia to **progress and thrive** by providing the **infrastructure for better positioning technology**.

This will **enhance accuracy and reliability** for Australia, allow **potential for innovative technologies** across industries and **accelerate economic growth**.





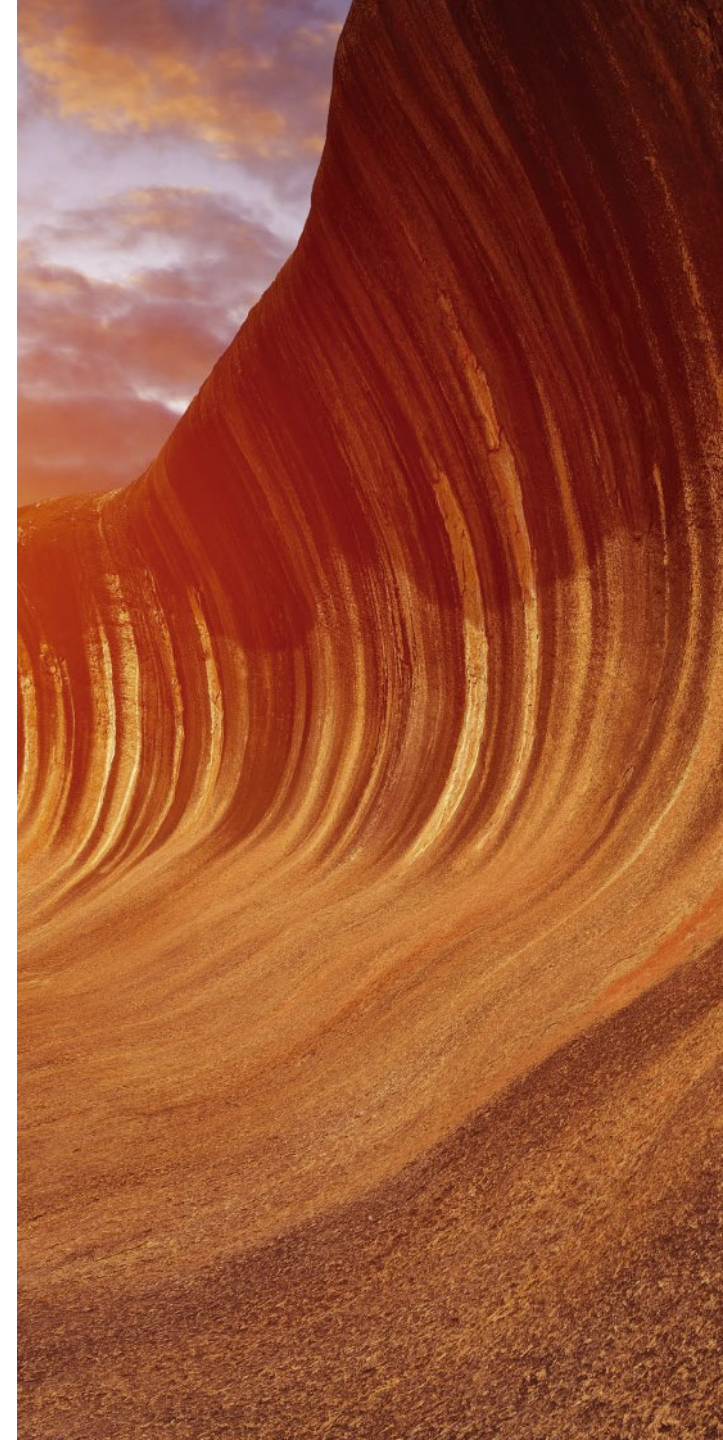
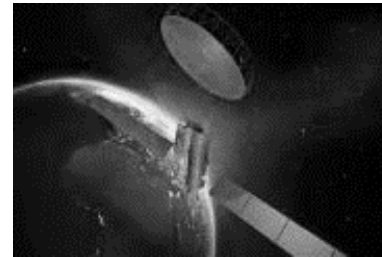
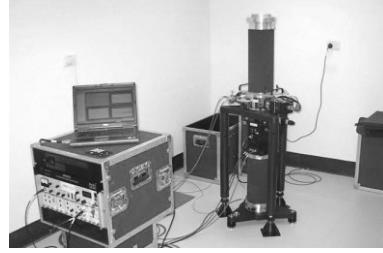
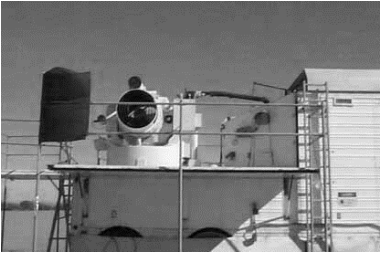
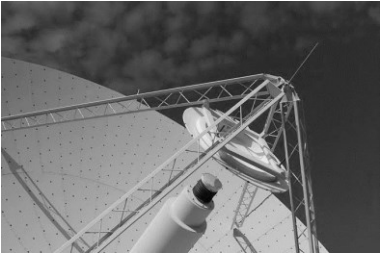


# Foundation Program

... to develop and maintain the Australian Geospatial Reference System



# Our Capabilities



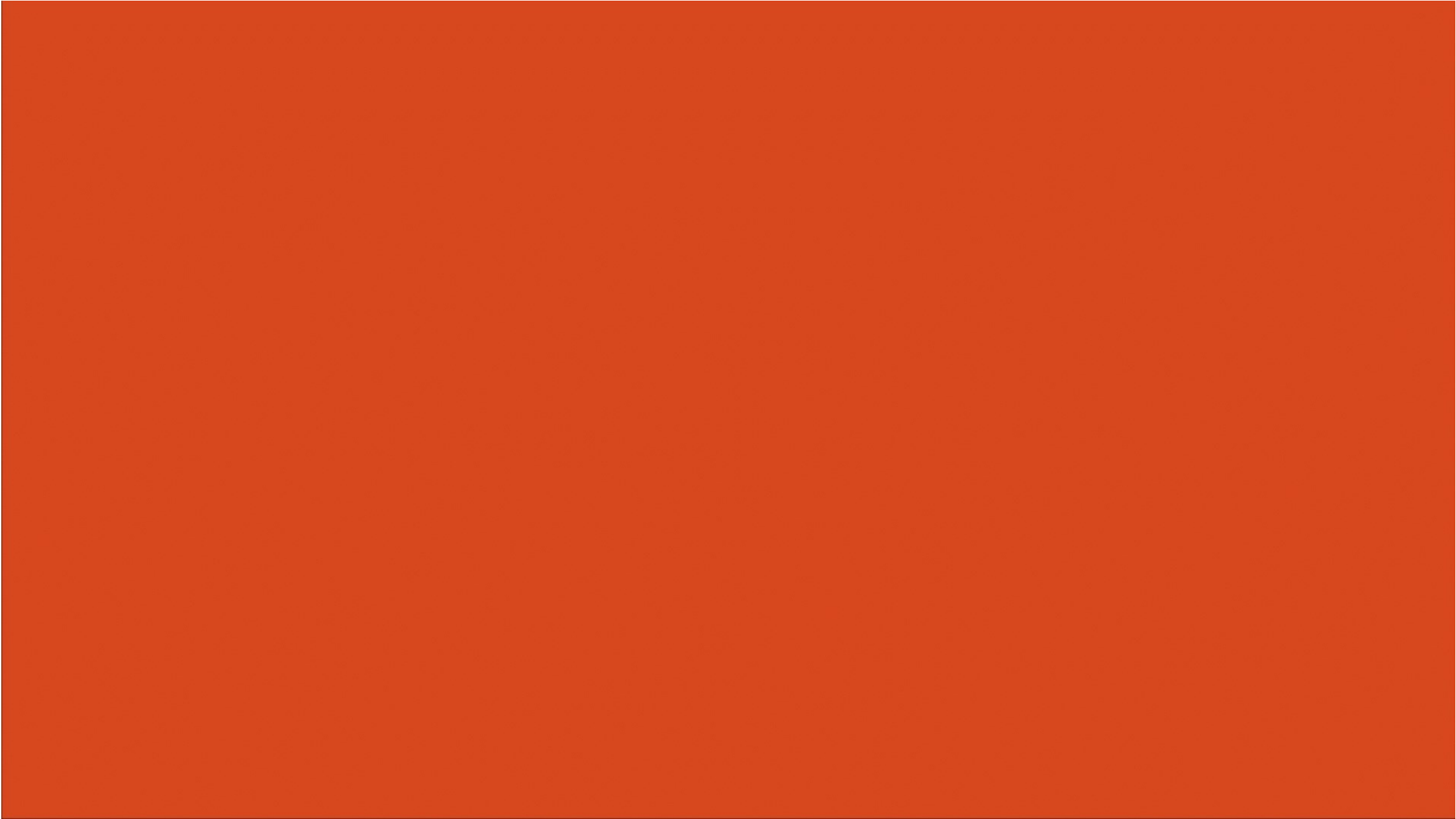


# Our New Program

In the 2018-19 Australian Federal Budget \$225 million was allocated to improve satellite positioning in Australia.

- > \$161 million for better GPS in regional Australia (**Satellite Based Augmentation System**).
- > \$64 million for better GPS for Australian industries (**National Positioning Infrastructure Capability**).





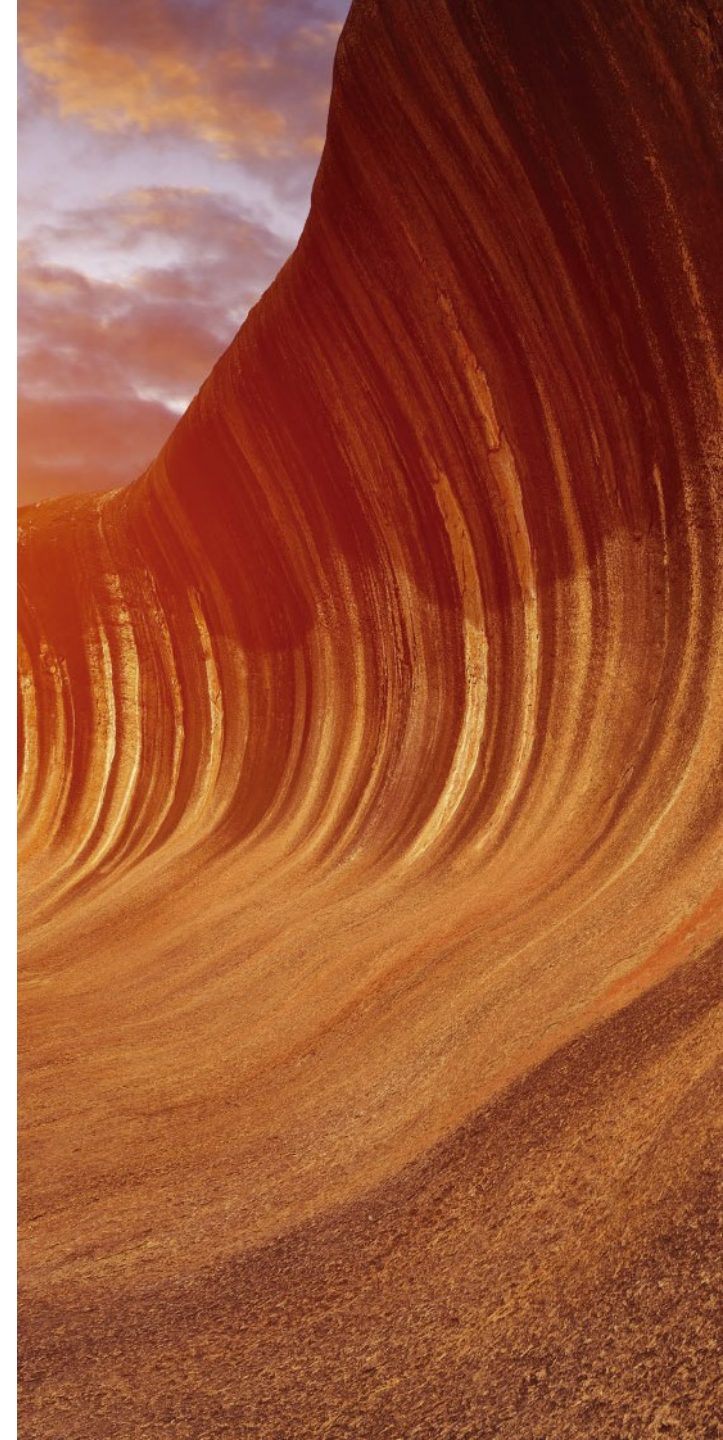


# Satellite Based Augmentation

# SBAS Deliverables



- > L1 SBAS (GPS only).
- > DFMC SBAS (L1/L5 GPS and E1/E5a GAL).
- > PPP (precise satellite clocks and orbits = 10 cm service).





# SBAS Economic Benefits



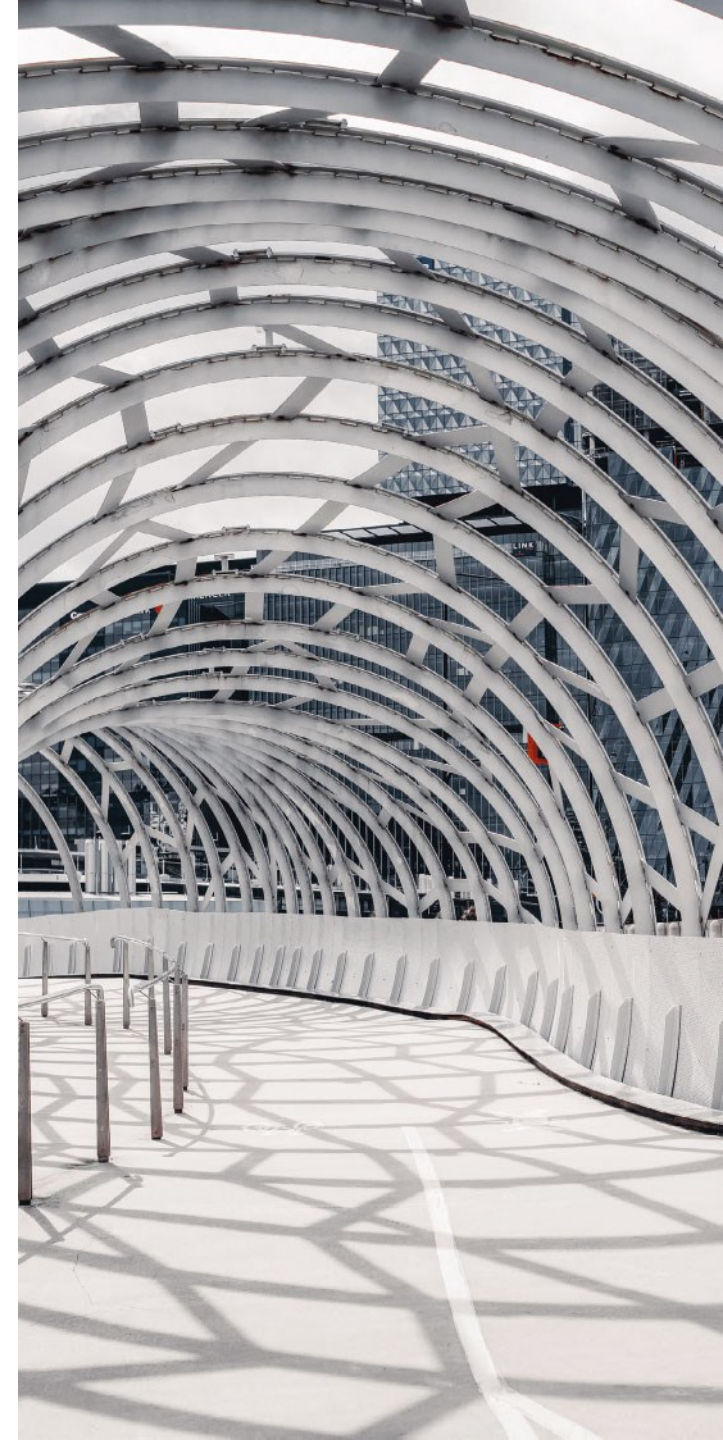
The SBAS test-bed ran for two years and assessed **45 applications** through **27 projects** across **10 industry sectors** to determine the economic benefit of SBAS technology to Australia and NZ.



# SBAS Economic Benefits

**INCREASE OF 1866  
SUCCESSFULLY COMPLETED**

medical helicopter rescue missions  
in remote locations

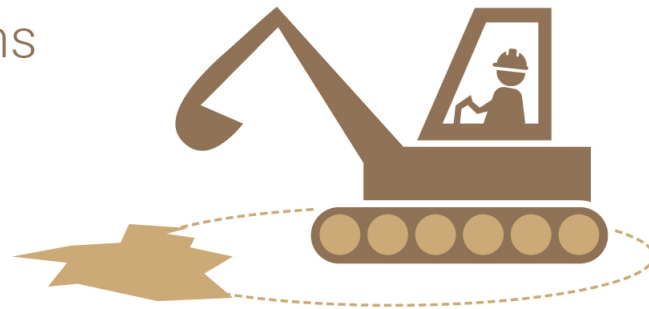




# SBAS Economic Benefits

**PREVENT 2000  
SERIOUS INJURIES  
AND 23 FATALITIES**

using Collision Avoidance Systems



# SBAS Economic Benefits

**INCREASED VESSEL  
CAPACITY OF 1375 DAYS**

for port operations





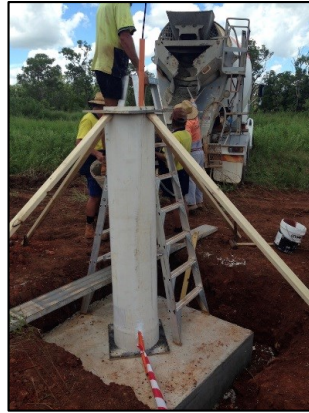
# SBAS Economic Benefits



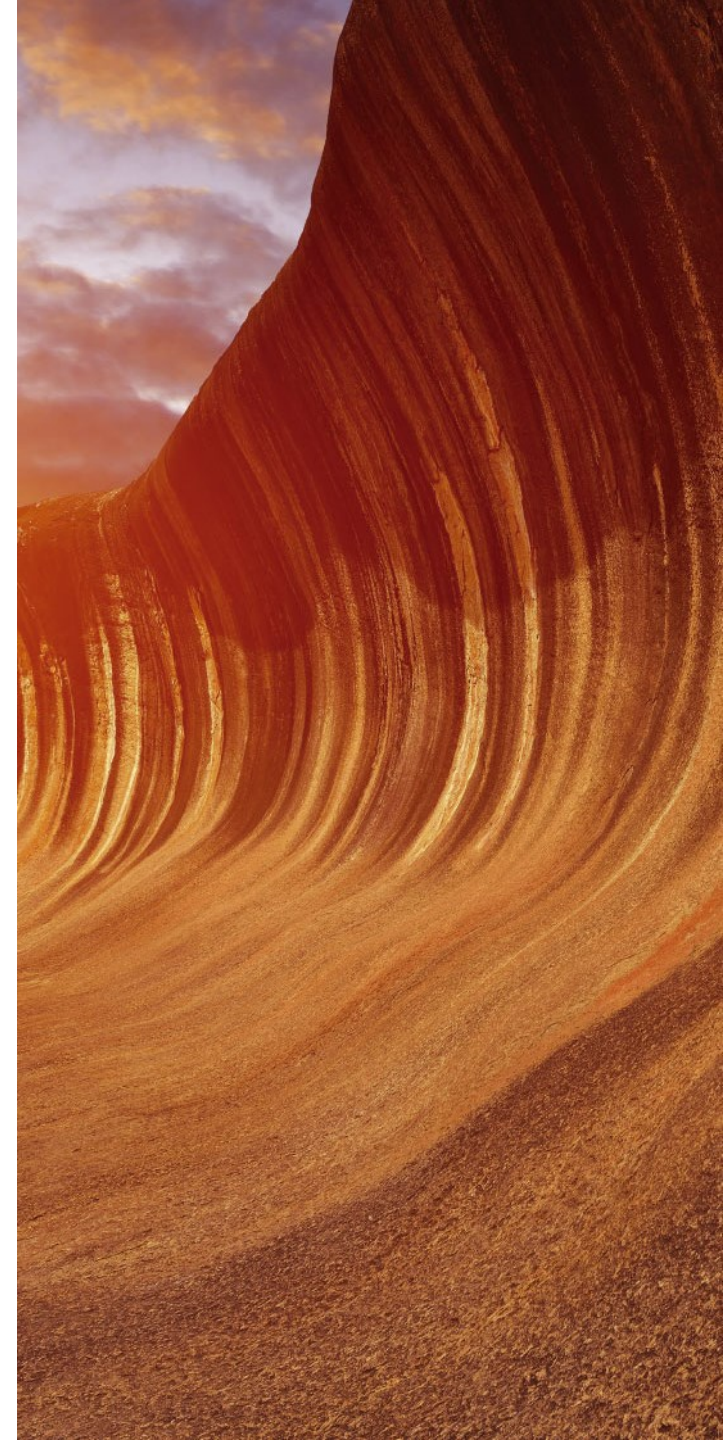
# National Positioning Infrastructure



# NPIC Deliverables

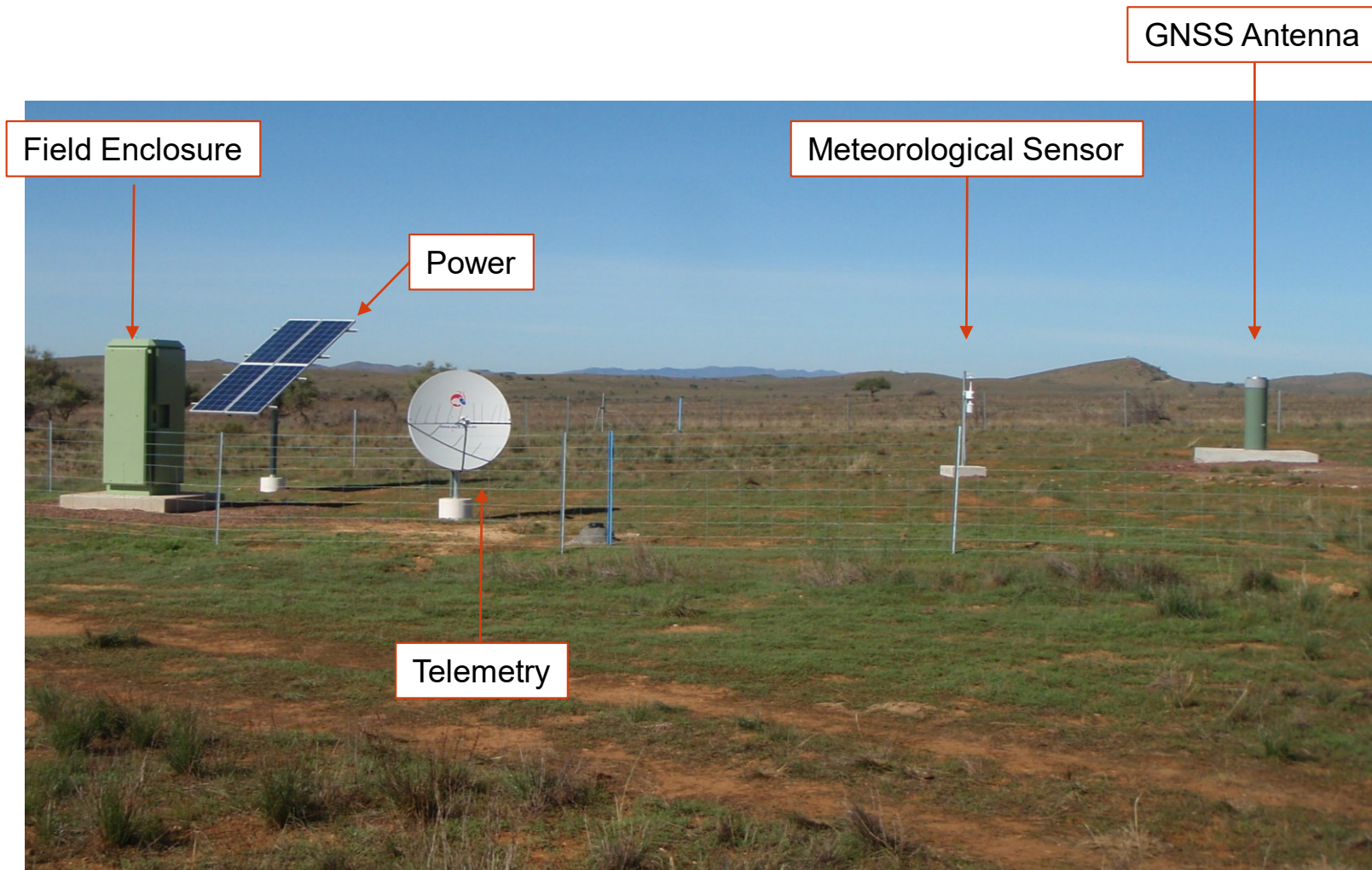


- > 200 station highly reliable GNSS reference station network.
- > Public access to public / private real-time data streams.
- > Open software to support GNSS analysis.
- > Scalable data centre to support 100,000's of users.

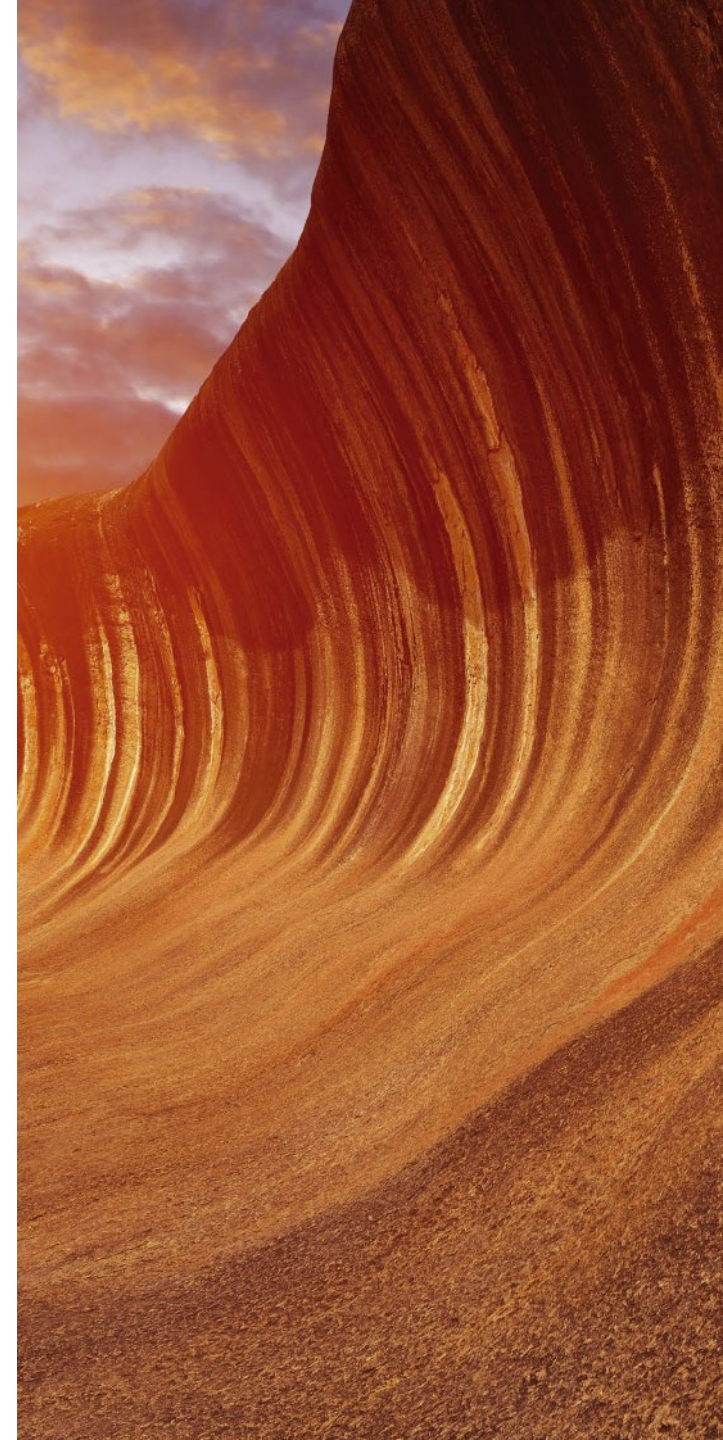




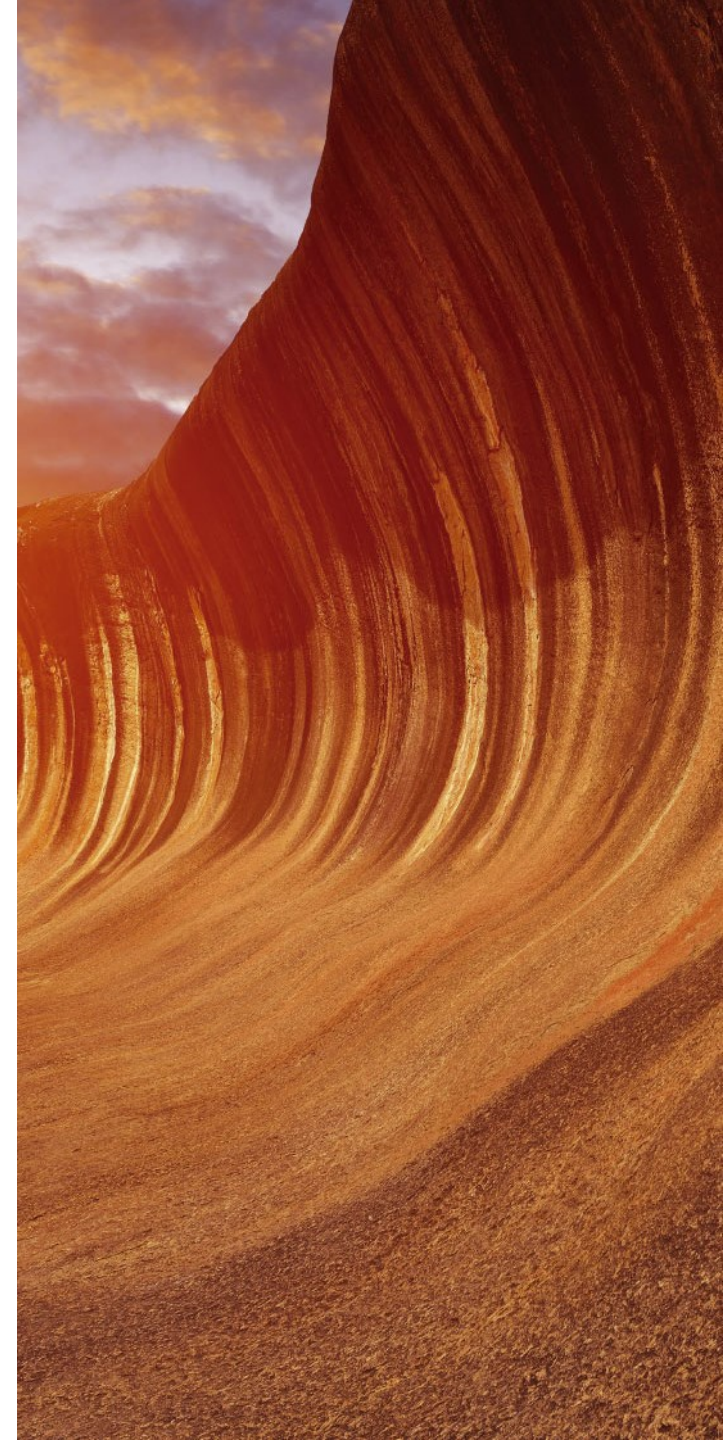
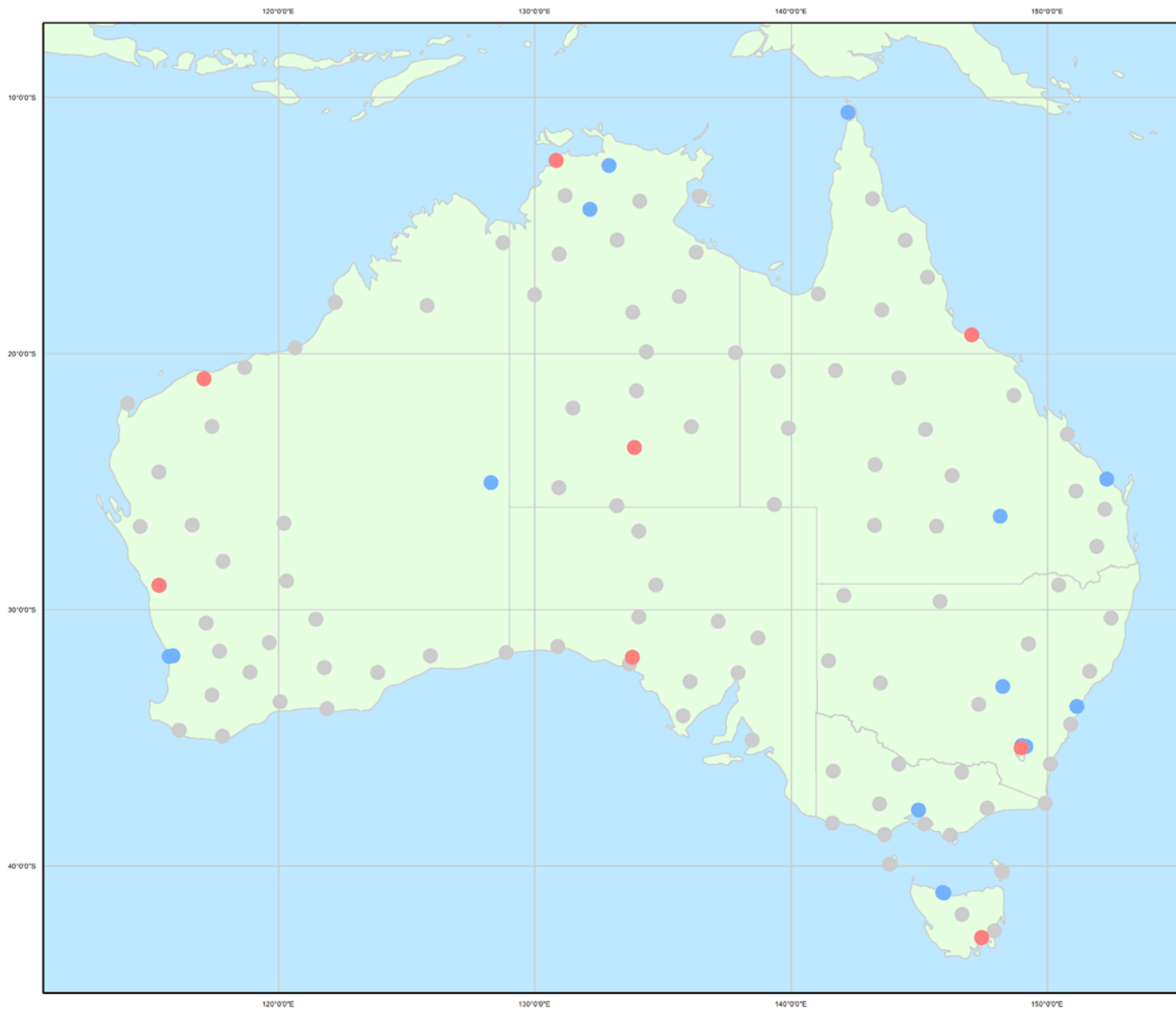
# NPIC Deliverables

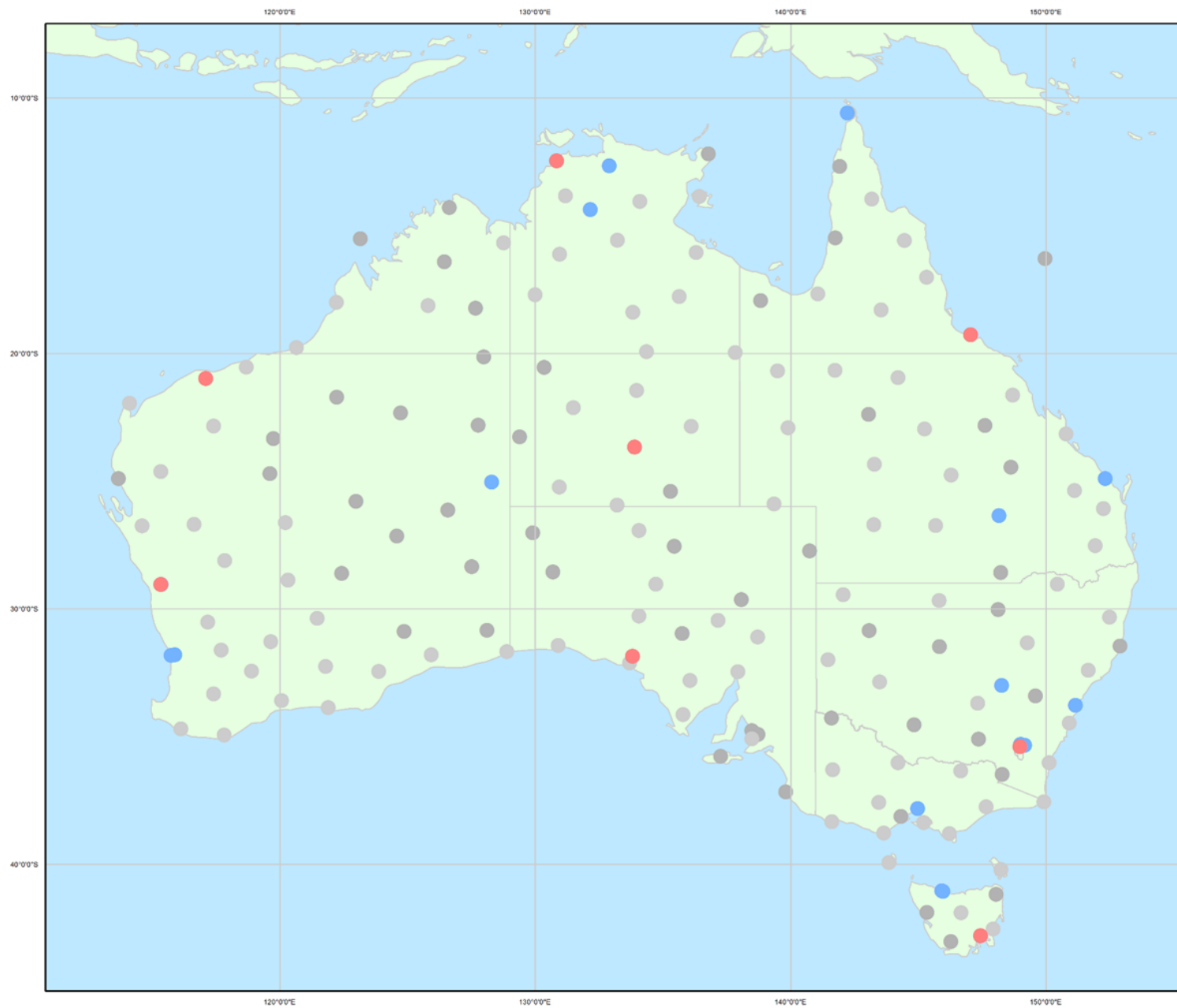


(BMAN00AUS) Blinman, South Australia

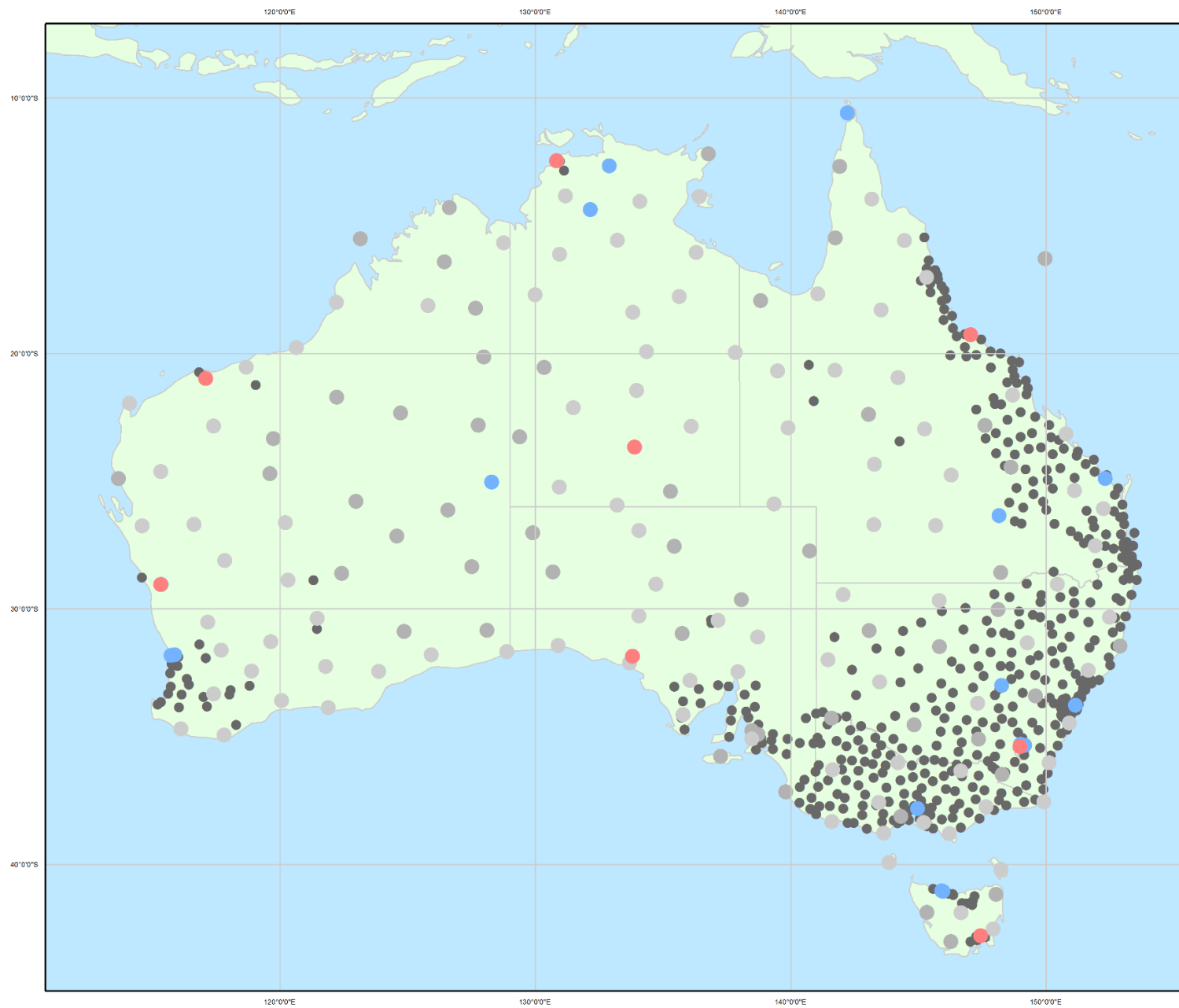












# Open Source Software

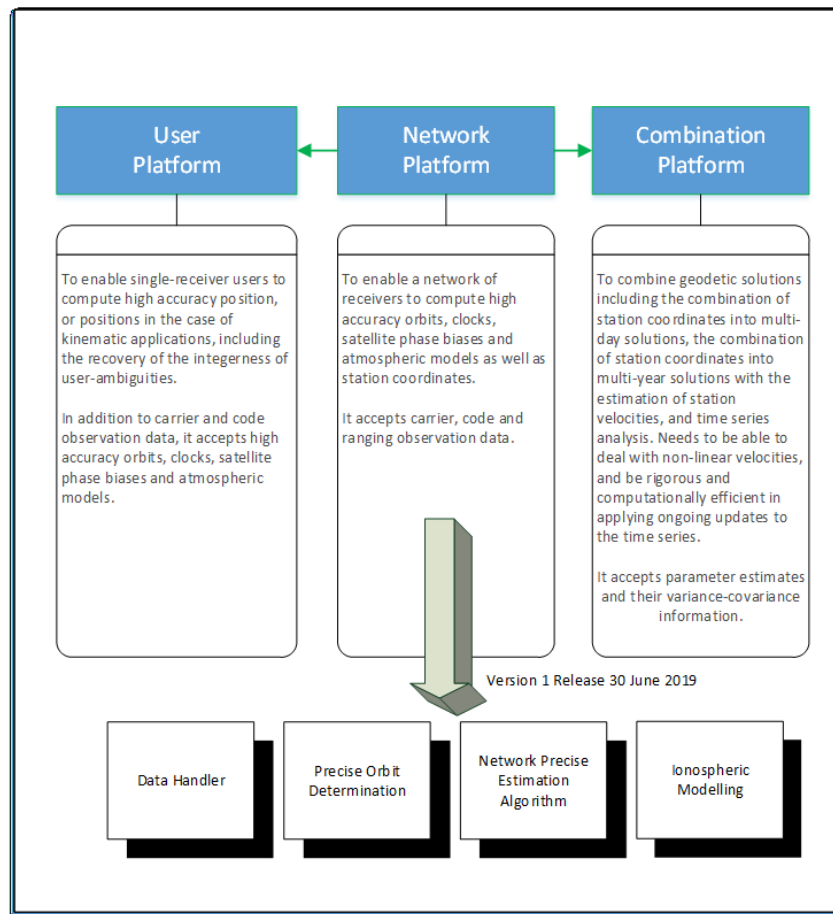
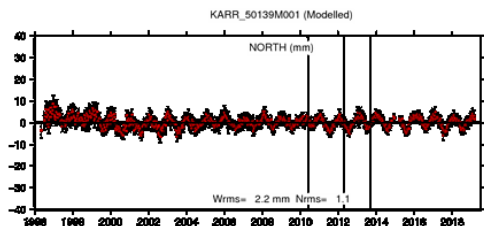
## Network Platform



## User Platform



## Combination Platform





# South Australia



# Collaboration with SA

Collaborative Project Agreement signed between Geoscience Australia and the SA Department of Planning, Transport and Infrastructure (November 2018).

## **Sites currently under negotiation**

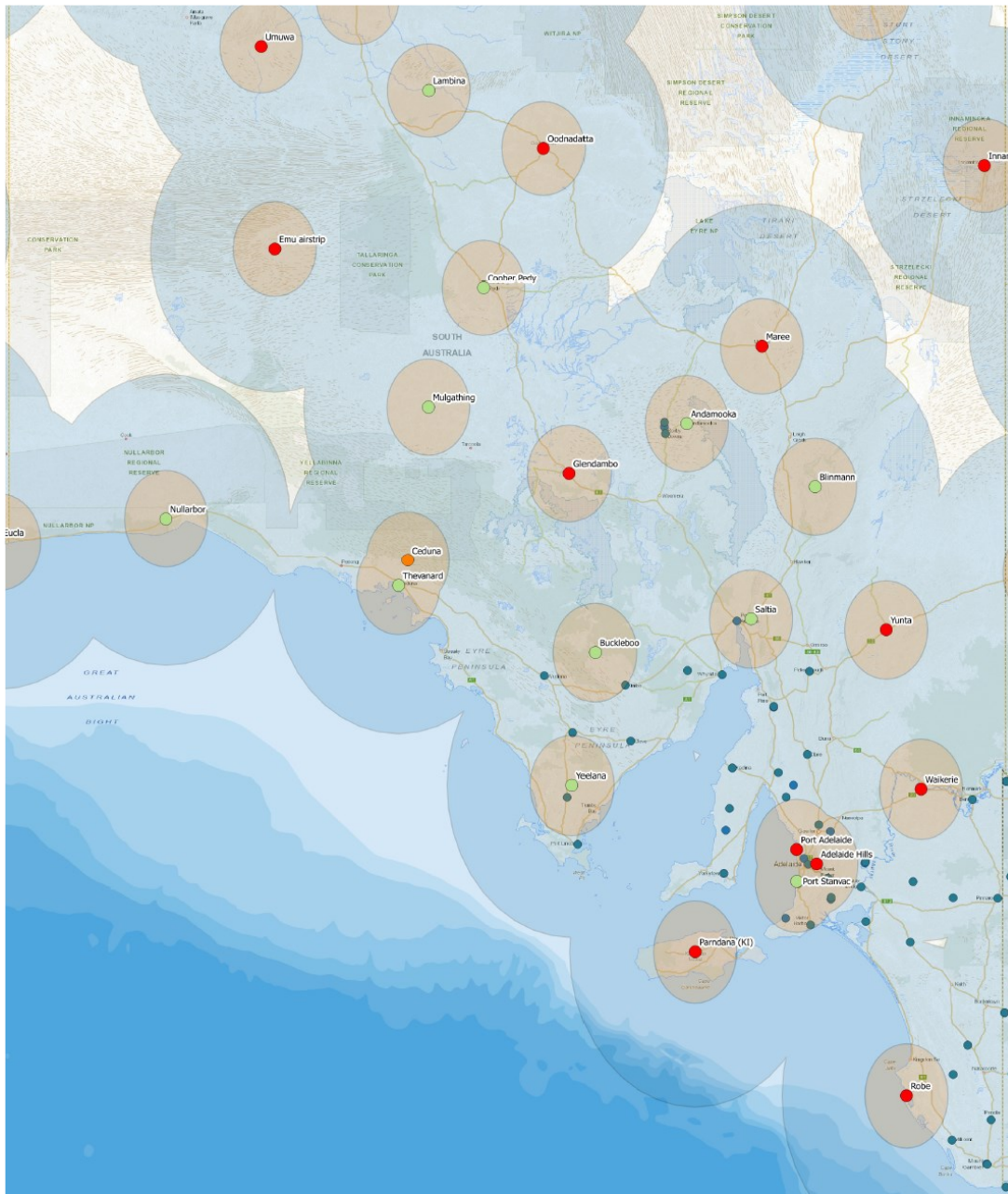
- > Waikerie, Kangaroo Island, Oak Valley, Kingston, Yunta.

## **Sites being scoped**

- > Inamincka, Oodnadatta, Strezlecki Track, Birdsville Track, Gelindambo, APY Lands.







# Questions

Ryan Ruddick

Director – GNSS Infrastructure and Informatics

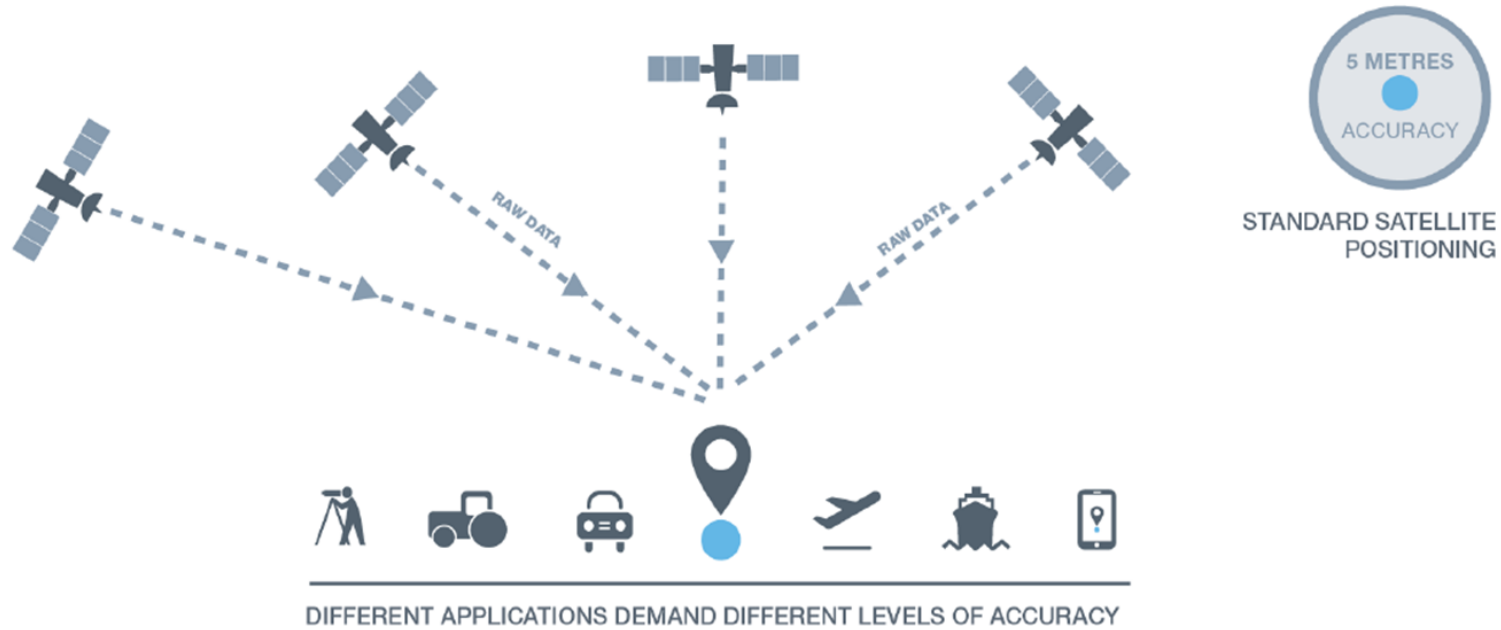
National Positioning Infrastructure Branch

Geoscience Australia

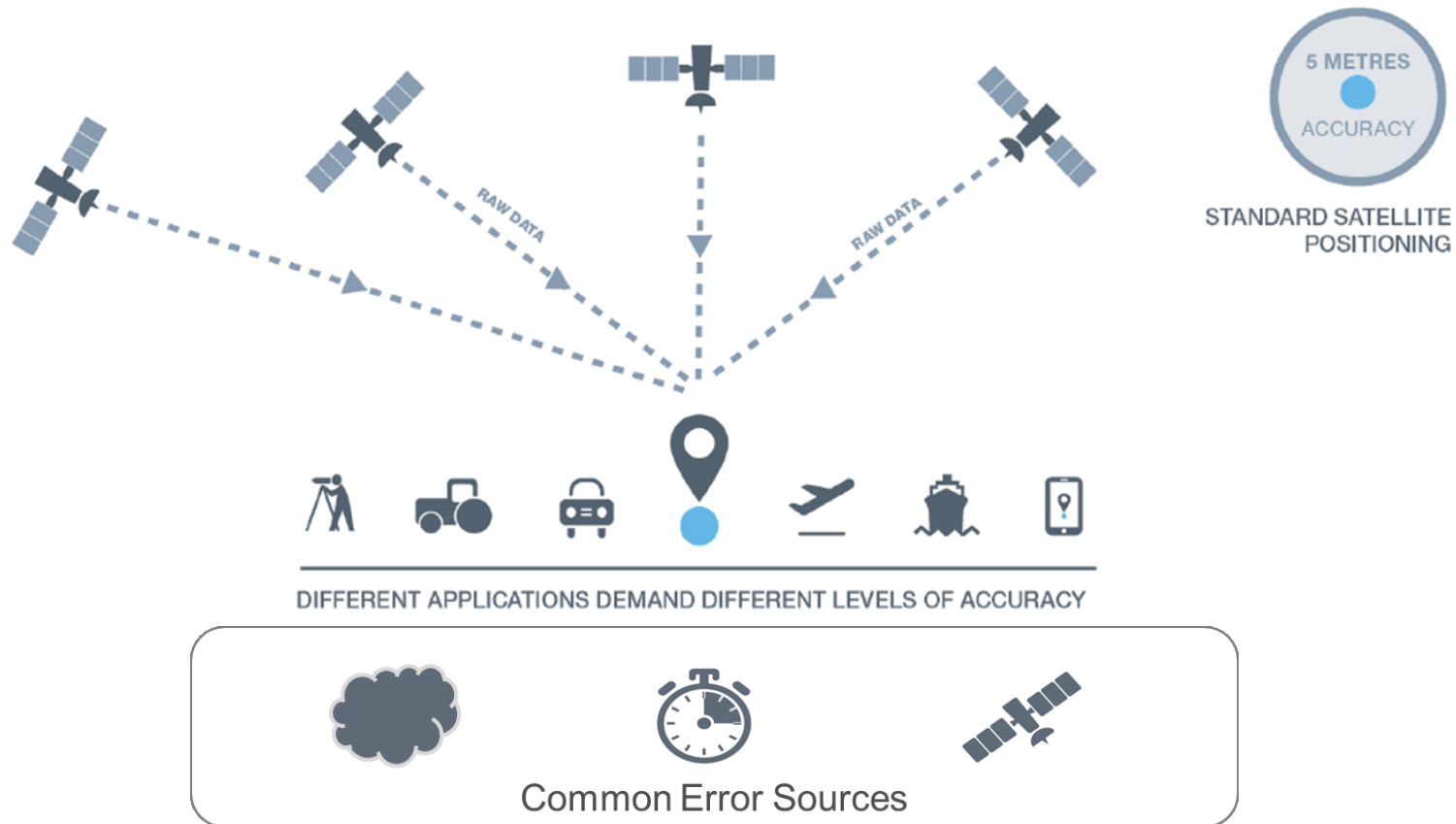
Email: [ryan.ruddick@ga.gov.au](mailto:ryan.ruddick@ga.gov.au)



# GNSS Positioning

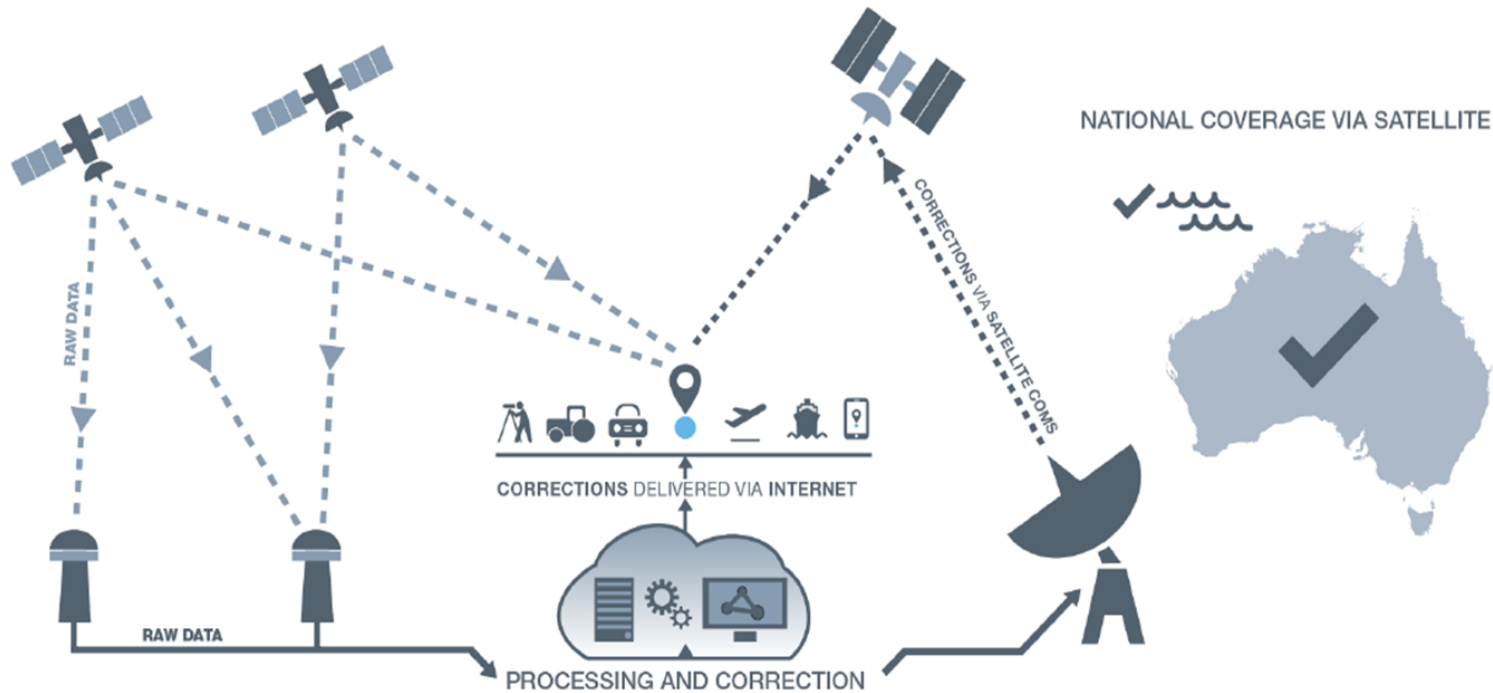


# GNSS Positioning





# Satellite Based Augmentation



# High Precision Augmentation



● =  
AUSTRALIA'S NETWORK OF  
GNSS GROUND STATIONS

