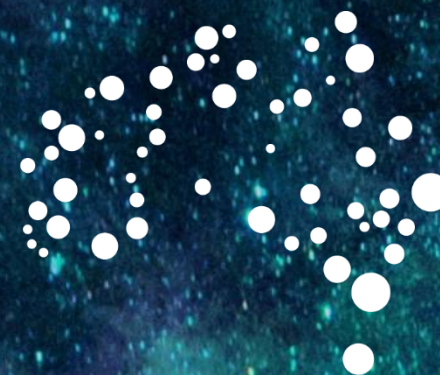




Australian Government



Australian
Space Agency

Australian Space Agency

Anthony Murfett
Deputy Head, Australian Space Agency

SA Space Forum
9 May 2019

*The Australian Space Agency acknowledges the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.
We pay our respects to their Elders past, present and emerging.*

Caretaker Period

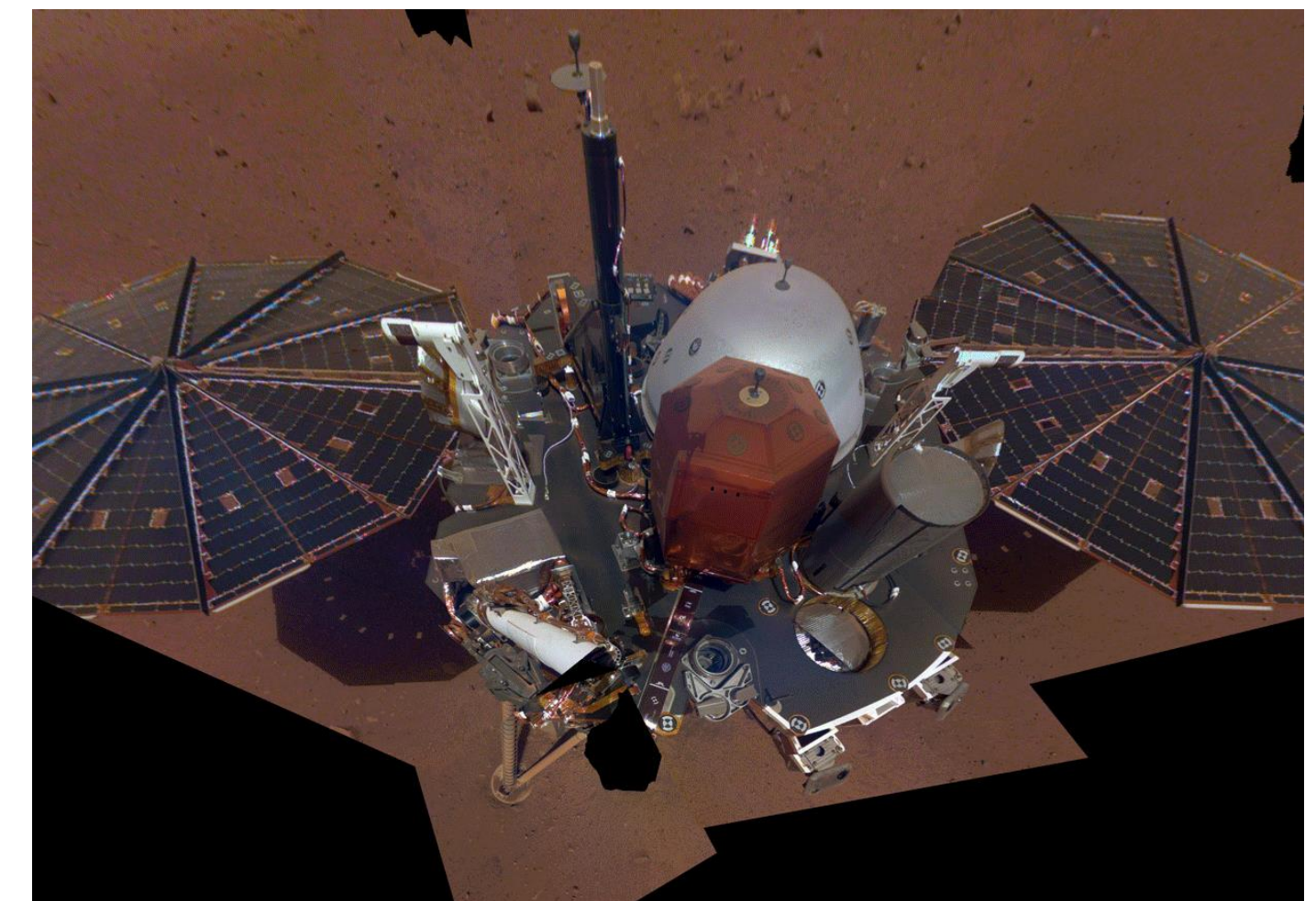


- **The Australian federal election has been called for 18 May 2019**
- **Government departments are now in caretaker period**
- **Caretaker period continues until the election result is clear or, if there is a change of government, until the new government is appointed.**

Space in the last year



- JAXA Hayabusa 2 arrives at Asteroid Ryugu
- NASA Voyager 2 enters interstellar space
- NASA InSight lands on Mars
- Chang'e-4 lands on far side of the moon
- Rocket Lab commences commercial launches
- Virgin Galactic passes 89.9km altitude
- Beresheet goes into lunar orbit
- First image of a black hole



Areas of opportunity



Position, navigation and timing

- Space Based Augmentation System (SBAS) – GA
- National Positioning Infrastructure (NPI) project – GA
- Virtual fencing of livestock
- Precision agriculture



Earth observation

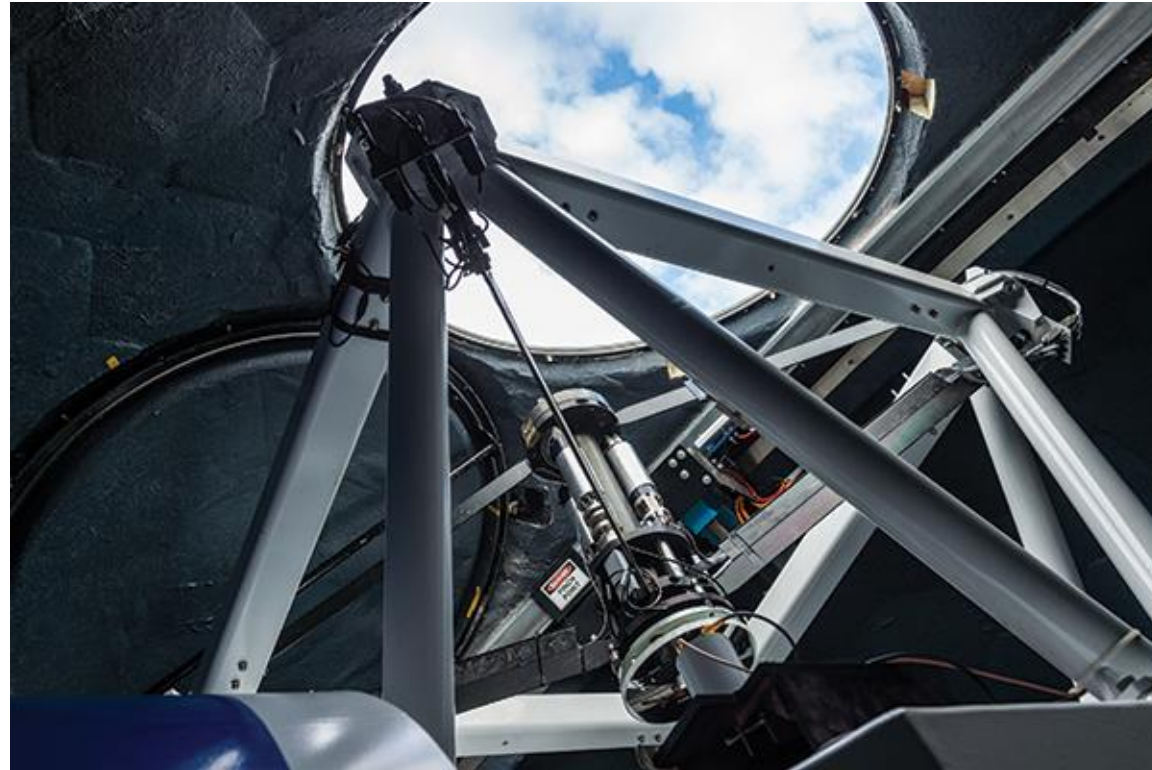
- Digital Earth Australia – GA
- NovaSAR capacity – CSIRO
- CUAVA 1 mission - Sydney University
- Next Generation Earth Observation - SmartSat CRC
- FrontierSI
- Consilium – using Earth observation for wine mapping in SA
- Maitec – commercial CAL/VAL of EO data and bushfire analysis
- CSIRO-Sat1 shortwave infrared imaging system and on-board data processing capabilities



Communications technologies and services

- IoT nanosatellites by Fleet
- Myriota using communication technology to support activities in remote locations
- Optical communications including - Australian Optical Ground Station Network and research into laser communications
- Advanced Communications a focus for SmartSat CRC
- Cingulan and Capricorn Space – starting ground station as a service

Areas of opportunity



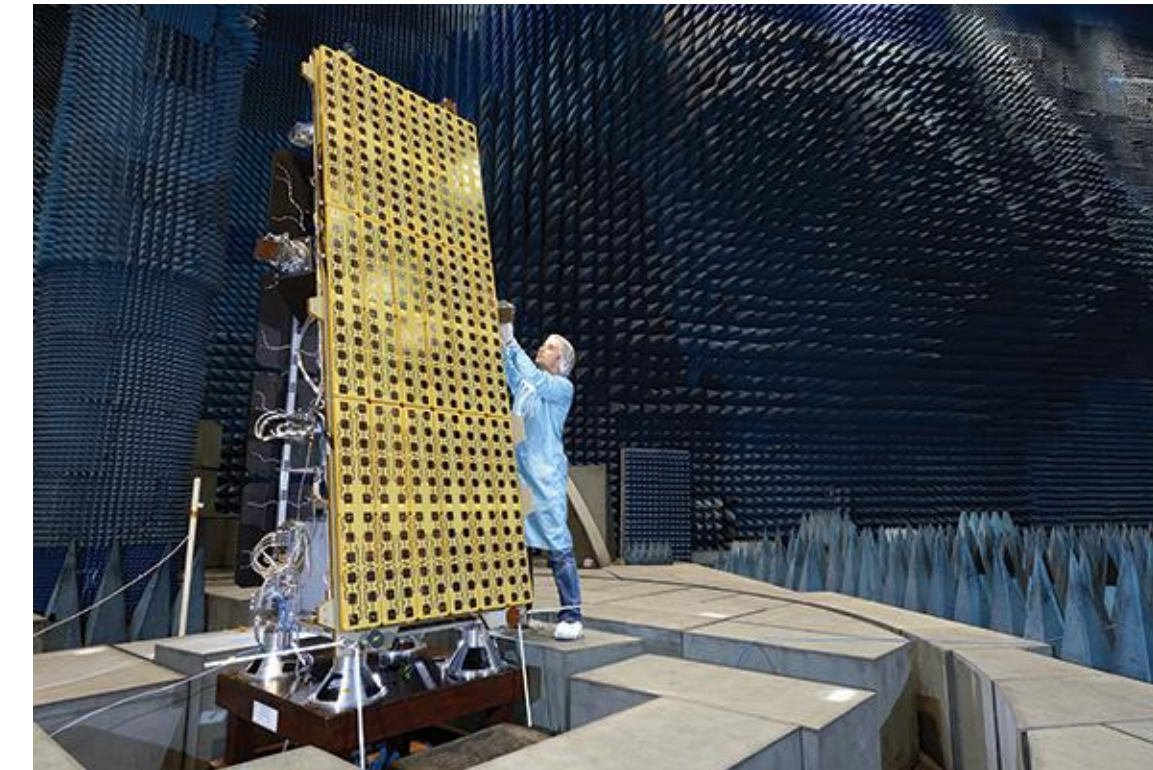
Space situational awareness and debris monitoring

- Inovor looking into in-orbit SSA
- Silentium developing 'passive radar' SSA
- Saber Astronautics – P.I.G.I. mission control software to track SSA and large constellations
- Curtin University Desert Fireball Network to track satellites
- EOS world class passive and laser SSA and debris tracking
- Western Sydney Uni is developing a neuromorphic 'event based' camera



Robotics and automation

- Woodside and NASA cooperation using the Robonaut program
- Australian Center for Robotic Vision
- Deakin University's Institute For Intelligent Systems Research And Innovation working on haptically-enabled remote tele-operated robotics (for medicine)
- Automation in the resources sector including Fugro and Rio Tinto



Leapfrog R&D

- Space Medicine: psychological effects of space travel to in orbit production of pharmaceuticals and synthetic biology
- Quantum cryptography and comms
- Artificial Intelligence onboard satellites
- CSIRO Space Future Science Platform
- M1 and M2 cube satellite – remote sensing in partnership with RAAF and USNW-Canberra



Access to space

- Gilmour Space's 'One Vision' hybrid rocket
- Equatorial Launch Australia looking to establish in Nhulunbuy, NT
- Southern Launch looking to establish in Whalers Way, SA
- Black Sky launched first commercial sounding rocket in 2018