National Aeronautics and Space Administration

# Space Communications and Our Shared Journey to the Cosmos


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NASA


Australian Space Agency

Australian Space Discovery Centre
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NASA SCaN Artist Concept

# It Started with "One Small Step"

We Pushed the Bounds of What Was POSSIBLE

~1964

First built Deep Space Station 42 (DSS-42)



The Control Room for DSS42



The Apollo 11 Moon Mission



Returned the first images of the Apollo 11 Moon walk



~1969



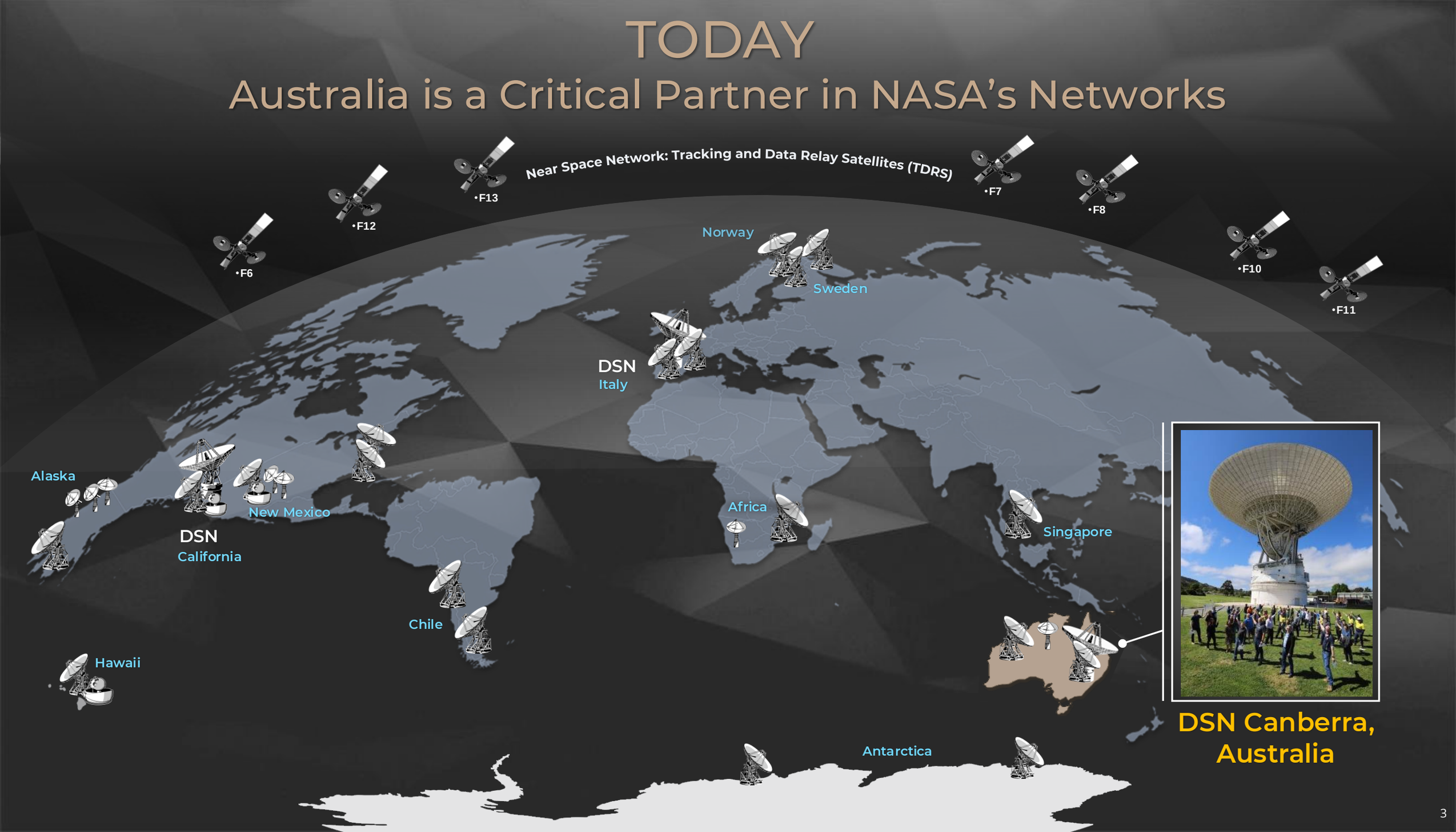






# TODAY

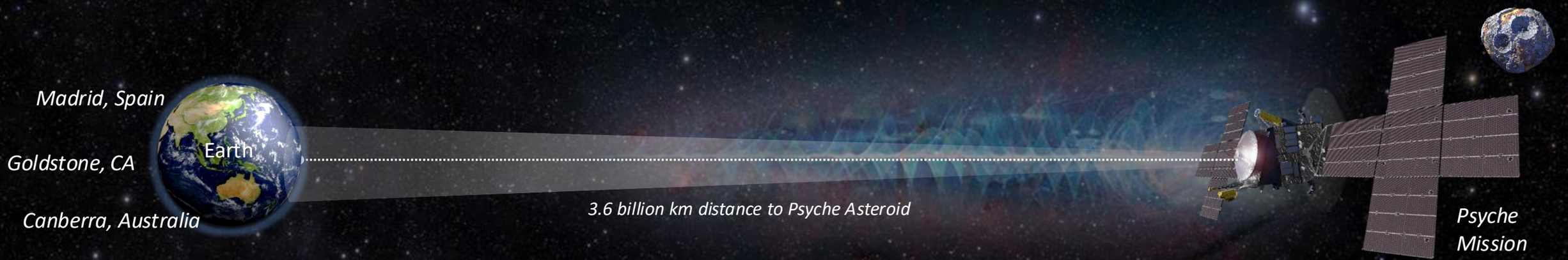
## Australia is a Critical Partner in NASA's Networks






DSN Canberra, Australia

# How does the Deep Space Network Work?



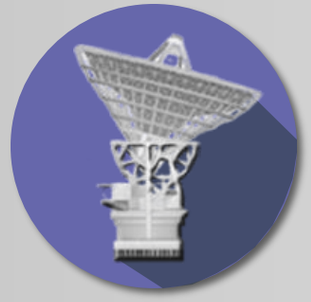

* Illustration is a representation only and not to scale

- **Three Complexes:** Australia, U.S., and Spain
- At every moment can see nearly 100% of the sky

**34 meter**



**70 meter**



**DSN 70-meter antenna**

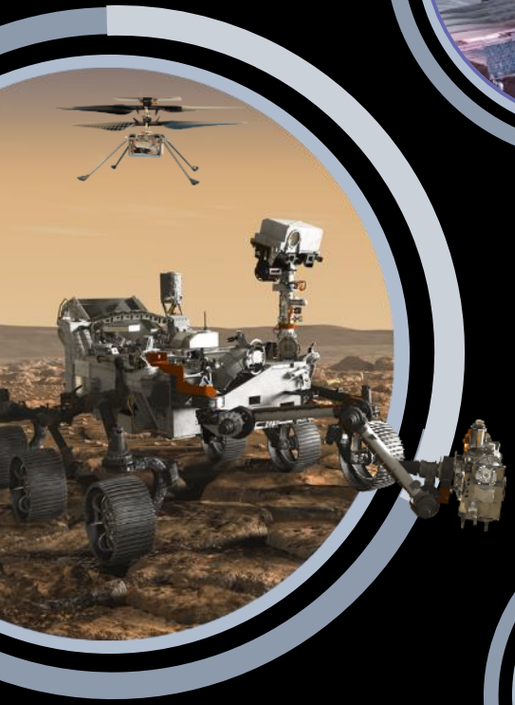
FIFA Pitch:
100–110 m long
64–73 m wide



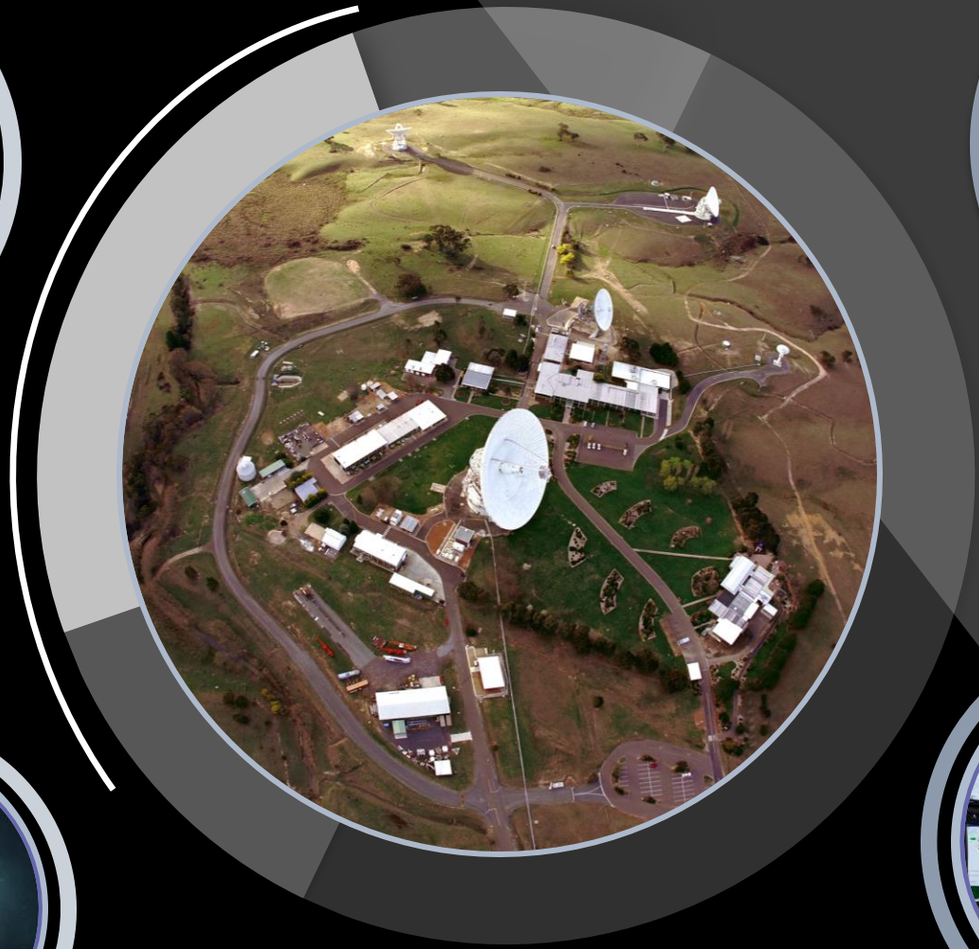
# DSN Canberra Enabling Science and Exploration













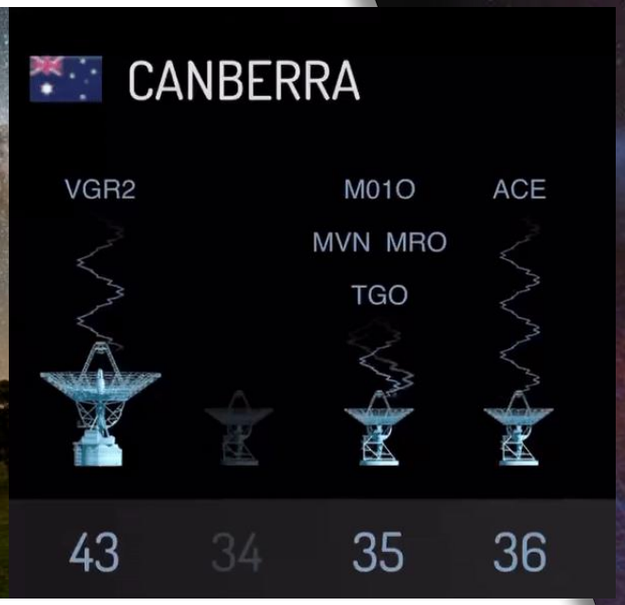






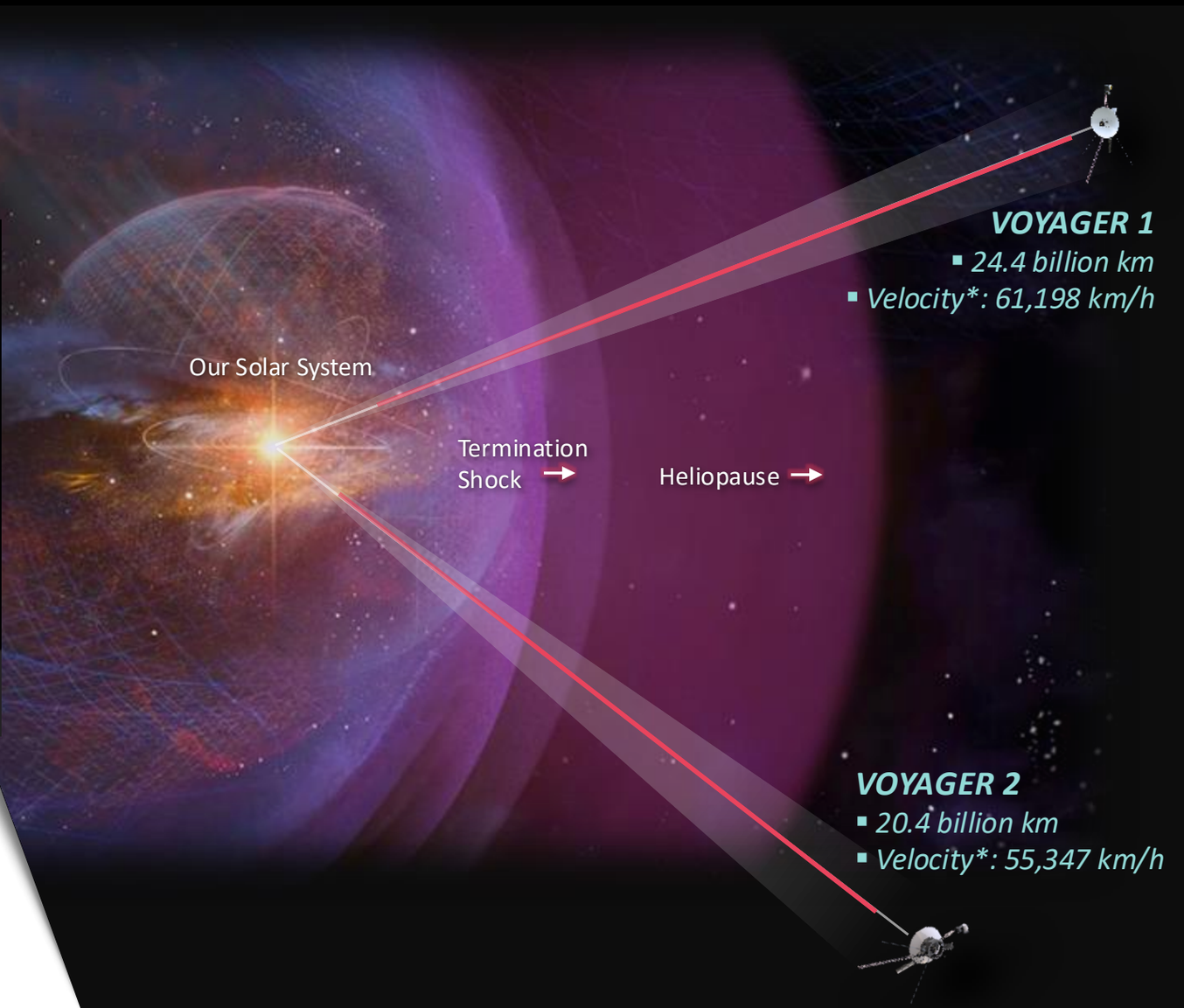
# Voyager 2 **Calling Home to Canberra**




DSN Canberra is Humanity's only Connection to **Voyager 2**

https://eyes.nasa.gov/dsn/dsn.html




*As of May 2024, *With respect to the Sun*

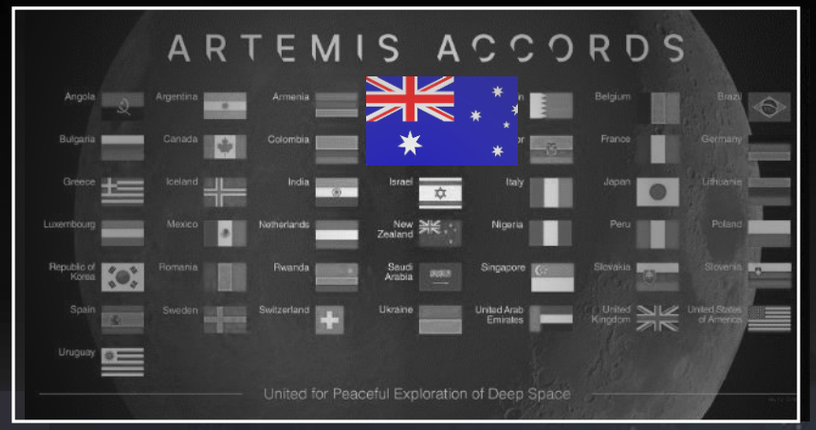
# The “Next Giant Leap”

## We Continue to Push the Bounds of What is POSSIBLE

- Next step in human space exploration
- Sustained presence on Moon
- Laying groundwork for humans on Mars



# TOGETHER to the Moon






October 2020, Australian Space Agency, Dr Megan Clark signed the Accord, witnessed by Anthony Murfett.




Australian Space Agency

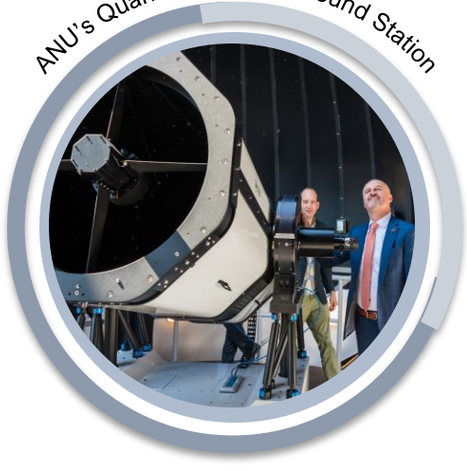
NASA

ARTEMIS

# Australian National University & Artemis II

By infusing new laser communications technologies into the Artemis missions, we're empowering our astronauts with more data than ever before.

ANU's Quantum Optical Ground Station

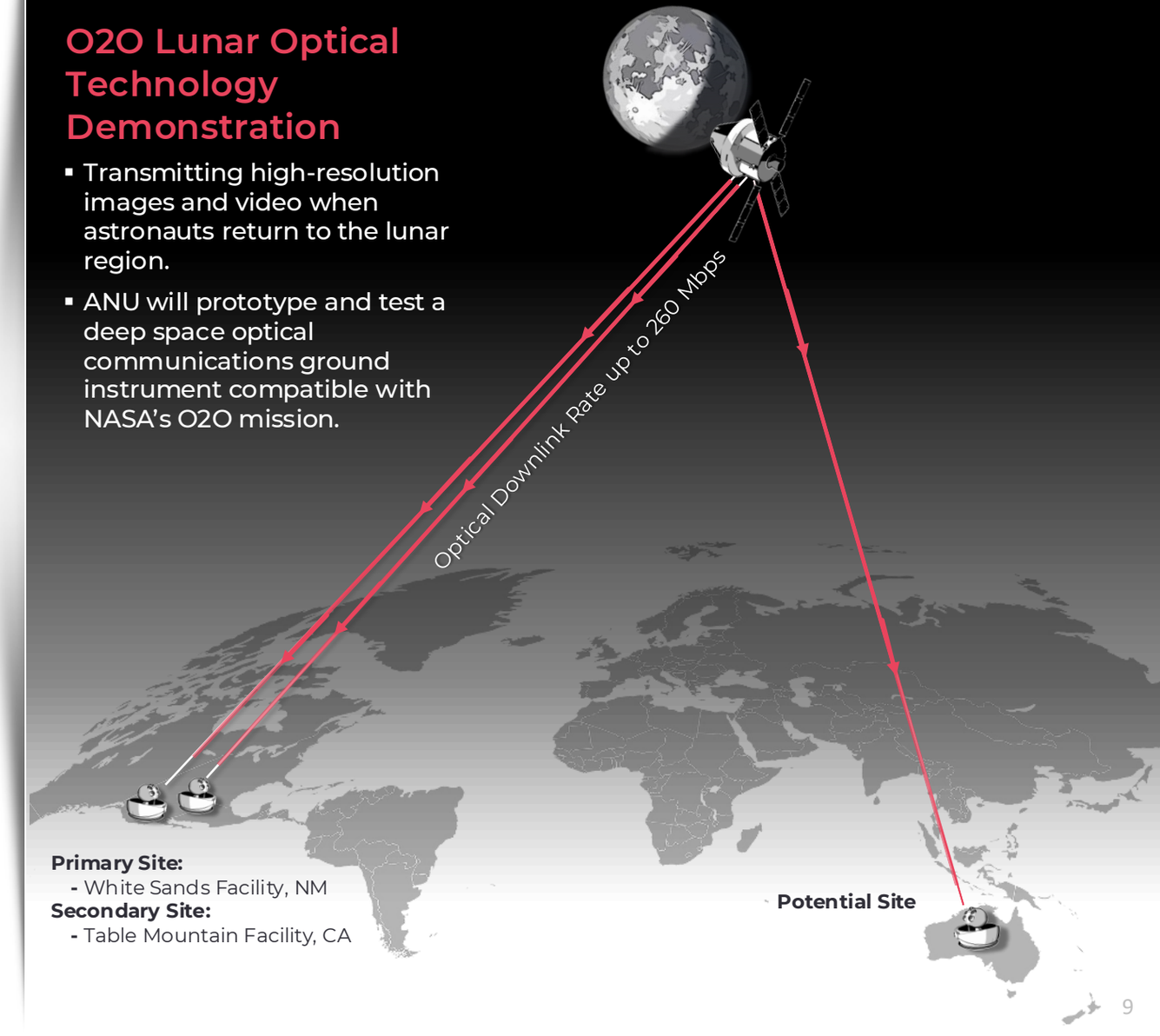


Artemis II Crew



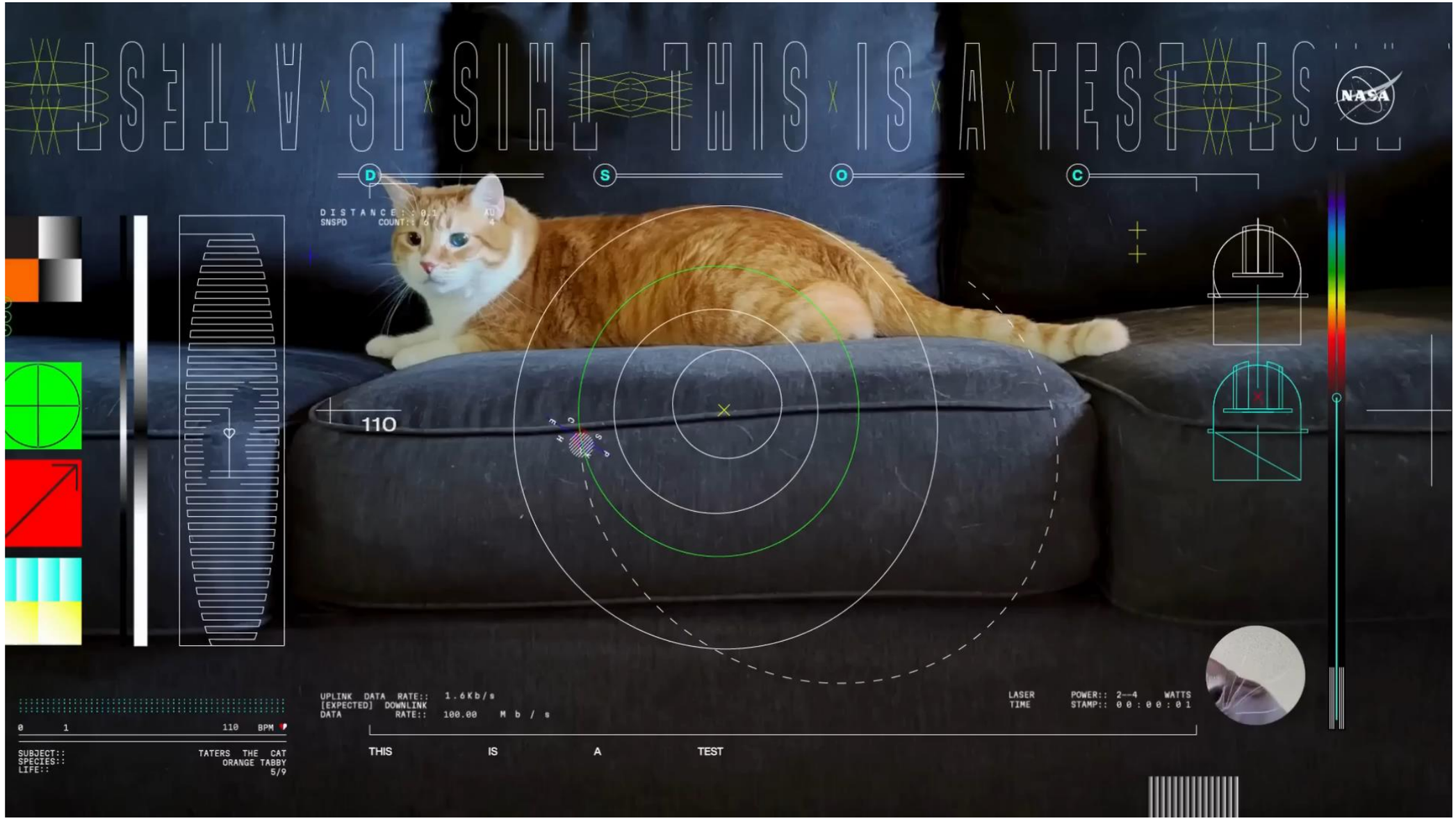
## O2O Lunar Optical Technology Demonstration

- Transmitting high-resolution images and video when astronauts return to the lunar region.
- ANU will prototype and test a deep space optical communications ground instrument compatible with NASA's O2O mission.




Australian National University

# Australian National University & Artemis II




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SCaN
Space Communications
and Navigation
Science and Exploration, Enabled Together.
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# “Artemis II: Mission Overview” Video

https://youtu.be/7XzhtWcepos

