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For Human Exploration, All Roads Lead to Mars

National Aeronautics and
Space Administration



- **NASA's vision:**
 - To reach for new heights and reveal the unknown so that what we do and learn will benefit all humankind
- **Why is Mars the new height?**
 - It is the only destination if humanity is to leave the cradle of Earth
- **How do we get to Mars?**
 - Through science, technology, commercial, international and human endeavors



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Like the Mercury Program:

Earth Reliant is solving the challenges of long duration spaceflight

Like the Gemini Program:

Proving Ground will practice living and working during long duration spaceflight

Like the Apollo Program:

Mars Ready is developing systems that will allow humans to explore Mars

**Unlike the Apollo Program,
this time we're taking a sustainable, pioneering approach!**



The Science Road to Mars: Charting the Course

National Aeronautics and
Space Administration



Identify & Solve Challenges

How does weightlessness
affect human and physical
processes?

Learn to Live & Work

How do radiation and
isolation affect human
ability to live and work?

Explore & Pioneer

What's the environment and
how does it impact human
habitability?



**Earth
Reliant**



Proving Ground



**Earth
Independent**

Science

The Technology Road to Mars: Paving the Way

National Aeronautics and
Space Administration



Identify & Solve Challenges

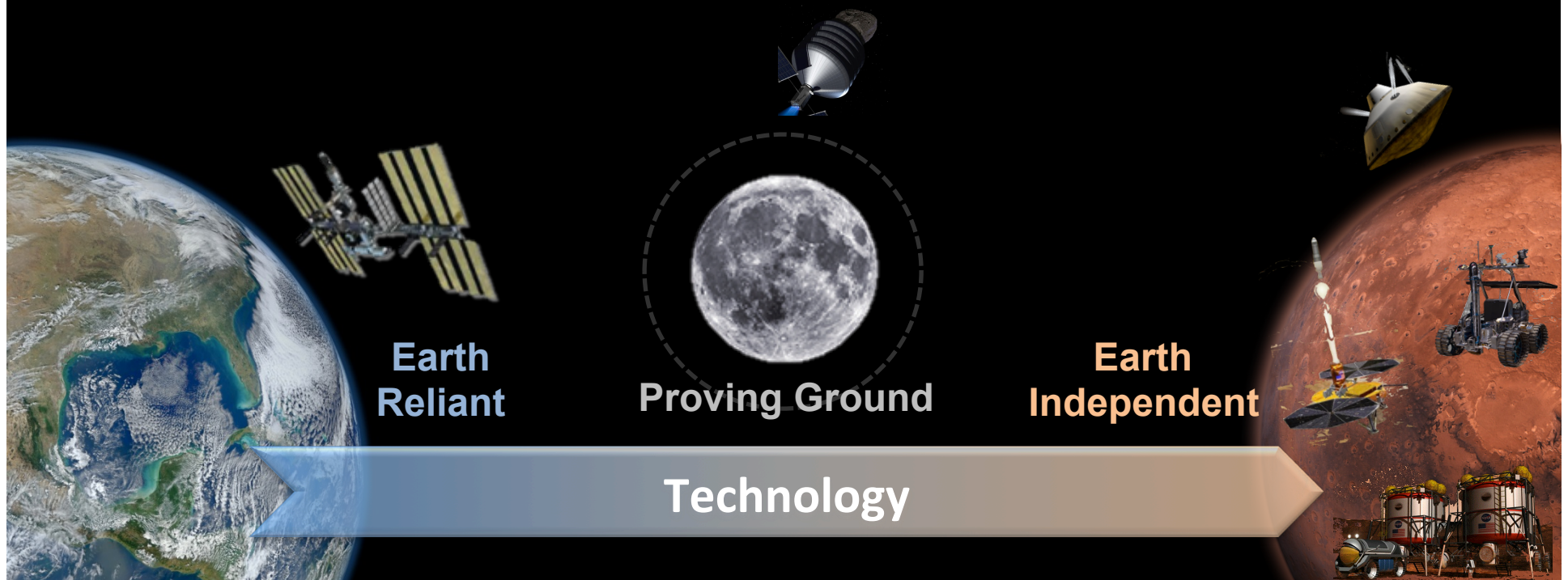
What technologies do humans need to survive for long durations?

Learn to Live & Work

How can humans, robotics, transportation, and ground control best work together in this environment?

Explore & Pioneer

How do we land, explore, live off the land, and return home?



The Commercial Road to Mars: Growing the Economy

National Aeronautics and
Space Administration



Identify & Solve Challenges

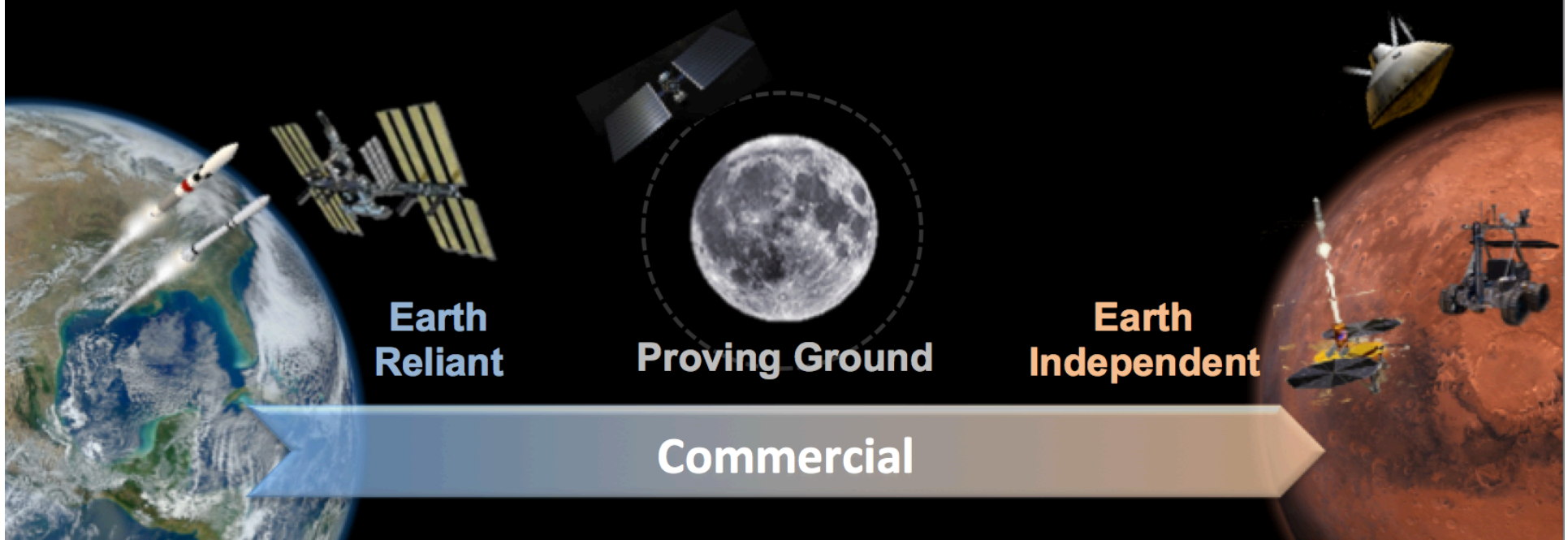
How do we lower the cost of cargo/crew launch while also benefiting the economy through R&D in micro-gravity?

Learn to Live & Work

How do we lower the cost of cargo/crew transport and other en route services?

Explore & Pioneer

How do we lower the cost of cargo/crew landing, surface operations, and Earth return?



The International Road to Mars: Exploring as a Species

National Aeronautics and
Space Administration



Identify & Solve Challenges

How do we collaborate in
all aspects of
long duration spaceflight?

Learn to Live & Work

How do we distribute
roles, responsibilities,
and capabilities?

Explore & Pioneer

How do we explore and
pioneer the new frontier
as a species?



The Human Road to Mars: A Deeper Vision, One Step at a Time

National Aeronautics and
Space Administration



Identify & Solve Challenges

How do we prove that we
can solve these challenges?

Learn to Live & Work

How do we practice living
and working in this
environment?

Explore & Pioneer

How do we explore and
pioneer the new frontier
for all humankind?

