Journey to Mars via Global Space Collaboration

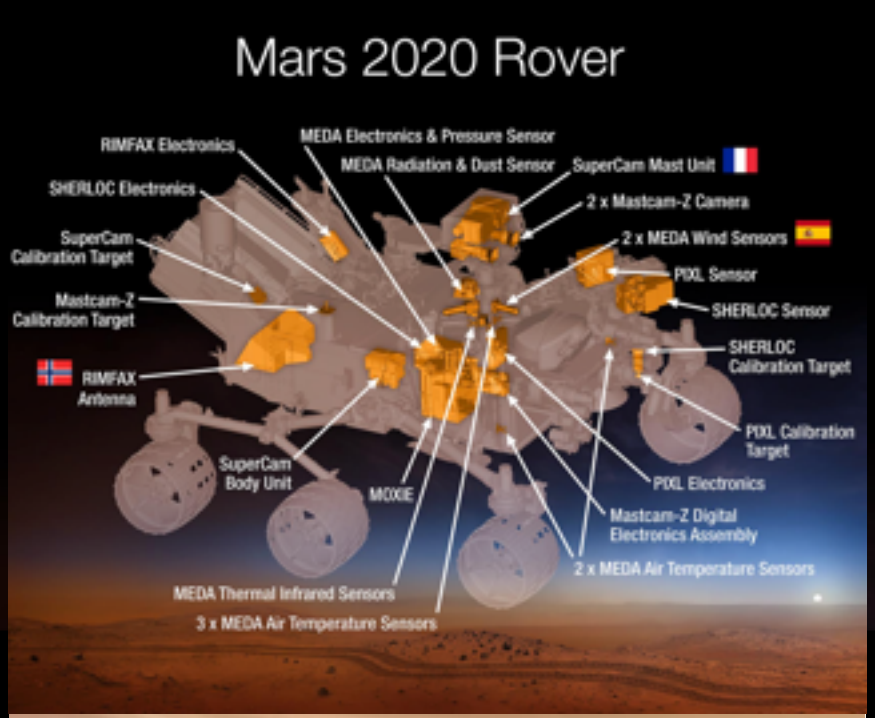
Dr. Dava Newman, NASA Deputy Administrator

#JOURNEYTOMARS @DavaExplorer

INTERNATIONAL COOPERATION

A Cornerstone of NASA's Activities

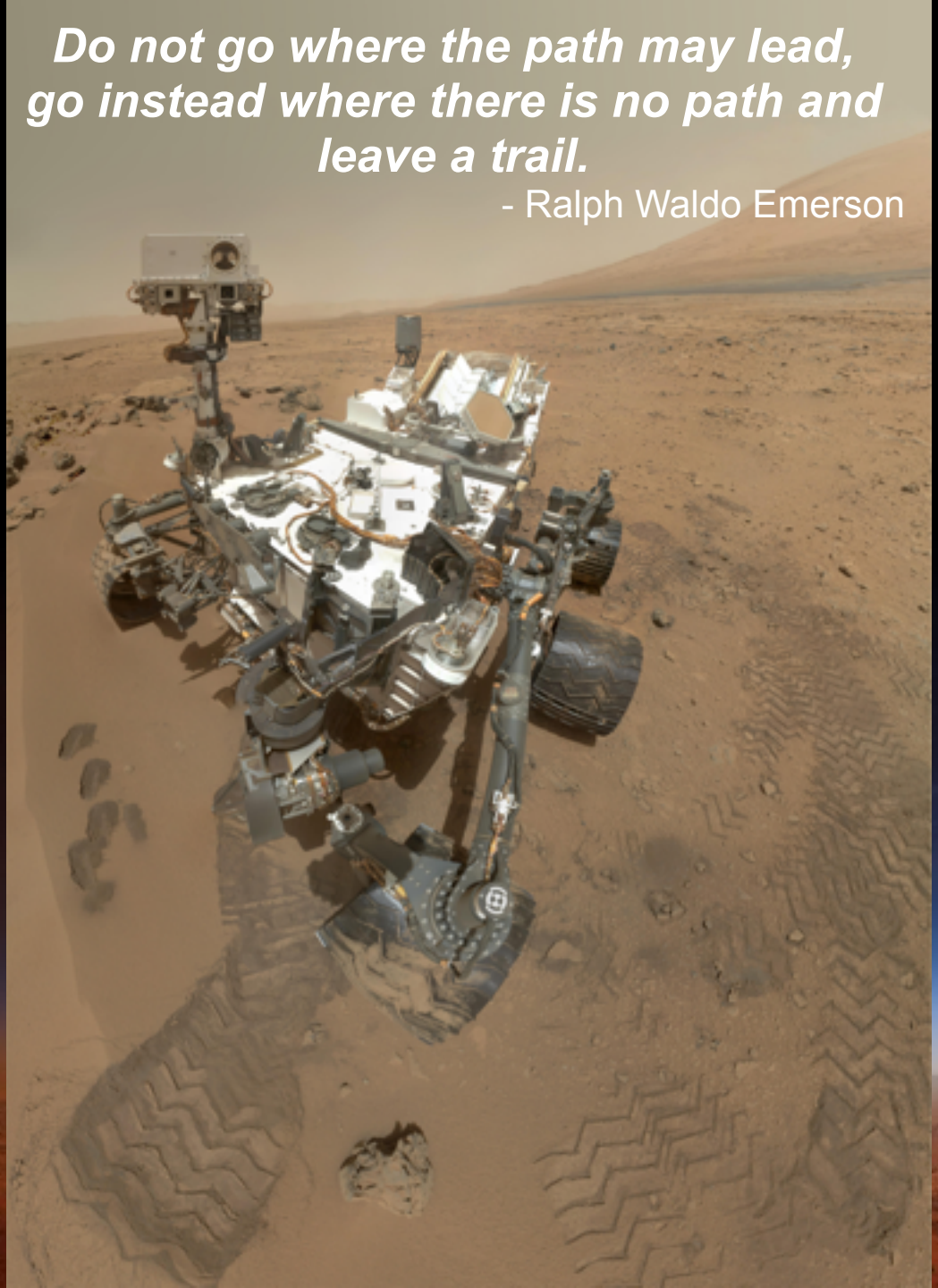
National Aeronautics and Space Administration



mars.nasa.gov

Do not go where the path may lead, go instead where there is no path and leave a trail.

- Ralph Waldo Emerson



National Aeronautics and Space Administration

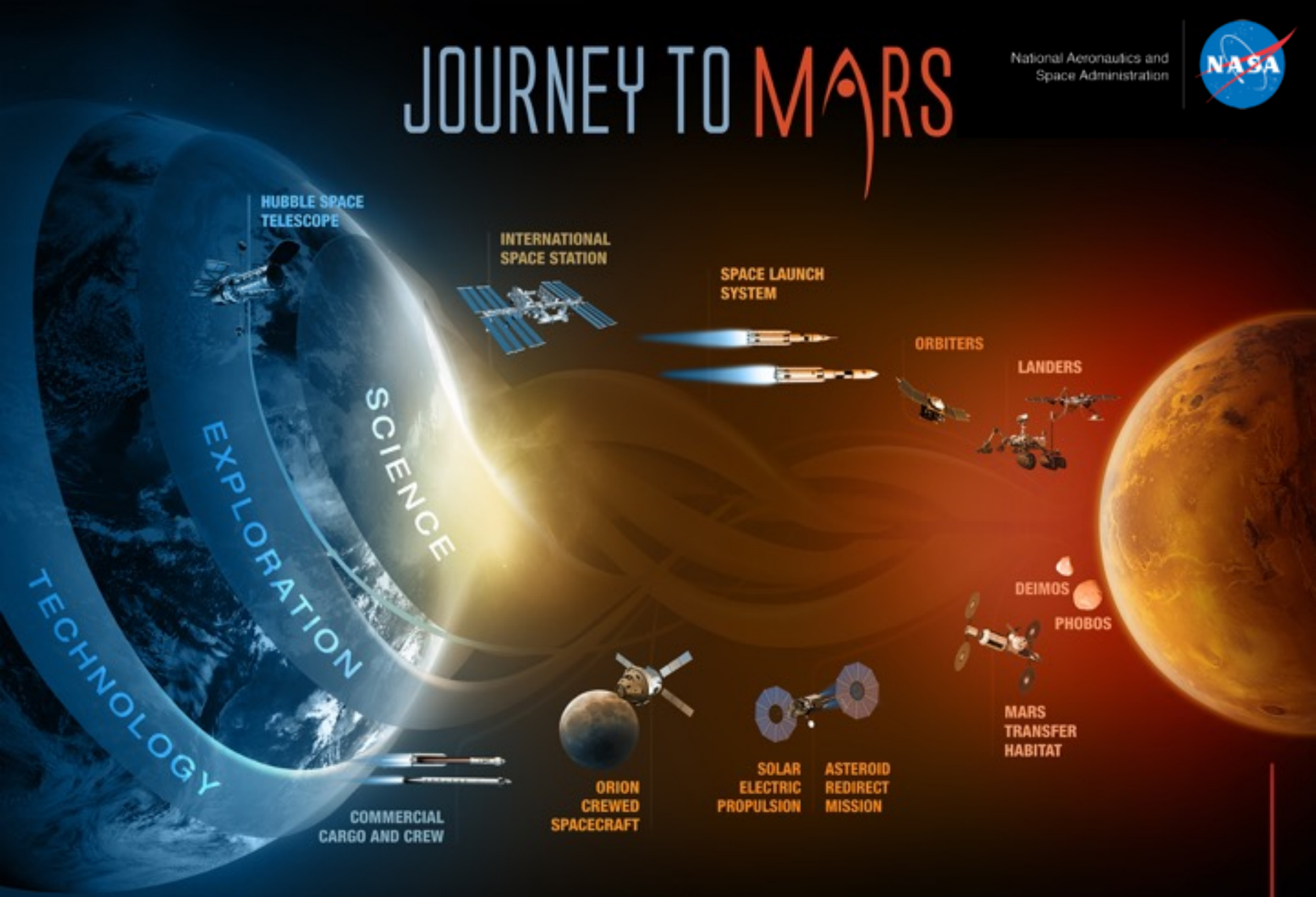
NASA

#JOURNEYTOMARS

JOURNEY TO MARS

National Aeronautics and Space Administration

NASA



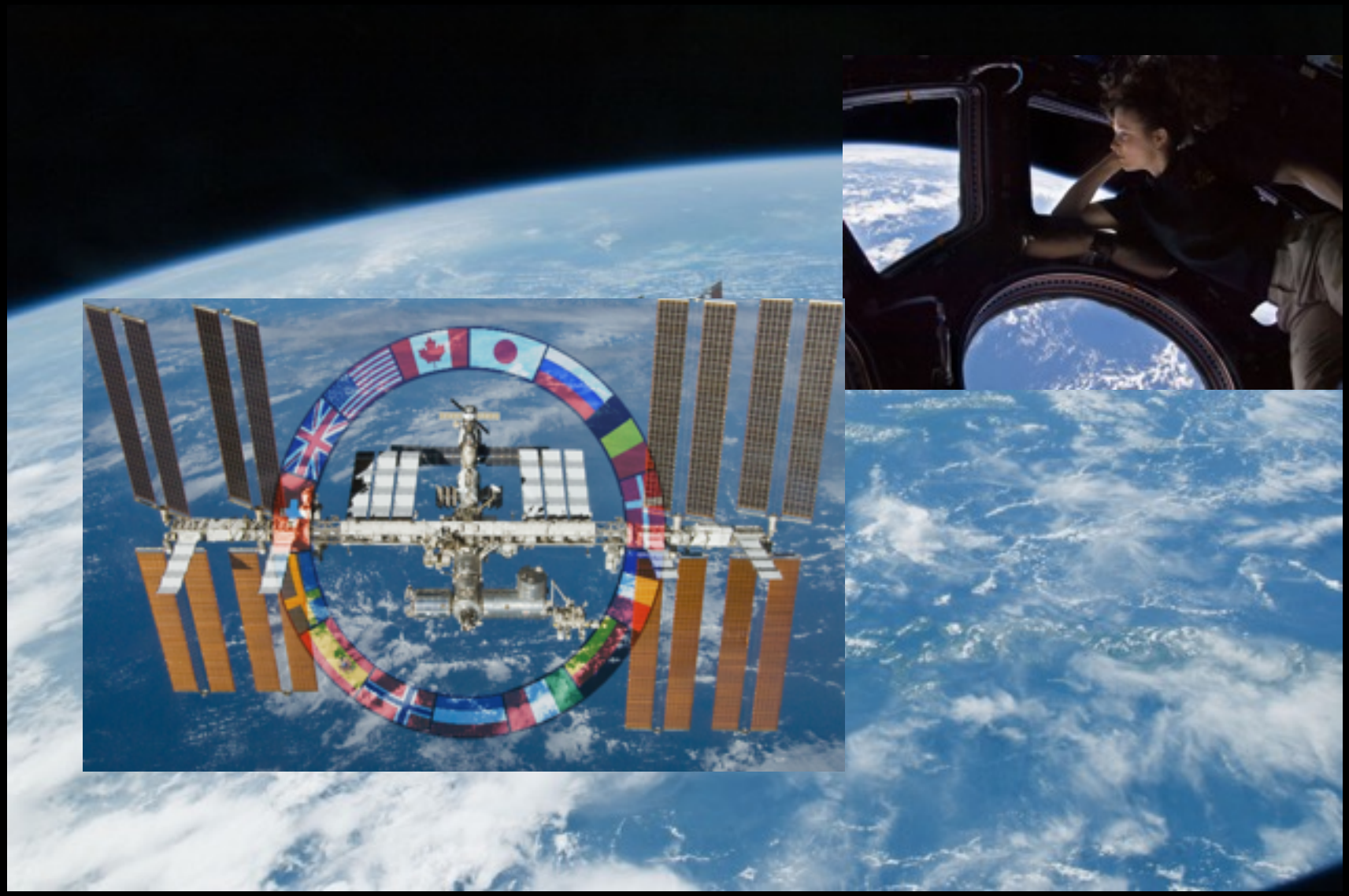
MISSIONS: 6-12 MONTHS
RETURN: HOURS
EARTH RELIANT

MISSIONS: 1-12 MONTHS
RETURN: DAYS
PROVING GROUND

MISSIONS: 2-3 YEARS
RETURN: MONTHS
EARTH INDEPENDENT

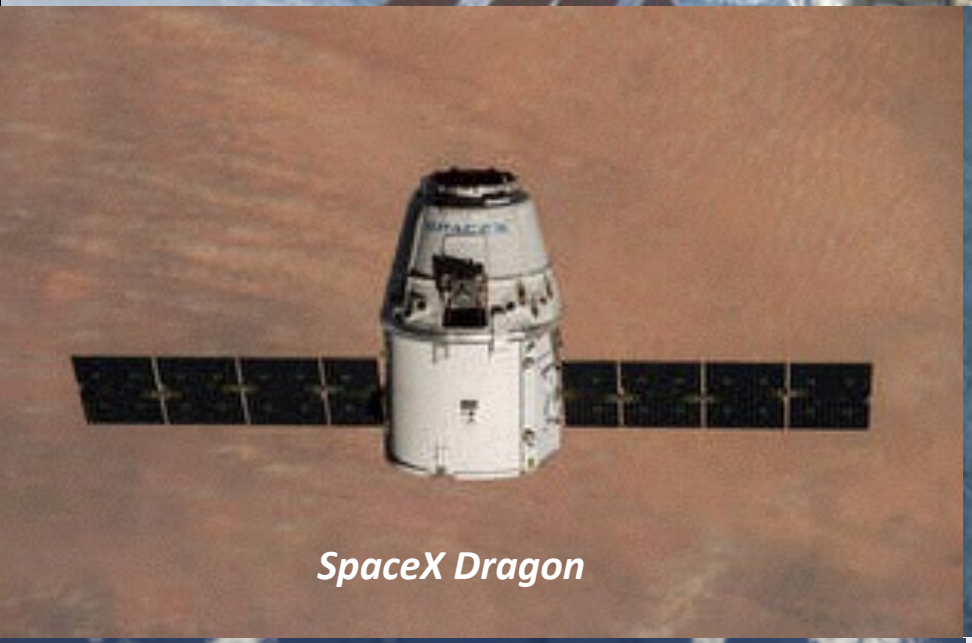
16 Years of Human Habitation on the International Space Station (ISS)

National Aeronautics and Space Administration



INTERNATIONAL SPACE STATION

Public-Private Partnerships



SpaceX Dragon

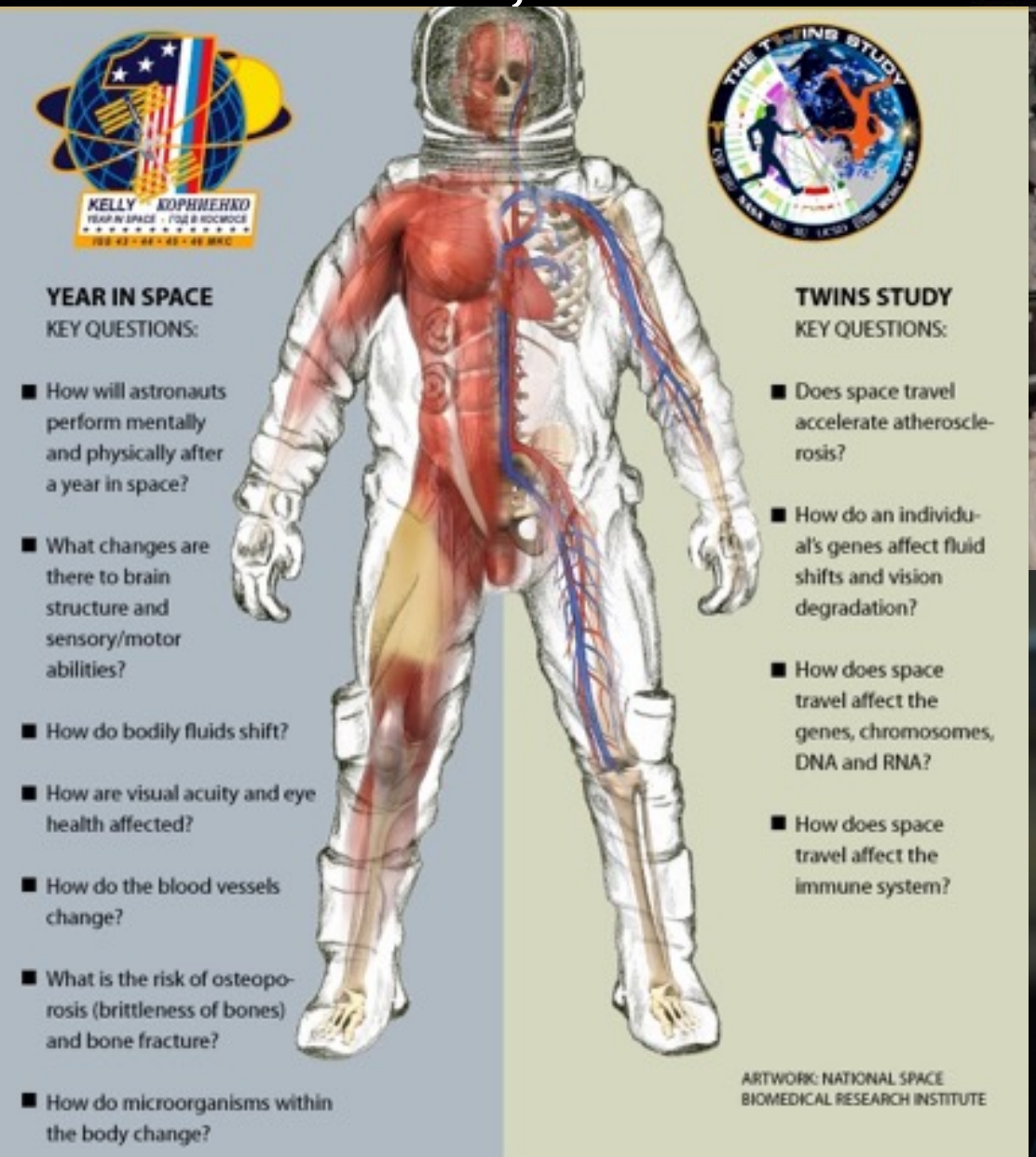
Orbital ATK Cygnus

Russian Soyuz

JAXA HTV

INTERNATIONAL SPACE STATION

Off the Earth, For the Earth



YEAR IN SPACE

KEY QUESTIONS:

- How will astronauts perform mentally and physically after a year in space?
- What changes are there to brain structure and sensory/motor abilities?
- How do bodily fluids shift?
- How are visual acuity and eye health affected?
- How do the blood vessels change?
- What is the risk of osteoporosis (brittleness of bones) and bone fracture?
- How do microorganisms within the body change?

TWINS STUDY

KEY QUESTIONS:

- Does space travel accelerate atherosclerosis?
- How do an individual's genes affect fluid shifts and vision degradation?
- How does space travel affect the genes, chromosomes, DNA and RNA?
- How does space travel affect the immune system?

ARTWORK: NATIONAL SPACE BIOMEDICAL RESEARCH INSTITUTE

Space Launch System (SLS)

National Aeronautics and Space Administration

Mars: Flowing Water & Atmosphere Loss

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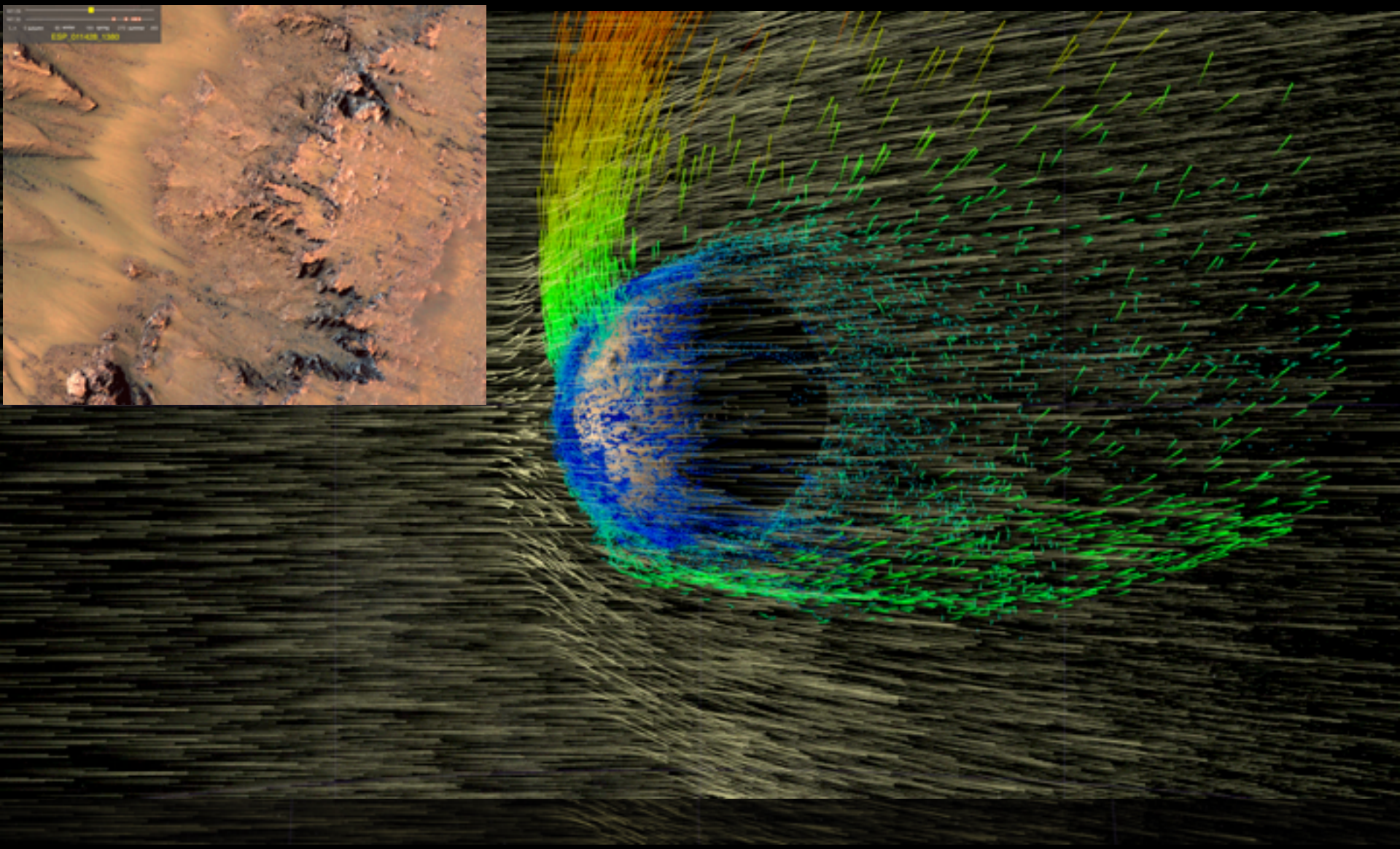

STEAMD

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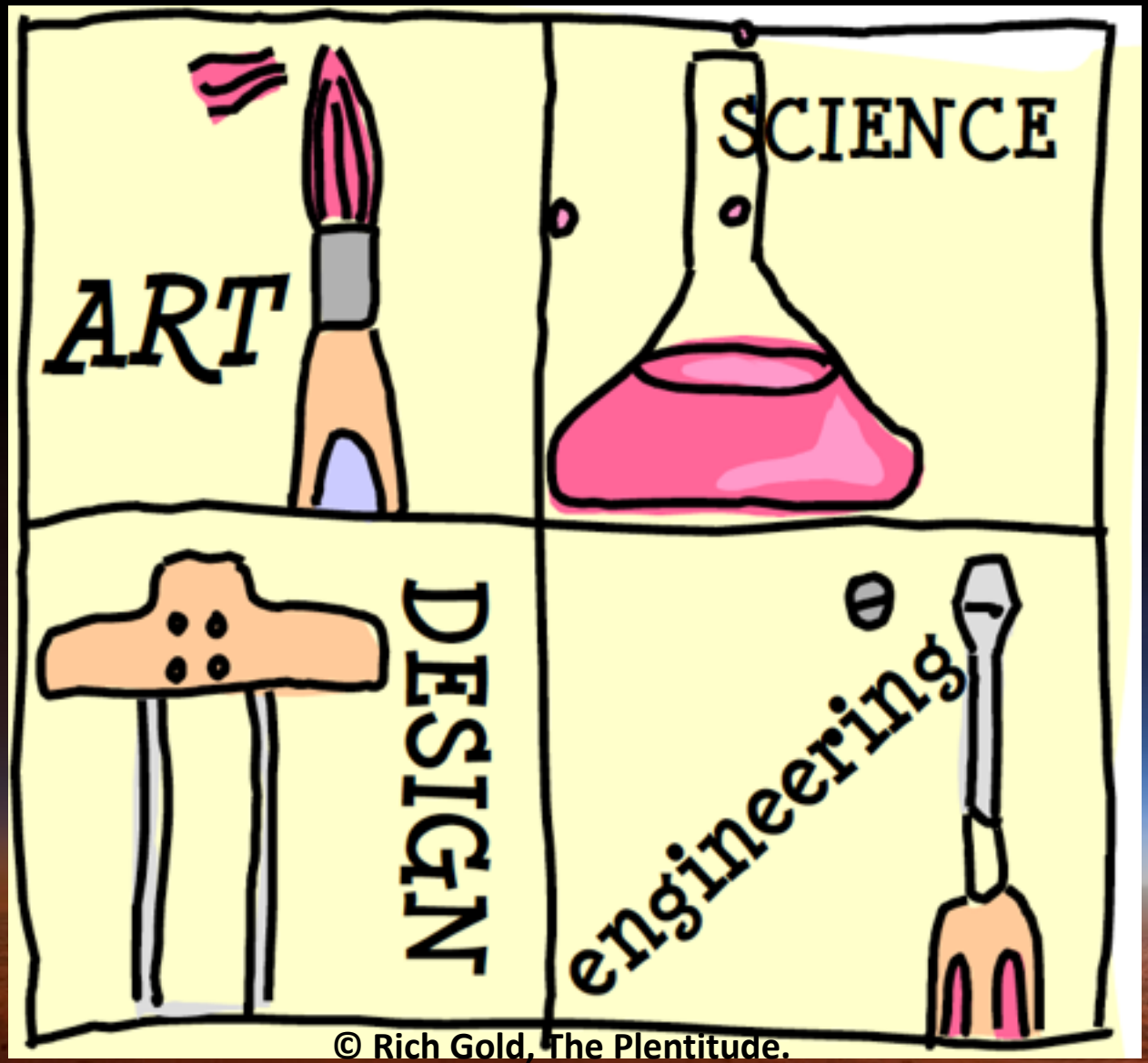
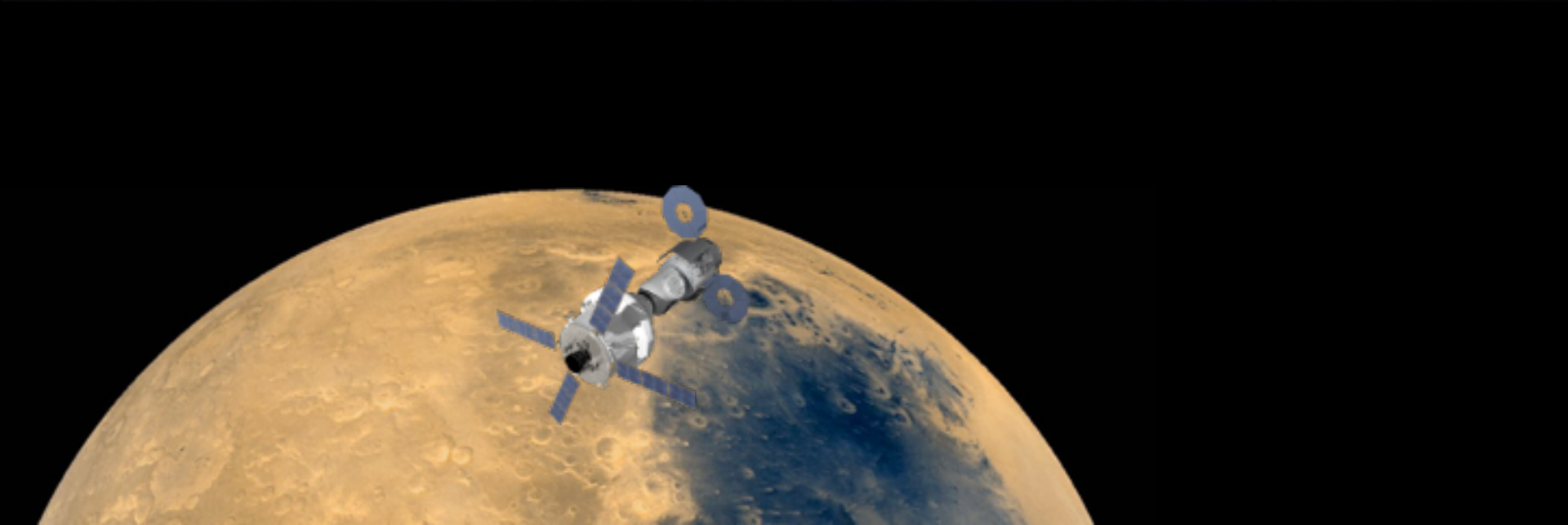


ISS – Deep Space – Mars



Spaceship Earth
It's the Only One We Have!

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Global Journey to Mars

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