



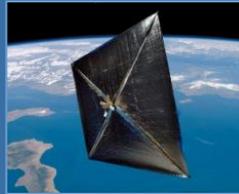
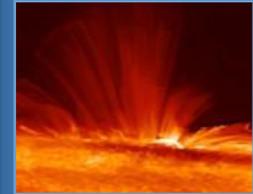
National Defense Industrial Association (NDIA) Manufacturing Division Meeting-

Path to Human Exploration – Partnership Opportunities

Jody Singer,
Program Manager, Flight Programs and Partnerships Office
Marshall Space Flight Center (MSFC)



marshall



June 4th, 2014

HUMAN EXPLORATION

NASA's Path to Mars



EARTH RELIANT

MISSION: 6 TO 12 MONTHS
RETURN TO EARTH: HOURS



Mastering fundamentals
aboard the International
Space Station

U.S. companies
provide access to
low-Earth orbit

PROVING GROUND

MISSION: 1 TO 12 MONTHS
RETURN TO EARTH: DAYS



Expanding capabilities by
visiting an asteroid redirected
to a lunar distant retrograde orbit

The next step: traveling beyond low-Earth
orbit with the Space Launch System
rocket and Orion spacecraft

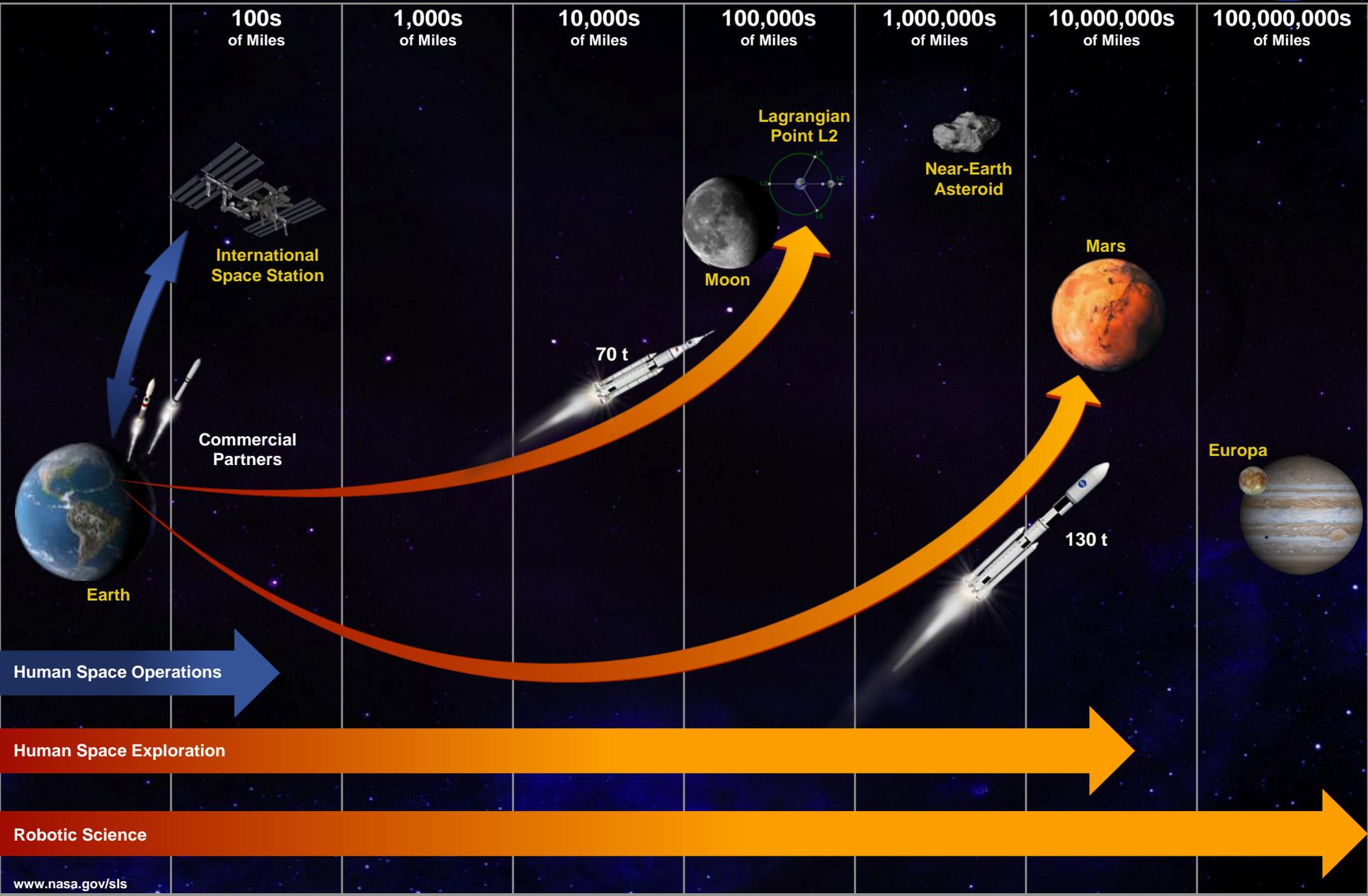
MARS READY

MISSION: 2 TO 3 YEARS
RETURN TO EARTH: MONTHS



Developing planetary independence
by exploring Mars, its moons and
other deep space destinations

The Future of Exploration and Science



100s of Miles

1,000s of Miles

10,000s of Miles

100,000s of Miles

1,000,000s of Miles

10,000,000s of Miles

100,000,000s of Miles

International Space Station

Commercial Partners

70 t

Moon

Lagrangian Point L2

Near-Earth Asteroid

Mars

130 t

Europa

Earth

Human Space Operations

Human Space Exploration

Robotic Science

FY15 Agency Goals



SLS/Orion:
Complete analysis of Orion's Test Flight (EFT-1) and design reviews



ISS: Increase utilization with science and technology payload hardware to 70 percent



Asteroid Redirect Mission:
Hold mission Concept Review in 2015

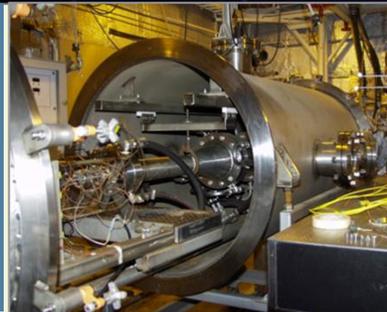


Launch 16 science and ISS cargo missions



Commercial Crew Program: Complete first phase of certification efforts with partners

Space Tech:
Transform technology with several major in-space demos

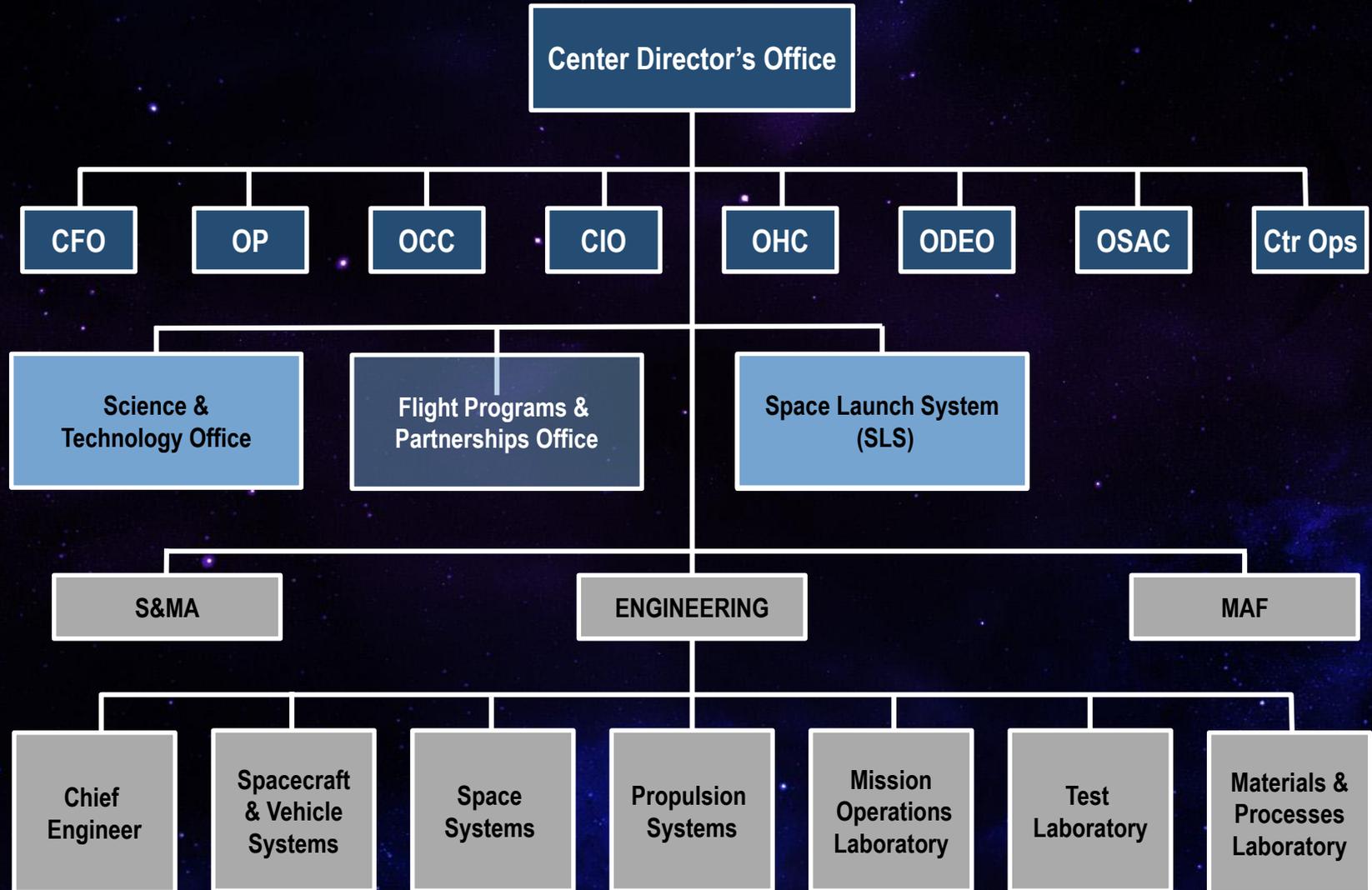


JWST: Deliver primary mirror backplane and backplane support to the Goddard Space Flight Center





NASA's Marshall Space Flight Center (MSFC) Organization



MSFC Partnerships Office



Stacy Counts

“Front Door” for External Partners to Access MSFC

Currently over 300 partner agreements

- Academia
- Commercial Space
- Federal Government



- ◆ Focus is on meeting the needs of external customer requests and developing long-term relationships
- ◆ *Within NASA's/MSFC mission assignments*
- ◆ Connect partners with appropriate technical personnel
- ◆ Educate (Partners and MSFC Employees) on the agreement process
- ◆ Provide capabilities awareness and education initiatives
- ◆ Advocate for the “partner” to ensure MSFC commitments are met



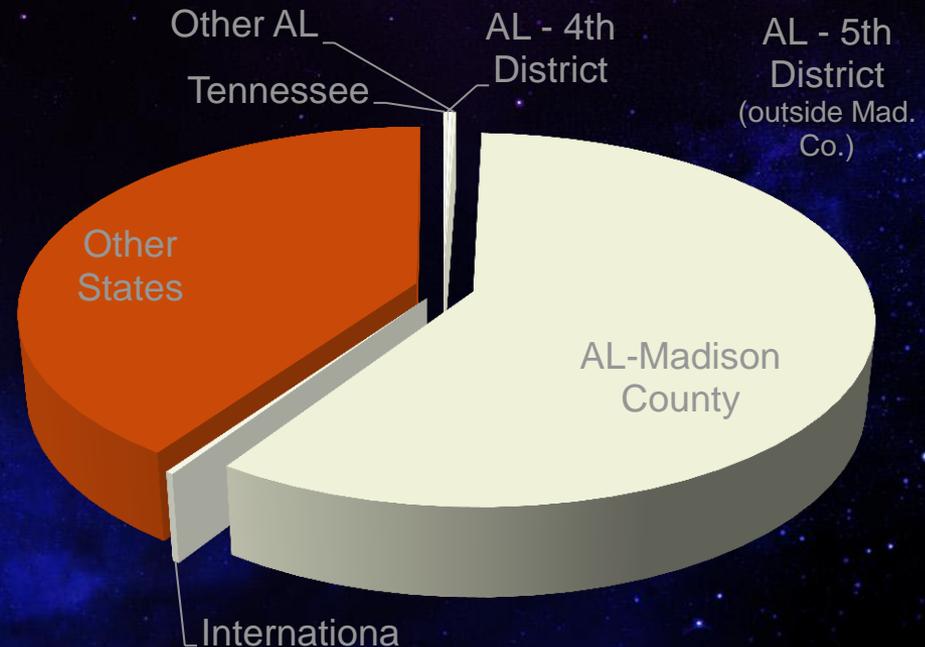
Marshall Impacts the Local and U.S. Economy



Marshall Employees & Associated Labor Income Impacts 40,000 Jobs Nationwide...



NASA's budget represents .5% of the federal budget



Marshall Procurements Economic Impacts Total Over \$6.3B

Pioneering Space....Notional Roadmap... Capability Driven- Forward Plan



Mars

Surface

Moons

Flyby

Surface

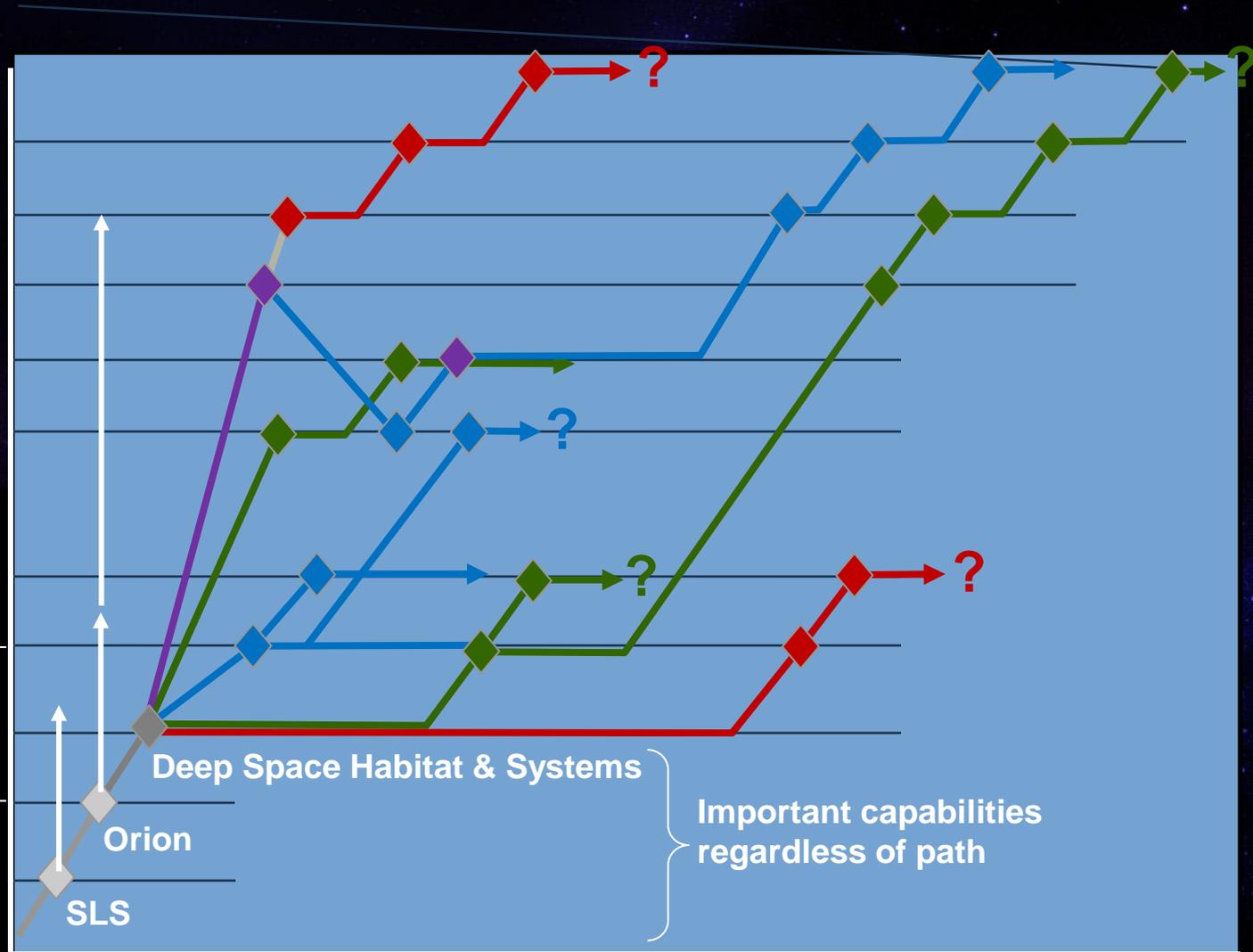
Tele-robotics

Asteroid

Cis-Lunar

Science
Missions

LEO



International Space Station is a Proving Ground that will lead to Human Exploration in Deep Space



Today – 2020's

2020's

2030's

Mars
228,000,000 kilometers



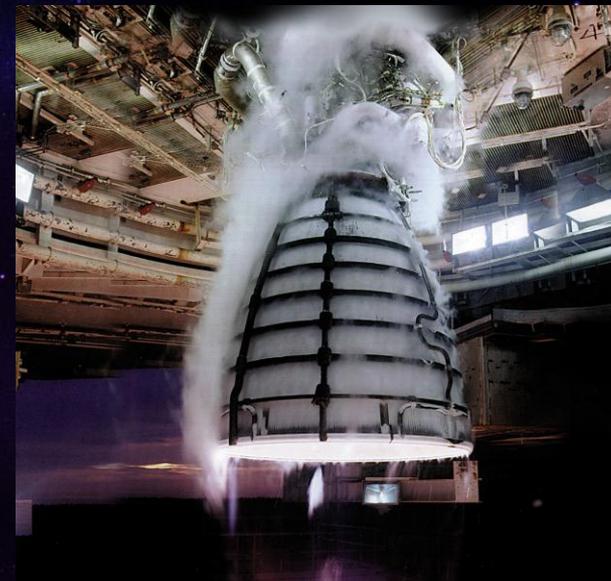
Evolutionary Path to Mars

		Mission Sequence	Current ISS Mission	Cis-Lunar / Asteroid Redirect Mission	Long Stay In Deep Space	Mars Orbit	Mars Surface, Short Stay	Mars Surface, Long Stay
Mars Destination Capabilities		In Situ Resource Utilization & Surface Power						X
		Surface Habitat						X
		Entry Descent Landing, Human Lander					X	X
		Advanced Cryogenic Upper Stage				X	X	X
Initial Exploration Capabilities		Deep Space Habitat		X	X	X	X	X
		Solar Electric Propulsion for Cargo		X	X	X	X	X
		Exploration EVA		X	X	X	X	X
		Crew Operations beyond LEO (Orion)		X	X	X	X	X
		Deep Space Guidance Navigation and Control/Automated Rendezvous		X	X	X	X	X
		Crew Return from Beyond LEO – High Speed Entry (Orion)		X	X	X	X	X
		Heavy Lift Beyond LEO (SLS)		X	X	X	X	X
ISS Derived Capabilities		Deep Space Habitat Systems Tests	*	→	X	X	X	X
		High Reliability Life Support	*	→	X	X	X	X
		Autonomous Assembly	*	→	X	X	X	X

Next 10 Years

→ Beyond

SLS.....Real Rocket, Real Hardware



America's Next Human-Rated Space Exploration System



Partnerships with NASA at Marshall Space Flight Center



◆ Opportunities Point of Contact:

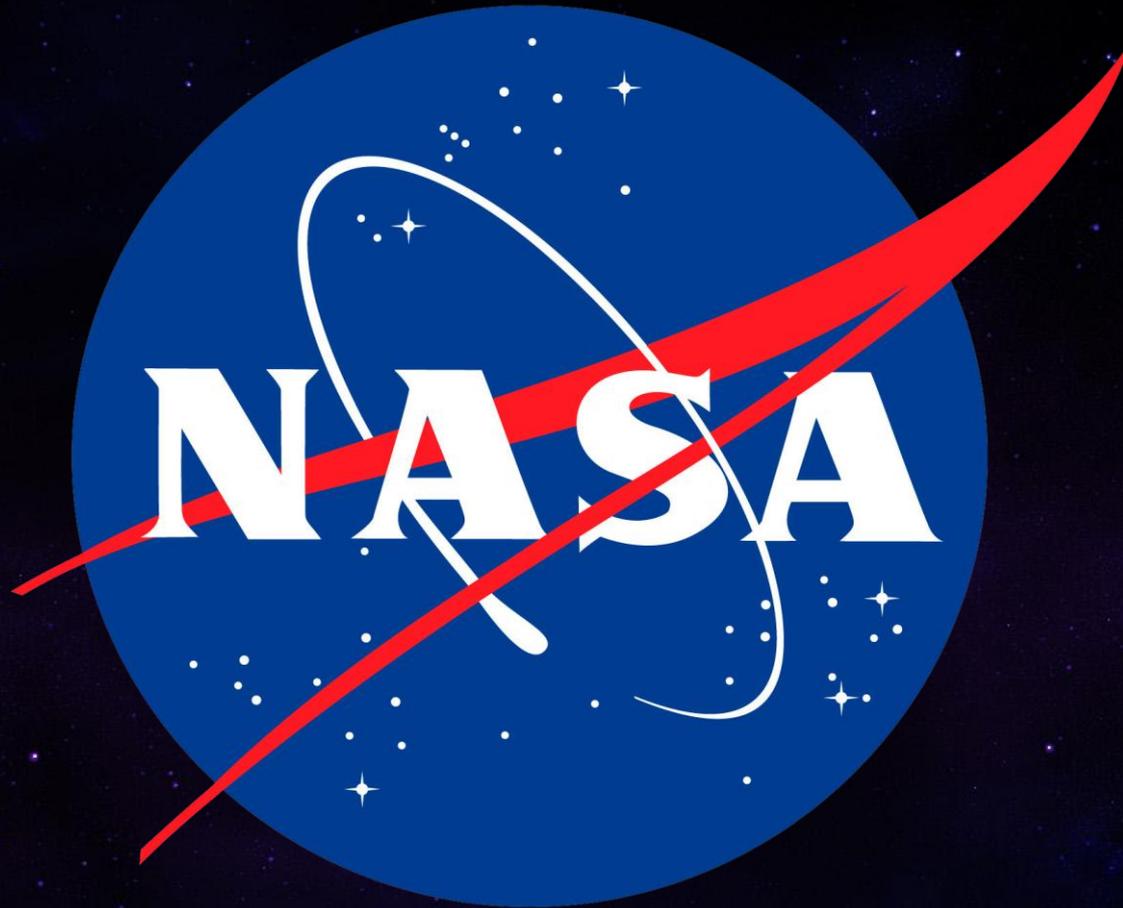
- Stacy Counts – MSFC Partnerships Manager in Flight Programs and Partnerships Office (stacy.m.counts@nasa.gov) ; partnership website: <http://www.nasa.gov/centers/marshal/partners/index.html>

◆ Websites:

- **Federal business opportunities: <https://www.fbo.gov/>**
- **MSFC Business Opportunities: [NSPIRES.nasaprs.com](https://nspires.nasaprs.com/)- --NASA solicitation and proposal integrated and review system**
- **Global opportunities/NAIS: <https://prod.nais.gov/cgbin/nais/index.cgi>**
- **<http://www.nasa.gov/sites/default/files/files/Pioneering-space-final-052914b.pdf>**

◆ Events/Opportunities:

- Exploration Day at the Huntsville Museum of Art- June 9th
- MSFC Small Business Day at the Huntsville Museum of Art – June 10th
- NASA Day on the Square, Huntsville, AL – June 21st
- Planetary Science Division Discovery Missions Announcement of Opportunity (AO)release (September 2014)



www.nasa.gov