Technology Development

GROUND-BASED

Test Bed for Space Env
• In Space Manufacturing

EARTH RELIANT ISS

PROVING GROUND Cis-lunar

Long Duration Missions
• Evolvable Cryogenics
• Composite Technologies
• Advanced Life Support Systems

Propulsion Tech
• Iodine Thruster
• Nuclear Thermal Propulsion
• Chemical Propulsion
• Lox Methane Engines
• 3D Printed Rocket Engines

EARTH INDEPENDENT Mars

Planetary Missions
• Space Habitat Construction
• NEA Scout / Solar Sail
• Landers / Lander Enabling Technologies

Asteroids

Europa

Cis-lunar
Science Research

Exploring the Sun and Its Effects on Our Solar System

Heliophysics

Unveiling the Mysteries of the Universe

Astrophysics

Making New Discoveries of Our Moons and Planets

Planetary

EARTH

Studying the Earth for the Benefit of Mankind
New Frontiers Office
$1 billion robotic solar-system explorers

Discovery Program Office
Less than $425M Planetary Missions
OPPORTUNITIES WITHIN SCIENCE AND TECHNOLOGY
Much of our budget comes from NASA’s Science Mission Directorate (SMD) and Space Technology Mission Directorate (STMD) and Human Exploration and Operations Mission Directorate (HEOMD).

Much of our Science budget is competed, while all of our technology work is directed.

A large part of our science and technology budget is spent on procurement.
Technology Transfer

Bridging NASA Technologies to the Public
Rocket Technology Stops Shaking in its Tracks

“One small device, less than 100 pounds can knock out the resonant response of a 650,000-pound vehicle. What else can we do?”

- Rob Berry, Engineer, Marshall Space Flight Center
Centennial Challenges

- **3D Printed Habitat Challenge**: Design, build, and create in this $2.25M challenge. Open now for registration.
- **CubeQuest Challenge**: A NASA Centennial Challenges competition.
- **Vascular Tissue Challenge**
2017 Dual Use Technology Development Cooperative Agreement Notice (CAN) at NASA MSFC

- NNM16ZCS001C
- Scope: Award cooperative agreements for technology development partnerships. MSFC resource contribution awards range from $10,000 to $100,000.
- The CAN will follow a 2-step process for proposal submissions. Step-1 of the proposal process is submission of a White Paper by the Offeror. The Offeror may submit a Step-1 White Paper. In Step-2 of the process, NASA will assess each White Paper submitted and invite selected Offerors to submit a full project proposal. Finally, NASA will select up to eight proposals for a cooperative agreement award and will be given a project start date.
- The next opportunity deadline to submit a White Paper is 2 May 2017.
Technology Demonstration Mission Program Office

2018
- Deep Space Atomic Clock
- Green Propellant Infusion Mission

2019
- Evolvable Cryogenics
  At Marshall Space Flight Center

2020
- Restore-L
- Solar Electric Propulsion

2021
- Laser Comm Relay Demonstration