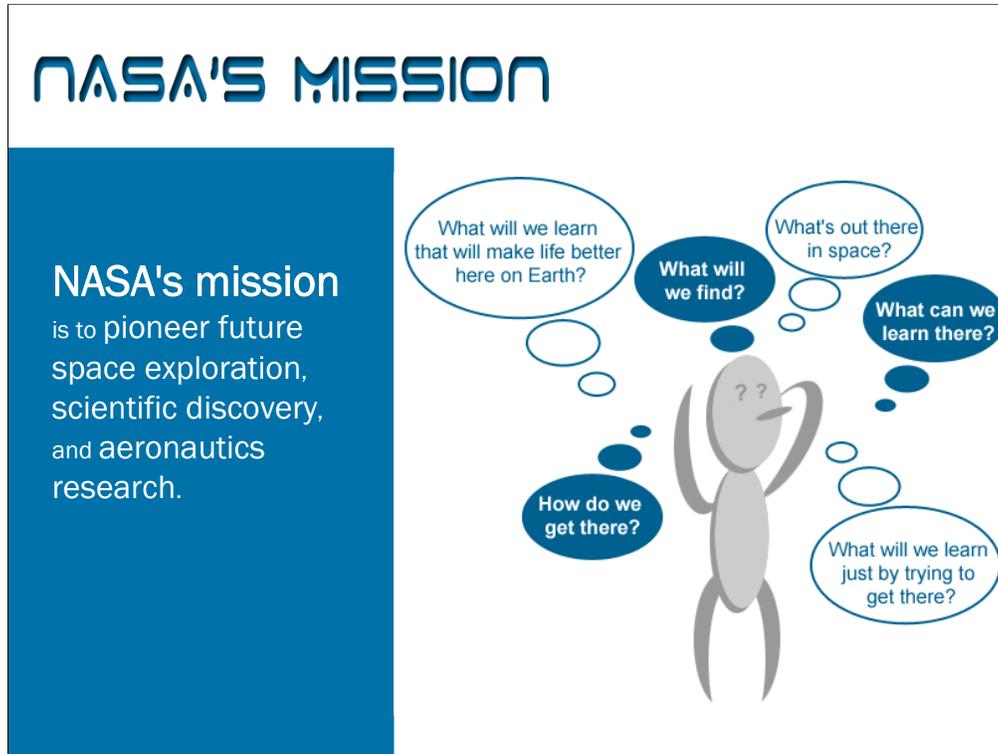


NASA  
MISSION  
DIRECTORATES





NASA's mission is to pioneer future space exploration, scientific discovery, and aeronautics research.

On January 14, 2004, President George W. Bush announced *A Renewed Spirit of Discovery: The President's Vision for U.S. Space Exploration*, a new directive for the nation's space program. The fundamental goal of this directive is "to advance U.S. scientific, security, and economic interests through a robust space exploration program." In issuing it, the President committed the nation to a journey of exploring the solar system and beyond. The journey will begin with returning to the Moon in the next decade, and then venturing further into the solar system, ultimately sending humans to Mars and beyond. He challenged NASA to establish new and innovative programs to enhance understanding of the planets; to ask new questions; and to answer questions that are as old as humankind.

To meet the President's challenge, thousands of people have been working around the world -- and off of it -- for almost 50 years, trying to answer some basic questions.

***What's out there in space?***

***How do we get there?***

***What will we find?***

***What can we learn there?***

***What will we learn just by trying to get there?***

***What will we learn that will make life better here on Earth?***

# NASA'S STRATEGIC GOALS

NASA has six strategic goals:

- Fly the Shuttle as safely as possible until its retirement, not later than 2010.
- Complete the International Space Station in a manner consistent with NASA's International Partner commitments and the needs of human exploration.
- Develop a balanced overall program of science, exploration, and aeronautics consistent with the redirection of the human spaceflight program to focus on exploration.
- Bring a new Crew Exploration Vehicle into service as soon as possible after Shuttle retirement.
- Encourage the pursuit of appropriate partnerships with the emerging commercial space sector.
- Establish a lunar return program having the maximum possible utility for later missions to Mars and other destinations.

## A LITTLE HISTORY

**1958** - President Dwight D. Eisenhower established the National Aeronautics and Space Administration NASA. It grew out of the National Advisory Committee on Aeronautics (NACA), which had been researching flight technology for more than 40 years.

**1960s** - President John F. Kennedy focused NASA and the nation on sending astronauts to the Moon. Through the Mercury and Gemini projects, NASA developed the technology and skills it needed.

**1969** - Neil Armstrong and Buzz Aldrin became the first of 12 men to walk on the Moon, meeting Kennedy's challenge.

### A Little History

President Dwight D. Eisenhower established the National Aeronautics and Space Administration in 1958, partially in response to the Soviet Union's launch of the first artificial satellite the previous year. NASA grew out of the National Advisory Committee on Aeronautics (NACA), which had been researching flight technology for more than 40 years.

President John F. Kennedy focused NASA and the nation on sending astronauts to the Moon by the end of the 1960s. Through the Mercury and Gemini projects, NASA developed the technology and skills it needed for the journey. On July 20, 1969, Neil Armstrong and Buzz Aldrin became the first of 12 men to walk on the Moon, meeting Kennedy's challenge.

## A LITTLE HISTORY

Meanwhile, NASA was continuing the aeronautics research pioneered by NACA. It also conducted purely scientific research and worked on developing applications for space technology, combining both pursuits in developing the first weather and communications satellites.

**1981** After Apollo, NASA focused on creating a reusable ship to provide regular access to space: the Space Shuttle which first launched in 1981.

**2000**, the United States and Russia established permanent human presence in space aboard the International Space Station, a multinational project representing the work of 16 nations.

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After Apollo, NASA focused on creating a reusable ship to provide regular access to space: the Space Shuttle. First launched in 1981, the space shuttle has had 120 successful flights. In 2000 The United States and Russia established permanent human presence in space aboard the International Space Station, a multinational project representing the work of 16 nations.

## A LITTLE HISTORY

1997 Mars Pathfinder became the first in a fleet of spacecraft that would explore Mars in the next decade, as NASA tried to determine if life ever existed there. The Terra and Aqua satellites are flagships of a different fleet, this one in Earth orbit, designed to help us understand how our home world is changing. NASA's aeronautics teams are focused on improved aircraft travel that is safer and cleaner.

Throughout its history, NASA has conducted or funded research that has led to numerous improvements to life on Earth.

NASA also has continued its scientific research. In 1997, Mars Pathfinder became the first in a fleet of spacecraft that will explore Mars in the next decade, ever existed there. The Terra and Aqua satellites are flagships of a different fleet, this one in Earth orbit, designed to help us understand how our world is changing. NASA's aeronautics teams are focused on improved aircraft travel that is safer and cleaner.

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# CURRENT MISSIONS

In the early 21<sup>st</sup> century, NASA's reach spans the universe.

- Spirit and Opportunity, the Mars Exploration Rovers, are still studying Mars after more than three years.
- Cassini is in orbit around Saturn.
- The Hubble Space Telescope continues to explore the deepest reaches of the cosmos.

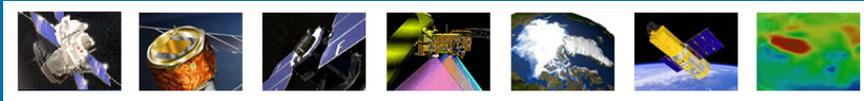


There are many current missions being conducted by NASA each year. You can see mission highlights and photos on the **NASA Mission's** Web site, <http://www.nasa.gov/missions/current/index.html>. On this site, you will be able to search through all NASA missions (past, present, and future) along with the launch schedules and calendar for current missions. Below are a few current missions.

# CURRENT MISSIONS

## Closer to home

- The latest crew of the International Space Station is extending the permanent human presence in space.
- Earth Science satellites are sending back unprecedented data on Earth's oceans, climate, and other features.
- NASA's aeronautics team is working with other government organizations, universities, and industries to fundamentally improve the air transportation experience and retain our nation's leadership in global aviation.



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# FUTURE MISSIONS

- Complete the International Space Station and retire the Space Shuttle by 2010
- Begin robotic missions to the Moon by 2008 and return people there by 2020
- Continue robotic exploration of Mars and the Solar System
- Develop a crew exploration vehicle and other technologies required to send people beyond low Earth orbit

In the next 20 years, NASA will be laying the groundwork for sending humans not only beyond Earth's orbit, but further into to space than they've ever been. These are the next key steps:

Complete the International Space Station and retire the Space Shuttle by 2010

Begin robotic missions to the Moon by 2008 and return people there by 2020

Continue robotic exploration of Mars and the Solar System

Develop a crew exploration vehicle and other technologies required to send people beyond low Earth orbit

# NASA LEADERSHIP

NASA Headquarters, in Washington, D.C., provides overall guidance and direction to the agency, under the leadership of the NASA Administrator.



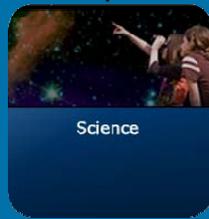
Michael Griffin



Shana Dale

NASA Headquarters, in Washington D.C., provides overall guidance and direction to the agency, under the leadership of Administrator Michael Griffin. Ten field centers and a variety of installations conduct the day-to-day work in laboratories, on air fields, in wind tunnels, and in control rooms.

# NASA'S ORGANIZATION



Mission Directorates

# NASA'S ORGANIZATION

A **directorate** is an agency usually headed by a director, and is often a subdivision of a major government department.

To implement [NASA's Mission](#), NASA Headquarters is organized into four Mission Directorates.

1. **Aeronautics**: Pioneers and proves new flight technologies that improve our ability to explore and which have practical applications on Earth.
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3. **Science**: Explores the Earth, Moon, Mars, and beyond; charts the best route of discovery; and reaps the benefits of Earth and space exploration for society.
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[Aeronautics](#)

[Exploration Systems](#)

[Science](#)

[Space Operations](#)

# 1. AERONAUTICS

**NASA** National Aeronautics and Space Administration

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**Bringing Aeronautics to You**  
AERONAUTICS<sup>™</sup>  
research mission directorate

Aeronautics Research Mission Directorate

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+ ARMD NRA  
+ TECHNICAL EXCELLENCE  
+ PEOPLE  
+ PARTNERSHIPS  
+ REFERENCE MATERIALS  
+ EVENTS AND EXHIBITS  
+ EDUCATION  
+ AERO MEDIA RELEASES  
+ MULTIMEDIA

**Welcome to the Aeronautics Research Mission Directorate**

NASA is the nation's leading government organization for aeronautical research. Our world-class capability is built on a tradition of expertise in aeronautical engineering and its core research areas, including aerodynamics, aeroacoustics, materials and structures, propulsion, dynamics and control, sensor and actuator technologies, advanced computational and mathematical techniques, and experimental measurement techniques.

Beginning with theoretical insight, augmented by research and testing in the laboratory and in flight, NASA scientists and engineers develop and use rich databases of information, unique analytical tools, and their singular expertise to close the gap between empirical and abstract knowledge. The results? Better design tools and technologies for improving vehicle and air system safety and performance.

**\* Special Announcement \***  
**+ NASA Aeronautics Scholarship Program**  
The NASA Aeronautics Scholarship Program for graduate and undergraduate students announces that the application period for this year is now **CLOSED**. Please visit the site for information on the application process.

The program expects to award annually 20, two-year scholarships plus summer internships to undergraduate students; and five, two- or three-year scholarships plus summer internships to graduate students.

**Upcoming Events**  
**+ October 7-9, 2008: Fundamental Aeronautics Program Annual Meeting**  
Atlanta, Georgia  
Save the date now for this important event that will strengthen partnerships and share research results as the aeronautics community.

**NASA CONTRIBUTIONS**

+ NASA Aeronautics Research Onboard

**HELPFUL LINKS**

+ "America by Air" Exhibition  
+ ASEP: Decadal Study  
+ Current Documents  
+ JPDO  
+ NACA Report Archive  
+ National Aeronautics R&D Plan  
+ National Aeronautics

**Latest News**

+ BWB Files Second Phase **NEWS**  
+ ROA 2008 NRA Amendment 5  
"Innovation in Aeronautics Instruction" Released **NEWS**  
+ Artifact Loan Opp: Shuttle Tiles

Internet

Aeronautics: pioneers and proves new flight technologies that improve our ability to explore and which have practical applications on Earth.

# 1. AERONAUTICS (ARMD)

**Aeronautics Research Mission Directorate (ARMD)** generates the revolutionary concepts, technologies, and capabilities needed to advance aircraft and airspace systems.

ARMDs programs facilitate safer, more efficient and environmentally friendly air transportation systems.

In addition ARMDs research will continue to play a vital role in supporting NASA's human and robotic space activities.

# NASA AERONAUTICS RESEARCH ONBOARD

DECADES OF CONTRIBUTIONS TO COMMERCIAL AVIATION



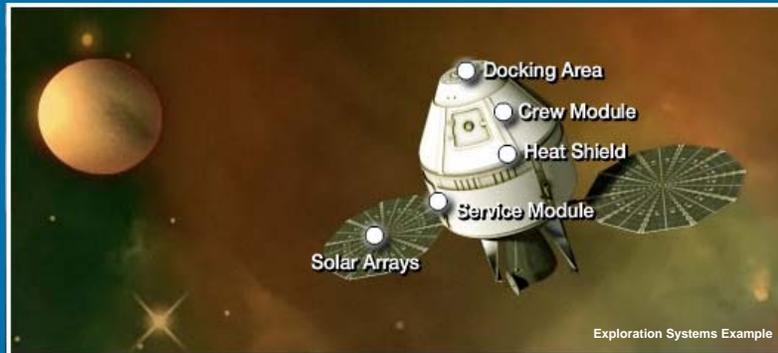
## 2. EXPLORATION SYSTEMS

The screenshot shows the NASA Exploration Systems Mission Directorate website. At the top, there is a navigation bar with links for HOME, NEWS, MISSIONS, MULTIMEDIA, and ABOUT NASA. Below this is a search bar and a login/sign-up section. The main content area is titled "Exploration Systems Mission Directorate" and features a "Featured Stories" section with a headline "LLRV Work led to Apollo Lunar Landers" and a sub-headline "NE Live @ The Future Forum". There is also a "View Archive" button. To the right, there is an "ESMD Related Sites" section with links to "NASA EDGE: NE Live @ The Future Forum", "Download Vodcast (158MB)", "Lunar Reconnaissance Orbits", "Your Name Here!", "NASA Home and City", and "NASA 101". The left sidebar contains a "Library" menu and sections for "The Vision" and "Exploration History".

Exploration Systems: creates new capabilities and spacecraft for affordable, sustainable human and robotic exploration.

## 2. EXPLORATION SYSTEMS (ESMD)

**Exploration Systems Mission Directorate (ESMD)** develops the launch systems, vehicles, and other capabilities that will carry humans into space and ultimately enable exploration on the Moon and Mars, beginning with the servicing of the International Space Station and following the retirement of the Space Shuttle in 2010.



The Orion crew exploration vehicle and its service module orbit the Moon with disc-shaped solar arrays tracking the sun.

# 3. SCIENCE

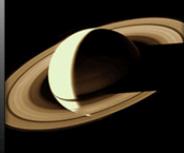
Home | Big Questions | Earth | Heliophysics | Planets | Astrophysics | Missions | About Us | Science News

Welcome to **NASA SCIENCE** ...for the benefit of all.

For Researchers | For Educators | For Kids | Citizen Scientists

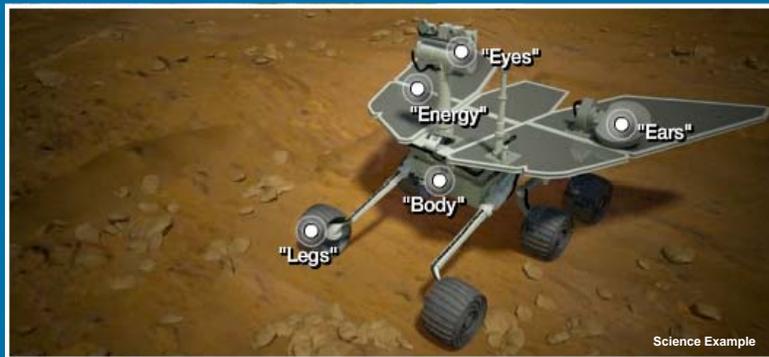
**SCIENCE NEWS**

- Orbiter Relays Second-Day Information From NASA Mars Lander
- NASA Mars Lander Prepares to Move Arm
- Cartwheel Coronal Mass Ejection
- Satellites Illuminate Pollution's Influence On Clouds

Earth	Heliophysics	Planets	Astrophysics
			
<ul style="list-style-type: none"><li>Climate</li><li>Carbon &amp; Ecosystems</li><li>Surface &amp; Interior</li><li>Atmosphere</li><li>Weather</li><li>Water &amp; Energy Cycles</li></ul>	<ul style="list-style-type: none"><li>Sun</li><li>Heliosphere</li><li>Magnetospheres</li><li>Space Environment</li></ul>	<ul style="list-style-type: none"><li>Inner Solar System</li><li>Outer Solar System</li><li>Small Bodies of the Solar System</li></ul>	<ul style="list-style-type: none"><li>The Big Bang</li><li>Dark Energy, Dark Matter</li><li>Stars</li><li>Galaxies</li><li>Black Holes</li><li>Exoplanet Exploration</li></ul>

## 3. SCIENCE (SMD)

**Science Mission Directorate (SMD)** projects humankind's vantage point into space with Earth-orbit and deep space observatories; spacecraft that visit other planetary bodies; and robotic landers, rovers, and sample return missions. SMD develops and deploys satellites and strives around the world to answer fundamental questions requiring the view from and into space.



The Science Mission Directorate develops and deploys satellites and probes in collaboration with NASA's partners around the world to answer fundamental questions requiring the view from and into space. The rover is an example.

# 4. SPACE OPERATIONS

**NASA** NATIONAL AERONAUTICS AND SPACE ADMINISTRATION + NASA Home + Contact NASA

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+ MISSIONS + EDUCATION & OUTREACH + SPACE FLIGHT AWARENESS + FAQs + RELATED LINKS + ABOUT US

## OFFICE OF SPACE OPERATIONS

### WELCOME TO THE SPACE OPERATIONS MISSION DIRECTORATE

#### Agency Plans for Future Human Space Flight

Success for NASA's exploration program requires teamwork, collaboration and a strong transition plan for existing assets such as vehicles, people and facilities. The future of human space flight depends on a safe, successful, and smooth transition. For more information, see the "Human Space Flight Transition Plan".

#### The Great Moonbuggy Race

The Great Moonbuggy Race is held in April in Huntsville, Alabama, at the U.S. Space & Rocket Center. Students are required to design a vehicle that addresses a series of engineering problems that are similar to problems faced by the original Moonbuggy team.

#### Experience of a Lifetime

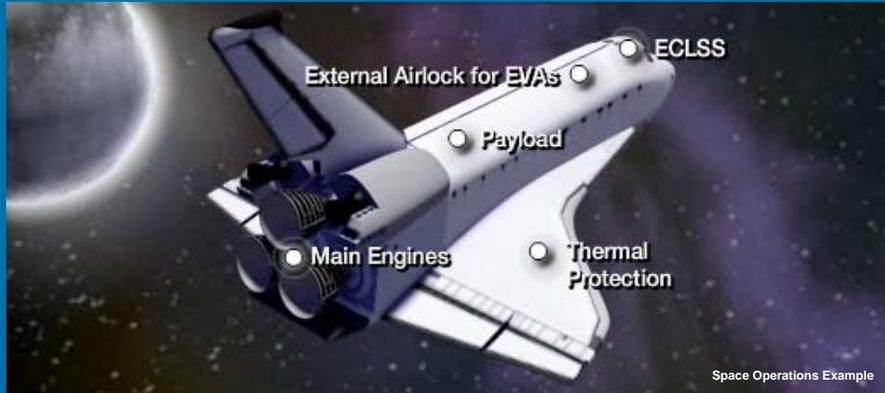
Students and teachers from six schools around the United States gathered to watch as space shuttle Discovery roared off its launch pad.

INTERNATIONAL SPACE STATION SPACE SHUTTLE PROGRAM SPACE AND FLIGHT SUPPORT

Done Internet 100%

## 4. SPACE OPERATIONS (SOMD)

**Space Operations Mission Directorate (SOMD)** manages the Space Shuttle and International Space Station (ISS) programs, as well as space communications and launch services. The SOMD paves the way for extended-duration human exploration in space.



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## DAY 2

Yesterday, we learned about NASA's Mission Directorates. Today, we're going to begin our challenge.

The class will be divided into four groups, one for each Directorate.

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**Remember, NASA Headquarters is organized into four Mission Directorates.**

# YOUR CHALLENGE

You have been given the challenge to plan a mission using all four of the directorates. Review the Mission Reading and Activity pages as these will help guide you. Think and discuss creatively about a future mission using all 4 directorates.

1. Within your groups, assign the leadership roles for each directorate.
2. Choose a name for your group's mission.
3. Write a Mission Statement:  
We will (*study, explore, build, design*) \_\_\_\_\_  
to (*discover, study, collect data, explore*) \_\_\_\_\_  
and \_\_\_\_\_  
in/on (*the moon, a planet, etc.*) \_\_\_\_\_

Your challenge begins!

Your group will write a Mission Statement that outlines your Mission.