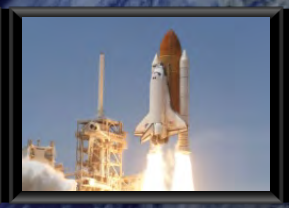
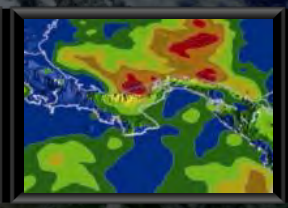
National Aeronautics and Space Administration

Space Launch System (SLS)
Status








marshall

Todd A. May
SLS Program Manager
August 5, 2011

Exploring Earth Orbit…and Beyond

To reach for new heights and reveal the unknown so that what we do and learn will benefit all humankind.

— NASA's Vision
2011 Strategic Plan

Safely fly and retire the Space Shuttle and maintain safe access for humans to low-Earth orbit (LEO) as we fully utilize the International Space Station.

— NASA's FY12 Budget

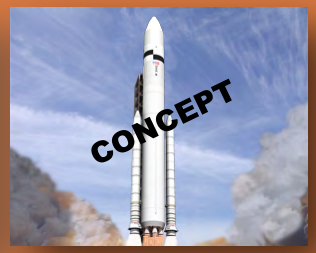
Lay the foundation for humans in deep space — the Moon, asteroids, eventually Mars — through development of a powerful, evolvable Space Launch System (SLS) and Multi-Purpose Crew Vehicle (MPCV).

— NASA's FY12 Budget

Expanding Humanity's Frontiers of Discovery

Marshall's Core Areas

Space Transportation/Launch Vehicle Technology and Development



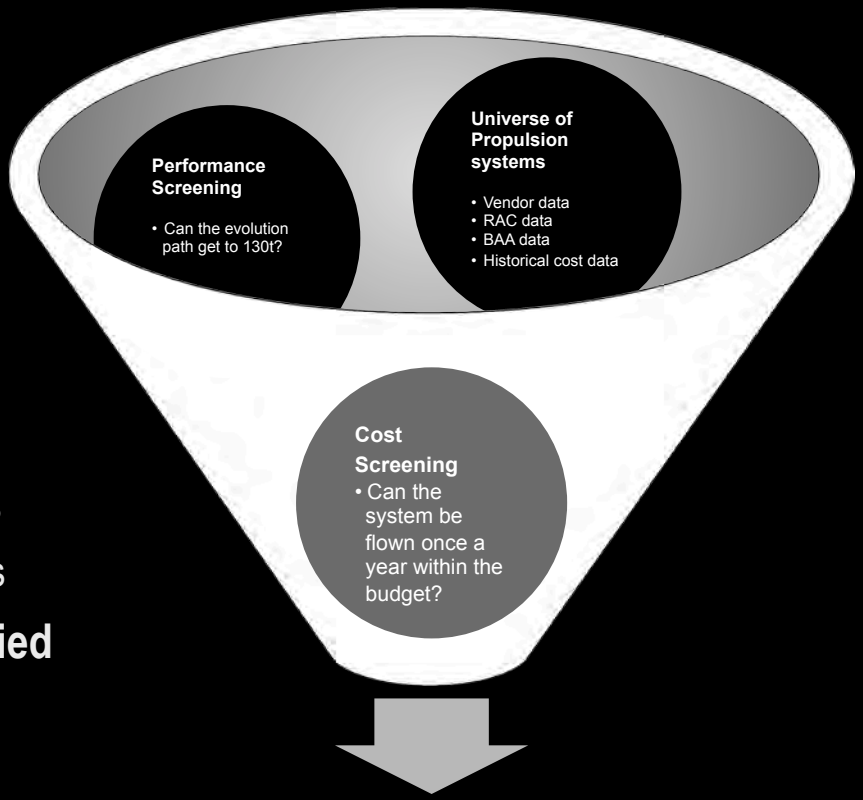
Propulsion Systems Technology and Development

Space Systems Technology, Development, and Integration

Scientific Research

Determining the Best Launch Vehicle Solution: Safe, Affordable, Timely, and Capable

- **Cost**
  - Must Be Affordable
  - Fixed, Nonrecurring, and Recurring Costs
- **Schedule**
  - Target Date is 2016
- **Performance**
  - Lifts the Multi-Purpose Crew Vehicle, Cargo, and Scientific Payloads
  - Initial Capability for Low-Earth Orbit (LEO) Missions
  - Evolves to 130 Tonnes (t) for Beyond LEO Missions
- **Candidate Launch Vehicle Architectures Studied**
  - Liquid Oxygen/Hydrogen
  - Liquid Oxygen/Kerosene Rocket Propellant
  - Solid and Liquid Boosters



Candidate Systems

- Detailed engineering assessments
- Detailed cost estimates and development schedules

Transitioning to Space Launch System

Ares Project

Shuttle Program

Orion Project

Mission Operations Project

Extravehicular Systems Project

Ground Operations Project

Altair Project

Lunar Surface Systems Project

EXPLORATION SYSTEMS DEVELOPMENT

SPACE LAUNCH SYSTEM (SLS) PROGRAM

- Heavy Lift Launch Vehicle with an initial lift capability of 70-100mt evolvable to the ultimate capability to 130mT
- Primarily derived from legacy hardware
- Capability to lift the Multi-Purpose Crew Vehicle
- Capability to back up International Space Station (ISS) commercial crew & cargo delivery
- Ultimate missions beyond low-Earth orbit (LEO)

HOST CENTER: Marshall Space Flight Center, Alabama

MULTI-PURPOSE CREW VEHICLE (MPCV) PROGRAM

- Serves as the primary crew vehicle for missions beyond LEO
- Capable of conducting regular in-space operations (rendezvous, docking, extravehicular activity) in conjunction with payloads delivered by SLS for missions beyond LEO
- Capability to be a backup system for ISS cargo and crew delivery

HOST CENTER: Johnson Space Center, Texas

21st CENTURY GROUND SUPPORT PROGRAM

- Supports vehicle processing, launch operations, flight control operations, crew recovery, and return vehicle recovery

HOST CENTER: Kennedy Space Center, Florida

ADVANCED CAPABILITIES DIVISION (ACD)

- Provides knowledge, technology, and innovation that will enable current and future exploration missions

HOST CENTER: Multiple

Beginning With Available Resources and Technologies

Building on Heritage Hardware and Facilities

Manufacturing and Transportation
Michoud Assembly Facility

MPCV Testing
Langley Research Center

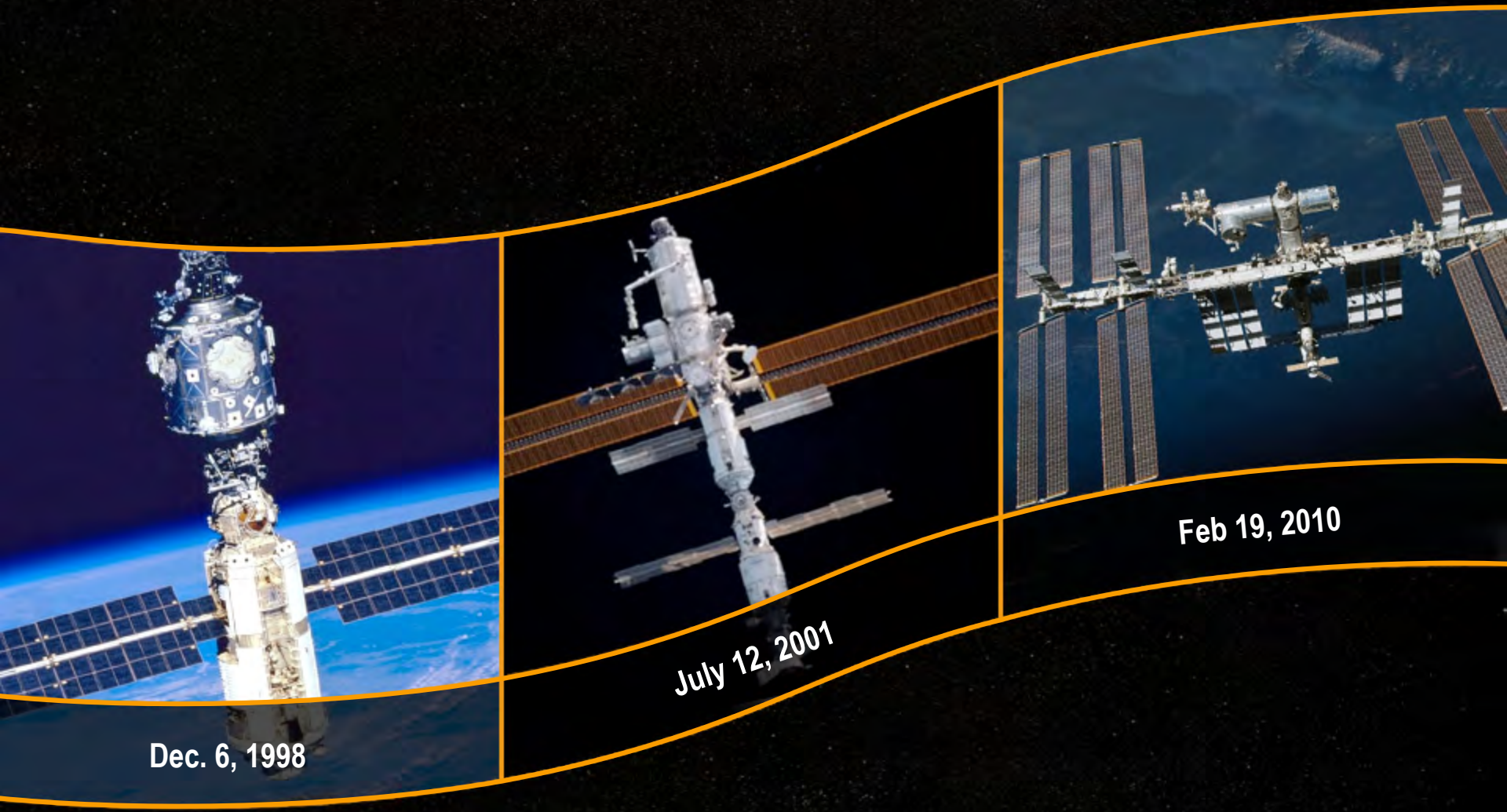
Space Shuttle Main Engine Testing
Stennis Space Center

J-2X Upper Stage Engine Injector Firing
Marshall Space Flight Center

Ground and Launch Operations
Kennedy Space Center

Smartly Selecting the Most Efficient Infrastructure

Delivering Incremental Capability



International Cooperation for Future Exploration Missions

For More Information

www.nasa.gov/exploration/systems

Space Launch System — Safe, Reliable, Capable, Sustainable