



Going Boldly Beyond: Progress on NASA's Space Launch System

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Space Launch System



The Future of Exploration



The Space Launch System [will] be the **backbone** of its manned spaceflight program for decades. It [will] be the most powerful rocket in NASA's history...and puts NASA on a more **sustainable** path to continue our tradition of **innovative** space exploration.

President Obama's Accomplishments for NASA
May 22, 2012

Advancing the U.S. Legacy of Human Exploration

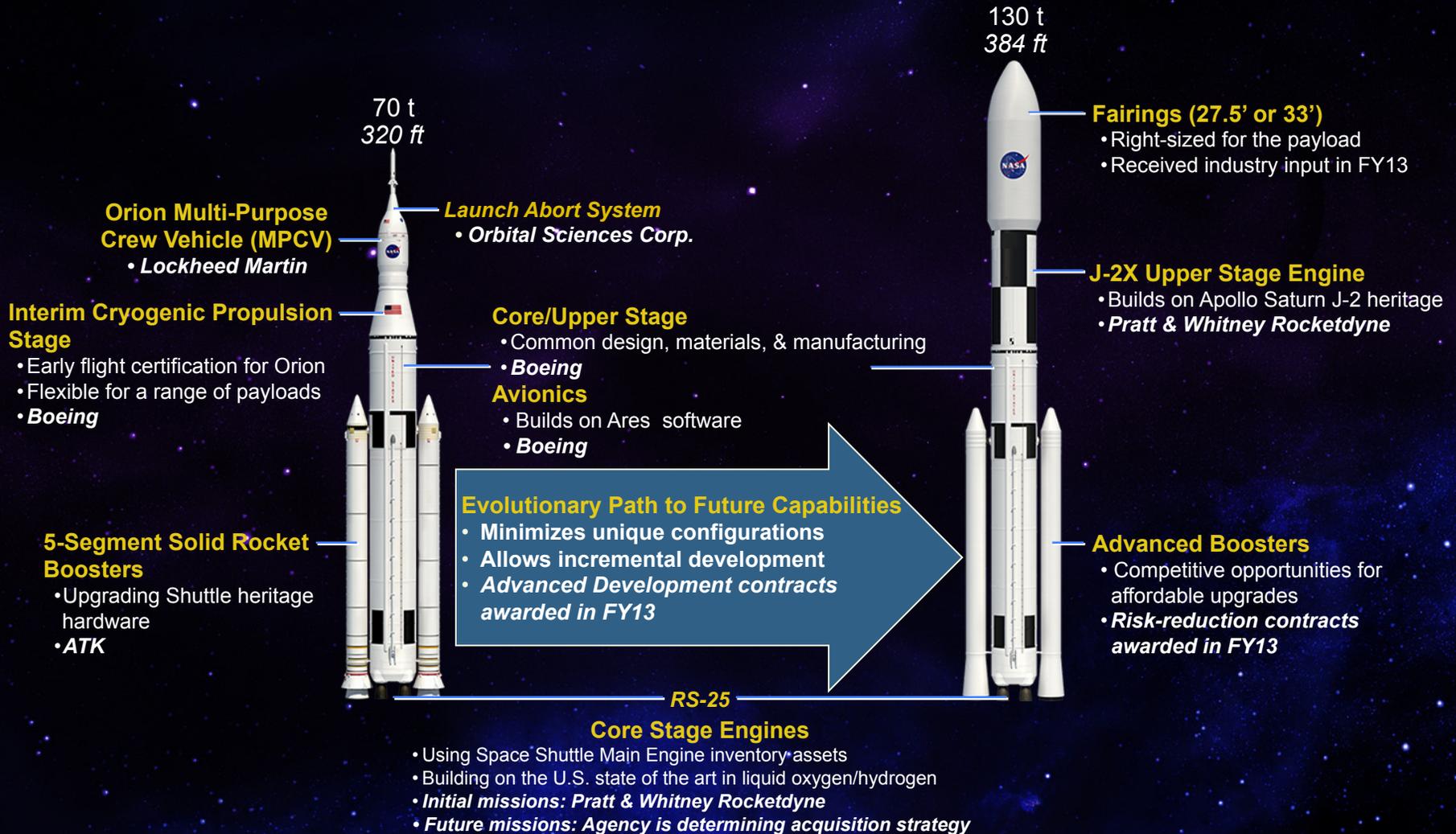


Building on the U.S. Infrastructure



INITIAL CAPABILITY, 2017-21

EVOLVED CAPABILITY, Post-2021



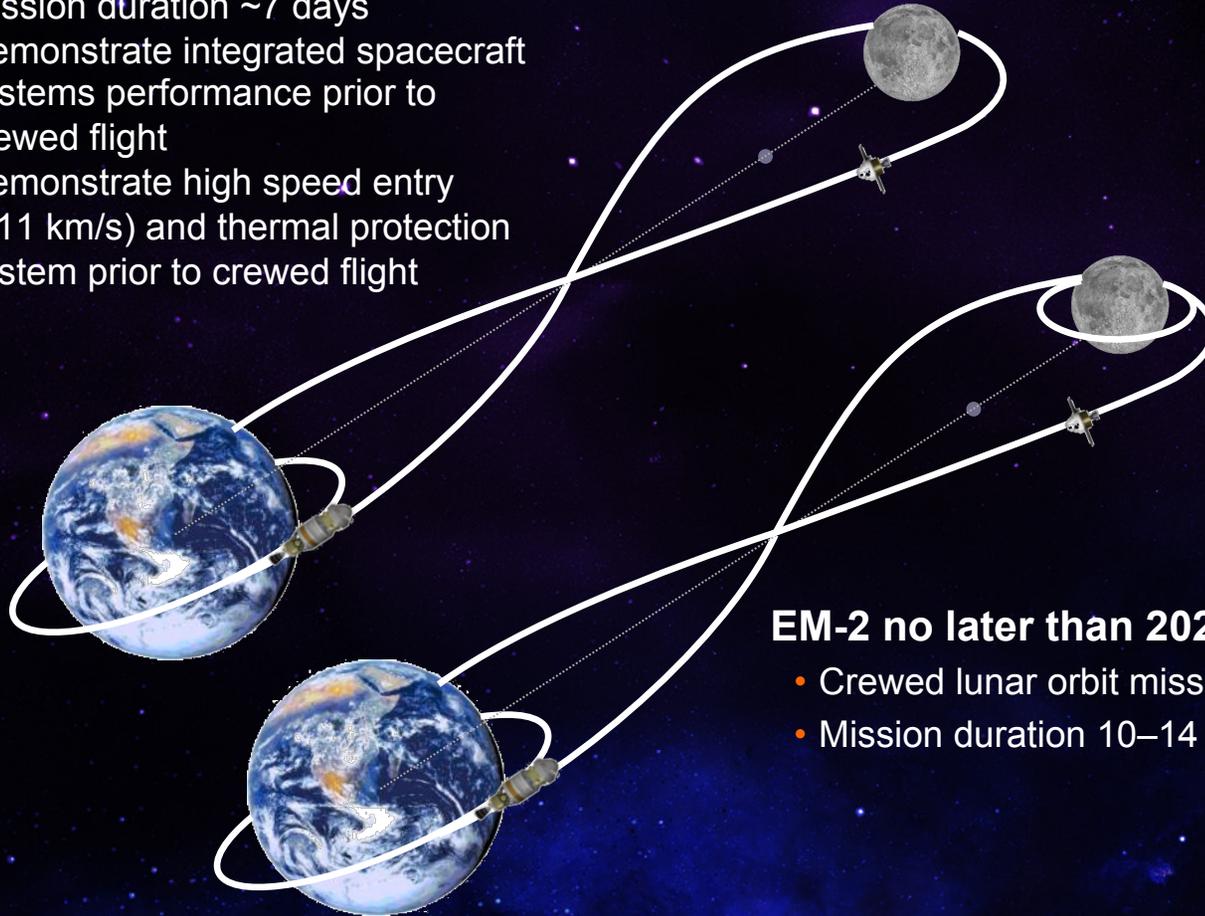
Working with Industry Partners to Develop America's Heavy-Lift Rocket

Initial Exploration Missions (EM)



EM-1 in 2017

- Un-crewed circumlunar flight – free return trajectory
- Mission duration ~7 days
- Demonstrate integrated spacecraft systems performance prior to crewed flight
- Demonstrate high speed entry (~11 km/s) and thermal protection system prior to crewed flight



EM-2 no later than 2021

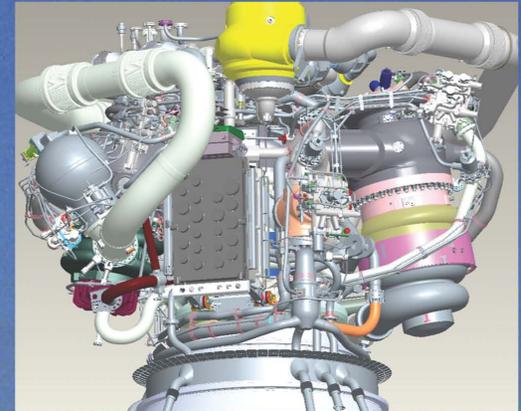
- Crewed lunar orbit mission
- Mission duration 10–14 days



5-Segment Solid Rocket Booster

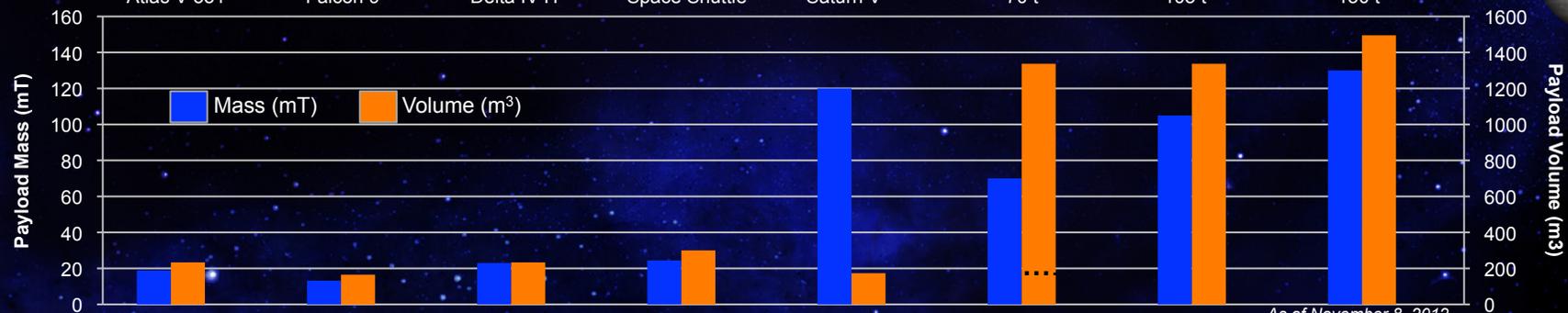
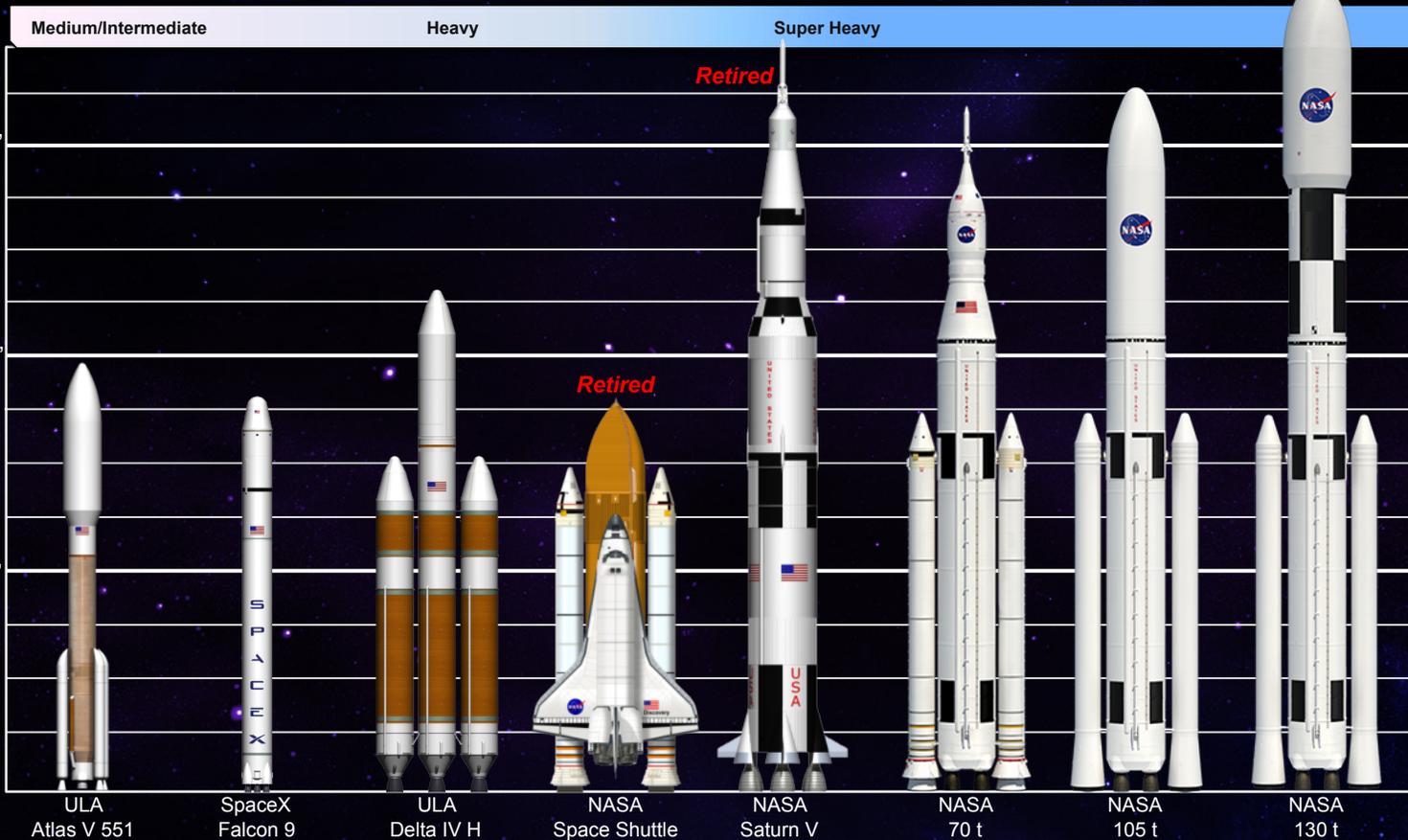
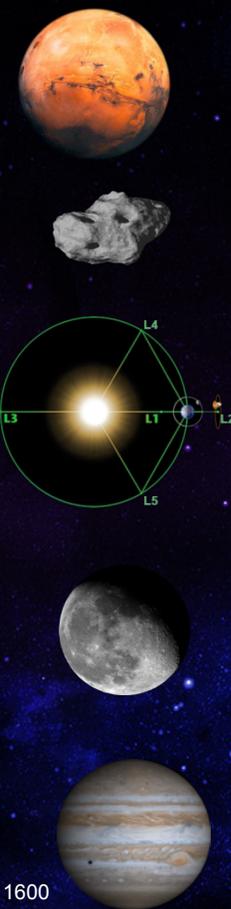


RS-25 Core Stage Engines In Stock



Common Engine Controller

Most Capable U.S. Launch Vehicle



As of November 8, 2012

Human Missions to Mars



Mars Landing: Heading for the High Ground
By Dan Durda

SLS: A Year of Accomplishments



Systems Engineering and Integration
SLS model undergoes wind tunnel
testing at Langley Research Center
Nov 2012



J-2X power pack assembly hot fire
test at Stennis Space Center
Nov 2012



Multi-Purpose Crew Vehicle Stage
Adapter (MSA) Pathfinder Hardware
at Marshall Space Flight Center
June 2012



Kennedy Space Center
Complex 39B ready
for a 2017 SLS launch
(artist's concept)



RS-25 Engines
at Stennis
Space Center
Oct 2012,
shown with
future RS-25
Test Stand A1



F-1 engine gas generator hot fire test at Marshall Space Flight
Center, Jan 2013 – technology development for an optional
Advanced Booster concept



Qualification Motor 1 casting at ATK
Oct 2012

System Requirements Review/System Definition Review Completed

A National Infrastructure Asset



For Beyond-Earth
Orbit Exploration

Launching in 2017



Exploring Space for America's Future



Inspiration



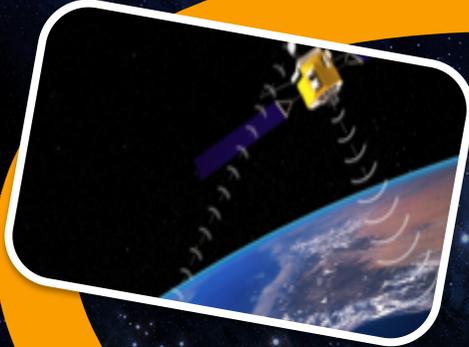
Scientific Knowledge



**New
National
Capability**



National Security



Economic Prosperity



Technology Development

Global Partnerships



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