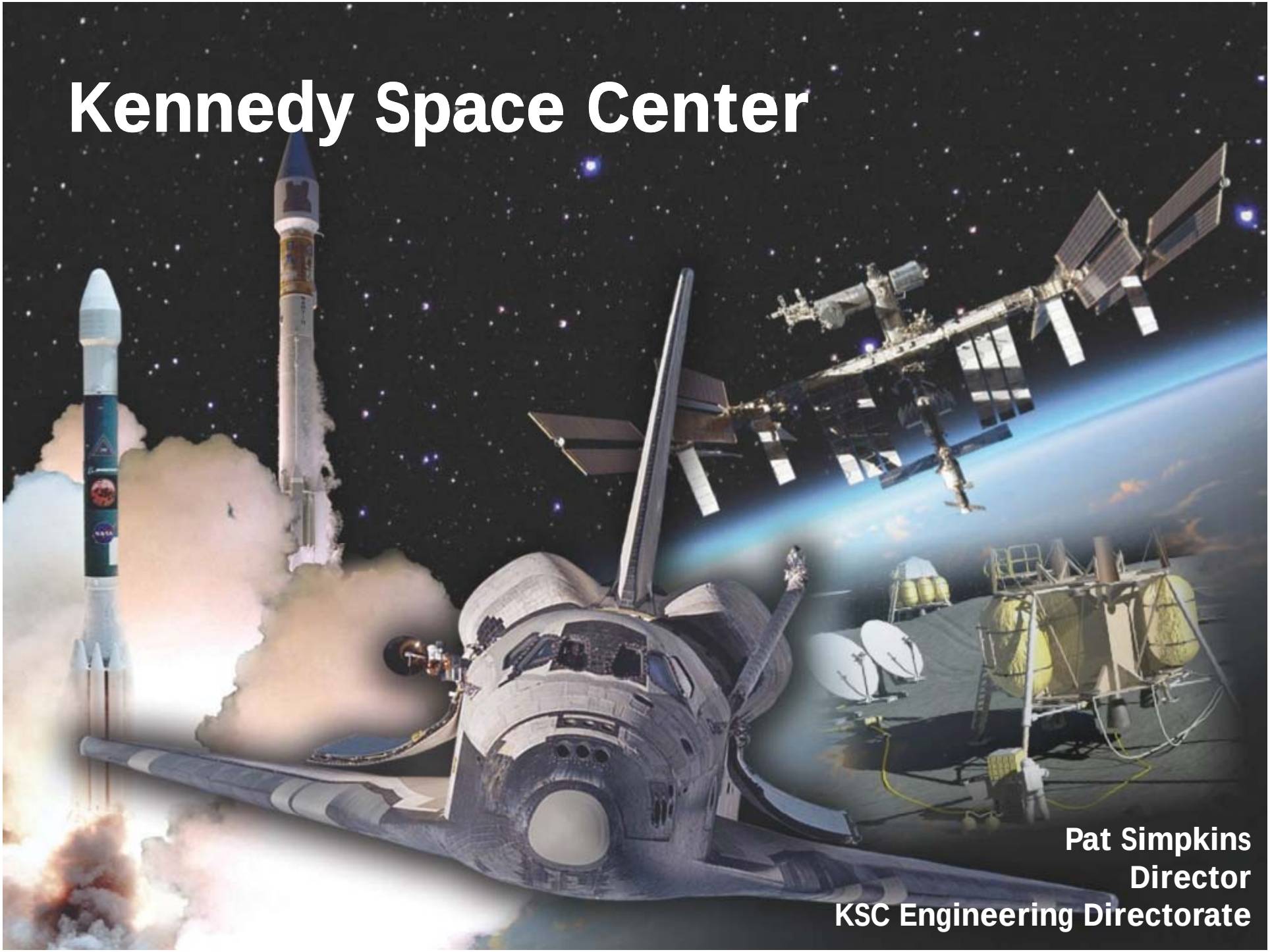
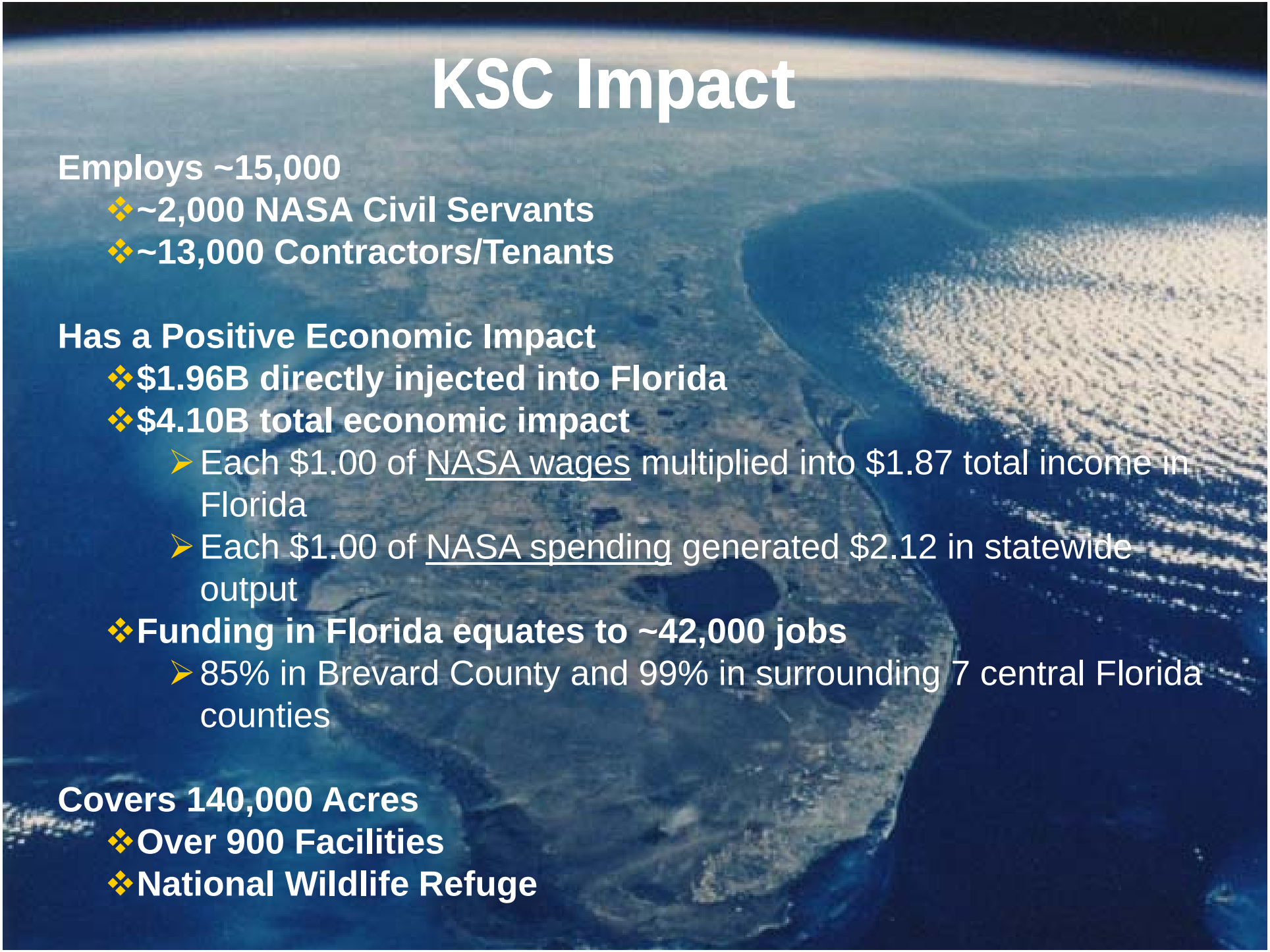
Kennedy Space Center



Pat Simpkins
Director
KSC Engineering Directorate



KSC Impact

Employs ~15,000

- **~2,000 NASA Civil Servants**
- **~13,000 Contractors/Tenants**

Has a Positive Economic Impact

- **$1.96B directly injected into Florida**
- **$4.10B total economic impact**
  - Each $1.00 of NASA wages multiplied into $1.87 total income in Florida
  - Each $1.00 of NASA spending generated $2.12 in statewide output
- **Funding in Florida equates to ~42,000 jobs**
  - 85% in Brevard County and 99% in surrounding 7 central Florida counties

Covers 140,000 Acres

- **Over 900 Facilities**
- **National Wildlife Refuge**

NASA's Direction

Highlights of NASA's FY 2011 Budget

- Top line increase of $6.0 billion over 5-years (FY 2011-15) compared to the FY 2010 Budget, for a total of $100 billion over five years.

- Significant and sustained investments in:
  - Transformative technology development and flagship technology demonstrations to pursue new approaches to space exploration;
  - Robotic precursor missions to multiple destinations in the solar system;
  - Research and development on heavy-lift and propulsion technologies;
  - U.S. commercial spaceflight capabilities;
  - Future launch capabilities, including work on modernizing Kennedy Space Center after the retirement of the Shuttle;
  - Extension and increased utilization of the International Space Station;
  - Cross-cutting technology development aimed at improving NASA, other government, and commercial space capabilities;
  - Accelerating the next wave of Climate change research and observations spacecraft;
  - NextGen and green aviation; and
  - Education, including focus on STEM.

- Cancellation of the Constellation program; and $600 million in FY 2011 to ensure the safe retirement of the Space Shuttle upon completion of the current manifest.

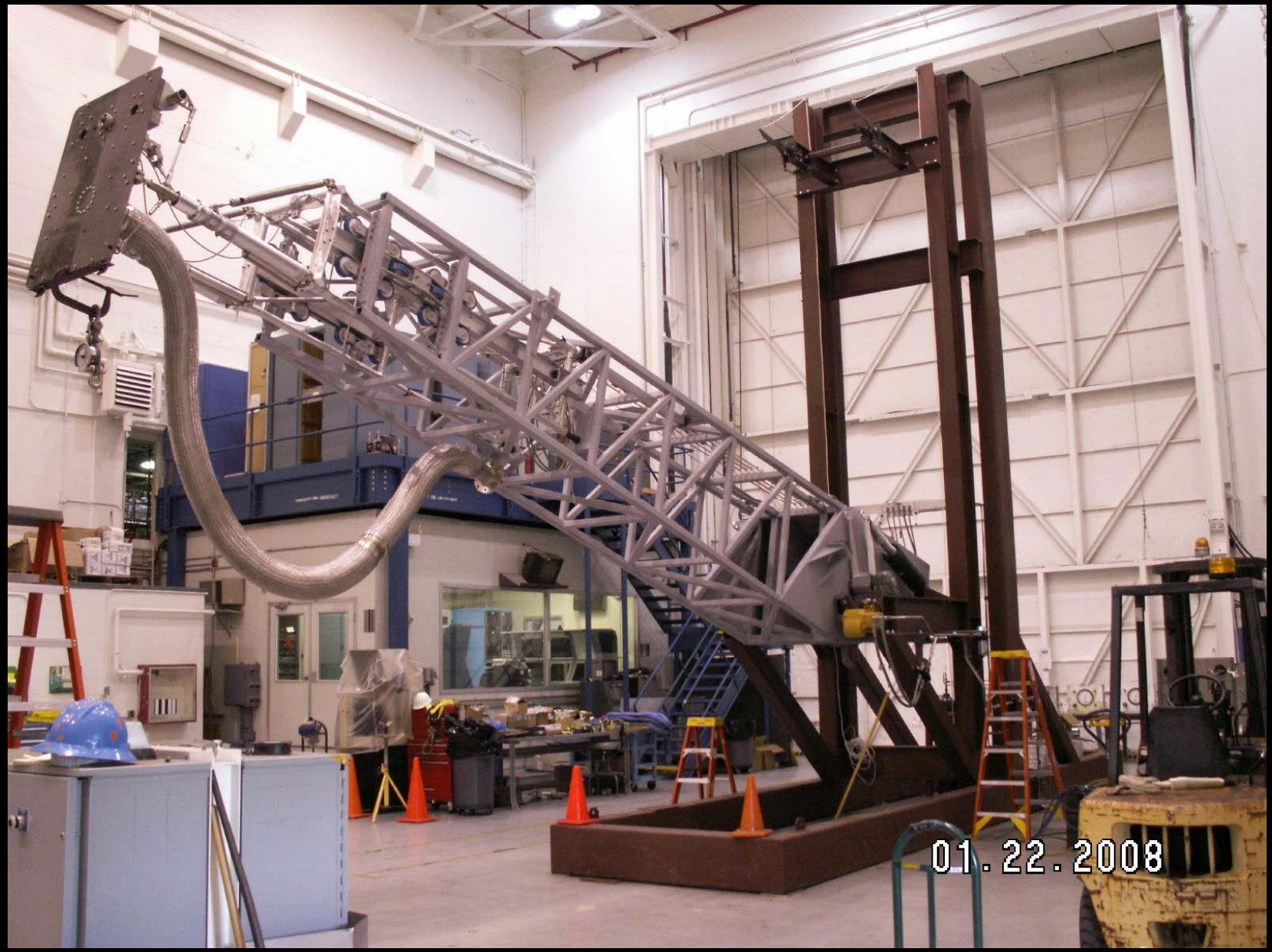
We Face a Challenging Year

- Safely Execute Current Responsibilities
  - Shuttle fly-out and retirement
  - Complete ISS Assembly and Support full ISS utilization (extended through 2020)
  - LSP continues to support science missions
  - Constellation Program realignment
    - Complete through PDR
    - Document and capture lessons learned
- Prepare for the Future

What We Have Done

- Identified barriers to commercial space activities on the Space Coast
- Initiated pursuit of KSC and NASA roles for Commercial Crew and Cargo
- Identified core KSC Research and Technology Development capabilities for future roles as well as enhance current
- Prepared workforce/acquisition strategies for various Agency scenarios
- Developed partnerships for Shuttle Landing Facilities, Exploration Park and other KSC facilities
- Organized KSC to prepare for future work

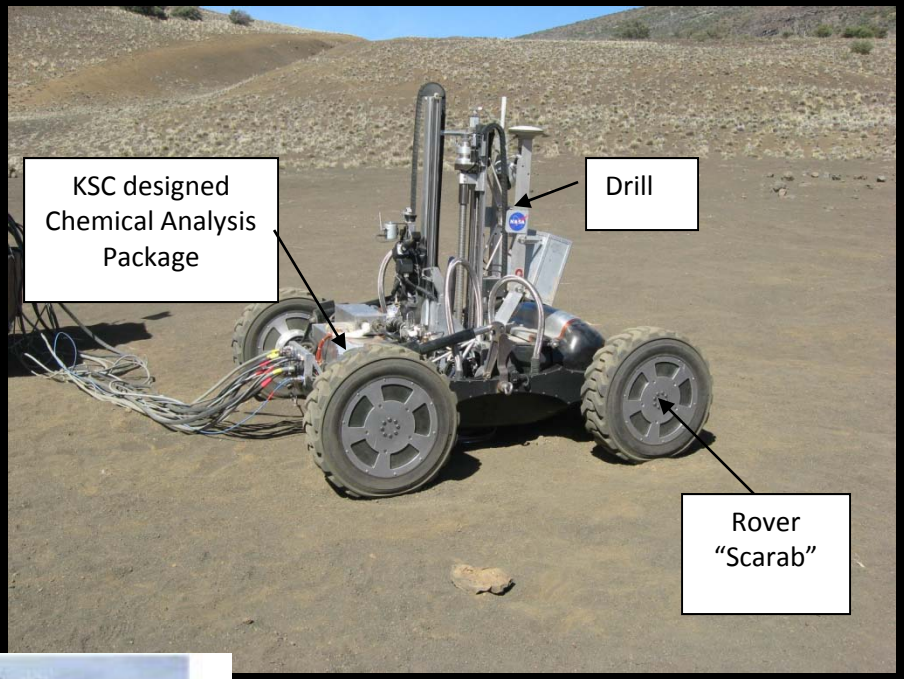
What We Have Done

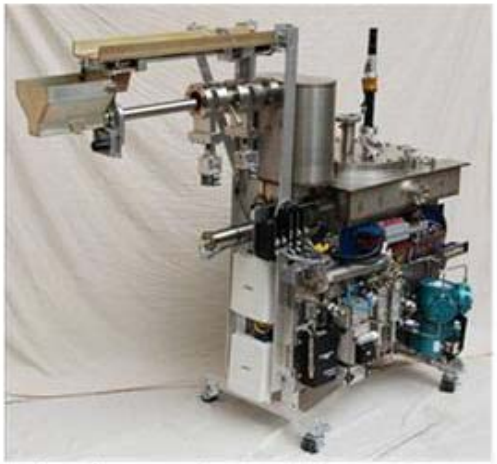


What We Have Done

What We Have Done

RESOLVE (Regolith and Environment Science and Oxygen and Lunar Volatile Extraction) Precursor Demonstration



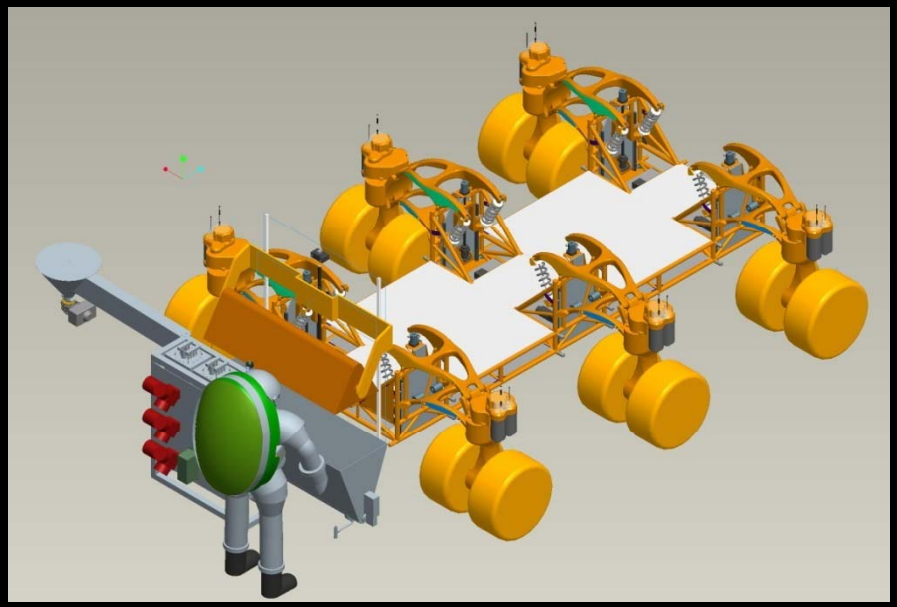


Carbothermal Regolith Reduction Module (ORBITEC)

Solar Energy Collection and Delivery Module (PSI)

What We Have Done

O2 Excavator
Enhanced LANCE
Enhanced Quick Attach
ISRU O2 Production
Regolith Feed System
Surface Stabilization

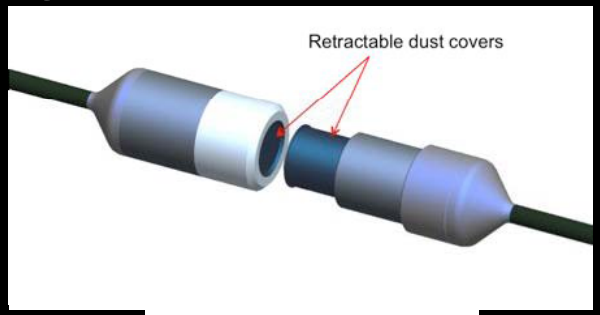


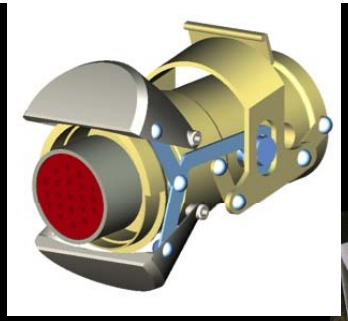
What We Are Doing

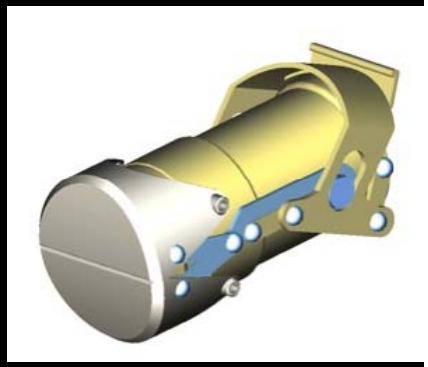
Present manual repair technology for wiring

New repair technology for wiring

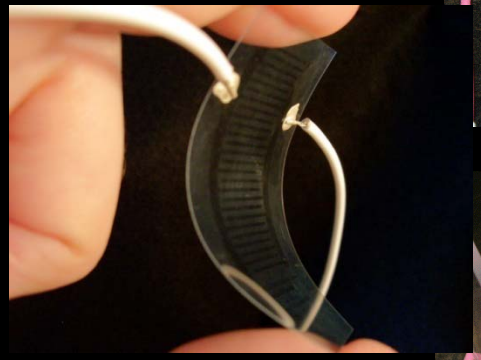
Advanced Materials for Life Cycle Optimization

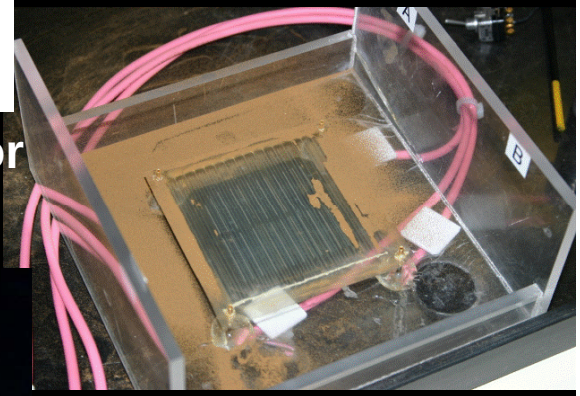


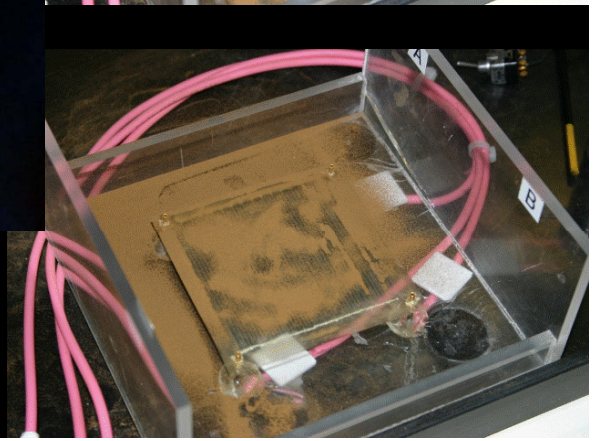




Advanced Systems for Remote Habitation







Resource Requirements Planning for KSC Projected Work

KSC Work Portfolio Strategy

Flagship Technology Demonstration Project at KSC	***Enabling Technology Development and Demonstration Project at KSC***	***Commercial Crew & Cargo Program or Project***	***Space Technology Initiative Project***	***Heavy-Lift and Propulsion Technology Project***	***Exploration Robotic Precursor Project***	***Constellation Ground Transition & Closeout Project***	***KSC ISS Ground Processing Project***

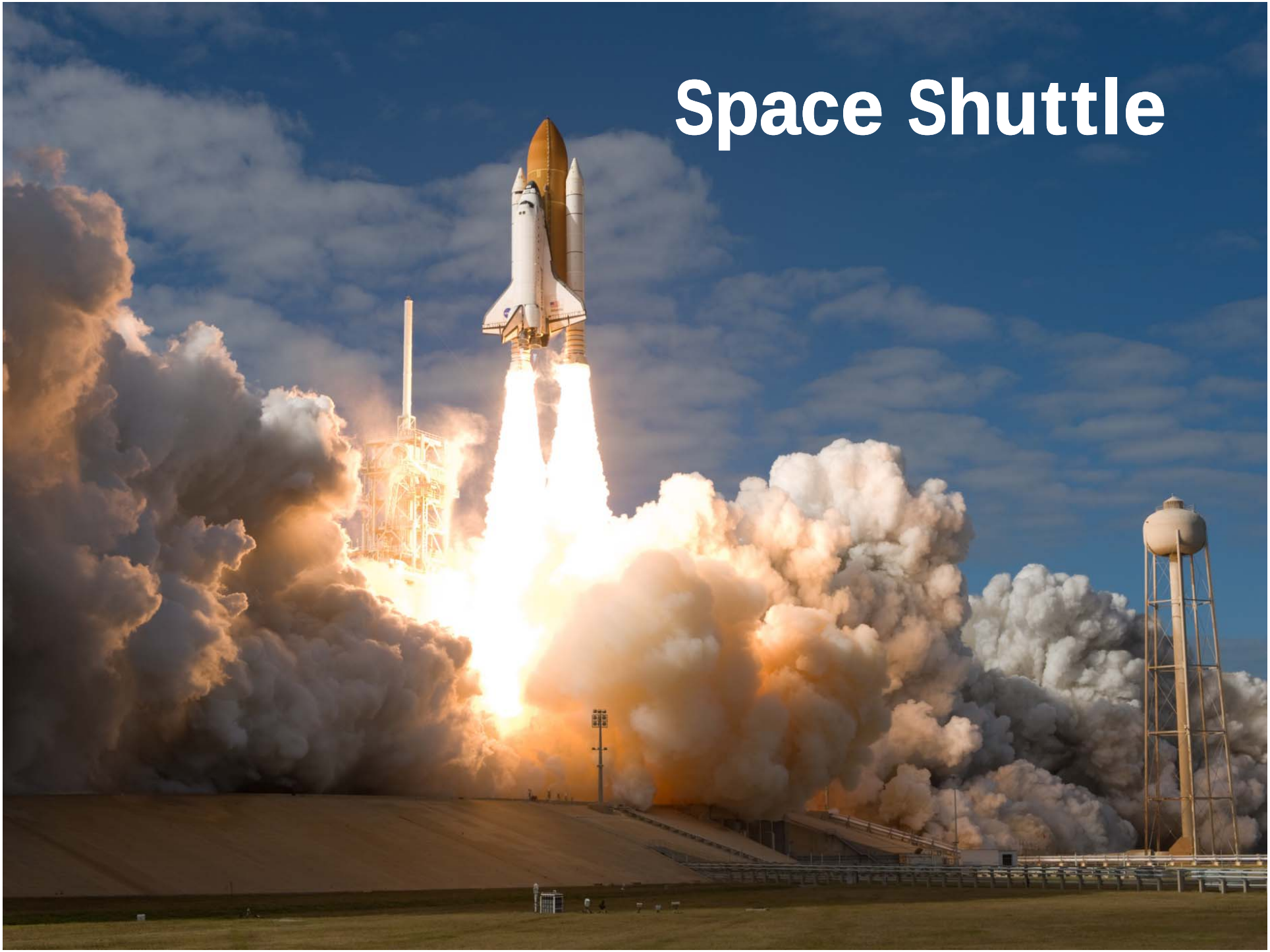
Education Programs	***Participatory Exploration Program***	***Human Research Project*** *(already at KSC)*	***Center Management Operations and Institutional Services***	***Launch Services Program***	***21st Century Launch Complex Program***	***Shuttle FY 2011 First Quarter Funding***	***Changes to Shuttle Transition planning***

Project Plan

Data and Insight; Resource integration

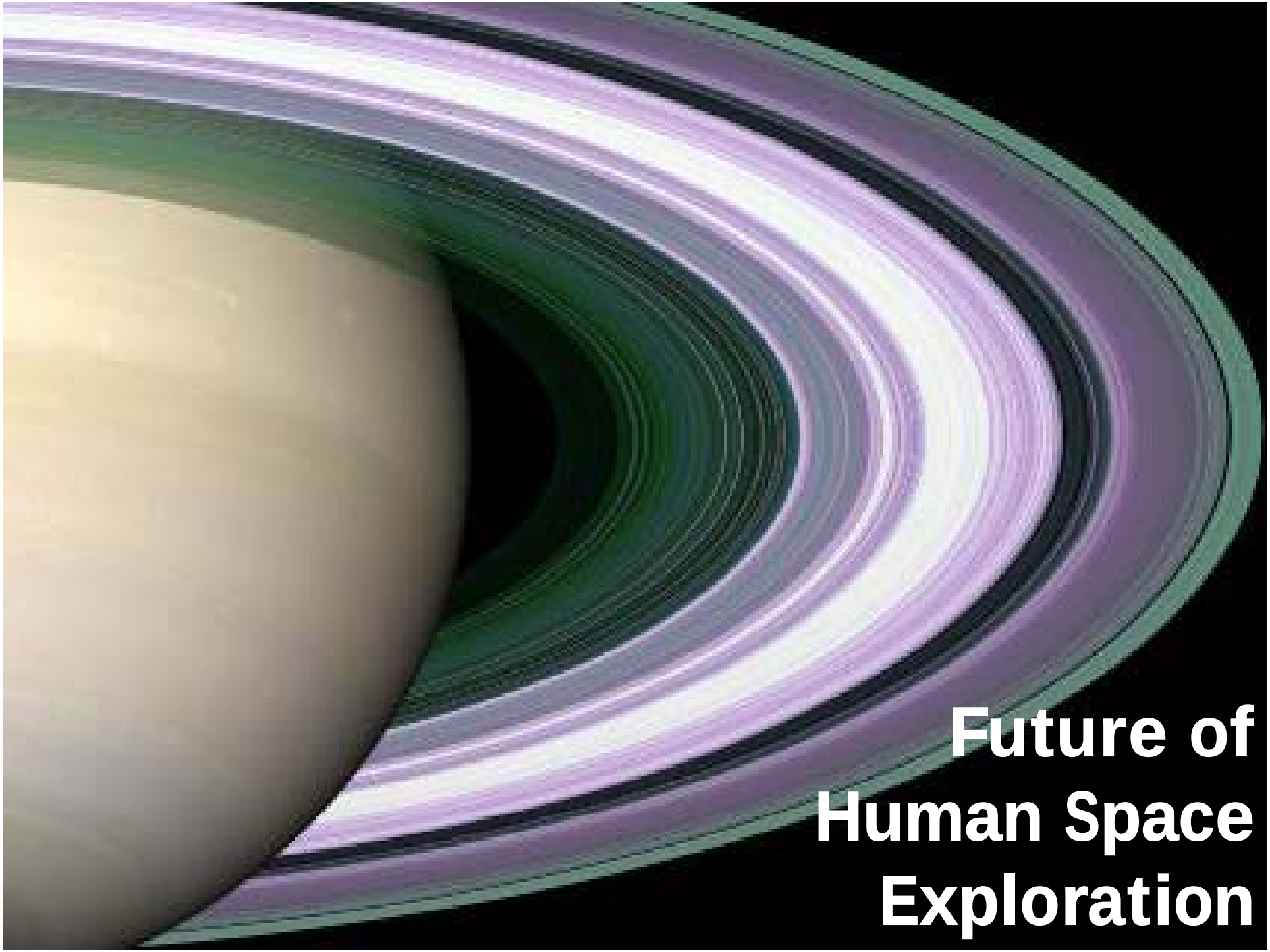
- Labs/ Testbeds
- Facilities
- Technical Services
- Communication Infrastructure
- Civil Service Workforce
- Technical & Operations Support
- Budget Integration

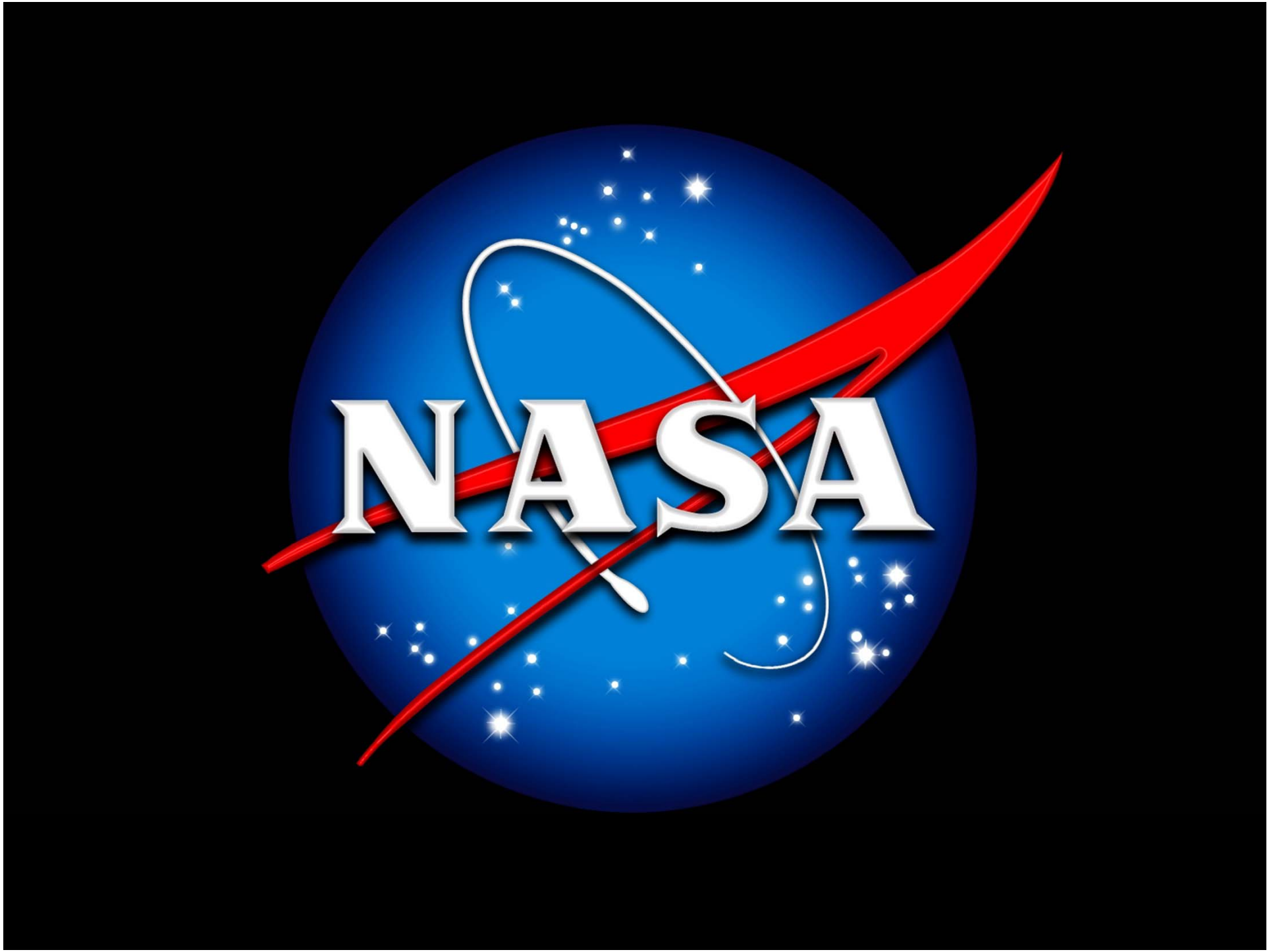
KSC Resources Portfolio Strategy


Space Shuttle

International Space Station

Launch Services Program
Solar Dynamic Observatory


Future of
Human Space
Exploration


NASA