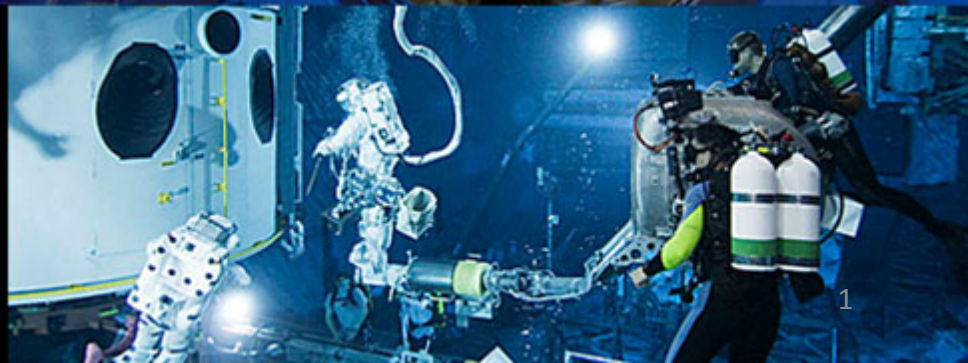
National Aeronautics and Space Administration

NASA



NASA JSC Co-development and Partnering Initiative

JOHNSON SPACE CENTER

PARTNERING FOR THE FUTURE

Dr. Ellen Ochoa | March 4, 2015

Enabling the JSC of the Future

National Aeronautics and Space Administration

JSC's Highly Successful Co-Development Initiative

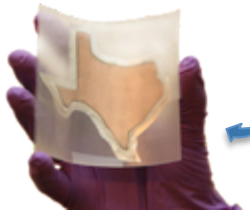
- JSC's Co-development (Co-dev.) initiative is one of many tools that JSC's Partnership Development Office (PDO) uses to find strategic partners from industry, academia and other Government Agencies

- The goals of Co-dev partnerships are to advance technologies required for Space Exploration and/or Science
  - > Fill technology gaps
  - > Determine current state of technologies
  - > Avoid cost
  - > Find solutions in others tool boxes
  - > Expedite development time
  - > Share resources (people, facilities, $$)

- **26 Co-Dev Announcements released**
- **230+ responses**

	Responses	Potential Collaborations
Navigation, EDL and Aero Science	39	3
Energy production, management & storage	31	14
Propulsion	17	4
Robotics and Augmented Reality	50	4
Structures	16	6
Safety and Mission Assurance	17	2
Human Health and Performance	30	9

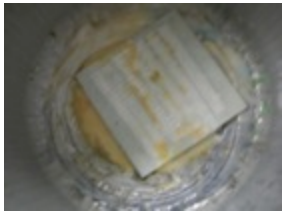
Aluminum Wiring Technology
Raytheon: Collaboration to advance US Industry Standards and Testing Protocol
- Establishing NASA Standard for aluminum wiring could result in significant weight savings for future vehicles.



Li-Ion Battery Technology
Big Delta Systems: Innovative technology; spray-on li-ion batteries
- Potential game changing technology
- Battery essentially becomes integral with structure

Air-independent Fuel Cells
Boeing Huntington Beach: Makes fuel cells for Navy drones using jet fuel
- Common technologies shared between two different fuel cell designs
- Collaborate with knowledge sharing, peer review and lessons learned

Robotics and Simulation Technologies
Osterhout Design Group (ODG): Cutting-edge wearable technology
- Co-development using NASA cutting-edge Augmented Reality capabilities could result in game changing technology



Composite Sandwich Habitable Pressurized Structures
Natural Process Design Inc..: Patented Self-repairing, fiber reinforced matrix materials
- Potential game changing technology
- Could result in innovative structure for deep space habitats

Co-Development Opportunities and Mechanisms

- Co-dev/Partnering opportunities include:
  - Knowledge Sharing/peer review
  - Formation of community-of-practice
  - Reimbursable Work
  - Teaming to mature technology

Data Sharing &
Working Together
To Further the State of the Art

Mechanisms Include:

- Binding Agreements: Space Act Agreement (SAA)
  - SAA "authorizes NASA to enter into and perform contracts, leases, cooperative agreements, or other transactions as my be necessary in the conduct of its work and on such terms as may deem appropriate…"
  - Process takes longer but may be required especially if parties believe Intellectual Property (IP) will be involved

- Non-Binding Agreements:
  - Letter of Intent
  - Protocols
  - Agreements in Principle
  - Technology Plans
  - Program Plans
  - Action Lists
  - Meeting Minutes
  - Working Group Minutes
  - MOUs/MOAs