



ISS National Lab Education Project

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What the ISS National Lab Mandate Means

- **ISS National Lab gives us a mandate to bring external partners into the ISS Program. These partners could be:**
 - **Other Federal Agencies**
 - » State or Local Agencies are not precluded
 - **“the Private Sector”, which we think means**
 - » Commercial entities
 - » Non-Profit or Not-for Profits organizations
 - » Professional Organizations (AIAA, IEEE, minority demographic professional orgs, etc.)
 - » Community organizations
 - **Current or candidate ISS PI’s/PD’s desiring an Education component in their research**
- **Funding for partner activities could be:**
 - **100 % partner funded**
 - **Shared funding with NASA**



Vision for the ISS National Laboratory Education Project

- **Congress also mandated the incorporation of educational projects in ISS National Lab to promote STEM literacy and engagement**
- **We desire to create a national resource for STEM education using the unique venue of the ISS Program**
 - **Develop a resource that enables educational activities onboard and the ISS and in the classroom**
 - **Be accessible to educators and students from K through Post Doc**
 - **Provide opportunities for life-long learners via educational institutions and venues**
 - **Attract Americans from all backgrounds into STEM education, advance their STEM literacy, facilitate future STEM employment**
 - **Make the connection to ISS personal**
 - **Make the ISS a “recognizable brand”**



How We Can Use the ISS for Education

- **Experiments performed using onboard resources (no upmass)**
- **Payloads flown to ISS or onboard ISS cargo vehicles (upmass required)**
- **Ground based activities that follow or engage students in onboard activities:**
 - » **Ground based control group experiments**
 - » **Ground based activities involving direct interaction with ISS**
 - » **Ground based activities considering ISS resources in their solution set**
 - » **Flight following activities – a study of the ISS systems and operations**



Strategic Thinking

- **ISS NL is about partnering to expand ISS utilization; therefore, we should not have a majority of NL Educational activities that are NASA funded**
 - **As a “first draft starting point”, a suggested break out as a strategic objective:**
 - » **At least 60 % of activities are exclusively partner funded (no direct NASA funding)**
 - » **No more than 40 % of activities have at least partial NASA funding. Of this 40 %:**
 - › **At least 60% have majority funding provided by the partner**
 - › **No more than 40% have majority funding provided by NASA**
- **NASA Education must provide review and approval of all activities to ensure they can be construed as “Education”**
- **Involvement in a limited number “Outreach” activities could be acceptable and could be enabled using NL Education resources**
 - **At least 1 of the 3 criteria are met or the activity is purely at the “inspire” level**
 - » **Generates interest and publicity in ISS, NASA and STEM**



Strategic Thinking (continued)

- **“Branding” & “Getting the Word Out” is vital**
 - **“Brand Name” and Tag Line should be attention getting**
- Examples:**
 - » **“Orbital Classroom” – Educational Lessons Using the International Space Station”**
 - » **“Cosmic Campus”– Educating Students from space with the International Space Station**
 - » **“SSTAR STEMS” – Space STation Academics and Research for Science Technology Engineering and Mathematics Students**
- **All available media should be used to promote the NL Education Project**
 - **NASAExpress and Center email distributions**
 - **Dedicated ISS NL Education Project web site**
 - **Social Media NASA specific outlets**
 - **NASA Television**



Implementation

- **Project ideas can be submitted through a standing “Announcement of Opportunity”**
- **Space Act Agreements would be the main instrument used for external entities**
 - **Vetted through ISS Program Office**
 - **Approvals at the HQ Edu Office (Winterton) and SOMD (Gerstenmaier) levels**
- **MOUs could be used to engage NASA educational entities such as Space Grants**
- **For activities utilizing onboard resources or with upmass/downmass requirements ISS Program Office Payload Office processes will be used with assistance from that organization (Code OZ)**
 - **Includes NASA sponsored or exclusively NASA funded activities**
- **Office of Education Project Metrics reported through NASA Education**



A Few Current Projects

- **Kids In Micro-g Student Experiment Competition Activities**
 - **Targets Grades 5-8 to design a microgravity demonstration experiment using onboard materials**
 - » **SOMD developed project with participation from Center Education Offices**
- **Microsoft Blink Webpage design contest**
 - **Contestants design web pages addressing two topics:**
 - » **Benefits provided by NASA programs to the Nation and world**
 - » **Landing pages for simulated student ISS flight controller training web based lessons**
 - **Microsoft conducting the contest in consultation with NASA**



A Few Current Projects (continued)

- **Amateur Radio on ISS (ARISS)**
 - **Ongoing school contact operations**
 - **Expanding capabilities into Columbus module in conjunction with ESA Education**
- **ARISSat-1**
 - **Free-flyer satellite to be deployed next year on Russian Segment EVA developed by AMSAT (Radio Amateur Satellite Corp.), proof of concept satellite to be deployed in 2010**
 - **Carries experiment ports for up to 4-6 student experiments**
 - **Interest in developing this core capability for a series of follow-on satellites**



Forward Looking Conclusion

- **Education now has a congressional mandate in the ISS Program as a part of the ISS National Lab initiative**
 - **The importance of this project is underscored by the emphasis on education being articulated by the White House and NASA Administrator Charlie Bolden**
- **Our desire is to use support and resources from the ISS Program and all elements of NASA Education to execute this educational initiative**
 - ***Space Grants could enable opportunities for participation in ISS from all 50 states!***
- **We want your ideas and inputs!!!! Please contact me! NASA Global email: mark.t.severance@nasa.gov Office: 281-483-0384**



Background Chart: ISS National Lab Enabling Legislation

NASA Authorization Act of 2005, Sec.507 NATIONAL LABORATORY DESIGNATION (Public Law 109-155)

“DESIGNATION – To further policy described in section 501(a), the US segment of the ISS is hereby designated a national laboratory.”

“MANAGEMENT - PARTNERSHIPS - The Administrator shall seek to *increase the utilization of the ISS by other Federal entities and the private sector through partnerships, cost-sharing agreements, and any other arrangements that would supplement NASA funding of the ISS.*”



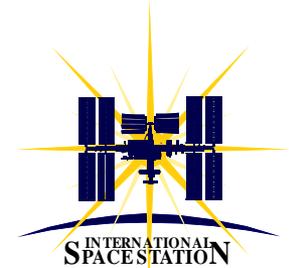
Background Chart: 21st Century Competitiveness Act

21st Century Competitiveness Act, 2007 Conference Report

SEC. 2006 *USE OF INTERNATIONAL SPACE STATION NATIONAL LABORATORY TO SUPPORT MATH AND SCIENCE EDUCATION AND COMPETITIVENESS*

SENSE OF CONGRESS - It is the sense of Congress that the *International Space Station National Laboratory offers unique opportunities for education activities and provides a unique resource for research and development in science, technology, and engineering, which can enhance the global competitiveness of the United States.*

DEVELOPMENT OF EDUCATIONAL PROJECTS.-The Administrator of the National Aeronautics and Space Administration *shall develop a detailed plan for implementation of 1 or more education projects that utilize the resources offered by the International Space Station.* In developing any detailed plan according to this paragraph, the Administrator shall make use of the findings and recommendations of the International Space Station national Laboratory Education Concept Development Task Force.



Backup Chart: What Does It Mean To Be An Educational Activity ?

- **All activities should be credible as “Education” in the NASA Office of Education definition. This means:**
 - **Intent is to increase learning, educate students, educators and/or the public in STEM subject areas**
 - » **The activity includes at least 2 of the 3 criteria:**
 - › **Standards based supplemental materials/handouts are used as part of the activity**
 - › **Trained/Qualified STEM educators/staff are involved to interact with participants to enhance understanding and increase the educational value of the activity**
 - › **Content of the activity is based on educational standards for in-depth exploration of topics**
 - **Activity can be at any level of the “Education Pyramid”**
 - » **Inspire**
 - » **Engage**
 - » **Educate**
 - » **Employ**



Backup Chart: What Does It Mean To Be An Educational Activity ?(con't)

- **2 types of “Education”:**
 - » **Formal: In-classroom or “Hands-On” activities providing experiential education**
 - » **Informal: Field trips, public venues (museums, science centers, special events)**
- **If the above criteria are not met the activity is considered “Outreach”**
 - **Not a bad thing, but could lead to credibility issues if NASA is promoting “Outreach” activities as “Education”**