NASA Education Design Team

Presentation to the NASA Advisory Council
Education and Public Outreach Committee

Leland Melvin and Trish Pengra
19 July 2010
NASA Education Design Team

Team Chartered by Administrator Bolden to

• develop a strategy to improve NASA’s education offerings, and

• to assist the Agency in establishing goals, structures, processes and evaluative techniques to implement a sustainable and innovative STEM Education program.

Six month effort with initial recommendations due to Administrator in time to influence the FY2012 Agency budget, final recommendations in October 2010
NASA Education Design Team

Team made up of NASA Civil Service Employees with Education Expertise in the Following Competencies:

- K-12 Programs
- Higher Education Programs
- Informal Education Programs
- Outreach Programs
- Partnerships with External Organizations
- Classroom Teaching Experience
- Program Evaluation, Metrics, and Research Experience
- Systems Engineering Experience
- Program Development and Implementation Experience
Team Members

- Leland Melvin, Co-Lead
- Trish Pengra, Co-Lead
- Bill Anderson, HQ Legislative Affairs
- Gregg Buckingham, KSC Education Manager
- Nicole Campbell, White House Fellow
- Carmel Conaty, GSFC Sys Planning & Analysis Manager
- Lisa Guerra, HQ ESMD (on detail to UT to develop systems engineering undergrad curriculum)
- Rob LaSalvia, NASA Explorer School Project Manager
- Dean Kern, NASA Goddard Education Program Manager
- Lori Manthey, IPCE/GRC Executive Officer
- Bonita Soley, HQ Office of Diversity and EO
- Stephanie Stockman, SMD Physical Scientist/education lead
Systems Engineering Approach

- Requirements analysis
  - Analyze mission, identify requirements, define performance and design constraints

- Functional analysis/allocation
  - Decompose to lower level, allocate requirements to all levels, define interfaces, integrate architecture

- Synthesis
  - Define alternative systems concepts, select preferred, define interfaces

- Systems analysis & control
  - Trade studies
  - Risk analysis
  - Effectiveness
  - Performance measurement

- Verification
  - System configuration
  - Architecture
  - Specifications & baseline
NASA Systems Approach to Education

Current NASA Education Programs
- Analyze mission, identify requirements, define performance and design constraints

Individual Education Projects
- Decompose to lower level projects, define interfaces, integrate system

Data Evaluation
- Evaluation data and analysis to inform Program/project design and improvement

Systems analysis & control
- External studies and research
- NRC Report
- Morrison Study

Administration policy
National Aeronautics and Space Act, 1958
Dept. of Education
NRC “Rising Above the Gathering Storm”
Congressional Direction

System design Specifications (systems playbook)
Timeline

May
Team chartered

May-July
Understand current program

July-August
Define optimal program, gap analysis

Mid-August
Preliminary findings/budget

Mid-October
Final product to Administrator
We want to hear from you…

• How do you view NASA’s role in STEM education?
• Should NASA use the media (television, film, video games) to build interest in STEM disciplines? How?
• Should NASA harness the power of Web 2.0 and social media to inspire students? How?
• How can NASA partner more effectively to increase program impact?
• How can NASA help STEM educators capture and maintain student interest in STEM?
• What are the Critical Success Factors for STEM education programs?