



NATIONAL INSTITUTE FOR ROCKET PROPULSION SYSTEMS

NIRPS - Solutions Facilitator Team Overview and Accomplishments

60th Joint Army Navy NASA Air Force Propulsion Meeting / 9th Modeling and Simulation / 7th Liquid Propulsion / 6th Spacecraft Propulsion / Joint Subcommittee Meeting

April 29 – May 2, 2013

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NASA Marshall Space Flight Center

Scope:

National
Multi-organizational
Multi-sector

Purpose:

NIRPS will help preserve and align government and private rocket propulsion capabilities to meet present and future US commercial, civil, and defense needs, while providing authoritative insight and recommendations to National decisional authorities

Tri-faceted approach:

- ◆ **Stewardship:** Monitor and analyze the state of the industry in order to formulate and recommend National Policy options and strategies that promote a healthy industrial base and ensure best-value for the American taxpayer
- ◆ **Technology:** Identify technology needs and recommend technology insertions by leading roadmap assessments and actively participating in program formulation activities
- ◆ **Solutions Facilitator/Provider:** Maintain relationships and awareness across the Government, industry and academia, to align available capacity with emerging demand

- **Lead:** Thomas Brown – NASA/MSFC
- **Facilitator:** Rhonda Childress-Thompson – NASA/MSFC
- **NASA members:**
 - ◆ Steve Gentz & Roberto Garcia – NESC/MSFC
 - ◆ Roger Baird & Sam Dougherty – MSFC
 - ◆ Mark Moody – RPT/SSC
 - ◆ David Jacobson – GRC
 - ◆ Paul Caraccioli – MSFC
- **USG:**
 - ◆ Douglas Chapman – Army/Redstone Test Center
 - ◆ Nickolas Demidovich - FAA
- **Industry:** Brett Alexander (Blue Origin), Randy Kendall (Aerospace Corp.), Eun Kim (Aerospace Corp), Frank McCall (Boeing), Chris Sanders (PWR), Mark Salita (Retired, Solids Industry Expert)
- **Academia:**
 - ◆ Mitchell Walker – Georgia Institute of Technology

- **Developed key strategies (top level plan) to address the Grand Challenges:**
 - Primary Grand Challenges Addressed:
 - “Simplify access to Government skills and capabilities”
 - “Facilitate collaboration across the government, academia and industry”
 - Secondary Grand Challenge Addressed
 - “Invigorate STEM pipeline”

FY 13 Goals Traced to Grand Challenges

Solutions
Facilitator

Grand Challenges	FY13 Goals	Team
1. Support the competitiveness and resilience of the industrial Base	1.1 Develop Supply Chain Analysis for SLS Architecture Decisions. 1.2 Develop Metrics to Determine Health of Industrial Base.	Stewardship Stewardship
 2. Invigorate the STEM pipeline	2.1 Provide engineering students with practical experience utilizing propulsion design and analysis tools and methodologies.	Solutions Facilitator
3. Develop and integrate a science and technology plan for propulsion systems	3.1 Use existing roadmaps to identify opportunities for collaborations and leveraging of complimentary activities.	Technology
4. Reduce development and sustainment costs for missiles and rocket systems	4.1 Conduct a study/survey of low cost technology test beds and/or other methods for transitioning propulsion component /sub-system technologies through the TRL valley of death (TRL 4-6).	Technology
 5. Collaborate across agencies for missile and rocket propulsion system development	5.1 Develop initial community of interest capability. 5.2 Establish a Cross-Cutting Collaborative Solutions Team that executes tasks of cross community interest, stimulating potential follow-on collaborations.	Solutions Facilitator Solutions Facilitator
 6. Foster access to facilities and expertise across Government, industry, and academia	6.1 Develop initial Propulsion Skills and Capabilities Directory & Web Tool. 6.2 Complete study of mechanisms for potential pass through process to ease access to cross government skills and capabilities.	Solutions Facilitator Solutions Facilitator
Integrated Goals		
Integrated Goals	IG.1 Develop operational model defining management concepts, operating principles and framework, and high-level goals including a concept of management oversight for periodic evaluation. IG.2 Develop a comprehensive Strategic Communications Plan that addresses external and internal stakeholders, interactive websites, and outreach planning for public, STEM, and Agency/Industry engagement. IG.3 Establish a National Charter IG.4 NDAA 1095 Follow-on Activity	Integrated Integrated Integrated Integrated

- **Developed key “solutions strategies”** (top level plan) to begin to address the primary solutions Grand Challenges – Simplify access to Government skills and capabilities & Facilitate collaboration across the government, academia and industry
- **Supporting STEM:** Supported continued development and university utilization of the MSFC Generalized Fluid System Simulation Program (GFSSP) - Student Version, in support of fluid dynamics education and student design projects.
 - Addition of six university partners
 - *Auburn University, UAB, UAH, Alabama A&M, University of Houston Clearlake, Vanderbilt University*
 - *Initial discussions with: with University of Texas at Austin, Florida Institute of Technology , University of Colorado*
 - Development of teaching manuals and technical/user manuals.
 - Support of multiple university student design activities.
- **Contracted tasks with CPIAC** to continue additional development of NIRPS Web Capability including the “Cross-Community Skills and Capabilities Directory/Database, the Propulsion Community of Interest, and potential web collaboration portals.
- **Initiated task with Defense Acquisition University** to perform streamlined facilitation mechanisms study

- **Initiated contract with CPIAC** to continue additional development of NIRPS Web Capability including the “Cross-Community Skills and Capabilities Directory/Database, the Propulsion Community of Interest, and potential web collaboration portals.

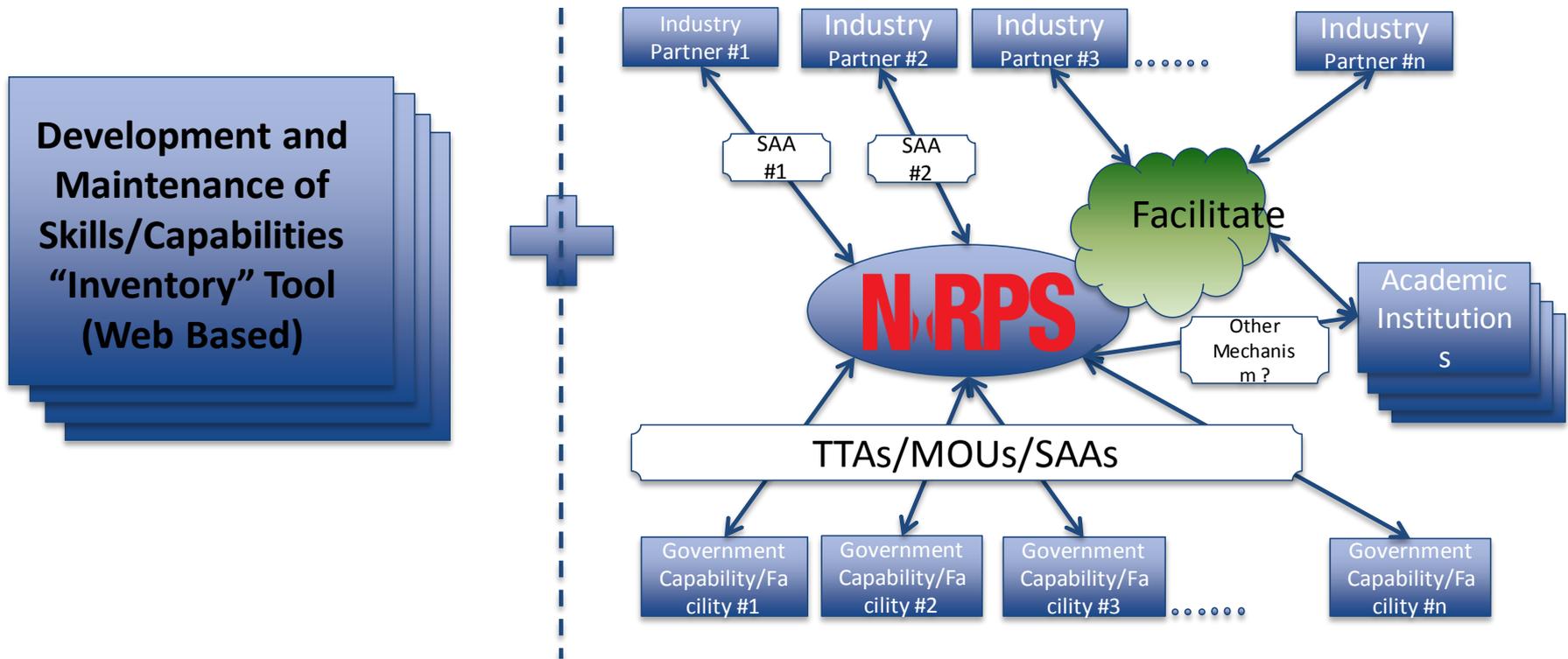
- Presented “static storyboard” for Skills and Capabilities Directory/Database at December 2012 JANNAF

- Identified POCs and solicited company and/or agency data for Skills & Capabilities Directory/Database
 - Information Collected
 - Company/Org
 - Sub-Organization
 - Point of Contact (POC)
 - Skill/Capability Title
 - Description of Skill/Capability
 - Projects/Programs Supported
 - Heritage (yrs. of experience)
 - Sensitivity (Public or Gov. Only)
 - Category)
 - Additional Category
 - Skill/Capability Application
 - Skill/Capability Discipline

- Hosting NIRPS Workshop at April/May 2013 JANNAF to demonstrate the Skills & Capabilities Directory/Database

Accomplishments

- Initiated task with **Defense Acquisition University** to perform streamlined facilitation mechanisms study



GOAL - To provide and facilitate simplified access to a broad range of national propulsion capabilities and facilities while increasing collaboration across the entire propulsion community

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The National Institute for Rocket Propulsion Systems (NIRPS) will support the preservation and advancement of the nation's rocket propulsion base to ensure that it continues to serve its vital role in national security, space exploration, economic growth, and education. The Institute stewards U.S. leadership in rocket propulsion by:

- Collaborating and cooperating with the government, commercial and academic propulsion communities to most effectively use national capabilities and resources
- Monitoring public- and private-sector rocket propulsion activities
- Facilitating technical solutions for today's challenges
- Evaluating and recommending new technologies for further development
- Making available the information required by national decision-makers so that policies and other instruments of the government support the sustainment, and where appropriate, the advancement of the nation's civil, defense, and commercial propulsion capabilities.

UPCOMING EVENTS



NIRPS presentation at the JANNAF Spacecraft Propulsion Conference in Huntsville, Alabama (December 2011) [More>>](#)



NIRPS Announces Teams to address Key Propulsion Challenges After reviewing more than 40 industrial base studies and assessments, NIRPS has identified six grand challenges facing the industry. [More>>](#)



NIRPS Announcement Featured in This Week @ NASA Video interview of Dale Thomas at the JANNAF conference... [More>>](#)



NIRPS Collaboration portal The location to access and interact with Government, industry and academic members of the United States Propulsion Community

NIRPS Portal Access

Responsible Official: W. Brown