Science & Technology Partnership Forum

AF– NASA – NRO Interagency S&T Partnership Forum

Activities and Background

6 Nov 2018

Science and Technology Collaboration

Background

- Established S&T Partnership in 2015 as Summit Action Item
  - Strategic AF/NRO/NASA forum to identify synergistic efforts and technologies
  - Additional orgs: OSD, DOS, DARPA, AFRL, SMDC, NRL, DIA, NOAA, +

Accomplishments

- 10 Tech Exchange Meetings to date: 24 orgs
- Cross-walked S&T roadmaps in each area
- Topic 1 transitioned to Gov't Forum on CubeSats
- Cross-agency Innovation Summits with industry
- Normalized terms/requirements/goals
- Delivered recommendations on goals, strategies, and potential joint concepts
- 2 Analytical Games with Intel Community (ODNI)

Focus Areas

16 topics identified and prioritized. Top 4:

1. Small Satellite Technology Lead: AF	3. In-Space Assembly (ISA) Lead: NASA
2. Big Data Analytics Lead: NRO	4. Space Cybersecurity Lead: NASA

Next Steps

- In-Space Assembly industry/FFRDC summit (NOW)
- Deliver ISA recommendations to Agencies (Fall '18)
- One-day Big Data Research Workshop (Mar'18)
- New topic: cislunar space technologies (FY19)

Key technology areas address mutual needs across government space

S&T Collaboration Accomplishments

- Recent Activities (examples)
  - 5 technical interchange meetings in 2018
  - Monthly Space Pillars meetings in Pentagon
  - Interagency white paper on ISA investments and gaps
  - Analytical game on Cislunar development across civil/military/IC
- Tech Transitions
  - Cyber defense strategy for NASA's Restore-L and SCAN missions
  - ISA Briefing to Industry (NOW)
  - Government-wide cyber test range catalog
  - Space Cybersecurity Information Sharing and Analysis Center (ISAC)
- Future Efforts
  - USAF assessment of International Space Station (FY19)
  - Space test range using ISA techniques (proposal)
  - ID S&T gaps for Cislunar Space Domain Awareness and Intel (and future military activity)

Topic 1: Small Satellite Technology

Lead: AF

Goal: Develop miniaturized sensing capabilities for cube-sat and small-sat platforms.

Accomplishments:

- Conducted Technical Exchanges among government to identify key sensor technologies with most cross-agency Return on Investment.
- Captured ongoing development of small satellite miniaturized sensor technologies and briefed at the 30th Annual Small Satellite Conference, Logan, Utah
- Discussed with industry the role of government
- Cross-walked NASA-AF S&T roadmaps for small sat tech as a pilot and published full cross-walk overview in AIAA SPACE public paper.
- Provided technical input to OSTP's Harnessing Small Satellite Revolution initiative & captured by the White House

Current Status:

- Transitioned continuity of efforts to the Government Forum on CubeSats

Topic 2: Big Data Analytics (BDA)

Lead: NRO

Goal: Integrate advances in cognitive modeling with automated data analytics to create game-changing effects.

Accomplishments:

- Summit discussions since 2015
- Technical Exchange meeting – October 2016
- NRO Enterprise Data Strategy –18 November 2016
- Space Pillars Meeting – 3 May 2018
  - To understand big data value, trends and issues
  - To discuss and share views and perspectives
  - Participants normally include individuals form DoD, IC, NASA, State, or any other U.S. Government organization or agency
- On-going: Leverage advanced big-data-sharing platforms with integrated nonlinear automation tools.

Steps:

- Oct 2018 – Big Data Analysis Solutions Forum; NRO/JD Hill; S&T Alliance participation
- Mar 2018 – one-day Big Data Research Workshop
- Plan next Government TEM

NRO Big Data Roles:

- Traditionally NRO is viewed as a big data provider
- NRO is also a big data consumer
- Increased automation in collection is needed
- NRO is a cloud participant
  - Applies multi-INT analytics on data in the cloud
  - Provides results to the cloud
  - Exchanges information with partners via the cloud
- Big Data Analytics Interests
  - Data dimensions
  - Big Data infrastructure
  - Big Data Analytics

NRO is participating with DNI and Community to develop, evaluate, and deploy capabilities to derive the benefits of shared Big Data.

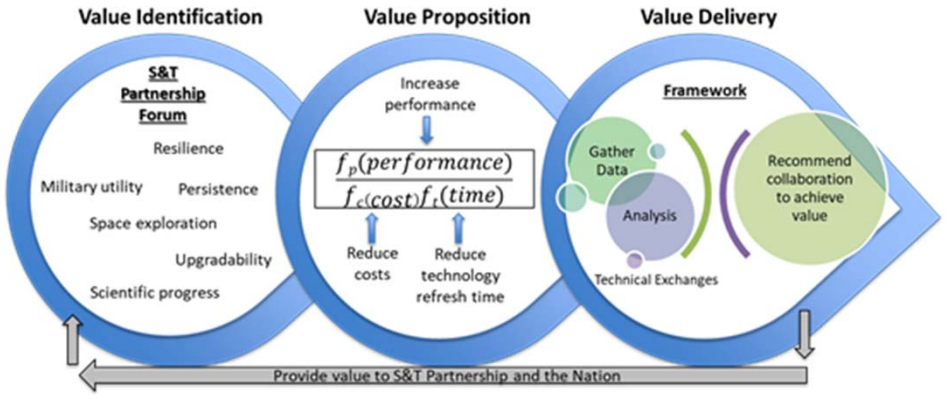
Topic 3: in-Space Assembly (iSA)

Lead: NASA

Goal: Develop the capability to perform autonomous or semi-autonomous in-space assembly of space systems.

Accomplishments:

- Technical Exchanges to ID and prioritize developments
- Delivered interagency white paper describing value proposition, strategic plan, current investments and planning, and summaries of potential concepts
- Defined iSA dictionary of terms, and defined and categorized iSA capability areas
- Performed capability gap analysis to determine interagency partnering recommendations

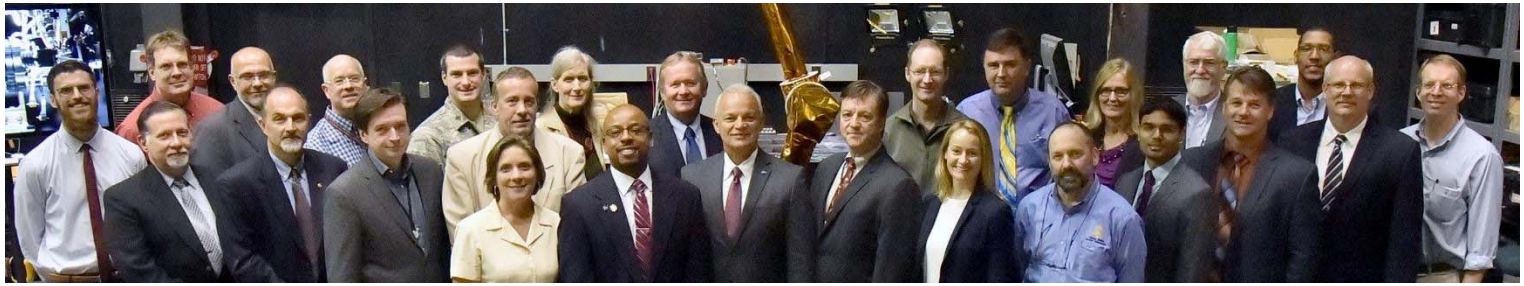


Steps:

- Oct 2018 - Deliver interagency partnering recommendations (from maintaining awareness to program coordination)
- Nov 2018 - Engage with industry/FFRDCs regarding their visions for iSA and plans to infuse iSA into their business lines

DARPA
NASA
NRL
NRO
USAF

iSA Tech Exchange @ NRL



Questions?