National Aeronautics and Space Administration

Space Technology Mission Directorate
Science Mission Directorate

Small Spacecraft Systems Virtual Institute (S^3VI)

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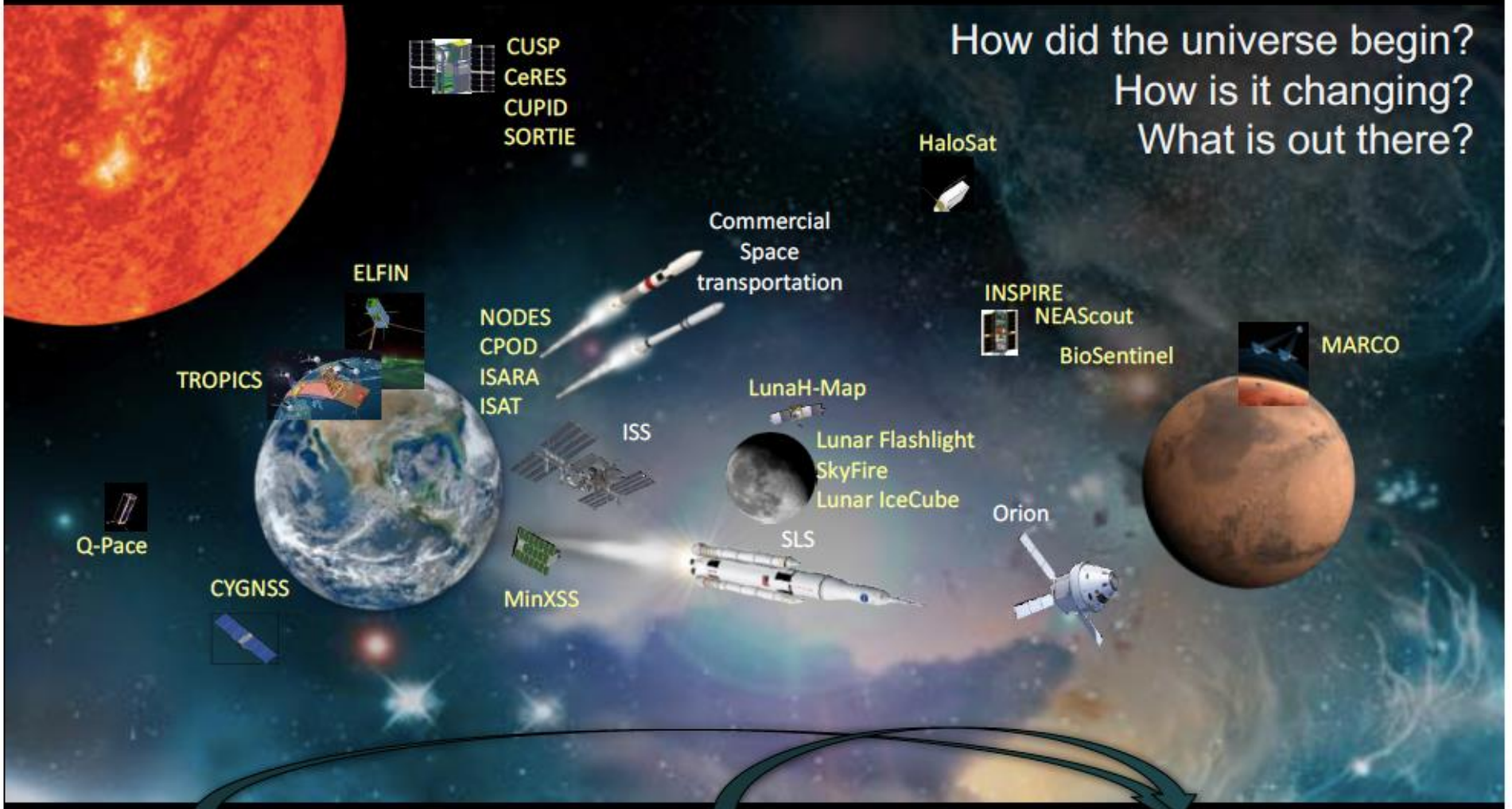
Distribution Statement A: Approved for Public Release

NASA is Enabling the Community's use of SmallSats to Help Answer Humanity's Big Questions



NASA Technology:

SSTP technology investments

- Formation Flight, Propulsion
- Communications, ACS systems

NASA Exploration:

Access to Space, SKGs

- CubeSat Launch Initiative
- SLS/Orion/Commercial

NASA Science:

- SmallSats in all solicitations
- Leveraging STMD technologies
- Augmenting Larger Missions

S³VI Charter

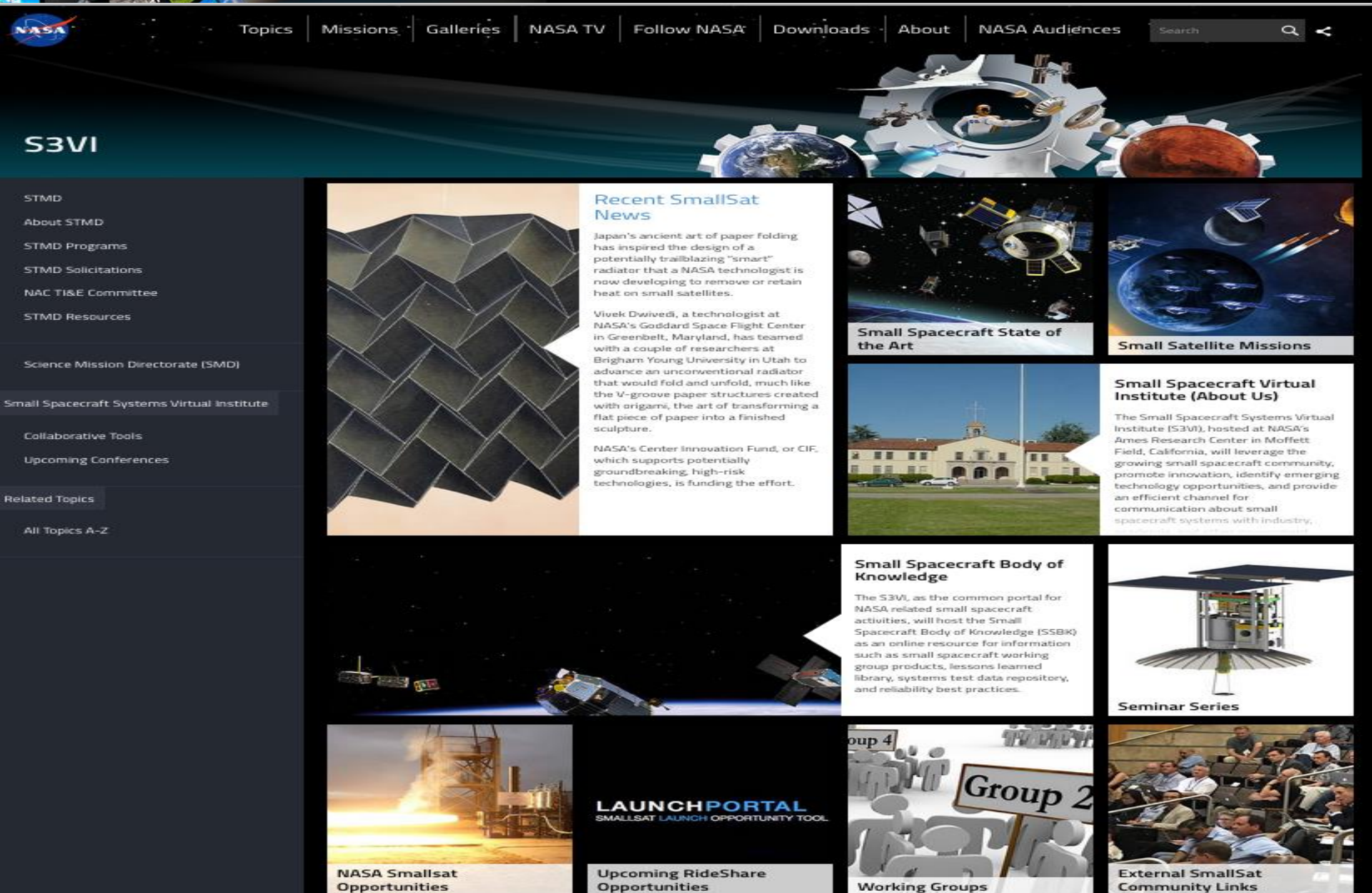
- NASA desires to advance clear communications, coordination, and consistent guidance regarding small spacecraft activities across the agency. To that end, S³VI shall:
  - Enhance internal integration
  - Act as single point of contact for information dissemination
  - Serve as repository for streamlined development approaches and processes
  - Provide US smallsat research community with access to mission enabling information
    - Within NASA
    - Other government agencies (OGAs)
    - Academia
    - Industry

Year 1 Tasks

- Develop and maintain the NASA Small Spacecraft Web Portal
- Support the NASA Small Spacecraft Community of Practice (CoP)
- Support the NASA Small Spacecraft Coordination Group (STMD + SMD).
  - HEO coordination in process
- Maintain and update the the STMD Small Spacecraft Technology State of the Art (SoA) report
  - Linked into Web Portal

Web Portal

https://www.nasa.gov/smallsat-institute



Key S³VI Web Portal Features

- Small Spacecraft Body of Knowledge (SSBoK)
  - SoA (already exists); online web access, self submittal feature
  - Lessons Learned dbs (to be developed/acquired)
  - CoP db (after transition from OSMA)
  - Other dbs (i.e., component catalogues, test libraries, etc.)
- NASA small spacecraft mission and tech funding opportunities
- Launch opportunities (including CSLI, DoD*, commercial)
- Working Groups repositories, collaboration tool kits, proceedings
- Smallsat Seminar Series
- External links of interest to community, including upcoming smallsat workshops, conferences, events, etc.
- Virtual Collaboration Tools

**Some DoD launch information not for wide dissemination.*

Working Groups Support

- Small Spacecraft Reliability WG *(up and running)*
  - Co-chaired by GSFC and JPL; NASA + OGAs membership
  - Create pathway for science and exploration quality smallsats
  - First open meeting with industry March 14-15 in Pasadena
    - S^3VI proposes to collect, organize, and ingest proceedings and support future activities
- Smallsat Access to Space WG *(in formulation)*
  - Initial members: GSFC (lead), ARC, MSFC, KSC, and JPL
  - Support NASA-wide rideshare capabilities and policies development
- *Examples of other potential WGs (TBD start dates)*
  - *Smallsat propulsion*
  - *Deep space communications for smallsats*
  - *Smallsat power*
  - *Smallsat testing philosophy (may be part of Reliability WG?)*
  - *Frequency licensing for smallsats*
  - *Orbital debris*

Top Challenges

- Ability to extract key knowledge from Centers, other sources
  - Proprietary/competitive issues
  - Rapidly changing domain
- Data management/distribution policies
  - ITAR
  - Proprietary data
  - Sensitive But Unclassified (SBU) data
  - Competition sensitive information
  - *NO CLASSIFIED MATERIALS/DATA*
    - » Developing data management plan to address various concerns; includes a tiered access plan

Forrester Research: Once a business deploys four to five collaboration tools, there is a significant improvement in benefits from the technologies

Gartner: “Hyperconnectedness will lead to a push for more work to occur in formal and informal relationships across enterprise boundaries…and that has implications for how people work and how IT augments or supports that work”