



# SMALL SPACECRAFT SYSTEMS VIRTUAL INSTITUTE

## STATUS UPDATE

August 5, 2017





# S<sup>3</sup>VI Charter



- Advance clear communications, coordination, and consistent guidance regarding small spacecraft activities across NASA
  - 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

*S<sup>3</sup>VI is a NASA-wide Institute*



# S<sup>3</sup>VI Strategy



Promoting innovation and exploration of new concepts by establishing effective conduits for the exchange of information.



## Engage

Small Spacecraft Body of Knowledge

## Share

Small Spacecraft State of the Art & Technical Databases



## Small Spacecraft Systems Virtual Institute



## Collaborate

Working Groups, Partnership Opportunities

## Launch

Launch Portal



Jointly Sponsored by the Space Technology Mission Directorate and the Science Mission Directorate



# Web Portal



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

## Small Spacecraft Virtual Institute

[Home](#)

[About S3VI](#)

[Small Satellite Reliability Initiative](#)

[NASA Small Satellite Opportunities](#)

[Upcoming Conferences](#)

[Collaborative Tools](#)

### Related Links

[Space Technology Mission Directorate](#)

[Science Mission Directorate](#)

[Small Satellite Missions](#)

[CubeSats](#)

[CubeSat Launch Initiative](#)

[Cube Quest Challenge](#)

[Office of the Chief Technologist](#)

[Technology Drives Exploration](#)

### Related Topics

[All Topics A-Z](#)

### Recent SmallSat News

#### NASA Set to Launch Dellingr

NASA scientists and engineers named their new [CubeSat](#) after the mythological Norse god of the dawn. Now, just days from launch, they are confident Dellingr will live up to its name and inaugurate a new era for scientists wanting to use small, highly reliable satellites to carry out important, and in some cases, never-before-tried science.

The shoebox-sized spacecraft is set to launch in August aboard a SpaceX Falcon 9 rocket to the International Space Station where it will be deployed later into a low-Earth orbit.

[Archived SmallSat News](#)



**SmallSat Parts On Orbit Now (SPOON) Database - Request for Information**



**Open Small Spacecraft Technology Program Solicitation**



### Small Spacecraft Virtual Institute

Promoting innovation and exploration of new concepts by establishing effective conduits for the exchange of information.

[Bruce Yost Talks About Small Satellite Collaboration with NASA](#)

Contact us at [Agency-SmallSat-Institute@mail.nasa.gov](mailto:Agency-SmallSat-Institute@mail.nasa.gov)

### Small Spacecraft Body of Knowledge

The S3VI, as the common portal for NASA related small spacecraft activities, will host the Small Spacecraft Body of Knowledge (SSBK) as an online resource for information such as small spacecraft working group products, lessons learned library, systems test data repository, and reliability best practices.



**NASA Smallsat Opportunities**



# Key S<sup>3</sup>VI Web Portal Features

- Small Spacecraft Body of Knowledge (SSBoK)
  - Smallsat parts db (SPOON – collaboration with AFRL Small Spacecraft Portfolio)
  - State of the Art (components, systems – generated from SPOON annually)
  - Lessons Learned and Best Practices dbs (to be developed/acquired)
  - Smallsat Community of Practice (currently NASA only, but looking to expand)
  - Other dbs (i.e., component catalogues, test libraries, etc.)
- Links to feature stories (Recent NASA SmallSat News)
- Small spacecraft user guides, standards, and other documentation
- NASA small spacecraft mission and technology funding opportunities
- Launch opportunities (including CSLI, DoD\*, commercial)
- Working Groups repositories, collaboration tool kits, proceedings
- Smallsat Seminar Series (to be developed)
- External links of interest to community, including upcoming smallsat workshops, conferences, events, etc.
- Virtual Collaboration Tools
- More to come

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



# RFI and SPOON Database Activities



- **Request for Information (RFI) Data Call**
  - Collecting information regarding the State of the Art for technology, components, and systems relevant to small spacecraft for Earth and interplanetary mission design
  - Seeking qualified civil servant and other government experts to serve as reviewers. If interested in volunteering as a SME sign up at the S3VI booth
  - <https://www.fbo.gov/spg/NASA/ARC/OPDC20220/NNA17S3VI001L/listing.html>
- **SmallSat Parts On Orbit Now (SPOON)**
  - This database includes a variety of small satellite components, including payloads, flight processors, antennas, propulsion systems, ground station equipment, star trackers, and more
  - SPOON will be the first federated S3VI database
  - <https://spoonsite.com>
- **Points of Contact:**
  - Craig Burkhard (NASA Ames Research Center)  
[craig.d.burkhard@nasa.gov](mailto:craig.d.burkhard@nasa.gov), Phone: 650-604-1170
  - Charlene Jacka (AFRL Small Satellite Portfolio)  
[charlene.jacka.1@us.af.mil](mailto:charlene.jacka.1@us.af.mil), Phone: 505-846-1672



# Technology Development Programs



## Science Mission Directorate

- Planetary Instrument Concepts for the Advancement of Solar System Observations Program (PICASSO)
- Maturation of Instruments for Solar System Exploration Program (MatISSE)
- Undergraduate Student Instrument Project (USIP)
- Planetary Science Deep Space SmallSat Studies (PSDS3)

## Space Technology Mission Directorate

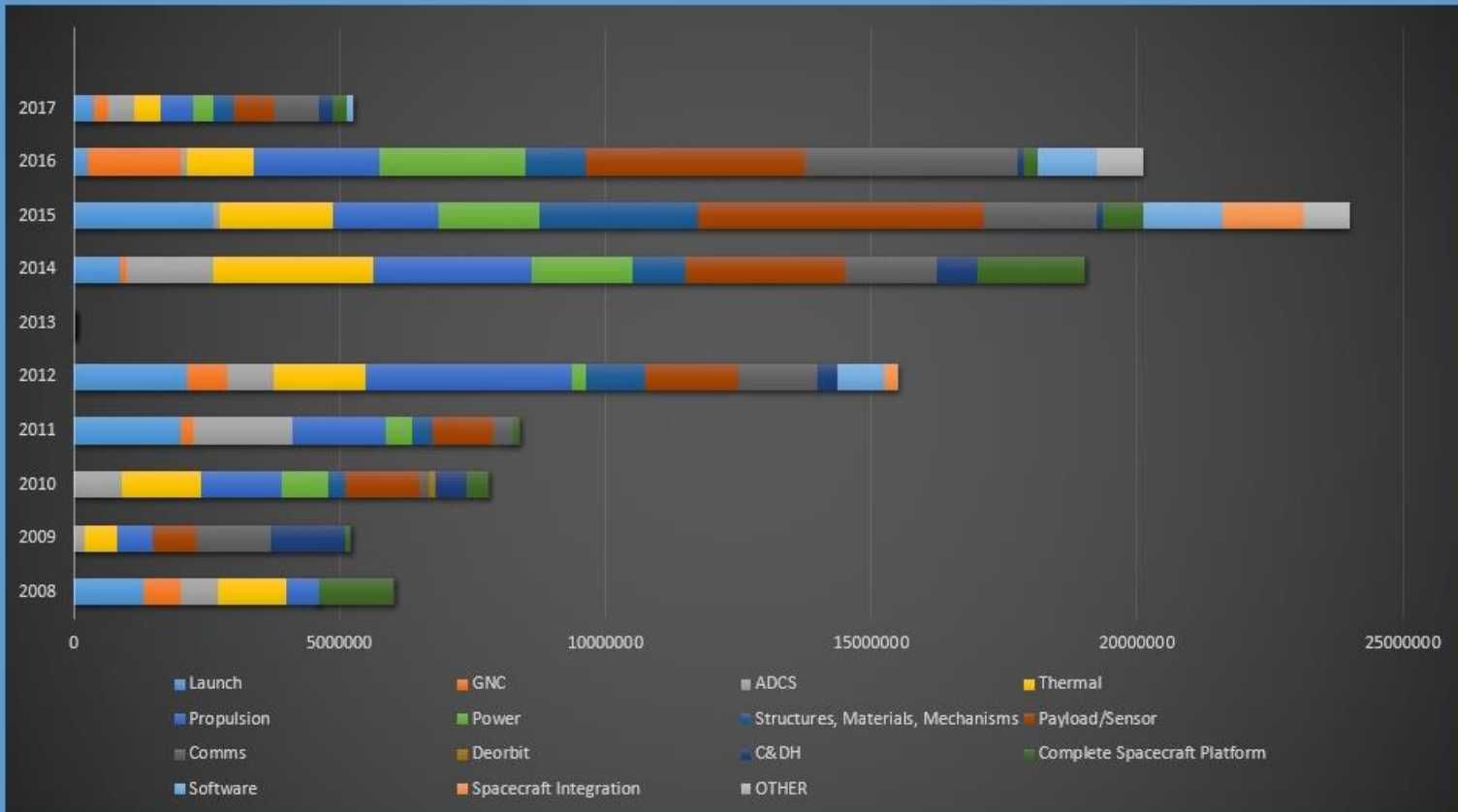
- Small Spacecraft Technology Program (SSTP)
  - Capability demonstrations
  - Technology development
  - Smallsat Technology Partnerships (STP)
- Tipping Point and ACO Public/Private Partnerships
- Centennial Challenges Program
  - CubeQuest Challenge
- Small Business Innovative Research Program (SBIR)
  - Approximately 30 SBIR awards made in 2017 relating to small spacecraft

## Human Exploration and Operations Mission Directorate

- Cubesat Launch Initiative (CSLI)
- Space Launch System EM-1 cubesats



# NASA SBIR Smallsat Investments\*



\*2008 was first year that Smallsat topic was solicited. Note: data for 2017 not yet complete.

No SBIR solicitation in 2013.

Estimated over \$110M funded on ~360 projects.





- Further discussions:  
S3VI: booths 92-93  
SDL (SPOON): booths 11-12