



NASA Small Spacecraft System Virtual Institute - Enabling the Community

5th COSPAR Symposium
16 - 21 April 2023, Singapore



Small Spacecraft Systems Virtual Institute - Charter

- Provide Strategic Communications, Coordination, and Outreach
 - *Increase overall awareness of programs, opportunities and activities across NASA, coordinate messaging for small spacecraft activities and future plans*
- Maintain and Publish the Small Spacecraft Body of Knowledge (SSBoK)
 - *Collect and disseminate best practices, capture technology information and data for SmallSat community and publish the State of the Art (SoA) report*
- Conduct Special Studies
 - *Facilitate or execute special studies to inform, assist, or educate stakeholders*
- Provide support to the NASA Small Spacecraft Coordination Group (SSCG)
 - *Facilitate SSCG meetings, serve as liaison with OGAs, conduct external workshops and public events, serve on solicitations panels and reviews*



Small Spacecraft Systems Virtual Institute – Stakeholders



Acronyms

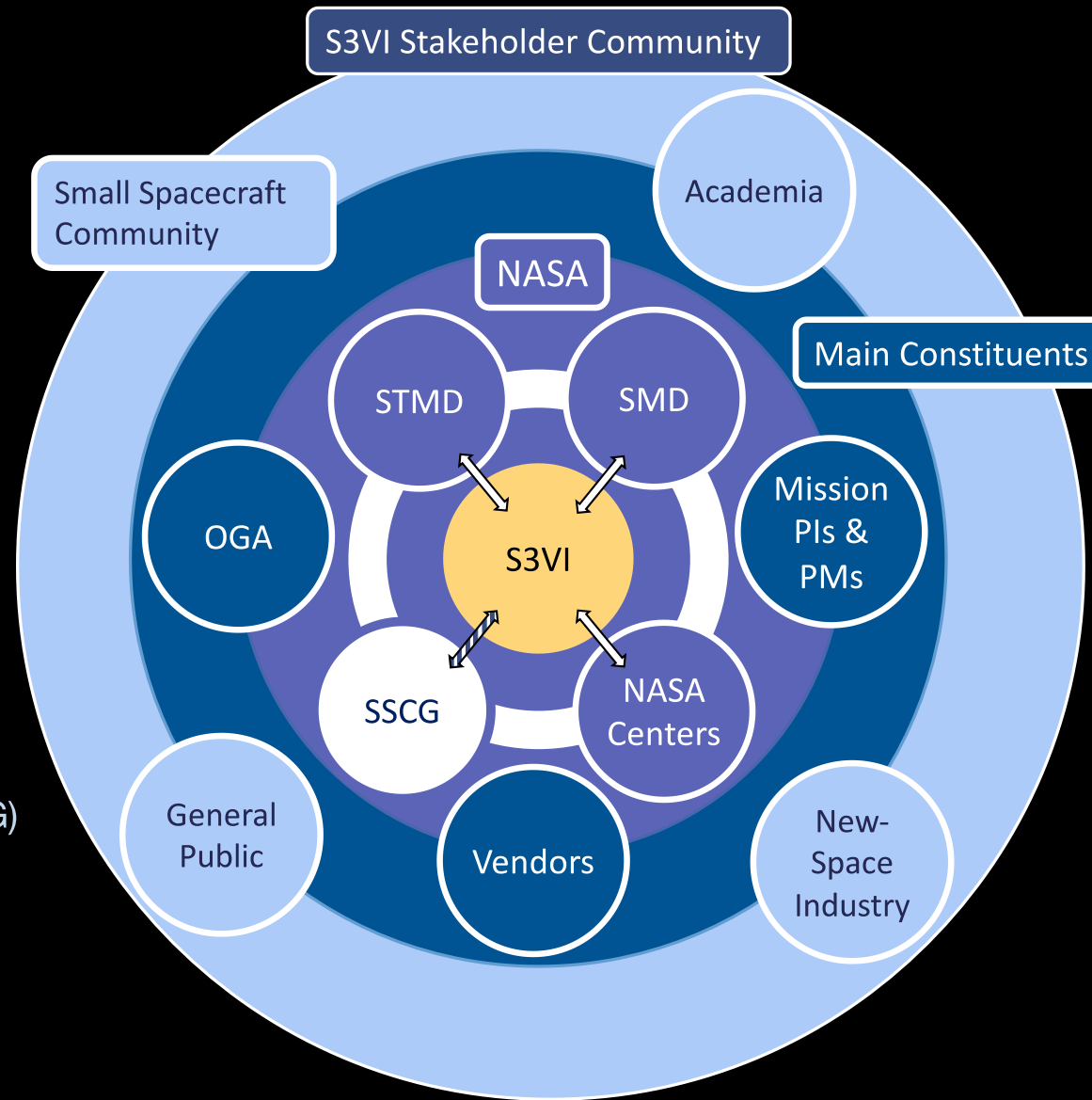
Small Spacecraft Systems
Virtual Institute (S3VI)

Space Technology Mission
Directorate (STMD)

Science Mission
Directorate (SMD)

Small Spacecraft
Coordination Group (SSCG)

Other Government
Agencies (OGA)



Small Spacecraft Systems Virtual Institute – Challenges



- SmallSat community continues to grow at accelerating pace, however investigators are continuing to struggle with mission design and in-flight operations.

- Specific emphasis on new entrants to SmallSats as a science enabler



- Strong desire from community for aids, tools, guidance, communications. Barriers to entry & successful mission execution still exist for some



- Infrastructure improvements underway at agency level (new web Content Management System). S3VI's webportal will be part of the agency's web improvement plans



- Smallsats are still not universally accepted for many mission solutions
 - Institute's strategy is to nurture and extend the NASA SmallSat community and ecosystem and gain wider acceptance for smallsats



S3VI Products & Support Areas

 = Conferences

 = Web Portal

 = Tools, Data

 = Publications

 = Webinars

Community Issues and Solutions - Examples



Issue

S3VI Solution Set

Distributed Resources



S3VI Webportal Site (Resources, Solicitations, Launch Portal)
Small Spacecraft Technology State of the Art Report
Webinar Series

Cost Estimating



Space Mission Design Tool Collection, including Cost
Estimating tools

**Limited Diverse Networking
Opportunities**



NASA SmallSat LEARN Forum
NASA exhibits at small spacecraft conferences

Technology Infusion Barriers



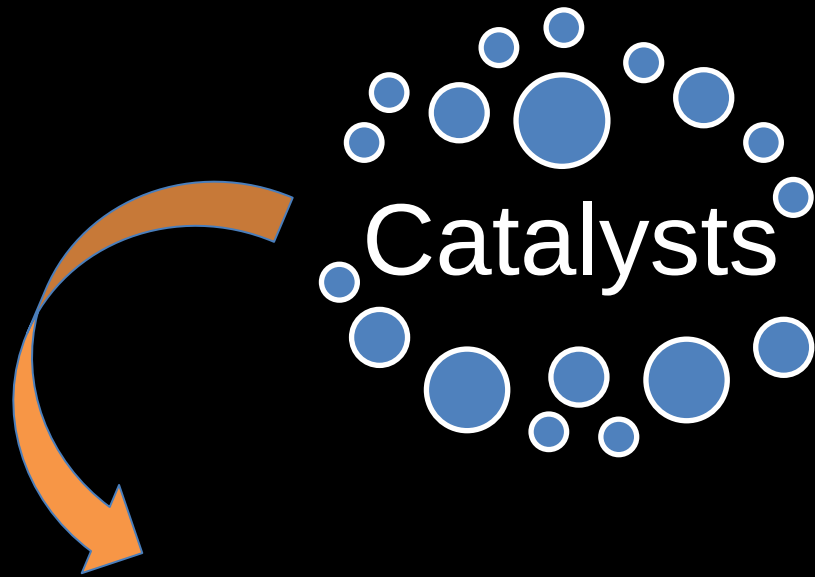
Support to Technology Showcases, Technology Exposition,
NASA SmallSat LEARN Forum
NASA exhibits at small spacecraft conferences

Smallsat Anomalies



Anomaly Reporting Tool (NASA-only)

Motivations for the Small Spacecraft Community



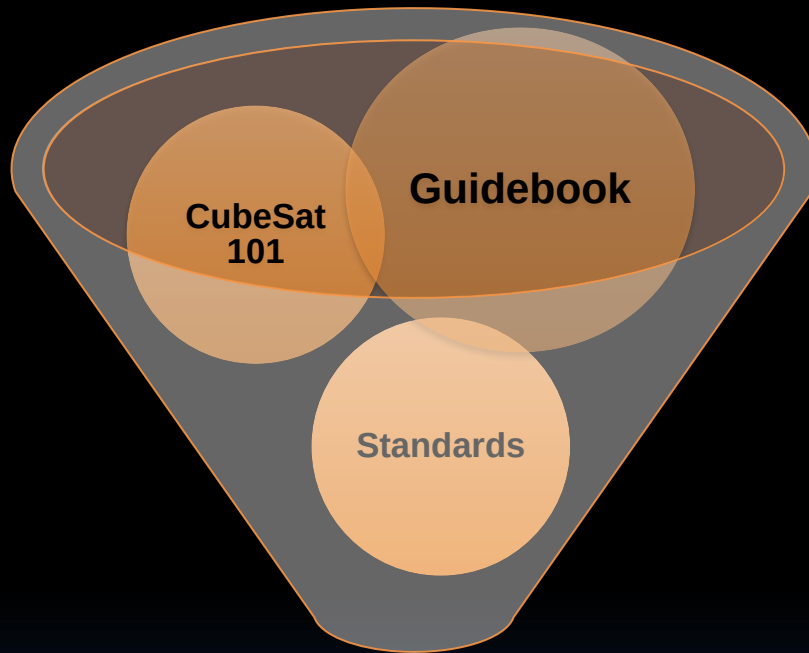
- Low Cost and Low Barriers to Entry, High Risk Tolerance, Rapid Development Cycles, Diverse Contributors, Agile Innovative Approaches
- Accumulated Experiences, Successes, and Failures
- Overwhelming, Distributed Resources
- Growing Field of Providers Across all SmallSat Fields
- Expanding Application Areas for SmallSats

Create and sustain a community that learns first-hand the knowledge each member has to offer through the development of tools, sharing forums, & other engagement opportunities

Enabling the Small Spacecraft Community



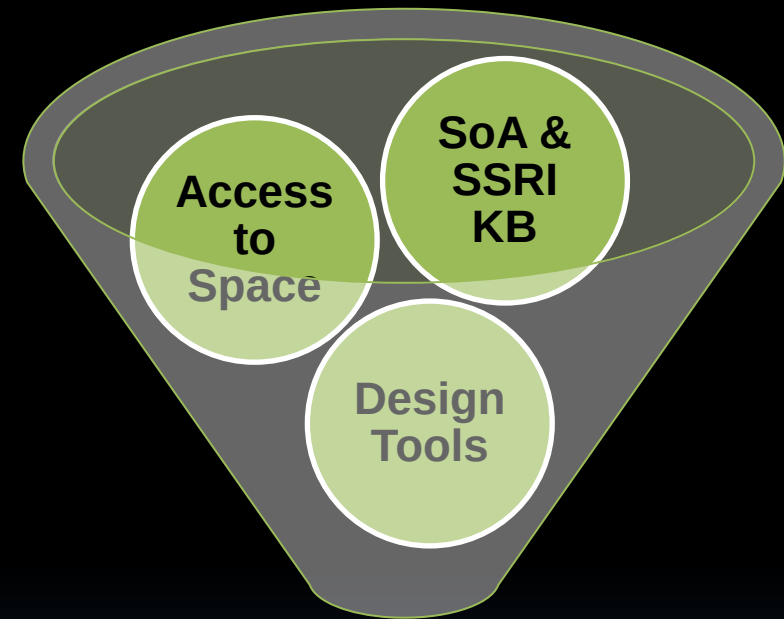
S3VI builds or collects tools, sponsors resource development and engagement opportunities for those new to small spacecraft and those well practiced



**Support for New Entrants
to Small Spacecraft**



Share & Collaborate



Learn & Develop

Building Community Through

Sharing Knowledge

- ✓ **Guidebook (aka Copper Rules)**
- ✓ SmallSat *LEARN Forum
- ✓ Community of Practice Webinar Series
- ✓ Mission Accomplished Webinar Series
- ✓ **Access to Space Announcements**
- ✓ S3VI Quarterly Newsletter

*Learning from Experiences, Achievements, and Resolution Navigation

Building Tools

- ✓ **Small Spacecraft Reliability Knowledge Base Tool**
- ✓ Small Spacecraft Information Search
- ✓ **State of the Art Report**
- ✓ **Space Mission Design Tool Collection**
- ✓ Anomaly Reporting System

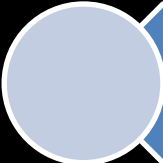
Connecting People & Ideas

- ✓ Industry Days Webinar Series
- ✓ **Cross-Agency Collaboration**
- ✓ University SmallSat Technology Partnerships – TechExpo

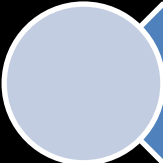
Growing the Small Spacecraft Community



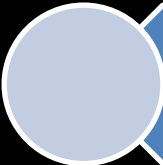
S3VI continues to interact with other NASA organizations and its stakeholders to identify opportunities to collaborate, capture, learn, and share SmallSat experience and to promote their capabilities and applications. Contribute toward community growth by taking an active role .



Submit your tech to the SoA Report



Subscribe to the S3VI Newsletter



Contribute a CoP Webinar Topic



Submit your open source design tool to the web portal

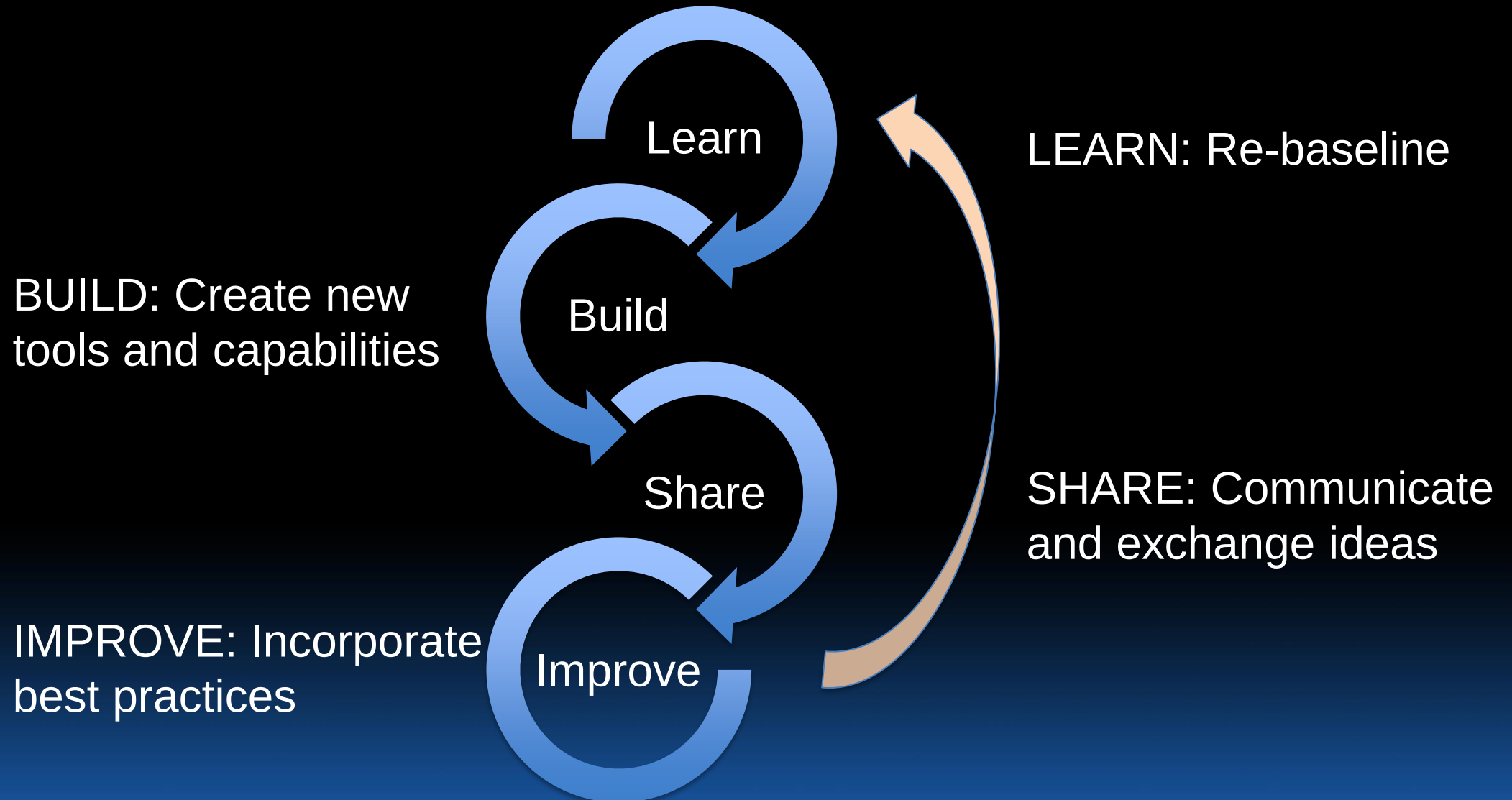


Participate in Smallsat working groups

Small Spacecraft Community Approach



The Small Spacecraft Community model is iterative



Resources and Products



S3VI Web Portal



State of the Art Report



SSRI Knowledge Base



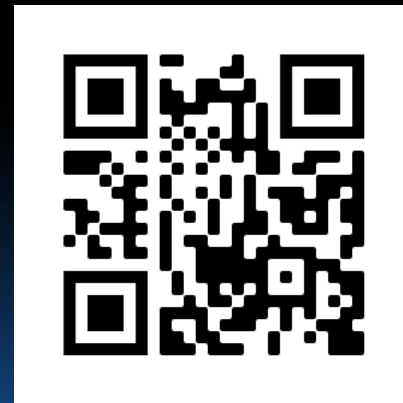
Webinar Series



S3VI Newsletter



Information Search



CubeSat 101



S3VI Subscription





www.nasa.gov/smallsat-institute/