

NASA Ask Me Anything Panel

SmallSat Conference 2022

Panel Members:

Access to Space:

- Speaker 1: **Alan Zide**, Program Executive, Heliophysics Division & **Shaun Daly**, Mission Manager, NASA Launch Services Program
- Speaker 2: **John Kelly**, Program Manager, Flight Opportunities Program
- Speaker 3: **Norman Phelps** & **Liam Cheney**, Launch Services Program, CubeSat Launch Initiative

Conjunction Assessment and Mitigation

- Speaker 4: **Lauri Newman**, Conjunction Assessment Manager

Moderator:

Alex Austin, NASA JPL

Ask Me Anything – Access to Space – Alan Zide & Shaun Daly

SMD Rideshare Office & Launch Services Program

National Aeronautics and
Space Administration



- LSP Commercial VADR launch contract for SmallSats for Dedicated Launch & Rideshare
- SMD Rideshare opportunities



- Utilize excess performance on NASA Primary launches – RS Policy
- NASA Science-unique orbits – VADR
 - Promote expansion of commercial launch options for SmallSats with higher risk tolerance



- Partnering with government and commercial providers for increased opportunities
- Compatibility and DNH for reducing risks to all payloads
- Mission flexibility for increasing launch opportunities and reducing costs

Current Opportunities & S3VI Resources

NASA Launch Portal
<https://s3vi.ndc.nasa.gov/launchportal>

Upcoming SmallSat
Mission solicitations
<https://www.nasa.gov/smallsat-institute/nasa-smallsat-opportunities>

NASA SMD Rideshare Guide
https://www.nasa.gov/sites/default/files/atoms/files/smd_spa_rug_with_dnh_generic_2021dec15.pdf

Questions? Email:
hq-smd-rideshare@mail.nasa.gov

Ask Me Anything Panel #1 – John Kelly

Lead NASA Organization: Flight Opportunities

National Aeronautics and
Space Administration



Description of NASA Organization

Flight Opportunities rapidly demonstrates promising technologies for space exploration, discovery, and the expansion of space commerce through suborbital testing with industry flight providers.

Impact / Importance

- More than 250 successful flights have been completed since 2011, enabling more than 870 tests of space technologies.
- Many mission infusions! Examples:
 - LVS (Mars 2020 lander)
 - Rad PC (ISS and CLPS lunar mission)
 - CubeSat Reaction Wheels (2023 JSC CubeSat mission)

Target Audience / Stakeholder

Technologists who can benefit from flight testing their innovations on commercial suborbital vehicles

Current Opportunities/Status

- **TechFlights:** Annual solicitation awards up to \$750K to purchase flights from a commercial provider for testing/demonstrating technologies that address NASA mission needs
- **TechLeap Prize:** Annual challenges address specific topics and award up to \$650K to develop payloads, plus access to flight testing on a commercial suborbital vehicle
- **TechRise Student Challenge:** Winning teams of 6-12th grade students receive \$1,500 to build a payload, plus access to a suborbital flight test

Future Plans

- Commercial vehicle capability enhancements
- Collaboration between Flight Opportunities and Small Spacecraft Technology programs to rapidly increase access to low-Earth orbit and beyond

For more information contact

[Nasa.gov/flightopportunities](https://nasa.gov/flightopportunities)
NASA-FlightOpportunities@mail.nasa.gov

CSLI / ELaNa – Norman Phelps & Liam Cheney

CubeSat Launch Initiative / Educational Launch of Nanosatellites

National Aeronautics and
Space Administration



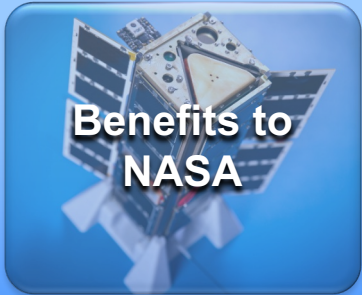
Provide access to space for CubeSats developed at educational institutions, non-profit organizations, NASA Centers and programs, giving CubeSat developers a low-cost pathway to conduct research in the areas of science, technology development, and education.

Benefits to Organizations



- Removes financial barriers associated with launch
- Enables students, teachers and faculty to obtain hands-on flight hardware development and operational experience
- Provides mechanism to conduct scientific research and develop technologies in the space environment

Benefits to NASA



- Promotes and develops innovative public-private partnerships
- Provides a mechanism for low-cost technology development and scientific research addressing NASA Goals, Objectives and Strategic Knowledge Gaps
- Enables the acceleration of flight-qualified technology assisting NASA in raising the Technology Readiness Levels (TRLs)
- Strengthens NASA and the Nation's future STEM workforce

Challenges



- Erosion of CubeSat “ready for turnover” dates due to resource problems, hardware/software anomalies, & COVID-19
- Affordable launch opportunities for CubeSats needing to go to “atypical” orbits and/or containing provocative features
- Lack of consistency and transparency in the RF licensing process
- Evolving FCC and NASA rules regarding propulsion, orbital lifetime, collision risk, etc.

*Announcement of Partnership
Opportunity releases in
August 2022*

- responses due by 11/18 -



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Ask Me Anything Panel #1 – Lauri Newman

Lead NASA Organization: Conjunction Assessment Risk Analysis (CARA)

National Aeronautics and
Space Administration



The NASA CARA Program performs risk analysis of close approaches for NASA missions and recommends a course of action to the operator.

Impact / Importance: Space is increasingly congested, and many space operators are new/inexperienced due to the increasing availability of inexpensive SmallSat technology. Collisions on orbit can prevent use of orbit altitudes for everyone. Using best practices for close approach prediction and mitigation is important to protect all spacecraft and keep space sustainable.

Target Audience / Stakeholder: CARA services are required for all NASA missions not part of the Human Spaceflight Program, which are supported separately.

Challenges & Lessons Learned: Collision of a SmallSat with a large object like a rocket body can make a large debris cloud. Not all operators follow best practices, such as sharing ephemerides with the 18th Space Defense Squadron for screening, increasing the risk of collision and thus debris production.

Future Plans: The USG is working to establish a Space Traffic Coordination Capability via the Department of Commerce to expand services to stakeholders beyond the current 18th Space Defense Squadron offering. CARA is actively involved in assisting DOC.

For more information:

NASA CA Website: <https://www.nasa.gov/conjunction-risk-analysis-and-mitigation>

Handbook of Best Practices:
https://nodis3.gsfc.nasa.gov/OCE_docs/OCE_51.pdf

CARA software repository: <https://www.nasa.gov/conjunction-assessment>