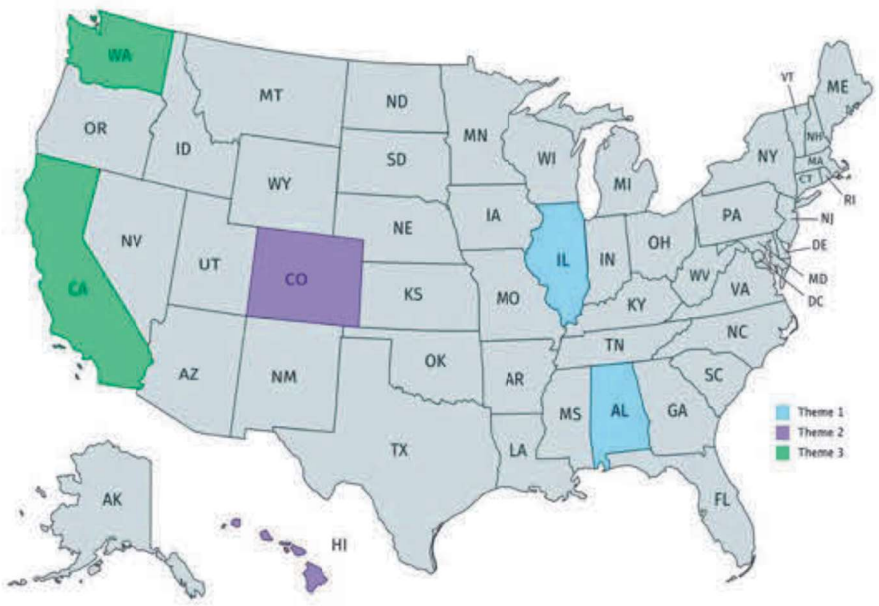
ARTEMIS STUDENT CHALLENGE – NEW AWARDS

Proposal #	Space Grant Consortium	Principal Investigator (PI)	Lead Institution	Funding Amount
20-Artemis-1-0023	AL	Lawrence (Dale) Thomas	University of Alabama, Huntsville	$200,000.00
20-Artemis-1-0024	CA	John Kosmatka	University of California, San Diego	$500,000.00
20-Artemis-1-0011	CO	Christopher Koehler	University of Colorado, Boulder	$499,333.00
20-Artemis-1-0001	HI	Luke Flynn	University of Hawaii, Manoa	$500,000.00
20-Artemis-1-0018	IL	Joshua Rovey	University of Illinois, Urbana-Champaign	$200,000.00
20-Artemis-1-0005	WA	Robert Winglee	University of Washington, Seattle	$499,864.00
			Total	$2,399,197



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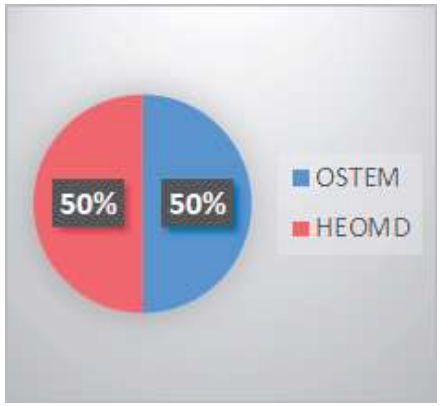
ASC AWARDEE – ALABAMA

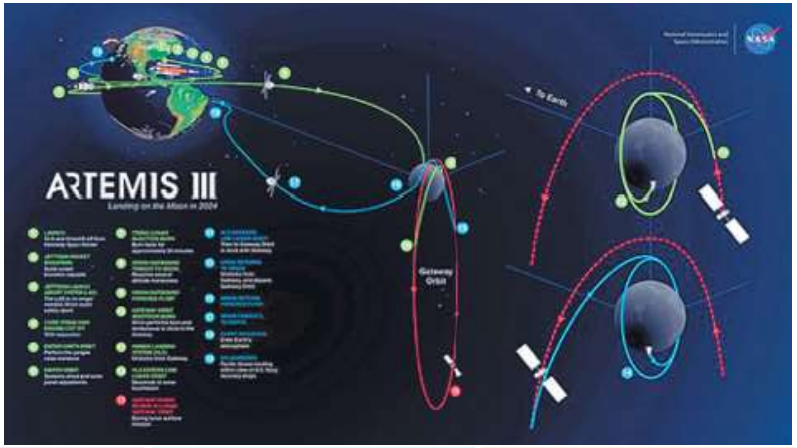
Teaching the Moonshot: Getting there and back with Multi-Body Dynamics

- Creating internet-accessible self-study and teaching resources for mission analysis within gravitational multi-body environments.
- Teaching interface using massive open online course (MOOC).
- Developed for undergrad junior/senior level in astrodynamics.



Current Status:

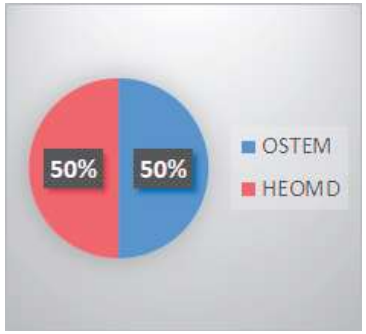
- 2 of the 5 modules complete
- VR environment called "Artemis Hall"
- 10-15 min. videos of professionals in the field
- Learning assessment after each module
- Presenting at the ASCEND conference



ASC AWARDEE – CALIFORNIA

LEAPFROG: Next Generation Lunar Lander Prototype for National STEM Competition

- Use of lunar lander simulator called LEAPFROG to provide "systems engineering hands on" training project for undergraduates.
- Use at radio-control (RC) fields across the country.
- Critical skill sets in electronic embedded systems, coding, control, and navigation systems, and the systems engineering interplay to operate a flight vehicle.

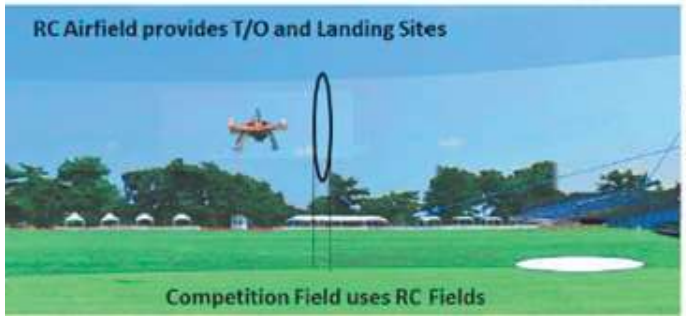


Current Status:

- Added a flight development competition using
- software development due to virtual environment
- Year 1 – build and execute in CA, Year 2 – open to
- the nation
- Creating 6 regions in the US for competition

CALIFORNIA SPACE GRANT CONSORTIUM

Possible Competition Metrics:
- Flight Time
- Stability and Hold
- Navigation Precision
- Fuel Useage
- Multi-Hop Translation
- Various Guidance Challenges
- Etc



RC Field supports Audience Member Viewing Stands for public involvement

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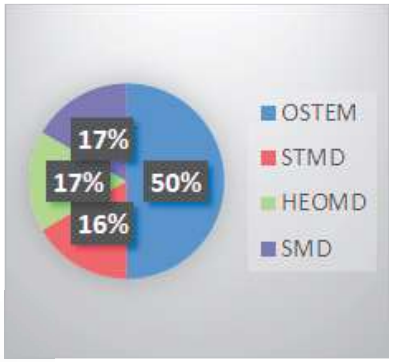
ASC AWARDEE – COLORADO

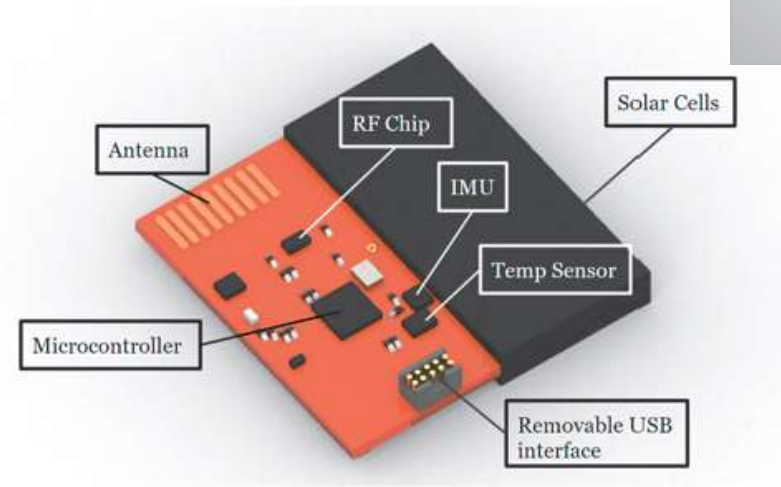
Great Lunar Expedition for Everyone (GLEE)

- Encourages students or teams to create LunaSats, a fully functional and autonomous spacecraft the size and weight of a maple leaf.
- LunaSat sensors include temperature sensors, accelerometers, magnetometers, gyroscopes, and sensors that measure infrared and cosmic radiation.
- 500 student-built LunaSats on the Moon



Current Status:

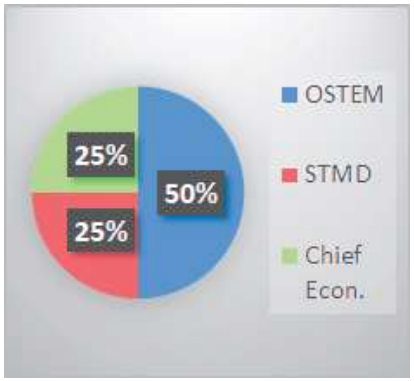
- Recruited a team of students to develop kits
- Developing LunaSat Kit and Design
- Completed high-altitude balloon test
- Recruiting for the Science Advisory Board



ASC AWARDEE – HAWAII

Low-Cost CubeSat Kit and Course Development for Undergraduate Research Projects in the Public Domain

- Creating low-cost CubeSat kits including onboard computing, radio communication, rudimentary dynamic sensors, infrared camera, and electrical power system.
- Developing an online undergraduate course, reinforcing theoretical curriculum with ties to hardware
- Serve underserved, underrepresented populations



Current Status:

- Satellite kit – launch suborbital payload under $5K
- Number of strategic partners in several states, mostly community colleges
- Working with partners to understand the curriculum needs in a CubeSat educational program

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NASA

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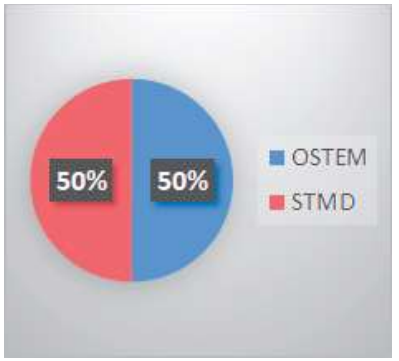
ASC AWARDEE – ILLINOIS

Efficacy of Student Self-Study of Foundational Artemis Information

- Develop technical resources and materials through a web-based self-study interface
- Videos, presentations, problems aligned to NASA's Advanced Exploration System domains
- Functional domains on crew mobility, habitat, vehicle, and foundational systems, robotic precursor, strategic operations, and integration around "Go, Land, Live, Explore" themes



Current Status:

- Developing online materials including videos of individuals in the field
- Creating an example of materials to share with SME's
- Students working through courses and providing feedback
- Pre-Assessment, self-study, post-assessment, badge/certificate

Illinois Space Grant Consortium

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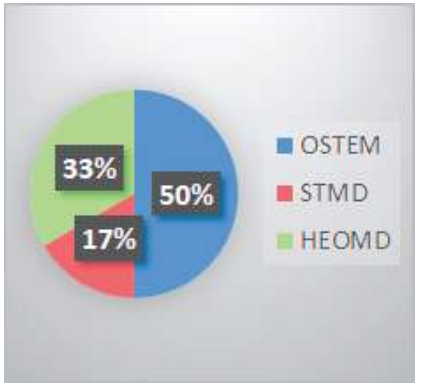
ASC AWARDEE – WASHINGTON

Lunar Technology Exploration Challenge (LTEC)

- Creating a multi-state undergraduate pilot challenge
- Develop a mechanism to deploy a rover through dark lunar lava tubes, maneuver obstacles and boulders, use photometry and spectrometry to develop a 3-D map, and deploy a barrier/plug to seal a portion of the lunar lava tube.
- Use Vex robots with Raspberry Pi embedded computers for running sensors, cameras, and components.



Current Status:

- 9 universities involved – 45% underrepresented
- Working to box the large set of parts, trays, rocks, and sand for creating the course
- Developing manuals to document challenges
- Creating 6 different sets to accommodate varying levels of expertise