Enabling Space Access to K-12 Through The Virginia Space ThinSat Program

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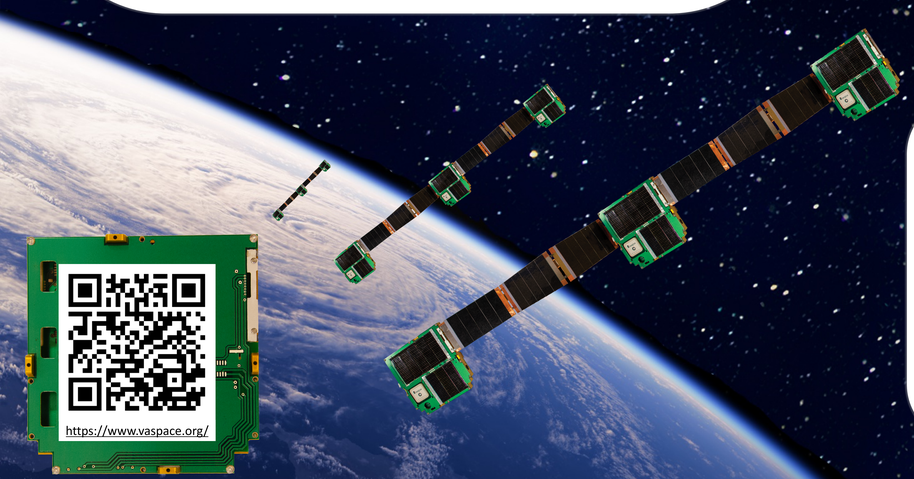
Mission Statement / Overview

To enhance STEM programs by offering Low Earth Orbit launch opportunity at no expense to participant colleges and universities while simultaneously exposing K-12 institutions to hands on space science and systems engineering.

- Educational Outreach impacts K-12 STEM in participating University's local community
- VCSFA and partners provide base satellite hardware, communication system, engineering knowledge, testing facilities, launch vehicle, online data dashboard
- Hands-on experience learning to develop, launch, track, collect and analyze data from a working satellite within approximately one academic year
- Testing ground for new student-developed technology with emphasis on short term objectives
- 32 lead institutes from 11 states impacting an estimated 600 students nationwide
- 12U max payload capability (4 3U CSDs)
- Launch from second stage of NGIS Antares rocket into ELEO



The Program

Phase One
- Plug and Play model utilizing board with array of sensors to measure atmospheric & 3-axis movement data in classroom setting
- Construct hypothesis and experiment to prove/disprove hypothesis

Phase Two
- Utilizes engineering model of flight chassis and standard/custom PCB as platform
- Students hold multiple reviews with engineers to ensure flight readiness
- High altitude balloon launch / drone flight opportunity to test payload operation and communication

Phase Three
Rocket Launch
- Submission of payloads, protoflight and environmental testing performed
- Integration and launch from NGIS Antares into Extreme Low Earth Orbit (<250 km)

Updates

- Growth from 15 lead institutions to 32 lead institutes from 13 states
- Greater access for Title 1 institutions and increased community involvement
- Doubled the number of custom payloads submitted for flight including sponsored objectives from NASA and the Combined Space Operations Center (CSpOC)
- Feedback from students and mission lessons learned directly applied to continual program improvement
- Tiered system of response to program management and enhanced program documentation for use by future teams

Impact

- Foster relationship between industry, higher education, and secondary education
- Give students real-world experience in satellite development
- Involve students in active learning
- Inspire students to pursue a career in STEM
- Expand opportunity for students – higher education, trade schools, future careers
- Aid and enable technological advancements through SmallSats