



# SPACE FLIGHT DESIGN CHALLENGE

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NASA West Virginia Space Grant Consortium & NASA WV EPSCoR  
Fall Board of Directors Meeting  
October 7<sup>th</sup>, 2017



# GOALS

1. Advance education, knowledge, science, technology, engineering and mathematics (STEM) capabilities, as applied to space systems
2. Advance the IV&V Program's tools, domain knowledge, and engineering methods
3. Advance the disciplines of systems engineering and software engineering by exploring game changing technologies for NASA





# STRATEGY

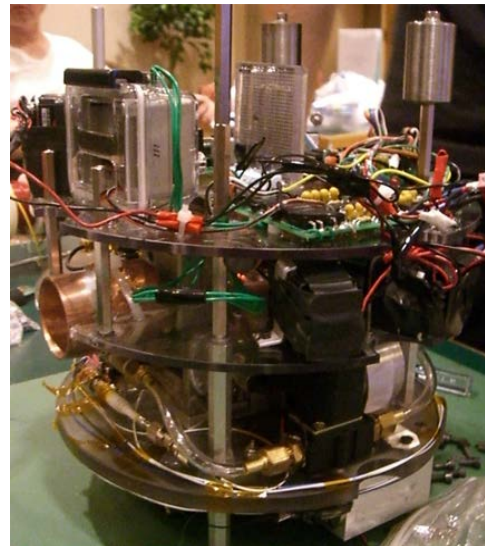
- Collaboration Among Many
  - NASA IV&V, industry, academia, & other government agencies
  - Opportunity to foster innovative advancements in space flight
  - Enhance knowledge & capabilities of the public through hands-on space-craft development
- Colorado Space Grant's RockSat program provides a low cost flight and opportunity to collaborate





# ROCKSAT

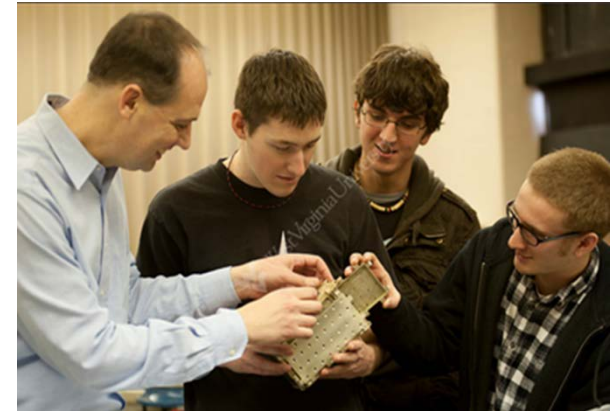
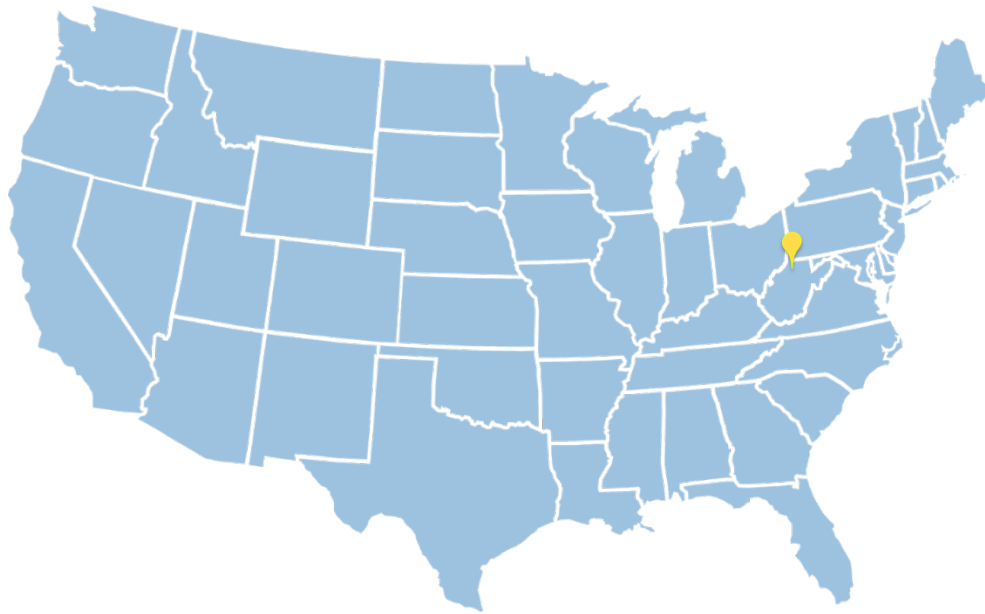
- Provides opportunities to students nationwide to design experiments, which launch on NASA-provided rockets
- 2 flights annually: *RockSat-C* & *RockSat-X*
- In less than 11 months, teams are mentored through the entire design lifecycle, as they design, build, test, and fly their experiment into space





# INCREMENT ONE

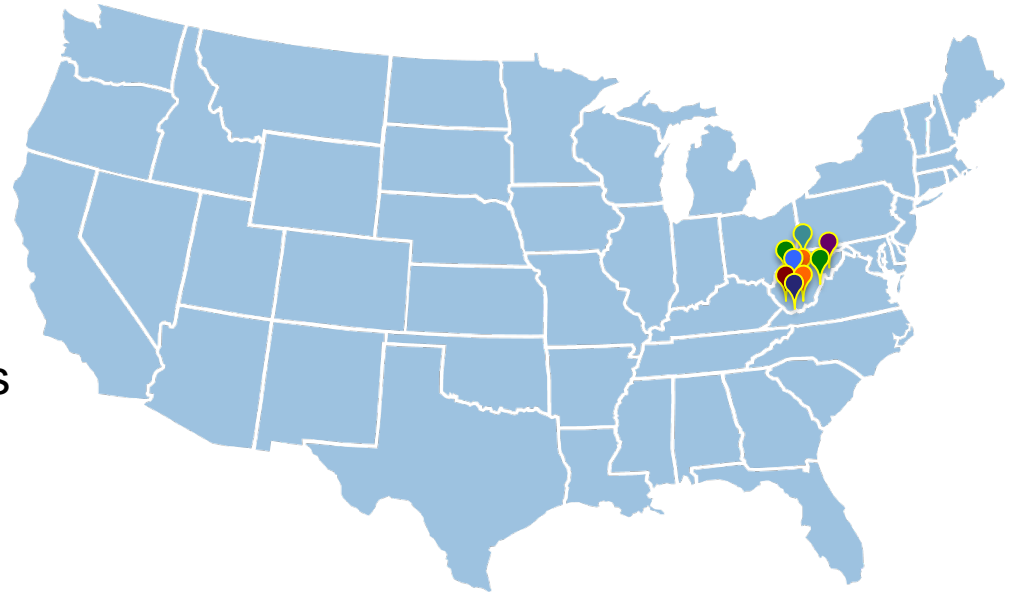
- 2011- Marc Gramlich & Dr. Dimitris Vassiliadis introduced RockSat to West Virginia University
- The small team of 5 individuals flew a multipurpose experiment on RockSat-C
- This is when SFDC saw the opportunity in the expansion of the program





# F A S T F O R W A R D

- 2017 – SFDC RockSat now offers two different flights through CO’s program
  - RockSat-C & RockSat-X
- Our RockSat program is spread across 9 institutions
  - 84 students
  - 16 advisors
- Design reviews at IVV allow students real world exposure to facilitating milestone reviews under a review panel with real NASA employees
- Development of NASA fellowships through the WV Space Grant for students supporting the initiative

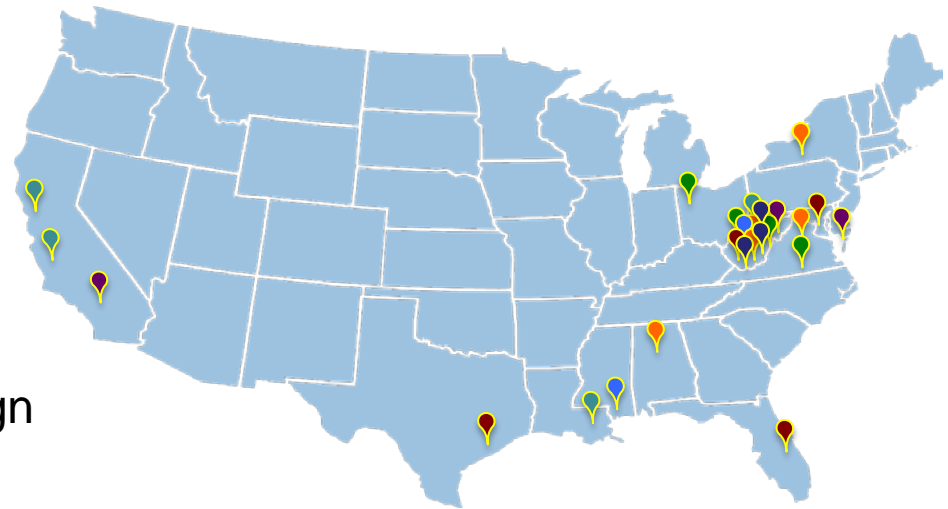




# WHERE WE STAND

- RockSat-X

- Expanded to 7 teams
- 1 team out of state
- Using WVU as the hub to interface with all experiments
- Most teams have RockSat implemented as a senior design program



- RockSat-C

- 4 teams and 3 outreach payloads
- Includes out of state
- Outreach teams: GS Troops, School of deaf and the blind, and K-12
- All NASA centers

- RockSat

- Developed temporary website as hub for students
- Pushing to create a one stop website for all initiatives SFDC
- Outreach at WVU
- Pushing to make it a senior design course



# U P C O M I N G

- Plans to take the next step:
  - Embed RockSat as a course into schools already involved
    - Additional financial resources can be used to either expand SFDC RockSat initiative or alleviate financial pressure off WV Space Grant & IV&V
    - Courses must be planted into the curriculum for students to create a need for them to join
  - Expand to more out-of-state institutions
  - Begin to reach out to industries for additional support
- SFDC has expanded exponentially over the past two years, and we believe that this is just the start. You have a lot to look forward to.

