Cal Poly Activities

Ryan Nugent
California Polytechnic State University, San Luis Obispo

5th UNISEC Global Meeting, Rome, Italy
December 2nd, 2017
Cal Poly Activities

• Create and Maintain CubeSat Standards
• Develop Cal Poly CubeSats
  ➔ 8 launched and 7 in development
• Integrating and Launching CubeSats
  ➔ Successfully completed 23 Launch Campaigns
    • 151 CubeSats integrated, 87 CubeSat Dispensers (mostly P-PODs)
    • 12 different launch vehicles and 10 ranges
• Cal Poly’s CubeSat Lab currently supported by 3 faculty, 3 staff, and 80 students
Activities in 2017

- CubeSat Developers Workshop April 26-28, 2017
  - Approx. 550 attendees from over 20+ countries, 26 Exhibitors
  - Keynote given by James Reuter from NASA and Prof. Yu Xiaozhou from NPU, China

- Annual Conference held at Cal Poly in San Luis Obispo, CA, USA
  - April 30 to May 2, 2018
  - www.cubesat.org/workshop-information
CubeSats Scheduled to Launch in 2018

- ExoCube-2 – 3U CubeSat
  - Measure the density of Hydrogen, Oxygen, Helium and Nitrogen in the upper atmosphere
  - Partners: NASA GSFC, Univ. of Wisconsin, Scientific Solutions Inc., NSF

- ISX (Ionospheric Scintillation eXplorer) – 3U CubeSat
  - Study the multi-frequency radio wave interference produced by the atmosphere at sunset near the equator
  - Partners: SRI International, NSF

- LEO (Launch Environment Observer) – 2U CubeSat
  - Measure and record in-situ telemetry data from within the P-POD during launch
  - Merritt Island High School, NASA, AI Solutions

- LightSail-2 – 3U CubeSat
  - Attempt the first controlled solar sail flight in Earth orbit
  - Ecliptic Enterprises, The Planetary Society

- DAVE (Damping And Vibration Experiment) – 1U CubeSat
  - Particle Damper Experiment
  - Originally funded by a U.S. commercial company, now an internal project
Other Activities

• Maintain 1U to 12U CubeSat Standards
• Creating Standards for satellites larger than CubeSats (i.e. ~50kg, ~100kg, etc.)
• Creating documentation and tools to increase success of first time CubeSat and small satellite developers
  ❖ Lessons Learned Documentation
  ❖ Standardize Launch Documentation
  ❖ Mission Assurance Documentation to increase reliability of CubeSats
• Launch Integration for CubeSats
  ❖ 3 missions currently, including the launch integration of the MarCO CubeSats
• Develop new technologies to enable more complex CubeSat missions
Thank You!