Small Spacecraft Technology Program (SSTP) – Projects 2014 - 2015

The Small Spacecraft Technology Program invests in the development and demonstration of a range of technologies and capabilities and engages the talents of a broad community of researchers and technologists from government, industry and academia. Currently, the SSTP funds and/or manages 34 projects that are organized under the four program elements.

FOCUSED TECHNOLOGY DEVELOPMENT

Small Spacecraft Propulsion
1U Cubesat Green Propulsion System with Post-Launch Pressurization
• Busek Co., INC., Natick, MA

Advanced Hybrid Rocket Motor Propulsion Unit for Cubesats
• The Aerospace Corporation, El Segundo, CA

Iodine RF Ion Thruster Development
• Busek Co., INC., Natick, MA

Inductively Coupled Electromagnetic Thruster System Development for Small Spacecraft Propulsion
• MSNW LLC, Redmond, WA

Operational Demonstration of the MPS-120 Cubesat High-impulse Adaptable Modular Propulsion System
• Aerojet Rocketdyne, Sacramento, CA

Small Earth Return Vehicles
Technology Development for the Maraia Earth Return Capsule
• NASA Johnson Space Center, Houston, TX and Kennedy Space Center, FL

FLIGHT DEMONSTRATIONS

Cubesat Proximity Operations Demonstration (CPOD)
• Tyvak Nano-Satellite Systems, LLC, Orange, CA

Edison Demonstration of Smallsat

Networks Mission (EDSN)
• NASA Ames Research Center, Moffett Field, CA

Nodes - Network & Operation Demonstration Satellite
• NASA Ames Research Center, Moffett Field, CA

Integrated Solar Array and Reflectarray Antenna (ISARA)
• Jet Propulsion Laboratory, Pasadena, CA

Optical Communications and Sensor Demonstration (OCSD)
• The Aerospace Corporation, El Segundo, CA

PhoneSat Series
• NASA Ames Research Center, Moffett Field, CA

SMALL BUSINESS INNOVATIVE RESEARCH PROGRAM
- 2014 Awardees

1U Cubesat Lasercom Terminal for Deep Space Communication
• Fibertek, Inc., Herndon, VA

Cubesat Ambipolar Thruster for LEO and Deep Space Missions
• Aether Industries, LLC, Ann Arbor, MI

Deep Space Cubesat Gamma-ray Navigation Technology Demonstration
• ASTER Labs, Inc., Shoreview, MN

Deep Space Cubesat Regenerative Ranging Transponder (DeSCReeT)
• Innoflight Inc., San Diego, CA

Deployable Solar Energy Generators for Deep Space Cubesats
• Nanohmics, Inc., Austin, TX

High Power Betavoltaic Technology
• MicroLink Devices, Inc., Niles, IL

LunarCube for Deep Space Missions
• Busek Company, Inc., Natick, MA

Multi-Purpose Interplanetary Deployable
Aerocapture System (MIDAS)
• Altius Space Machines, Inc., Louisville, CO

Solar Electric Propulsion Cubesat Bus for Deep Space Missions
• ExoTerra Resource, LLC, Lone Tree, CO

SMALLSAT TECHNOLOGY PARTNERSHIPS

Advanced Manufacturing

Printing the Complete Cubesat
• University Of New Mexico
• Partners: University of Texas - El Paso and Drake State Technical College
• NASA Partner: Glenn Research Center

Communications

Development of Novel Integrated Antennas for Cubesats
• University Of Houston
• NASA Partner: Johnson Space Center

High Rate Cubesat X-band/S-band Communication System
• University Of Colorado
• NASA Partners: Goddard Space Flight Center, Marshall Space Flight Center

Space Optical Communications Using Laser Beam Amplification
• University Of Rochester
• NASA Partner: Ames Research Center

Guidance, Navigation and Control

An Integrated Precision Attitude Determination and Control System
• University Of Florida
• NASA Partner: Langley Research Center

Cubesat Autonomous Rendezvous & Docking Software
• University Of Texas
• NASA Partner: Johnson Space Center

Radiation Tolerant, FPGA-based Smallsat Computer System
• Montana State University
• NASA Partners: Goddard Space Flight Center, Marshall Space Flight Center

Smallsat Precision Navigation With Low-Cost MEMS IMU Swarms
• West Virginia University
• Partner: Marquette University
• NASA Partner: Johnson Space Center

Power

Smallsat Low Mass, Extreme Low Temperature Energy Storage
• California State University - Northridge
• NASA Partner: Jet Propulsion Lab

Propulsion

Film-Evaporation MEMS Tunable Array for Picosat Propulsion and Thermal Control
• Purdue University
• NASA Partner: Goddard Space Flight Center

Propulsion System and Orbit Maneuver Integration in Cubesats
• Western Michigan University
• NASA Partner: Jet Propulsion Lab

Science Instrument Capabilities

Compressive Sensing for Advanced Imaging and Navigation
• Texas A&M University
• NASA Partner: Langley Research Center

Mini Fourier-Transform Spectrometer for Cubesat-Based Remote Sensing
• Appalachian State University
• Partner: University of Maryland - Baltimore County
• NASA Partner: Goddard Space Flight Center

For more information about the SSTP, visit:
http://www.nasa.gov/smallsats

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