Return to Menu

Centennial Challenges Program

Project Manager(s)/Lead(s)

Sam Ortega/ZP30
(256) 544–9294

Eric Eberly/ZP30
(256) 544–2092

Sponsoring Program(s)

Centennial Challenges Program
Space Technology Mission Directorate

Project Description

NASA's Centennial Challenges Program was initiated in 2005 to directly engage the public in the process of advanced technology development. The program offers incentive prizes to generate revolutionary solutions to problems of interest to NASA and the nation. The program seeks innovations from diverse and nontraditional sources. Competitors are not supported by government funding and awards are only made to successful teams when the challenges are met.

In keeping with the spirit of the Wright Brothers and other American innovators, the Centennial Challenge prizes are offered to independent inventors including small businesses, student groups, and individuals. These independent inventors are sought to generate innovative solutions for technical problems of interest to NASA and the nation and to provide them with the opportunity to stimulate or create new business ventures.

The core of Centennial Challenges: opportunity, innovation, and communication.

The West Virginia University Mountaineers took home a Level 1 prize for $5,000 at the 2014 Sample Return Robot Challenge. They and one other team have also earned the right to attempt Level 2 at the 2015 event, with a potential prize purse of $1.5 million.

The Cube Quest Challenge offers up to a $5 million prize purse for communication with a CubeSat near or beyond the Moon.

Anticipated Benefits

Centennial Challenges advance technologies that are currently technology barriers for NASA to achieve its future goals. Challenges conducted address current topics on NASA's technology roadmap that are also beneficial to other technology sectors here on Earth.

Competing teams have a unique opportunity to leverage their ideas whether they win prize money or not. Through the visibility of the challenges, all participants gain the opportunity to be seen by and network with other industries who may be searching for similar solutions, as well as to interact with each other, media outlets, and with the public at outreach events.

Potential Applications

Much of the technology developed through these competitions has been adopted by the agency, academia, and/or the commercial sector and infused into their respective industries for use and continued advancement. It is the hope and goal of the program that solutions discovered via challenges will continue to grow and benefit others in areas outside of each challenge.

Notable Accomplishments

In 2014, the program completed the third running of the Sample Return Robot Challenge, an autonomous rover competition held at Worcester Polytechnic Institute in Worcester, MA. Seventeen teams competed in the two-level challenge for a $1.5 million prize purse. The West Virginia University Mountaineers completed Level 1, winning $5,000 and the opportunity to attempt Level 2 for the remaining prize money in 2015. The challenge will be competed again in June 2015.

Also this year, two new challenges were announced and opened for registration. The Mars Ascent Vehicle (MAV) Challenge <www.nasa.gov/mavprize> is helping to advance the technology to return samples from a planetary surface. The challenge focuses on getting the samples from the surface to orbit for collection and return to Earth. The MAV Challenge requires highly reliable and autonomous sample insertion into the rocket, launch from the surface, and deployment of the sample container. Innovative technology from this competition may be considered in future planning for a planetary exploration mission. Centennial Challenges is partnering with the NASA Student Launch to conduct this challenge in parallel with the Student Launch competition.

Also, the new Cube Quest Challenge <www.nasa.gov/cubequest> opened for registration in November. Cube Quest offers a total of $5 million to teams that meet the challenge objectives of designing, building, and delivering flight-qualified, small satellites capable of advanced operations near and beyond the Moon.

Cube Quest teams will have the opportunity to compete for a secondary payload spot on the first integrated mission of NASA's Orion spacecraft, and the Agency's Space Launch System (SLS) rocket.

The competition includes three stages: Ground Tournaments, Deep Space Derby, and Lunar Derby. All teams may compete in any one of the four Ground Tournaments. Teams that rate high on mission safety and probability of success will receive incremental awards. The Ground Tournaments will be held every 4 to 6 months, leading to an opportunity to earn a spot on the first integrated flight of Orion and SLS.

References

Visit <www.nasa.gov/winit> for more information on the program, upcoming and past challenges.