National Aeronautics and Space Administration

Space Technology Game Changing Development

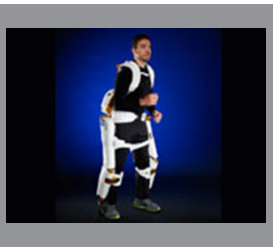
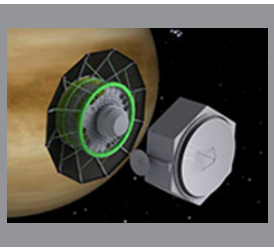
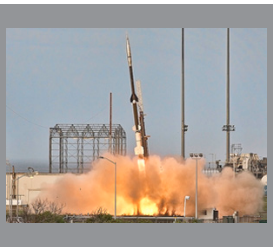
Monthly Highlights

April 2013

STMD Leadership Visits NASA Langley, Talks Asteroid Mission

NASA's Associate Administrator for Space Technology Mike Gazarik gave an overview of the newly formed mission directorate to a packed auditorium at NASA Langley's Research Center April 19. Gazarik highlighted Space Technology's role in the recently announced asteroid mission, specifically its role in solar electric propulsion. Gazarik said: "What this mission does, what this concept does, is really bring everything together in a synergistic fashion. It leverages all the work we're doing now."

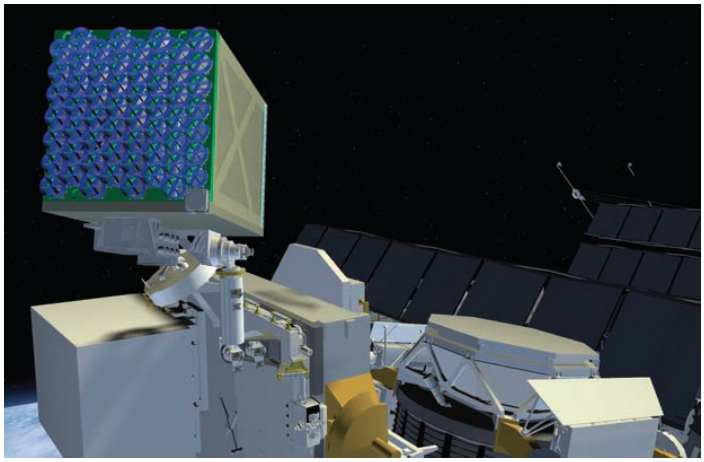
To read the full article, click here: http://www.nasa.gov/centers/langley/news/researchernews/rn_Gazarik.html

NICER/SEXTANT Team Wins Explorer Mission of Opportunity

Excerpts from The Cutting Edge/Lori Keesey

The Neutron-star Interior Composition Explorer/Station Explorer for X-ray Timing and Navigation Technology (NICER/SEXTANT), which NASA's Science Mission Directorate recently selected as its next Explorer Mission of Opportunity, not only will reveal the physics that make neutron stars the densest objects in nature, but also demonstrate a groundbreaking navigation technology that could revolutionize the Agency's ability to navigate to the far reaches of the Solar System and beyond.



The 56-telescope NICER/SEXTANT payload that NASA recently selected as its next Explorer Mission of Opportunity will fly on the International Space Station.

Roughly the size of a college dormitory-size refrigerator, NICER/SEXTANT will fly in 2017 as an external attached payload on one of the ISS ExPRESS Logistics Carriers, unpressurized platforms used for experiments and storage.

From its berth on the International Space Station, NICER/SEXTANT will use its telescopes to detect X-ray photons in the pulsars' powerful beams of radiation to measure their arrival times. With these measurements, the system will stitch together an onboard, autonomous navigational solution using specially developed algorithms.

With the Explorer win, the NICER/SEXTANT team will begin building and integrating the telescope package and associated hardware and software.

For the full article, click here: http://www.nasa.gov/topics/universe/features/zombie-stars.html

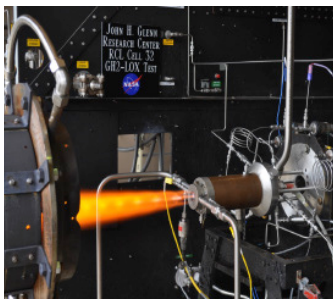
Game Changing in the Community

GCD's Manufacturing Innovation Project out of NASA's Glenn Research Center led a successful effort within the White House Council on Strong Cities, Strong Communities initiative.

The initiative established a new model of federal-local collaboration dedicated to assisting communities get back on their feet and create jobs by helping them better leverage federal resources and form key partnerships to implement economic visions. Together, the SC2 team and NASA, worked with Cleveland and the Manufacturing Advocacy & Growth Network (MAGNET), to select nine medium-to small-sized companies to receive a total of 400 hours of subject matter expertise and access to $450K in low-interest loans, which allowed them to grow their business and hire more employees.

The annual report can be found here: http://www.whitehouse.gov/blog/2013/04/25/supporting-local-communities-building-capacity-and-cutting-red-tape

MIP Team Begins Testing

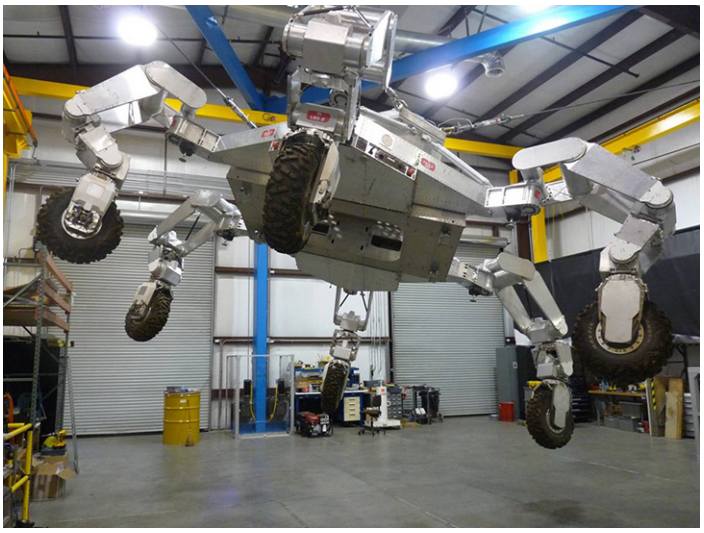


NASA Glenn Research Center's **Manufacturing Innovation Project (MIP)** team began hot-fire testing of a workhorse liquid oxygen, gaseous hydrogen rocket engine. Testing of the workhorse engine, which will continue for the next couple of weeks, is being used by the team as a risk reduction activity in preparation for hot-fire testing of a 2,000-pound thrust liquid oxygen, gaseous hydrogen engine that incorporates an additively manufactured injector built by Pratt & Whitney Rocketdyne (PWR) under a Space Act Agreement.

Game Changing Education and Public Outreach

Engaging with Gaming

At the recent **Game Developers Conference** at the Moscone Center in San Francisco, Calif., Jeff Norris and Victor Luo described how NASA and NASA's Jet Propulsion Laboratory are using video games to engage the next generation about its missions and video game technologies to control robots that are in development within NASA's Space Technology Mission Directorate. The talk incorporated many live demonstrations including Kinect-based control interfaces for **Robonaut** and **ATHLETE**. The game-changing moment came when Norris and Luo remotely controlled the ATHLETE robot in JPL's low gravity test bed live from the stage at the conference using the soon-to-be-released Leap Motion hand tracking controller. The audience watched a live video feed from the test bed as Norris positioned and articulated a virtual model of ATHLETE and commands were relayed to the real robot. ATHLETE systems engineer Matt Frost and JPL Ops Lab members Jay Torres, Garrett Johnson, and Ryan Goetz supported the demonstration.



The ATHLETE robot.

To watch this game-changing "first," click here: http://www.youtube.com/watch?v=ZkFyBdicjgU

In the News

Carol Tolbert, project manager for the Manufacturing Innovation Project, is featured in the NASA TV Women's History Month video. You can watch it here: http://www.youtube.com/watch?v=0CSDlf_EBeI

Welcome new team members

Raphael Some and Michelle Munk, Principal Investigators; Kim Cone, Solicitation Manager; and Anne Rhodes, Graphic Designer

NASA Releases Digital Technology Innovation Magazine

A new, updated format of NASA's **Technology Innovation Magazine**, or E-Zine, was released in April. The publication features the latest space technology innovators and project developments across the agency. In this issue, look for articles on Woven TPS and former Game Changing Development Principal Investigator Neil Cheatwood, among others. You can read it online or download it onto your iPhone or iPad. For more, visit: http://www.nasa.gov/directorates/spacetech/home/innovation_ezine.html

Game On!

http://gameon.nasa.gov

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