



Game Changing Development

Rapid Technology Infusion

Game On!

The Game Changing Development (GCD) Program seeks to develop and advance space technologies that will result in new approaches and capabilities used in NASA's future space missions.

Located at NASA's Langley Research Center (LaRC) in Hampton, Va., the Game Changing Development Program is part of the Space Technology Program (STP) within the Office of the Chief Technologist. With an overall budget of \$165 million for 2012, GCD has projects spread across nine states and employs approximately 400 highly-skilled experts throughout eight NASA centers.

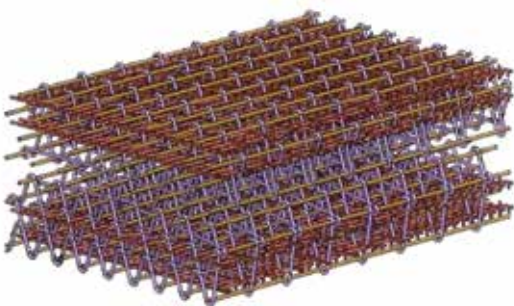
GCD focuses its efforts on the mid Technological Readiness Level (TRL) range (3-5/6). The general lifecycle of a project at GCD begins with proof of concept (TRL-3) and usually ends with system testing in a relevant environment (TRL-5/6). These projects are typically two to three years long.



Graphic of Composite Cryotank and its potential applications in space.

The GCD Program sponsors more than 25 technology development projects across several technology themes, which are in line with NASA priorities. The themes are:

- Launch and In-Space Propulsion
- Energy Storage
- High Data Rate Communications
- Lightweight Space Structures
- Robotics and Autonomous Systems
- Environmental Control and Life Support Systems
- Space Radiation
- Science Instruments & Sensors
- Entry, Descent & Landing



Woven Thermal Protection Systems (TPS) could improve heat shields for future spacecraft.



Human Robotics Systems (HRS) develops advanced robotics technology to amplify human productivity and reduce mission risk by improving the effectiveness of human-robot teams.

The Program's technology developments are done primarily in laboratories, which include ground testing in preparation for in-space demonstrations by other stakeholders. However, some of these demonstrations could also be performed under GCD. Successful technologies will transition to other STP programs, such as the Technology Demonstration Missions (TDM) Program or directly to flight missions under NASA's Mission Directorates. The technologies can also transfer to other governmental agencies or support national needs.

With a focus on game-changing technologies, in a high-payoff, high-risk environment, success is not expected with each investment. However, over time we expect dramatic advances in space technologies to enable entirely new NASA missions and provide potential solutions for a wide variety of our society's grand technological challenges.

The GCD Program investments in innovative space technologies directly supports NASA's mission to "...drive advances in science, technology, and

exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of Earth..."

For more information about GCD, please visit: <http://gameon.nasa.gov>



Engineers checked out the Inflatable Reentry Vehicle (IRVE-3) following the complete inflation system test under vacuum conditions in the Transonic Dynamics Tunnel at NASA's Langley Research Center in Hampton, Va.



IRVE-3 was launched by a sounding rocket on July 23, 2012 from NASA's Wallops Flight Facility. The test was a success.

National Aeronautics and Space Administration

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NASA Facts