National Aeronautics and Space Administration

NASA's Impact in Maryland: A Tech Transfer Perspective

You know that NASA studies our planet, our sun, the solar system, and the Universe.
But did you know about the space program's economic impact here on Earth?

In 2011, NASA invested over **$1.6 billion** in the state of Maryland.

Since 2001, NASA's SBIR/STTR Program has invested nearly **$57 million** in **62 Maryland companies** and more than **$1.2 billion** nationwide.

How NASA's SBIR/STTR Program Benefits Maryland

NASA is committed to moving technologies and innovations into the mainstream of the U.S. economy, and the Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) program helps fulfill this goal.

SBIR/STTR stimulates technological innovation by encouraging small, high-tech companies—particularly minority and disadvantaged businesses—to partner with NASA to help meet its research and development needs in key technology areas. At the same time, this program strengthens small companies by enabling them to bring cutting-edge new products into the U.S. economy.

The list to the right highlights Maryland businesses that received SBIR/STTR contracts from NASA since 2006. **(Visit http://sbir.nasa.gov for more information on the SBIR/STTR program.)**

NASA SBIR/STTR Companies in Maryland

Active Signal Technologies, Inc.	Linthicum
Advanced Fluidics, LLC	Columbia
Argo Navis Technologies, LLC	Annapolis
BreakAway, Ltd.	Hunt Valley
Brimrose Technology Corporation	Sparks
Coherent Technical Services, Inc.	Lexington Park
CoolCAD Electronics, LLC	College Park
Emerald Sky Technologies, LLC	Columbia
Energy Research, Inc.	Rockville
Entropy Engineering	Gaithersburg
Fantalgo, LLC	Elkridge
Flexure Engineering	College Park
Global Science & Technology, Inc.	Greenbelt
the Hammers Company	Greenbelt
Intelligent Automation, Inc.	Rockville
Ionova Technologies, Inc.	Frederick
MassTech, Inc.	Columbia
Neocera, Inc.	Beltsville
NVI, Inc.	Greenbelt
Open Research, Inc.	Bethesda
Optical Scientific, Inc.	Gaithersburg
Pharad, LLC	Glen Burnie
Seabrook Engineering	Seabrook
Signal Processing, Inc.	Rockville
Starodub, Inc.	Kensington
StormCenter Communications, Inc.	Baltimore
VorCat, Inc.	Rockville
Xigen, LLC	Rockville

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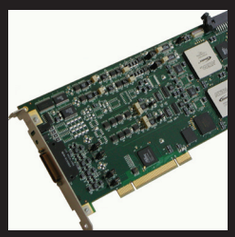
How NASA Spinoffs Benefit Maryland

Simulation Software Models Future Airspace Utilization *(Rockville)*
With more than 87,000 flights every day and airspace demand that is expected to triple by 2025, solutions are needed to avoid longer delays and increased airport congestion. Through NASA contracts, Intelligent Automation, Inc. has developed specialized simulation software to explore ways of improving the utilization of the National Airspace System (NAS), providing flexible modeling of every part of the NAS down to individual planes, airports, control centers, and even weather. The software has been licensed to a number of aerospace and robotics customers and has even been used to model the behavior of crowds.

Software Automates Spacecraft, Instrument Testing *(Greenbelt)*
To support NASA's Small Explorer program, the Hammers Company, Inc. (tHC) created all-in-one software for developing, testing, and operating spacecraft. The software tools enable designers to test systems and components before integrating them into spacecraft, thereby decreasing risks, costs, and maintenance schedules. The design is modular, so components can be modified to meet individual mission requirements. tHC also developed a satellite simulation tool through NASA funding. NASA uses these tools to support 15 orbiting satellites, and the aerospace industry is using them to develop science instruments, spacecraft computer systems, and navigation and control software.



Telemetry Boards Interpret Engine, Satellite Data *(Frederick)*
The remote measurement and transmission of systems data—telemetry—is essential to ensuring the safe and successful launch of NASA's space missions. Streamed binary telemetry data provides valuable clues about the status of various vehicle systems. Through Space Act Agreements, telemetry innovator Ulyssix Technologies, Inc. developed a pulse code modulation board that translates raw telemetry data into understandable measurements for engineer analysis, playing an essential role in satellite launch and ground support, as well as in the testing of remote-controlled drones and jet engines. Beyond its role in NASA missions, the company's telemetry product line supports a host of military and aerospace applications.

Virtual Reality Display Offers 3-D Panoramic Views *(Columbia)*
Robots have long been part of NASA's space exploration program, and robotic development continues in order to meet exploration needs anticipated in future missions. To expand the limited vision field of NASA's dexterous humanoid robot, Sensics, Inc. developed a head-mounted display with a high-resolution, three-dimensional panorama. The display includes a camera array that allows remote control and telepresence, immersing the operator in the robot's workspace in real time. The display is sold commercially for high-end virtual reality applications, and the system could also enable remote operation of machinery in biohazard, defense, or medical environments, allowing operators to work without being at risk.

Spinoff Fortifies Infant Formulas, Foods Globally *(Columbia)*
NASA experiments involving plant growth for long-duration space flights led to the identification and manufacturing method for a nutritional supplement now found in everyday food. Martek Biosciences Corporation developed and patented two strains of microalgae that produce oils rich in docosahexaenoic acid (DHA), and a similar process for a fungus that produces an oil rich in arachidonic acid (ARA). Both DHA and ARA are important nutrients for optimal infant development, and DHA has health benefits that extend throughout life. Martek's supplements are found in more than 90 percent of the infant formulas sold in the United States and many abroad.

NASA actively seeks partnerships with U.S. companies that can license NASA innovations and create "spinoffs" in areas such as health and medicine, consumer goods, transportation, renewable energy, and manufacturing. When businesses leverage NASA technologies to develop new products, it not only benefits the regional economy, but significantly strengthens the nation's competitiveness in the global marketplace.

NASA's centers across the country—including Goddard Space Flight Center in Maryland—have helped 205 Maryland companies develop revolutionary spinoff technologies.

Learn more about how NASA innovations benefit the public in Spinoff, an annual publication that highlights NASA's most significant technology transfer successes.
(Available at: http://www.sti.nasa.gov/tto)

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Publication herein does not constitute NASA endorsement of the product or process, nor confirmation of manufacturer's performance claims related to any particular spinoff development.

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