



NASA's Impact in Pennsylvania: 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 **\$39 million** in the state of Pennsylvania.

Since 2001, NASA's SBIR/STTR Program has invested over **\$41 million** in **29 Pennsylvania companies** and more than **\$1.2 billion** nationwide.

How NASA's SBIR/STTR Program Benefits Pennsylvania

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.

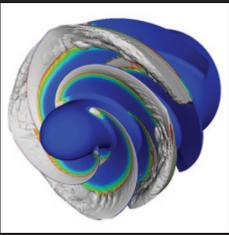
The list to the right highlights Pennsylvania businesses that received SBIR/STTR contracts from NASA since 2001. (Visit <http://sbir.nasa.gov> for more information on the SBIR/STTR program.)

NASA SBIR/STTR Companies in Pennsylvania

Advanced Cooling Technologies, Inc.	Lancaster
Ambint	Pittsburgh
Applied Analytic Research, Inc.	West Chester
ArkLight	Center Valley
Astrobotic Technology, Inc.	Pittsburgh
Combustion Research and Flow Technology, Inc.	Pipersville
Discovery Machine, Inc.	Williamsport
Electron Energy Corporation	Landisville
GDA Corporation	State College
Gnostic Communications	Pittsburgh
Illuminex Corporation	Lancaster
Integran Technologies, Inc.	Pittsburgh
k Technology, a division of Thermacore, Inc.	Langhorne
Lawrie Technology, Inc.	Girard
Materials Research and Design, Inc.	Wayne
Materials Resources International	Lansdale
Maxpower, Inc.	Harleysville
Monitor Instruments Company	Cheswick
Nanomat, Inc.	Somerset
NanoMaterials Company	Malvern
Nokomis, Inc.	Charleroi
ProtoInnovations, LLC	Pittsburgh
Pulsar Informatics, Inc.	Philadelphia
QorTek, Inc.	Williamsport
RL Associates, Inc.	Yardley
Sensortex, Inc.	Kennett Square
SureLogic, Inc.	Pittsburgh
Thermacore, Inc.	Lancaster
TRS Ceramics, Inc.	State College

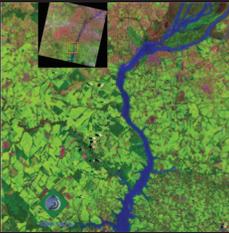
pennsylvania





Modeling Tools Predict Flow in Fluid Dynamics *(Pipersville)*

Through NASA funding, CRAFT Tech, Inc. enhanced its existing computational fluid dynamics software to simulate cryogenic fluid flows and related phenomena such as cavitation in liquid rocket turbopumps. By modeling rocket engine exhaust, the software ensures that plumes do not cause damage to the facility, structure, or the test article itself. Applications include commercial aerospace, industrial commercial pumps, and the liquefied natural gas industry.



Cloud Detection Enhances Satellite Imagery *(State College)*

NASA funded Geospatial Data Analysis Corporation (GDA) to detect clouds in Landsat 8 images. GDA developed the Cloud And Cloud Shadow Assessment (CASA) tool, a feature detection/extraction system for clouds and cloud shadows. Once identified, each new cloud is stored in a library so CASA learns to be more accurate with subsequent evaluations. GDA has developed similar products that identify streams, land covers, and crops.



Treatment Prevents Corrosion in Steel and Concrete Structures *(Pittsburgh)*

NASA partnered with Surtreat Holding, LLC on an environmentally friendly, anti-corrosive spray for concrete slabs, preventing further corrosion. Recently, NASA improved its technology and partnered with Surtreat again on a water-soluble, environmentally friendly galvanic coating for concrete-enclosed steel structures that lasts 10 years or more, resists chloride penetration, and eliminates freezing/thawing problems. This coating bonds inorganic compounds to structures, becoming part of the steel/concrete matrix indefinitely.



Advanced Airfoils Boost Helicopter Performance *(Perkasie)*

NASA developed an airfoil with greater lift, less drag, and less pitch, making it ideal for heavy lifting operations. Carson Helicopters, Inc. licensed the airfoil and developed a rotor blade replacement ideal for heavy load hauling. Compared to similar aircraft, Carson's helicopters can carry 2,000 pounds more, fly 17 miles per hour faster, and travel 70 miles farther on the same fuel load. The five-blade rotors are made from advanced composite materials that reduce operating maintenance costs.



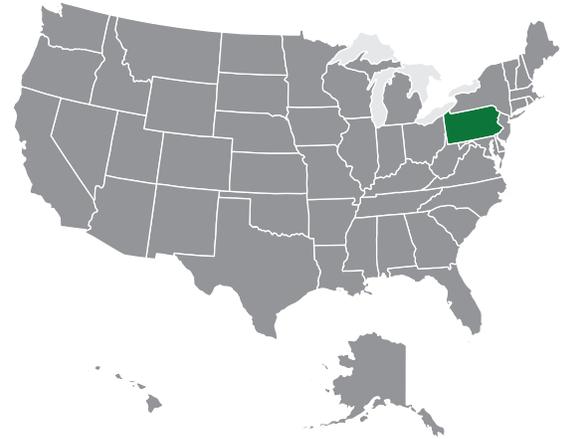
The Proven Solution for Cleaning Up Oil Spills *(Pittsburgh)*

Universal Remediation, Inc. (UniRemInc) produces several oil removal products that use NASA's microencapsulation delivery technology. Their petroleum remediation product (PRP) encapsulates molecules of oil before they settle, causing less damage to the ecosystem. PRP works in water or soil to absorb and isolate contaminants. UniRemInc markets a small package of PRP to contain bilge water oil before dumping. Tubes of PRP contain larger spills by encircling the contaminated area to prevent spreading.



The Space Laser Business Model *(Horsham)*

NASA's laser development team created several laser systems including the Geoscience Laser Altimeter System (GLAS). Eventually, this team founded their own company, Avo Photonics, providing contract manufacturing services for photonic and microelectronic customers in communications, military, aerospace, medical, and industrial markets. With its state-of-the-art equipment and design expertise, the company provides product development support from concept through production.



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 have helped 99 Pennsylvania 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>)

National Aeronautics and Space Administration

**Office of the Chief Technologist
NASA Headquarters
Washington, DC 20546**

www.nasa.gov

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.