



NASA's Impact in Utah: 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 **\$460 million** in the state of Utah.

Since 2001, NASA's SBIR/STTR Program has invested nearly **\$9 million** in **11 Utah companies** and more than **\$1.2 billion** nationwide.

How NASA's SBIR/STTR Program Benefits Utah

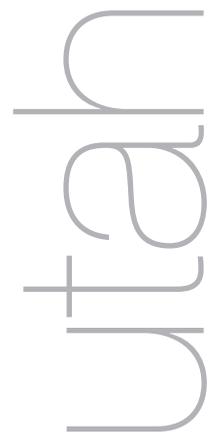
NASA is committed to moving technologies and innovations into the mainstream of the U.S. economy, and the Small Business Innovation Research/Small Business Technology Transfer (SBIR/STTR) program helps fulfill this goal.

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 Utah 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 Utah

Aribex, Inc.	Orem
Axon Medical, Inc.	Salt Lake City
Bipolar Technologies	Provo
Ceramatec, Inc.	Salt Lake City
Felix ALBA Consultants, Inc.	Murray
HyPerComp Engineering, Inc.	Brigham City
InnoSys, Inc.	Salt Lake City
Larson Davis, Inc.	Provo
Materials and Systems Research, Inc.	Salt Lake City
Merril Corporation of Utah, dba MSI Photogenics	Salt Lake City
Wasatch Photonics, Inc.	Logan



How NASA Spinoffs Benefit Utah



Engineering Design Software Aids NASA, Automotive and Motor Sports Industries (*Provo*)

NASA funding enabled Optimal Solutions Software, LLC to enhance its engineering design software to optimize the shapes of complex components. The software contains an arbitrary shape deformation capability that allows designers to customize shape parameters, rather than be limited to computer-aided parameters. NASA uses the software to design propulsion devices, pumps, valves, and other fittings. Commercial applications include automotive and marine vehicle design analysis, and the motor sports industry uses the technology to reduce drag, improve down forces, and enhance engine design.



Space Technology Leads to Golf Shaft That Enables Longer Shots, More Control (*Pleasant Grove*)

Technology designed to help stabilize weapons launch platforms in space is improving the design of graphite composite products on Earth. NASA research on the damping of space structures resulted in a technology used by New Revolution Golf to design a progressive golf shaft that includes a viscoelastic layer sandwiched between two opposing wavy-patterned graphite layers to increase stiffness and damping. The increased damping enables longer shots, more control, and less shaft vibration, reducing the stinging effect avid golfers often report after striking the ball.



Lightweight Hybrid Tanks Increase Safety, Reliability for Firefighters (*Brigham City*)

HyPerComp Engineering, Inc. collaborated with NASA to increase the safety and reliability of high-performance pressure vessels. Over-wrapped with composite materials, the lightweight hybrid vessels are aluminum-lined and filament-wound, and possess high-impact and fire-resistant properties. Aerospace uses include pressure tanks for launch vehicles and propellant tanks for satellites. Commercial applications include air tanks for firefighters, compressed natural gas tanks for automobiles, and vessels used in chemical processing, pharmaceutical manufacturing, and oil and gas drilling and production.



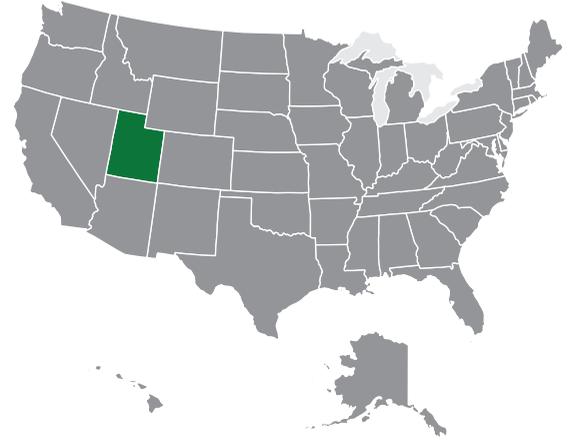
Unique Device Neutralizes Landmines Without Setting Off Explosive Materials (*Corinne*)

Thiokol Propulsion, now ATK Launch Systems, Inc. devised a method for neutralizing landmines in the field without setting off their explosive materials. The company utilized NASA's surplus, solidified rocket fuel to produce a flare that burns through a landmine's outer casing to defuse the explosive agents inside. The method is safer than either direct or remote detonation disarmament techniques, which can produce shrapnel that can harm personnel and increase minefield contamination.



Rugged Minicameras Captured Images in Harsh Underwater, Space Environments (*Salt Lake City*)

NASA turned to Videospection, Inc., a company specializing in the design and production of cameras for unusual and demanding applications, for a camera to withstand the harsh orbital environment aboard the space shuttle. The camera developed for NASA spawned commercial models used in situations requiring ruggedness, high resolution, and reliability. The cameras were used in high-pressure underwater environments, inside nuclear reactors, and in gas wells. A Videospection camera was used in 1985 to record images of the Titanic oceanliner 13,000 feet below the surface of the North Atlantic.



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 36 Utah 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.