



# NASA's Impact in the US: 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?



The stories below represent a sampling of the more than **1,750 NASA spinoffs** that have improved our daily lives and helped to transform the world.

US impacts stories

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. 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>)



### **Inflatable Antenna Supports Humanitarian Relief Efforts** (Huntsville, AL)

A technology with roots in the Small Business Innovation Research (SBIR) program is benefiting from an ongoing technology transfer relationship with NASA and leading to faster on-the-ground communications support for disaster relief efforts.

The inflatable antenna from GATR Technologies provides emergency Internet access, cell coverage, and phone lines over satellite networks via a compact package that deploys in less than an hour. GATR has deployed this technology as a critical support tool for first responders from Haiti to Afghanistan.



### **NASA-Proven Winglet Technology Saves Airline Industry Billions** (Seattle, WA)

Blended winglets, the upturned ends on many airplane wings, are among NASA's most visible fuel-saving, performance-enhancing technologies. Blended winglets reduce drag and generate additional forward thrust, leading to increased fuel economy. Aviation Partners Boeing (a joint venture of Aviation Partners,

Inc. and The Boeing Company) manufactures and retrofits blended winglets for commercial airliners and predicts total fuel savings greater than 5 billion gallons by year-end 2014.

**For more information on NASA's economic impact within each state, please visit:**

[http://www.nasa.gov/offices/oct/economic\\_impacts](http://www.nasa.gov/offices/oct/economic_impacts)



## How NASA Spinoffs Benefit the United States



### **Aerodynamics Research Revolutionizes Truck Design** (Loveland, CO)

A NASA innovation has dramatically improved the fuel efficiency of large trucks and recreational vehicles on America's highways. Airtab, LLC, the marketing arm of Aeroseve Technologies, Ltd., relied on NASA's aerodynamics research to develop its vortex generator, a product that helps reduce drag and improve vehicle stability and fuel economy. Thanks to this partnership, the average U.S. tractor trailer is now 15-25% more fuel efficient at highway speeds.

### **NASA Technology Decontaminates Polluted Soil and Groundwater** (Baton Rouge, LA)

A NASA-developed groundwater remediation compound designed to neutralize toxic chemicals in the soil near rocket launching facilities is cleaning up polluted areas around the world. Emulsified zero-valent iron (EZVI) deactivates contaminants with nano-sized iron particles in an environmentally friendly water and biodegradable oil emulsification. EZVI is one of NASA's most frequently licensed technologies and was awarded a place in the Space Technology Hall of Fame.



### **Cell Phone Cameras Use Spacecraft Technology** (San Jose, CA)

Technology developed to significantly miniaturize cameras on interplanetary spacecraft yet maintain scientific image quality is now prevalent in our everyday lives. Aptina Imaging Corporation has shipped more than 1 billion of its complementary metal-oxide semiconductor sensors for use in digital cameras, camera phones, and Web cameras. Today, one of every three cell phone cameras features Aptina's sensor technology.

### **NASA Electrolyte Formula Combats Dehydration** (Boulder, CO)

An electrolyte formula developed to help astronauts stay hydrated during space missions is now benefiting the public. Wellness Brands, Inc. licensed the formula from NASA to provide hydration for elite athletes and endurance sport enthusiasts. But it is not only athletes who benefit from the electrolyte formula. Under the exclusive NASA license, Wellness Brands plans to market products to help combat dehydration due to long-distance flights, jet lag, altitude sickness, diseases, and heat stroke.

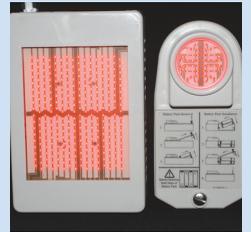


### **Vision Screening Detects Eye Diseases in Children** (Birmingham, AL)

An optics technology originally developed by NASA for space telescopes in the 1970s has found new life as a highly successful screening device for the detection of vision problems in children. Vision Research Corporation's vision screening system has helped detect eye abnormalities and eye diseases in millions of infants and children. This photorefractive technology provides fast, non-invasive, early screening for conditions such as nearsightedness, farsightedness, astigmatism, cataracts, and amblyopia (or "lazy eye").

### **Light Therapy Helps Treat Cancer and Heal Wounds** (Barneveld, WI)

A technology originally developed by NASA has evolved into a state-of-the-art medical device that increases the effectiveness of chemotherapy treatments and provides pain relief for thousands of Americans. Quantum Devices, Inc. developed this non-invasive device for use in cancer treatments, prevention of painful sores that result from radiation and chemotherapy, and wound healing. The device shows promise in treating bone atrophy, burns, multiple sclerosis, Parkinson's disease, Alzheimer's disease, and retinal disorders.



### **Water Purification System Improves Public Health** (Sanford, FL)

NASA SBIR funding enabled the Argonide Corporation, a nanomaterials company, to develop a unique filtration system with the potential to revolutionize water purification in the U.S. and around the globe. The system, developed to help astronauts recycle and purify water while in orbit, removes 99.99% of dangerous bacteria, viruses, cysts, organic debris, parasites, and dissolved and particulate metals such as iron and lead. With the help of NASA's technology, Argonide is helping to purify the Earth's water supplies.

### **Tough Textiles Protect Police and Troops** (New Ipswich, NH)

NASA partnered with Warwick Mills, Inc. to create airbags tough enough to protect the Mars Pathfinder and Mars Exploration Rover during descent and landing. Developing these advanced airbag textiles enabled Warwick Mills to create a new line of puncture- and impact-resistant body armor. Warwick customers include the United States Marine Corps, the New York State Department of Corrections, the Federal Bureau of Prisons, and police departments throughout the United States.



National Aeronautics and Space Administration  
Office of the Chief Technologist  
NASA Headquarters  
Washington, DC 20546

[www.nasa.gov](http://www.nasa.gov)

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