

The Innovation Partnerships Office

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The Innovation Partnerships Office (IPO) at Johnson Space Center (JSC) uses partnerships to drive the infusion of technology, creative partnerships to develop technology, and traditional business partnerships to license and to transfer NASA-developed technology to the U.S. marketplace. Traditionally known as the Technology Transfer Office, the office changed its name to better reflect its expanding role and capabilities at the center.

For 50 years, NASA developed technologies to orbit the Earth, land on the moon, and explore the stars and galaxies. This human need to explore and its attendant curiosity created new ideas and innovations that benefit everyone here on Earth through spinoffs. Spinoffs are resulting commercial products that originate with NASA funding, research, licensing, facilities, or assistance. The founders of the space program, through the Space Act of 1958, require NASA to transfer its technologies to the marketplace so that the U.S. taxpayer can benefit from the advancements.

For decades, the space agency has triggered U.S. innovations and inventions, while nurturing partnerships to facilitate the transfer of NASA-developed technologies to the private marketplace through inclusive programs for both small and big businesses. NASA ingenuity, coupled with technology transfer initiatives, has garnered more than 1,600 documented commercial applications of NASA technology.

Areas of technology research and development at JSC focus on the center's technology core competencies of Environmental Control and Life Support, Extravehicular Activity, Lunar In-situ Resource Utilization, Lunar Operations, Thermal Management, Exploration Crew Health Capabilities, Space Human Factors and Food Systems, Space Radiation, and Sensors for Autonomous Systems and can be seen in the areas funded for development by IPO programs.

The IPO is now working on innovative partnership models to enhance and initiate technology research and development for infusion into the agency. It is also spinning NASA technologies out into the marketplace through private industry and investment.

JSC IPO launched a technology research and development program in 2008 for focused investment groups (FIGs) in which JSC Directorates presented their needs for technology development and their needs funding based on mission requirements and the ability to advance the technology to a readiness level to meet future space flight needs. Technologies being funded in the FIGs are Human System, Habitat Systems, Surface Mobility Systems, Mission Operations, and Mission Enabling Science. Each FIG was funded at levels that in many cases allowed for the leveraging of the Partnerships Office funds to gain outside additional supportive funding sources and partnerships to advance the development of the technology.

NASA also uses more traditional avenues to develop technology for infusion and spinout; these are the Small Business Innovative Research (SBIR) and Small Business Technology Transfer (STTR) programs. JSC's IPO has managed \$69.7M for the SBIR program initiatives and \$8M in STTR initiatives in the five most recent program years.

The SBIR/STTR programs, established by law, exist to stimulate technological innovation in the private sector by increasing participation by small business in federal research and technology development. A competitive proposal process is launched annually via a solicitation of proposals with the focus of meeting NASA technology program needs, coupled with the potential for commercialization. For more information on the SBIR/STTR programs, visit <http://sbir.nasa.gov>.

Investment Seed funding is also available through the Innovative Partnership Program at NASA; this program is administered by the IPO at JSC. The Seed Fund works to meet mission technology goals specifically to address barriers with joint-technology partnerships providing leveraged funding, resources, and expertise. It is sourced from NASA headquarters, managed through each of the centers, and requires coordination with NASA mission directorates who identify specific technology development needs.

A current partnership between JSC and Caterpillar Inc. (Peoria, Ill.) resulted from an IPP Seed Fund Award. JSC

needs to develop the capability to build bases and habitats – all of which requires heavy construction – for NASA’s return to the moon. Caterpillar is known for its ability in mining and construction equipment designed to move earth. The partnership was formed with Caterpillar because of its potential to advance key technologies to meet critical NASA needs for the future, and Caterpillar has similar interests in advancing autonomous operations in a mining application. For more information about this partnership, visit <http://technology.jsc.nasa.gov/>. For more information the Seed Fund, email jsc-techtran@mail.nasa.gov.

The methods and tools used by IPO to infuse technology, spin out technology, and partner with business and universities include Space Act Agreements and Patent Licensing Agreements. Space Act Agreements are used primarily to collaborate with entities other than NASA for everything from lending personnel and expertise to equipment and other facilities and resources. Patent Licensing Agreements are used

to license NASA technologies to businesses in the private sector to transfer the technology to the marketplace for further development and successful commercialization to benefit the U.S. taxpayer. For more information about JSC licensing opportunities, visit <http://technology.jsc.nasa.gov/licensing.cfm>.

Another NASA program is the Inventions and Contributions Board (ICB). Also established by the Space Act of 1958, the ICB Space Act Awards rewards and promotes outstanding scientific or technical contributions sponsored, adopted, supported, or used by NASA that are significant to aeronautics and space activities.

Over the past 50 years, the ICB issued more than 98,000 awards, equaling \$44M, to NASA and its contractor employees as well as to other government, university, and industry personnel. The ICB award program also gave out 3,300 technical awards in 2008 totaling more than \$2M. At JSC, the IPO administers the ICB Space Act Awards and presented \$140,000 to 270 JSC innovators in 2008.

