

Rocket Science May Be Coming Soon to a Business Near You

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How would you like to be able to take technology from the National Aeronautics and Space Administration for a trial run? That's more possible than ever before, as the Technology Transfer Office at NASA's Glenn Research Center in Cleveland has been working overtime to grant opportunities for private-sector companies to license NASA innovations. In fiscal year 2015 alone, Glenn licensed 18 of its technologies to 8 U.S. companies—securing more licenses than in the previous ten years combined—so these technologies will be making the return trip from space back to Earth.

What led to this enormous leap in licensing success? The change began with intentional decisions to develop a more business-focused mindset at Glenn. The Glenn tech transfer office took a number of clear, concrete steps to strengthen the creative and business ties between NASA innovators and private-sector entities—encouraging companies to take NASA tech out of the box and see what it can do for their business.

Take a holistic approach to innovation:

All real change must start from within, so Glenn's TTO intentionally focused on changing its internal approach to managing intellectual property. The team established monthly, face-to-face meetings with all stakeholders in the technology transfer process, including experts in licensing and agreements, science and technology, legal issues, patenting, outreach, deal-making, small business, and more. By meeting as a group on a routine basis, the entire team developed an aligned, holistic approach to innovation. The team also challenged



NASA Glenn Technology Transfer Licensing Team in 2015. Photo Credit: InnoVector Tech

the status quo by asking innovative questions. Instead of posing the obvious question—"how can we secure more licensing agreements?"—team members instead asked questions that challenged existing practices, such as "who is our typical 'customer'? What problems are these customers using NASA technologies to address? How can these technologies solve existing problems in the marketplace?"

Leverage market data:

Glenn used its considerable data resources to identify what attracted potential commercial partners to work with NASA—and which obstacles, real or perceived, might be standing in the way. The data revealed that small and medium-sized businesses are the most likely to take an interest in NASA technology, but that concerns about cost and red tape kept some from getting involved.

Remove perceived barriers to licensing:

To encourage more licensing, Glenn's TTO embraced the evaluation license, a streamlined, low-risk, flat-fee license that makes "test driving" NASA technology a much simpler prospect. If a company or organization sees a potential application for a Glenn-developed innovation, it doesn't need to supply a truckload of financial documents or a detailed commercial plan—just complete a simplified licensing application and pay a small, up-front fee.

Once companies realized they had a low-cost option to try a NASA technology and discover how it would perform and contribute to their business goals, they gained the confidence to move forward. The Glenn TTO has secured four evaluation licenses since 2015, where they previously had none.

Understand private sector needs:

Glenn's TTO encouraged its scientists to get involved more directly with businesses and entrepreneurs. For example, Glenn sent a team of its innovators to a business program called the Launch House Accelerator. This 16-week "boot camp" gave these scientists the opportunity to take a novel water-purification system into a commercial environment and discuss possibilities with manufacturers and potential licensees. Currently, Glenn's TTO is in discussions with organizations to explore licensing opportunities for this technology.

Simplify and align messaging:

Glenn sought to drive engagement further by reaching out to potential partners via a revamped website and increased social media presence. These measures, in addition to a renewed emphasis on visually appealing and consistent marketing materials, underscored the idea that NASA technology is accessible and ready for commercial development.

What does this new emphasis on collaboration and

accessibility look like in practice? Well, the Marlborough Center for Sleep Disorders in Marlborough, Mass., saw an opening and obtained one of the streamlined evaluation licenses with Glenn. Now, a monitoring system originally designed for NASA spacesuits will be used to help further our understanding of what happens when we sleep. The Portable Unit for Metabolic Analysis (PUMA) allows real-time monitoring to make sure its wearer isn't suffering from a lack of oxygen. The Marlborough Center will use PUMA to monitor patients who suffer from sleep-associated breathing problems.

Marlborough had become interested in doing metabolic studies with some of its patient population, which includes people with sleep apnea, diabetes, obesity, and COPD, according to Marlborough director Dr. Clifford Risk. "PUMA gives us a small, portable, patient-friendly device that allows us to study metabolic

function—wake, exercise, sleep—in several clinical situations," says Dr. Risk. "We can then follow these results prospectively to adjust and optimize our patients' medical management."



A medical clinic is using a NASA device to help people suffering from sleep disorders. Photo Credit: NASA

Another partnership emerged when the Spencer, Mass.-based company FLEXcon secured an exclusive license agreement to manufacture and market one of Glenn's breakthrough materials: polyimide aerogels. Aerogels are the world's lightest material, and FLEXcon and its affiliate Blueshift International Materials produce aerogel-based components not only for aerospace applications but also for more terrestrial uses in construction, refrigeration and pipe insulation.



By obtaining a license from NASA, FLEXcon became the first commercial provider of NASA's polyimide aerogels, a revolutionary, lightweight material. Photo Credit: FLEXcon

"After we began manufacturing Glenn's polyimide aerogel materials, Glenn provided us with a number of leads from companies interested in purchasing our products," says FLEXcon president and CEO Neil McDonough. "This licensing deal has helped us reach new markets in a short period of time, providing new business opportunities."

A similarly excited outlook prevails at Hohman Plating in Dayton, Ohio. The metal-finishing company signed a nonexclusive license agreement to commercialize two of Glenn's revolutionary high-temperature lubricants. These lubricants will provide additional protection for rotating and mechanical wear applications, such as bearings and turbo machinery.

"NASA technology is helping us provide customers with coatings for unique application sizes and shapes. No one else has anything like this," says Hohman project manager Karin Cline. "And the broader value of being associated with NASA is that we become known as a company that solves problems instead of just making widgets."

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A vertical poster with a black background. At the top left, it says "National Aeronautics and Space Administration" and has the NASA logo. The main title is "NASA PATENTS FOR LICENSE" in large white letters. Below the title is a graphic of a globe with various business and legal terms like "PROTECTED", "TRADEMARK", "PATENT", "AUTHOR", "BUSINESS", "MARKET", "LAW", "ORIGINAL", "LEADER", "RULES", "COPY", "AUTHORSHIP", "FIRM", "NET", "LAWYER", "RESERVE", "COPYRIGHT", "TRADEMARK", "LAWYER", "FIRM", "NET", "LAWYER", "RESERVE", "COPYRIGHT" scattered around it. At the bottom, there is a list of categories: "• Materials & Coatings", "• Sensors", "• Electrical / Electronics", "• Communications", "• Power Generation & Storage". At the very bottom, it says "TECHNOLOGY TRANSFER PROGRAM" with a logo, "technology.grc.nasa.gov", and "Bringing NASA technology down to earth".