



NIST-TEDCO entrepreneurship program facilitates 11 new start-ups and \$2.7M in annual revenue



An entrepreneurial program created by the National Institute of Standards and Technology (NIST) and the Maryland Technology Development Corporation (TEDCO) has resulted in 11 new businesses that have generated \$2.7 million in annual revenue.

The NIST Science and Technology Entrepreneurship Program (N-STEP) is a joint effort by the NIST Technology Partnerships Office (TPO) and TEDCO designed to create collaborations resulting in new company formations by departing NIST employees and commercialization of NIST technologies, which in turn, creates jobs. Informally, two-way tech transfer is also happening as N-STEP recipients maintain relationships with their NIST contacts.

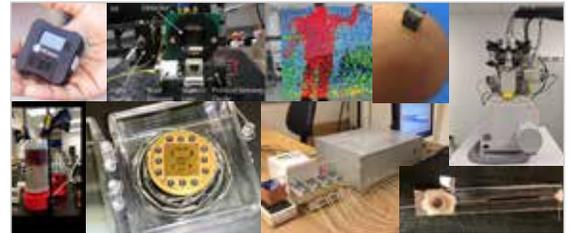
Since the start of the program in 2016, N-STEP has resulted in the creation of 11 new businesses (including eight in the state of Maryland), which have generated \$2.7 million in annual revenue, \$1.2 million in investment, an additional \$4.8 million in follow-on funding (e.g. grants), and 26 jobs reported in their required annual economic impact reports through February 2020.

Individuals who are nearing the end of their term of NIST employment are eligible for N-STEP; these include postdocs and associate researchers who are at NIST on temporary appointments and need future career options. NIST has more than 3,500 associates or visiting scientists doing research at NIST each year. Also, an average of 85 post-doctoral researchers join NIST each year. Most spend two years at NIST before moving on; NIST retains about 35% for longer-term employment.

Departing NIST employees in the N-STEP program get to launch their own companies, built on NIST research and their own skills, with the support they need for start-up success.

TEDCO is an independent instrumentality of the state of Maryland, established to facilitate the creation of businesses and support their growth in all regions of the state. TEDCO provides business assistance and funding for early-stage, technology-based businesses and fosters technology transfer and commercialization from state universities and federal labs.

N-STEP can be characterized as having “low hurdles” for its participants to clear. Participants receive mentorship and training, leading to the creation



Above: Companies and technologies that have resulted from the N-STEP program include (clockwise from top left): N5 Sensors, Inc. (“Chip-scale Hybrid Gas Sensors for Indoor Air Quality Monitoring”), Z-senz, LLC (“Resonant LIDAR Electronics for Small UAVs”), Vapor Cell Technologies, LLC (“Optimized Bonding Technology to Mass-Manufacture Chip-Scale Vapor Cells”), zeroK NanoTech, LLC (“Low Temperature Ion Source for Nanomachining and Nano-microscopy”), Parman Tech, LLC (“Analytical Nano-Particle Separation Instrumentation for Pharmaceutical Applications”), Microbial Pulse Diagnostics, LLC (“A Rapid Biophysical Diagnostic for Antimicrobial Susceptibility Testing”), Graphene Waves, LLC (“Affordable Quantum Resistance Standards Based on Graphene”), and PathOtrak, LLC (“MVP Design and Fabrication of a System for the Separation of Pathogenic Bacteria From Food Samples”).

of a business proposal that the participant presents to the TEDCO staff. If they are successful, a contingent award is made, and the participants learn how to form a company and secure a patent license.

N-STEP funding is \$100K for a one-year project to advance the technology toward commercialization. An additional \$12K must be used to develop the entrepreneur’s business acumen. Companies are encouraged to pursue grant funding for much needed follow-on funds to further development and sustain the company.

The technology transfer mechanisms used by N-STEP are the standards, starting with a research license at no cost to the company, preserving the company’s cash for operations and translational development efforts. The knowledge transfer is often facilitated with a cooperative research and development agreement (CRADA), allowing access to unique facilities, equipment, etc. and lowering the cost for the startup.

There has been funding from the three NIST Small Business Innovation Research (SBIR) awards and four SBIR awards from the National Science Foundation and the Department of Energy. N-STEP companies have raised money from investors, Maryland small business funding sources (including TEDCO), and a corporate bank loan. Some start-ups have also developed strategic partnerships with international corporations. ☞