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THE BEST IN  
SBIR

SMALL BUSINESS INNOVATION RESEARCH 2013

TIBBETTS | SBIR

AWARDS

HALL *of* FAME

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*U.S. Small Business Administration*



# CONGRATULATIONS TO THE RECIPIENTS OF THE 2013 TIBBETTS & SBIR HALL OF FAME AWARDS

**Created in 1953, the U.S. Small Business Administration (SBA) helps Americans to start, grow and succeed with their own companies. The agency’s mission often is described as the “three Cs”: facilitating access to capital, providing counseling, and ensuring that small businesses receive a quarter of federal contract dollars.**

One key way the SBA accomplishes its goals is through two programs: one devoted to small business innovation research (SBIR), the other to small business technology transfer (STTR). Through these competitive programs, the SBA ensures that the nation’s high-tech, innovative, small businesses are a significant part of the federal government’s research and development (R&D) efforts.

These programs have helped thousands of small businesses over the years. Today, we recognize the crème of the crop—those companies and individuals across the country that have used their SBIR/STTR funds to advance technological innovation and stimulate economic growth.

## Tibbetts Awards

Named after Roland Tibbetts, who was instrumental in developing the SBIR program, the Tibbetts Awards are presented annually to those who are beacons of promise and models of excellence in high technology. Winners are selected based on the economic impact of their technological innovation, and the extent to which that innovation served federal R&D needs, encouraged diverse participation and increased the practical commercial use of federal research. There are two types of Tibbetts Awards: awards for businesses that have participated in the SBIR Phase I and II award programs, and awards for individuals who have supported the SBIR program.

## SBIR Hall of Fame

The SBIR Hall of Fame recognizes companies that have a long and extraordinarily successful track record of research, innovation, and commercialization within the SBIR program. To be eligible for the award, a nominee must have won an SBIR award and continue to contribute significantly to the goals of the SBIR program.

In the pages that follow, we profile each recipient and the remarkable achievements each has accomplished. Individually, these profiles evince incredible ingenuity, resolve and success. As a whole, they demonstrate a remarkable range of benefits – locally, regionally, and nationally – and sustain the conviction that America’s future is as bright as its past.



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SBIR 2013

TIBBETTS  
AWARDS

## KUTTA RADIOS, INC.

2075 W Pinnacle Peak Road, Suite 102, Phoenix, AZ 85027  
602-896-1976 • www.kuttaradios.com

Kutta Radios, Inc. provides next-generation radio products to mine operators and first responders to enhance communication capabilities. The Kutta DRUM® radio system is based on magnetic fields at medium frequency, which turns the metallic infrastructure in an underground / enclosed environment into a large antenna that carries the radio signal for miles. The Kutta DRUM® radios are specifically designed to allow communications in challenging environments (mines, skyscrapers, subways, etc.), are a low-cost alternative to current communication systems on the market today, and can provide a life-saving communication link in an emergency.

In 2004, Kutta was awarded a Small Business Innovation Research (SBIR) grant by the U.S. Army (SBIR A04-135) to develop a radio system for through-the-earth (TTE) communications for use by soldiers and first responders in caves and tunnels. Early radio prototypes were able to send photos and text messages through more than 400 feet of solid rock. Kutta was awarded a subsequent SBIR Phase II contract, during which Kutta designed and built a multiple node, multi-hop, portable digital radio system capable of penetrating 100 feet of solid rock. After the Sago coal mine tragedy in 2006, in which twelve miners died due to a coal mine explosion, the U.S. Government investigated technologies that could save lives during and after incidents in underground mines. In addition, the U.S. Congress drafted the MINER Act, which the president signed into law in June 2006. The MINER Act requires all underground coal mines to have redundant, post-incident wireless communications.

Kutta was selected to test the SBIR radio prototypes in an active coal mine. Instead of using the TTE features of the radios, Kutta used magnetic induction technology, essentially turning all the metal inside a mine into a large antenna. During the first demonstration, Kutta's radios were able to communicate clearly for two miles point-to-point within the mine with cell phone voice quality. This successful demonstration led to additional funding by the National Institute for Occupational Safety and Health (NIOSH) to develop Kutta's radios for the mining industry. The resultant product line was named the Digital Radio for Underground Miners (DRUM®). The DRUM® system has a very broad appeal for several challenging communication situations.

The Research & Development Unit of the Fire Department of New York (FDNY) has also requested the rapid development and implementation of a medium frequency radio designed to address specific operational communication issues. Over the past two years, Kutta has worked closely with FDNY personnel to design and test a radio system that allows FDNY to communicate within subway tunnels and high-rise buildings. The newly developed Kutta “LINK” radio will allow members of the FDNY to seamlessly communicate with operational and tactical command posts using their existing radio equipment in these challenging environments that prevented communication in the past. This technological development by Kutta will not only enhance the safety and efficiency of first responders, but has the potential to establish an entirely new market within the communications industry.

## ACCURAY, INC.

1310 Cheaspeake Terrace, Sunnyvale, CA 94089-1104  
408-716-4600 • www accuray.com

Listed on NASDAQ since 2007, Accuray Inc. is a medical device manufacturer headquartered in Sunnyvale, Calif. In 2011, Accuray acquired TomoTherapy of Madison, Wisconsin, and became a major supplier of radiation oncology equipment world-wide with flagship products CyberKnife® and TomoTherapy® machines.

Accuray was a company with less than 500 employees when awarded the SBIR Phase I and Phase II contracts in 2010 in response to the DHS DNDO-SBIR solicitation HSHQDC-090R-00041.

Accuray's motto as a medical device company is "Offering new hope to cancer patients through innovations that help them live longer, better lives." The company and its employees are committed to offering its customers leading-edge solutions so they can expand clinical opportunities and offer the best treatment to each patient.

Accuray's entry to the field of cargo security was via a development contract from SAIC to build a special linear accelerator- (linac-) based x-ray system for the DNDO-CAARS program. Based on superb performance of the CAARS linac for SAIC in 2009, the company applied and received funding from the DNDO-SBIR program to further develop capabilities for non-intrusive inspection (NII) use. The firm's employees live by the Accuray motto to conduct the company's industrial business by focusing on innovation opportunities so that its customers can expand the field of using x-ray radiation in the NII of cargos.

The Accuray team is honored to participate in the national endeavor of homeland security against various terrorist threats. The ultimate measure of success for an SBIR project is that the general direction as envisioned by the sponsoring government agency turns into technological innovations that are commercialized in the market place. Accuray has benefited tremendously from this SBIR project in our competence in linac and associated technologies. This has been proven true in both medical and homeland security applications. Along the way, several patents have been applied for and some have already been issued. We are well positioned to be a major supplier of linac systems in the medical and industrial field.

## TORREY HILLS TECHNOLOGIES, LLC

6370 Lusk Blvd. F-111, San Diego, CA 92121  
(858) 558-6666 • [www.torreyhillstech.com](http://www.torreyhillstech.com)

Torrey Hills Technologies, LLC (THT), headquartered in San Diego, Calif., was founded in 2004 by Ken Kuang and supervised by an advisory board of experienced entrepreneurs and investors. The company is a leading manufacturer for advanced yet affordable equipment and components for the electronics industry. We successfully applied our commercialization experience and expertise in the electronics industry to tackle tough coal-mine safety issues. Since its inception, the company has posted an impressive 63 percent average annual growth rate (AAGR). Even in the midst of the latest global economic recession, Torrey Hills has grown its revenue by 250 percent since 2007. The company has about 40 people worldwide (including 22 fulltime and part-time jobs in the U.S.) and owns a manufacturing plant in China.

On an annual basis, methane gas explosions claim the lives of thousands of coal miners and generate an estimated \$45 billion in economic losses worldwide. Torrey Hills is developing novel methane capture and recovery techniques to supplement ventilation, which is the only established and proven technology for alleviating methane problems. Since modern coal mines have complicated underground networks, it is virtually impossible to ventilate every corner equally.

By developing inventive and affordable methane-capturing products and processes, Torrey Hills is targeting three critical global issues: preventing and mitigating gas explosions, capturing greenhouse emissions that damage the environment, and converting methane gas into liquid methanol, which is a clean fuel and a useful chemical raw material. The company has received two rounds of SBIR funding from the National Science Foundation and is seeking investors for the commercialization phase.

## MODULAR ROBOTICS

3085 Bluff Street, Boulder, CO 80301  
(303) 656-9407 • [www.modrobotics.com](http://www.modrobotics.com)

Toys shape the way children think about the world. The mission of Modular Robotics, a recent start-up company in Boulder, Colorado, is to develop innovative robotics construction kits. Through play these kits foster insight and creativity in general and in the Science, Technology, Engineering and Math (STEM) fields in particular. A new and expanding company catalyzed by NSF SBIR funding, Modular Robotics designed, developed, and brought to market its first product, Cubelets. The company plans to bring a second product, code-named EYVO, also a construction kit toy, to market by the fourth quarter of 2013.

Cubelets are small plastic blocks that snap together magnetically to make robots. The kits include Sense Cubelets, Think Cubelets and Action Cubelets. Snap them together with a battery block and you've built a working robot.

Modular Robotics was founded in 2008 by Mark D. Gross, professor of architecture at Carnegie Mellon University and his PhD student Eric Schweikardt, to commercialize Schweikardt's NSF-funded doctoral dissertation research on a robotics construction kit. In January 2009 the company received an SBIR-I grant from NSF to explore the commercial feasibility of a programming interface for children to modify the built-in behavior of the kit. With this support, and a follow-on SBIR-II grant in April 2010, the company took the initial hand-made research prototype to a commercial product, shipping to its first customers in June 2011, and is now manufacturing its innovative Cubelets kits at its Boulder, Colorado headquarters and shipping them to customers around the world. A second SBIR-I grant (July 2011) has enabled the company to begin the design and engineering for its second construction kit product, EYVO.

## DESIGN INTERACTIVE, INC.

1220 E. Broadway, Ste. 110, Oviedo, FL 32765  
(407) 706-0977 • [www.designinteractive.net](http://www.designinteractive.net)

Design Interactive, Inc. (DI) based in Oviedo, Florida is a certified economically disadvantaged woman-owned small business with almost 15 years of excellence in providing innovative, next-generation human-systems integration and training solutions. The firm provides solutions in training systems, performance assessment readiness assessment and next generation Human Systems Integration. It has provided successful solutions in training effectiveness evaluations for businesses of all sizes, including Fortune 500 clients. Military Training Technology magazine named Design Interactive as one of the top Modeling and Simulation Companies for Innovation in 2011 and 2012. In 2009, DI was named one of Central Florida's top woman-owned businesses and in 2012 debuted in the Orlando Business Journal's Book of Lists as the number 12 top modeling and simulation company in Central Florida. Additionally, DiversityBusiness.com has named Design Interactive among the top businesses for diversity in 2012.

## TiER1 PERFORMANCE SOLUTIONS, LLC

100 E. Rivercenter Blvd., Suite 100, Covington, KY 41011  
(859) 663-2114 • [www.tier1performance.com](http://www.tier1performance.com)

Established in 2002, TiER1 Performance Solutions, LLC is a multiple national-award-winning small business whose professional services empower organizations by enabling them to address tomorrow's challenges through better use of knowledge, education and technology. With a wide range of more than 200 government and Fortune 500 commercial customers totaling 300-plus training and organizational change management projects, our core team has developed significant capabilities to manage the most complex of programs. Our team includes nationally recognized experts with decades of experience in end user training, adult education, training delivery, analysis and strategy. Our core business areas include Best-In-Class Learning Systems, Curriculum Development, Courseware Development and Alignment, Reference-based Training Materials, Instruction and Competency Initiatives.

The firm's government experience spans state and federal clients, including the states of New Jersey, Washington, and Ohio and the Department of Homeland Security, NASA, the U.S. Army and the U.S. Air Force. Current customers include the Air Force Materiel Command (AFMC), the Air Force Security Assistance Center (AFSAC), the Air Force Research Laboratory (AFRL), NASA's Johnson Space Center and the Defense Institute of Security Assistance Management (DISAM).

The company's government research experience includes work with the Office of the Secretary of Defense, AFRL, DHS, NSF and NASA. This research allows us to stay focused on human cognition, learning processes, accelerated learning and learner engagement through interactive games and simulations. This research helps us create more precise learning experiences for end users—whether in the classroom, online, or in blended learning situations.

TiER1's commercial customer experience includes several well-known and highly respected Fortune 500 companies: FedEx, Rockwell Collins, Kraft Foods, Wendy's, Macys, Bloomberg, Kroger, Kao Brands, LensCrafters, Oracle, Cintas, Ethicon, Procter and Gamble, Great American Insurance, The Hartford Insurance and many more.

The company's entrance into the SBIR/STTR program began in 2009 with our first Phase I award. Since then, TiER1 has won six Phase I proposals (a 57 percent win rate) and received more than \$1.5 million in Kentucky SBIR matching fund awards. TiER1 attributes much of this success to its highly collaborative team, innovative approach to learning technology and the Kentucky SBIR/STTR matching grant program.

## OCEAN RENEWABLE POWER COMPANY, LLC

120 Exchange Street, Suite 508, Portland, ME 04101  
(207) 772-7707 • www.orpc.co

Ocean Renewable Power Company, LLC (ORPC) is a global leader in hydrokinetic technology and project development. With corporate headquarters in Portland, Maine, ORPC develops hydrokinetic power systems and eco-conscious projects that harness the power of oceans and rivers to create clean, predictable renewable energy. ORPC works in partnership with coastal and river communities to create and sustain local jobs while promoting energy independence and protecting the environment.

In 2012 ORPC made history by starting operation of the Cobscook Bay Tidal Energy Project, the first commercial, grid-connected hydrokinetic tidal energy project in North America. Located at the mouth of the Bay of Fundy near Eastport and Lubec, Maine, this is the only ocean energy project, other than one using a dam, which delivers power to a utility grid anywhere in the Americas. The TidGen™ Power System is connected to the Bangor Hydro Electric utility grid at an on-shore station in North Lubec. The project received a Federal Energy Regulatory Commission pilot project license and the first Maine Department of Environmental Protection General Permit issued for a tidal energy project. In addition, ORPC received approval for the first power purchase agreement for tidal energy from the Maine Public Utilities Commission.

ORPC has been developing and licensing projects at world-class tidal energy sites in North America's most robust tidal energy resources: the Bay of Fundy, and Cook Inlet, Alaska. These project sites have the potential to generate more than 300 megawatts of electricity—enough to power roughly a quarter of a million homes. The development of ORPC's power systems and projects is also creating substantial job growth and other economic opportunities, while helping to reduce the nation's reliance on foreign oil.

The company has developed three models of its patented power system for commercial deployment: the TidGen™ Power System, for use at shallow to medium-depth tidal sites; the OCGen™ Power System, for use at deep tidal and offshore ocean current sites; and the RivGen™ Power System, for use at river and estuary sites. These three power systems are all based on ORPC's proprietary turbine generator unit, whose simple, robust, modular design can be adapted to work in almost any application. ORPC's power systems produce no gas or liquid emissions, create no noise issues, and do not interfere with natural water landscapes, navigation, or water recreation.

The company was founded by Paul H. Wells, who with energy professionals Christopher R. Sauer, company president and CEO, and John R. Cooper, senior financial adviser, formed Ocean Renewable Power Company in 2004 and began developing ORPC's hydrokinetic technology. Nearly a decade later, ORPC employs 25 full-time employees and has offices in Portland and Eastport, Maine and Anchorage, Alaska. It was awarded

two grants for development of the TidGen™ Power System and its components by the U.S. Department of Energy in 2010: a highly competitive \$10 million Energy, Efficiency and Renewable Energy grant and a \$900,000 STTR Phase II grant. It was named Emerging Company of the Year by the New England Clean Energy Council in 2012.

## ORONO SPECTRAL SOLUTIONS, INC.

689 Odlin Road, Bangor, ME 04401  
(866) 269-8007 • [www.mainetechnology.org](http://www.mainetechnology.org)

Orono Spectral Solutions, Inc. (OSS) based in Bangor, Maine, specializes in developing sampling materials, systems and methods for collection of trace to bulk quantities of chemical and biological species such as warfare agents and toxic industrial materials for detection and identification with commercially available optical instrumentation. In essence “We don’t make the detectors, we make them work better.” OSS’ Mission Statement is to be the world-wide leader in sampling and analysis solutions for optical detection systems.

The company was founded in 2004 and spun out of research conducted in Dr. Carl Tripp’s lab at the Laboratory for Surface Science and Technology (LASST) at the University of Maine. In 2003, Dr. Tripp was awarded a Department of Defense (DoD) contract to develop infrared based sensors for the detection of chemical and biological warfare agents in water. It was quickly realized that the research had the potential for the development of both military and commercial products. OSS is co-owned by Dr. Tripp along with University of Maine alumni, Luke Doucette, and Dean Smith and was established to provide an avenue for transitioning the university research into commercial products.

The company received its first SBIR Phase I award in 2006 and success with this grant led to a Phase II and to a larger Broad Agency Announcement (BAA) contract that were both funded in 2007. This allowed OSS to invest heavily in infrastructure and personnel to support DoD research and development projects. By March 2008, OSS had increased in size to six employees and to accommodate this expansion, opened a 3,000 square foot business at 983 Stillwater Avenue in Old Town, Maine. Continued programmatic success increased the number of employees to 11 and this required that OSS expand its laboratory space once again. In November 2011, OSS moved its business to its present location at 689 Odlin Road in Bangor, Maine. The current 6,400 square foot facility was designed for research, development, and prototyping and has provided the necessary space for current operations while also providing space for future research and/or light manufacturing growth.

## INSTITUTE OF DISABILITIES RESEARCH AND TRAINING (IDRT), INC.

11323 Amherst Avenue, Wheaton, MD 20902  
(301) 942-4326 • www.idrt.com

Located in Wheaton, Maryland, The Institute for Disabilities Research and Training, Inc. (IDRT) is a woman-owned small business and approximately one-third of the staff is deaf, hard of hearing and speech-impaired. During the past 27 years, IDRT has been dedicated to improving the lives of people with disabilities, their families and service providers through research and development, training, technical assistance and advocacy. Although the company's work benefits people with all disabilities, they specialize in research and development efforts on behalf of adults and children who are deaf and hard of hearing.

IDRT has particular expertise in the development of American Sign Language (ASL)-accessible software and other assistive technologies that benefit these populations, in research on speech recognition, telecommunications, and closed captioned television, and in accommodations for ADA compliance. During its existence, the firm has developed more than 70 software products for the benefit of deaf people and others with communication challenges.

Through various SBIR awards, IDRT has been able to utilize the expertise of its staff and launch several successful products. In May of 2009, the AcceleGlove™, a patented sensor-enabled glove that is used to translate the gestures of sign language into screen-based text, was introduced. This NSF-funded SBIR product has been sold to such entities as the U.S. Naval Academy, Disney, Intel and General Motors for robotics, telemedicine, rehabilitation, surgery and military applications. Another SBIR grant, through NIDRR, supported the development of myTTY 3.0, a soft TTY solution, which has been used by organizations such as the Pentagon, the U.S. Postal Service, Homeland Security, the New York Mets and Wells Fargo Bank. Other NSF SBIR grants have launched the Sign Generator (for English-to-ASL translation) and are currently funding incorporation and integration of 3-D camera and AcceleGlove™ technologies for ASL-to-English translation.

Last, an NIDRR SBIR-funded software tool, ASL Clip and Create, enables users to easily create their own ASL educational materials. ASL Clip and Create has been so successful that it has been upgraded five times and is used throughout the US, Canada and parts of Africa. myASLTech.com is a new online initiative to house these programs and other ASL tools to increase access and ease the burden on service providers and family members of deaf people for generating and sharing their own ASL-translated materials, media and quizzes.

## SYNTONICS, LLC

9160 Red Branch Road, Columbia, MD 21045-2002  
(410) 884-0500 x201 • www.syntonicscorp.com

Syntonics is a technology-driven manufacturing company whose mission is to solve problems in the radio frequency (RF) domain to meet customer needs—although in many cases the firm’s customers didn’t realize what they needed until Syntonics invented and presented an innovative solution to their problem.

Syntonics’ business model is to use SBIR/STTR projects and university partnerships to create new products and develop technologies, which can then be commercialized. The company’s first two product lines, FORAX RF-over-Fiber communications systems and Handheld Tactical Antennas were conceived, developed and commercialized by the team of Bruce Montgomery, Doug Crowe, Gary Bruce and Ed O’Malley. Since introducing FORAX in 2005 and tactical antennas in 2007, Syntonics’ sales have averaged a compound annual growth rate of 26 percent and 2013 sales are forecast to increase by this average.

Company growth has added 33 high-technology jobs to Maryland and Ohio’s economies, plus an estimated 10 full-time equivalent jobs at suppliers. From its first SBIR proposal, Syntonics’ business model has emphasized teaming with universities. Syntonics has funded almost \$2 million of university research since 2002.

## BEACON INTERACTIVE SYSTEMS, LLC

One Alewife Center, Suite 210, Cambridge, MA 02140  
(617) 453-5503 • [www.beaconinteractive.com](http://www.beaconinteractive.com)

Beacon's software products support people in performing their work so that organizations can more effectively and efficiently accomplish their mission. Beacon matches Operational Business Needs and Workflow Processes with innovative implementations of Collaborative Software Technology.

Founded almost 19 years ago in a rent-controlled apartment on Beacon Street, this successful small business has worked with customers in a wide variety of industries. Beacon's clients have ranged from MetLife and Olympus to Hunt Manufacturing as well as spanning both consumer and investment focused Internet startups. Regardless of industry, customer, or function, Beacon has always provided high-quality solutions that improve operational efficiency and increase competitive advantage through strategic visibility. Beacon has consistently evolved how it develops and manufactures its technology offerings. This has been a critical component of remaining competitive in a crowded market and being able to win contracts that might otherwise go to large companies. External validation of this statement is evidenced by Beacon's 2001 participation in Anderson's Emerging Technology Tour. Beacon, along with two other companies were selected to present to top Anderson leadership because of the significant and innovative technology offerings from these three companies. Besides Beacon, the other two companies were Sun Microsystems and IBM's Wireless Division.

Beacon's persistence in technology evolution has resulted not only in changes in software manufacturing processes but also changes in base technology platforms. Beacon's current technology capabilities include both the Open Source Ruby on Rails platform as well as the Windows .NET platform. In terms of the company's manufacturing process, Beacon has moved from building products using complex and time-consuming waterfall approaches to a streamlined Agile Development methodology. The company's origins were in the non-federal, non-defense related private sector. One particularly successful endeavor was providing Integrated Account Management to the North American division of Olympus. As an 18 person company, the firm was bidding against a much larger rival, Siebel Systems. Olympus chose Beacon to provide their 500 field sales representatives with integrated Account Management training. While this and many other similar engagements were successfully accomplished by Beacon, with the economic downturn in the software industry in 2002, the private sector market became a much more difficult place for the company to operate. At this point Beacon engaged with the Navy SBIR Program. By leveraging private sector experience and core expertise in operational cost-savings innovation, the company won its first SBIR contract in 2002. The topic was targeted at supporting maintainers keeping deployed Navy ships mission

ready. From this initial experience, Beacon worked closely with the end user community. Beacon's SBIR strategy has been to focus in on and only pursue related SBIR topics in order to create not only deeper subject knowledge but also well-focused solutions. Since engaging with the SBIR Program, Beacon has won several Navy SBIR Phase I, II and III contracts. One of our Phase III Transitions is a product called eTagOut and is the subject of this nomination.

## AURORA FLIGHT SCIENCES CORPORATION

4 Cambridge Center, 11th Floor, Cambridge, MA 02142  
(617) 500-7370 • www.aurora.aero

Aurora Flight Sciences is a leader in the development and manufacturing of advanced unmanned systems and aerospace vehicles. Aurora is headquartered in Manassas, Virginia, and operates production plants in Bridgeport, West Virginia and Columbus, Mississippi; and a Research and Development Center (RDC) in Cambridge, Massachusetts.

Aurora is committed to research, testing and verification in a hands-on environment staffed by exceptionally talented people. It is understood that risk must be accepted.

Aurora's core values include:

- The integrity of data presented is essential
- A sense of urgency and a bias towards action must be maintained
- The focus should be on fixing problems rather than blame
- The merit of ideas is more important than their originator's position in the company
- Personal accountability must be instilled throughout the organization
- Leadership is best done by example

The personal commitment of Aurora's specialized engineers, programmers, managers and technicians are a reflection of the quality we offer our customers and stakeholders.

The mission of Aurora's Research sector is to perform basic and applied research supporting Aurora's core business and product development efforts in the areas of unmanned aircraft systems, small space systems, and other flight vehicles. The RDC supports Aurora's other business sectors, as well as serving the needs of external clients as diverse as NASA, the DoD and major government contractors.

Another key aspect of the RDC's mission is to further research cooperation with the Massachusetts Institute of Technology (MIT) and other universities. Aurora's synergistic relationship with MIT gives access to the innovative ideas coming from MIT faculty and students, and joins that with Aurora's proven ability to bring technologies from the lab into actual systems that can address customer needs. Aurora's Research sector is maturing technologies across a wide range of disciplines. We focus on areas such as propulsion, guidance and control, fault-tolerant avionics systems, as well as cutting-edge new vehicle designs. The research division is also developing innovative subsystems and components to integrate into these technology markets. In October 2007, Aurora acquired Payload Systems Inc. (PSI), a company providing science and engineering services for spaceflight and terrestrial applications since 1984. PSI's programs and capabilities were merged with those of Aurora's Research sector, further expanding and complementing the group's portfolio of technologies and expertise.

## GS ENGINEERING, INC.

47500 US Hwy 41 , Houghton, MI 49931  
(906) 482-1235 x102 •www.gsenvironment.com

GS Engineering, Inc. is an agile small business focused on design and analysis services, product development, instrumented field testing, and technology integration including lightweight structural systems and metal matrix composites. Incorporated by Glen Simula in 2001 and was the inaugural spin-off company under the Michigan Technological University's Smart Zone program. GS Engineering was founded with the purpose of applying advanced technology developed during Simula's 19 years at the Keweenaw Research Center (Michigan Technological University), to solve engineering problems primarily focused on military and commercial vehicles. GS Engineering employs more than 60 people of the following disciplines: mechanical engineers, electrical engineers, metallurgical engineers, test directors, test engineers, mechanical designers, engineering interns, technicians, mechanics, clerical and support staff. The collective team background encompasses professional expertise in the fields of military vehicles, professional motorsports, architectural and structural design, commercial trucks and chassis, consumer automotive, aerospace, off-highway and construction equipment and high volume manufacturing.

Functioning as a prime contractor to the U.S. Department of Defense and its major military commands, or as a subcontractor to OEM, GS Engineering has successfully executed over 470 government and commercial contracts ranging from single-component design through total (100 percent) responsibility for ground-up vehicle design, often with concurrent analysis and simulation efforts. GS Engineering has received and successfully completed 14 Phase I, 9 Phase II, and 9 Phase III SBIR awards for technology development and propelling economic growth through commercialization.

This work has occurred on a wide range of vehicle platforms including: LTATV, HMMWV, MECV, FMTV, MRAP (Cat I & Cat II), MATV, JLTV, EFV, Commercial Class 8 Trucks, Rough-terrain Forklifts, and the A-10 Thunderbolt II. GS Engineering also has extensive experience with the development of mine roller technologies and tracked vehicles such as the EFV, M1 Abrams Main Battle Tank, Bradley IFV, and Tracked Excavators. Testing and validation efforts are efficiently executed utilizing our 500+ acre purpose-built test facility, supported by other local test facilities, and our onsite data acquisition teams. With this breadth of vehicle systems knowledge and in-house expertise, GS Engineering brings a mature level of innovation and a unique design approach to solving complex engineering problems across multiple industries.

Quality and customer service has been and always will be a key metric in GS Engineering's value to its customers. The firm continuously strives for 100 percent customer satisfaction through on-time delivery and adherence to quality standards. GS Engineering's production, manufacturing and quality team functions in a dual role, supporting prototype and product development teams, and introducing Design for Manufacturing (DFM) processes early in the design cycle. GS Engineering is ISO 9001:2008 compliant and employs a 6 $\Sigma$  Black Belt to oversee quality control processes.

## CPSI BIOTECH

2 Court Street, Owego, NY 13827  
(607) 687-8701 • [www.cellpreservation.com](http://www.cellpreservation.com)

CPSI Biotech is a research and technology development company founded in 2003 that specializes in low temperature medicine and medical devices. CPSI's corporate headquarters is located in Owego, N.Y. The company is currently pursuing the development of several different technologies focused in the use of low temperatures to eradicate tumor tissue. CPSI has developed a new medical device that uses Supercritical Nitrogen and unique catheters for the cryoablation of targeted tissue. CPSI is also developing complementary cryoadjuvant compound technology (cryosensitizers) to improve the efficacy of cryoablation with a clinical trial using one such agent planned for the near term. Finally, CPSI is actively studying the specific stress pathways activated during tissue digestion and normothermic (37°C) cell bioprocessing in an effort to develop new agents (Cellguard) to improve the utilization of delicate cells such as human stem cells. In addition, CPSI Biotech has a strong link to SUNY-Binghamton (Binghamton University) and regularly hosts undergraduate laboratory sessions where students can work directly with unique cell types such as human induced pluripotent stem cells (iPSCs) as well as interact with the company officers and scientists to learn more about careers in biotechnology. As one of the first biotechnology companies in the southern tier of New York, CPSI also serves as a resource for individuals eager to exercise their entrepreneurial spirit and apply for SBIR grants. Finally, all three individuals nominated for this award serve on a regular basis on NIH SBIR review panels.

## ECOVATIVE DESIGN, LLC

70 Cohoes Avenue, Green Island, NY 12183  
(518) 273-3753 • [www.ecovatedesign.com](http://www.ecovatedesign.com)

Ecovative adapts living systems to create environmentally responsible materials and products to help people live in harmony with the rest of planet Earth. Ecovative has developed a low embodied-energy, compostable material that is literally grown into custom shapes and competes with petrochemical based plastic foams in cost and performance. Today, Ecovative is using this technology to grow Mushroom® Materials and has partnered with Sealed Air to scale the sales, distribution and manufacture of Restore™ Mushroom® Packaging. Our customers include a number of Fortune 500 companies that range from computer manufacturers (Dell) to furniture companies (Crate & Barrel), who sought to reduce their environmental footprint without adding new costs. Every plastic foam packaging part we replace means fewer end up in a landfill for an eternity.

Ecovative is challenging the current manufacturing paradigm of synthetic materials. Rather than using high-embodied energy processes and finite resources to manufacture materials, our company takes advantage of regionally sourced farm waste to grow high-performance products. Ecovative's current biomaterials comprises (changed words here) lignocellulosic agricultural waste bound cohesively into designated shapes by filamentous fungal tissue (mycelium), analogous to traditional composite fillers and binders, respectively. The resultant biomaterials offer renewable, safe alternatives to traditional plastic foams, while remaining cost and performance competitive. The ability to sell these products at parity with synthetics is related to the platform's open-loop production process. Unlike plastics, which are coupled to the price of fossil fuels, the Mushroom® Materials can grow from farm wastes like corn stalks or seed husks. The ability to grow, rather than manufacture, these materials also reduces cost as the products self-assemble using the calories in the farm waste for all energy needs. Ecovative's current platform is capable of tuning the biomaterials' mechanical, water, and thermal properties by modulating the agricultural filler (substrate) and fungal tissue to compete with a wide range of conventional materials. Ecovative's long-term goal is to become the first industrial age company to have a net positive impact on the planet's ecosystem. This means eliminating the negative environmental impacts of production through minimizing energy consumption and CO2 emissions. Producing a product that will sequester carbon and deliver nutrients back to the Earth when composted is paramount. Ecovative is a triple bottom line company. That means we measure our success based on positive impacts to the planet and the people living on it, while still running a sustainable and profitable business. The focus on our customers' needs, coupled with Mushroom® Material's cost competitiveness with plastics, gives our business a sustainable competitive advantage to keep scaling these environmentally preferable materials and products.

## PROTOCHIPS, INC.

616 Hutton Street, Suite 103, Raleigh, NC 27606  
(919) 341-2612 • www.protochips.com

Protochips, Inc. is a rapidly growing, venture-backed, profitable, international early-stage company that provides innovative analytical tools for materials and life sciences research. These tools enable targeted research and development of materials on the nano-scale. In 2005, Protochips received a Phase I SBIR grant to explore the feasibility of a microfabricated sample support with integrated capabilities for in situ experimentation within an electron microscope. Despite strong market need for an integrated platform, the tools used to observe and the tools used to work with nano-scale materials continued to be separate. Using proprietary technology, Protochips addressed this compelling market need by transforming the most widely used tools in nanotechnology—electron and optical microscopes—from just cameras to complete nano-scale laboratories. In 2006, after the success of the Phase I grant, Protochips was awarded a Phase II grant for the development of an in situ prototype. The company also won an Idea Fund grant to support commercialization and received assistance from the Technology Entrepreneurship and Commercialization Program, an NSF-funded program, to develop the business model and infrastructure for commercializing the product. During the course of Phase II Protochips received a DOE funded market assessment that proved invaluable and then participated in the DOE Dawnbreaker commercialization assistance program. After completing the prototype development, Protochips entered into Phase III and secured venture funding from a syndicate of angel groups in Virginia, North Carolina and Florida, including the Piedmont Angel Network, Emergent Growth Fund, The Jefferson Corner Group, and Wilmington Investor Network, along with two angels, Mr. Kulkarni and Mr. Zapata. By building a strong board and management team, Protochips was able to successfully commercialize the technology developed in the Phase II grant into the Aduro in situ system, leading to several million in initial sales worldwide to early adopters and lead users. There have now been more than 200 publications by university, national lab and corporate materials researchers using the system. The product is now entering into the early majority phase of its life cycle and seeing rapid growth in sales. In 2008, following the success of the Aduro project for materials heating and electrical studies inside the electron microscope, Protochips was granted a Phase I grant for the feasibility of a liquid flow cell for biological imaging with electron microscopes. After very successful results from Phase I, Protochips was awarded a Phase II award to refine and commercialize the “Poseidon” technology, which is now entering into its initial commercialization phase. Protochips empowers scientists across the world with innovative tools that enable the study of materials for life and materials sciences. Protochips enables the development and commercialization of revolutionary new nano-scale materials that will transform batteries, medicine, energy production and many other technologies and products coming out of government and corporate research laboratories.

## RICHARD FLAKE

Air Force Commercialization Readiness Program  
Air Force Research Laboratory (AFRL/XPP)  
1864 4th Street, Bldg 15 Room 225, Wright-Patterson AFB, OH 45433  
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Since 2006, Richard Flake has managed the Air Force Small Business Innovation Research (SBIR) Commercialization Pilot Program (CPP) and now the Commercialization Readiness Program (CRP) in the Plans and Programs Directorate, Industrial Partnership Division (XPP). He designed and stood-up a pilot program, which year over year has made great strides and demonstrated successes in accelerating the transition of SBIR technologies beyond Phase II. Under his leadership, the CRP has transformed and re-engineered Air Force processes, dedicated personnel to accelerating the transition of SBIR technologies developed for operational application, and strengthened awareness and participation by key stakeholders within industry and Air Force programs for insertion into Programs of Record.

Richard Flake began his professional career more than 25 years ago with the Air Force supporting the Airborne Warning and Control System (AWCS) program. Most of his professional career has been in research, development, and engineering, in a myriad of scientific research, program management and engineering disciplines at the Air Force Research Laboratory (AFRL) located at Wright Patterson Air Force Base in Ohio. Flake served as the Air Force liaison to the Defense Advanced Research Program Agency's (DARPA) Dual Use Technology Reinvestment Program (TRP) and subsequently managed the Air Force's dual use science & technology program.

## MBF BIOSCIENCE

185 Allen Brook Lane, Ste. 101, Williston, VT 05495  
(802) 288-9290 • [www.mbfbioscience.com](http://www.mbfbioscience.com)

MBF Bioscience designs quantitative microscope imaging systems for counting cells and quantifying the neuronal structure of the central nervous system at the cellular level. Microscopic analysis yields important information about the function and pathology of the nervous system, integral to the development of novel treatment strategies for brain injury and disease. MBF systems have aided in many important discoveries for both basic research and drug discovery in fields such as autism spectrum disorder, traumatic brain injury, Alzheimer's, Parkinson and Huntington's diseases. In addition to neuroscience medical research, MBF products are used extensively in stem cell, lung, kidney, reproductive, cardiac, genetic and toxicology research.

MBF Bioscience received its first SBIR grant in 1989. Since then, the company has grown to 39 employees today, and has generated more than \$100 million in revenues. As one of the most respected high-tech companies in Vermont, MBF has been able to recruit and retain employees locally and nationally by offering a stimulating work environment and paying well above the median income ranges for their region. MBF earned the distinction as one of the Best Places to Work in Vermont in 2007, 2009 and 2010. The award honors employers who strive to create better workplaces for their employees, in turn benefiting the state's economy. In 2007, the U.S. Small Business Administration presented MBF President Jack Glaser with the Vermont Small Business Person of the Year award. Glaser was selected for his outstanding leadership related to his company's staying power, growth, sales, innovation, and community contributions.

As a member of the local economy, MBF supports many local charities, schools and associations. In 2012, MBF received the Ben Blood award for continued support of the Chittenden Emergency Food Shelf. MBF employees give back to their communities through coaching, mentoring, tutoring and volunteering – all supported by the company.

## HARMONIA HOLDINGS GROUP, LLC

2020 Kraft Drive, Ste. 1000 , Blacksburg, VA 24060  
Phone: (540) 951-5900 • www.harmonia.com

Harmonia Holdings Group, LLC is a small, disadvantaged, woman-owned, qualified HUBZone technology company building cutting edge technology solutions to today's problems and providing Information Technology (IT) services, staffing and management.

Harmonia's technology portfolio includes tools for:

- Software Lifecycle Acceleration tools for Agile to CMMI Development, Software Modernization, SOA Development, etc.
- Collaboration tools for Rapid Idea Transfer, High Performance Computing, Technology Transfer Apps, etc.
- Compliance tools for IV&V, and Security C&A.
- Intelligence & Decisions tools for Large Data Handling and Automated Battle Management.
- Payment Processing tools.
- Connected vehicle simulation & traffic control tools for Transportation Systems

Harmonia's technologies dramatically impact the way software is developed for complex, sophisticated systems. As an example, Harmonia's game changing cashless payment technology is currently being used on the Littoral Combat Ship (LCS) and targeted next for the USS Zumwalt (DDG-1000) class destroyer, and is estimated to save the Navy and taxpayers \$70M over its lifecycle by conservative estimates.

Harmonia has worked with many federal agencies such as the SBA, USDA, Air Force, Army, IRS, Navy, NASA, NIH, Missile Defense Agency, Federal Aviation Administration, DARPA, ONR, OSD, and the Departments of Energy and Transportation as well as large prime contractors such as General Dynamics, Raytheon, Northrop Grumman, Lockheed Martin and SAIC. Harmonia's contracting vehicles include: GSA IT Schedule 70, Navy IDIQ, SeaPort-e, Alliant GSA, DESP II, eFast, and Warfighter FOCUS.

Harmonia has had successful Phase III transitions of past SBIR projects to both government and private sectors, and has an impressive "commercialization index" of 80 – an extremely high rating which represents dollars received in Phase III contracts and SBIR commercialization efforts. Harmonia has previously received a 2007 Tibbett's Award, was named one of the Smart100 in Washington, D.C. in 2009, and has ranked four years in a row (2009-2012) on Inc. magazine's list of fastest growing privately held companies.

## JOE HENNESSEY, PH.D.

NSF SBIR/STTR Senior Adviser, 4201 Wilson Blvd. Room 575.17, Arlington, VA 22230  
(703) 292-7069 • [www.nsf.gov/eng/iip/sbir](http://www.nsf.gov/eng/iip/sbir)

Dr. Joseph Hennessey has more than 17 years of federal service, almost entirely in support of the National Science Foundation's (NSF) Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs. He has invested years of effort in implementing SBIR/STTR policy, managing NSF SBIR/STTR programs and guiding SBIR/STTR applicants. Hennessey has demonstrated significant leadership and innovation while serving as the Senior Adviser of NSF SBIR/STTR programs. Hennessey's many contributions and achievements include:

- Development of a unique Fraud, Waste, and Abuse (FWA) prevention program at NSF in concert with the NSF Inspector General's Office to minimize FWA.
- SBIR 2.0—Played a pivotal role in implementing several components of the SBIR 2.0 Program at NSF. This included a review of streamlining the award processes, improving outreach to potential SBIR/STTR applicants, and consideration of innovative funding components (Phase IIB).
- Expansion of the SBIR/STTR applicant pool—Hennessey has been an outspoken advocate to expand the participation of women, minorities, and underserved states and implemented a program at NSF to expand underrepresented participation.
- Outreach - Worked tirelessly to share his experience with groups from around the country to ensure the continued success of the National Conferences.
- National SBIR/STTR Policy—Hennessey has been an instrumental part of implementing the new SBIR/STTR Reauthorization at the National Science Foundation.
- Evaluator and Judge—Hennessey has always given back to the Innovation Community and has regularly been called upon by SBA to tap into his knowledge and expertise in serving as a judge to evaluate and help select awardees for national innovation awards such as the Tibbetts and SBIR Hall of Fame.

Joe Hennessey is the "face" of NSF's SBIR/STTR program. His partnership style effectively leverages SBIR/STTR activities both inside and outside of NSF. He leads nine SBIR/STTR program directors. During the semi-annual return-without-review (RWR) process, Hennessey shields program directors from excessive calls and inquiries by managing RWR processes himself. Joining NSF in 1996, Hennessey currently serves as senior adviser in the Industrial Innovation and Partnerships Division within the Directorate for Engineering (ENG). Before joining NSF, he served for 27 years at Armstrong World Industries, culminating in the position of vice president and director of innovation. Hennessey received his Ph.D. in Organic Chemistry from the University of Maryland and is a member of the Industrial Research Institute (IRI), the Center for Innovation Management Studies (CIMS) at North Carolina State University and a trustee of Millersville University.

## TIZOC S. LOZA

Northrop Grumman Corporation  
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Tizoc S. Loza is the corporate program manager for Northrop Grumman Corporation's Mentor-Protégé (MP), Small Business Innovation Research (SBIR), AbilityOne and Historically Black Colleges and Universities/Minority Institutions (HBCU/MIs) programs. Loza possesses more than 25 years of aerospace industry experience and has held increasingly responsible positions in procurement, contracts and small business programs. He is responsible for corporate strategy development and implementation in the above initiatives, as well as the oversight of compliance and training for MP collaborations, SBIR programs and HBCU/MI partnerships.

Tizoc S. Loza is an active member of several academic boards and has been recognized by the White House Initiative for his support and participation with HBCUs. Under Loza's tenure, Northrop Grumman has received numerous Department of Defense Nunn-Perry awards for the Mentor-Protégé Program. Loza has personally received the very prestigious "Fifty Powerful Men in Business" award presented by The Minority Enterprise Executive Council. He also serves as Northrop Grumman's customer liaison and government relations representative to ensure these initiatives are run with consistent and efficient program management.

# SBIR Hall of Fame



## AEROVIRONMENT, INC.

181 W. Huntington Drive, Ste. 202, Monrovia, CA 91016  
(626) 357-9983 • www.avinc.com

From AeroVironment's beginnings in 1971, the company realized that securing the future would require more than clean power to drive transportation needs, protect infrastructure and sustain resources; it would require that inexhaustible power...human power. Since then, AeroVironment's achievements span from building the world's first effective human-powered and solar-powered airplanes to developing the world's first modern passenger electric car. The same pioneering spirit that drove the company's founder, still impassions a whole new generation of AeroVironment innovators.

Today, AeroVironment is empowering the 21st Century warfighter with an integrated and interoperable family of small unmanned aircraft systems (UAS) and the 21st Century commuter with home and public electric vehicle (EV) charging systems with vision, persistence, passion, agility and speed to meet customers' continuously evolving needs and to transform the lives of many.

As a result, the growing family of products and services from AeroVironment provide truly different and remarkable solutions, critical for the well being of our nation and our society. Aerovironment's small UAS provide cost-effective, reliable situational awareness that gives our armed forces and allies the power to reconnoiter and even target the dangers ahead. While AeroVironment's practical and comprehensive EV charging solutions, like home chargers and fast chargers, are paving the way for a safer, cleaner and brighter world.

At AeroVironment, it's the power to protect and serve....to charge and go...to innovate and transform. But most of all, it is 40 years of Human Power and giving customers the power to win.

## AUTONOMOUS TECHNOLOGIES CORPORATION

2501 Discovery Drive, Orlando, FL 32826  
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Autonomous Technologies began operations as a small SBIR-involved R&D company developing laser radar (LADAR) for space-borne tracking applications with the support of NASA and what at the time was known as SDIO—Strategic Defense Initiative (Star Wars) – now MDA (Missile Defense Agency). Principals of the firm radically shifted the use of the technology for medical application, specifically to the development of equipment for photorefractive keratectomy (PRK) laser surgery in which a weak laser beam is used to remove tiny layers of tissue and sculpts the cornea to improve sight. First-generation systems for PRK surgery required that patients’ eyes remain still, but the Autonomous LADARVision system enabled the tracking of a patient’s slightest involuntary eye movement. Now operational all over the world, Autonomous Technologies SBIR work enabled upgrade of the entire LASIK industry to eye tracking, flying spot shaping and customized surgery. In May 1999, Autonomous Technologies was acquired by Summit Technology. Summit was itself sold to Alcon Inc. during the summer of 2000. The company also established a partnership with CIBA Vision, a subsidiary of Swiss drug maker Novartis, to commercialize its technology.

## BIOGEN-IDEC

133 Boston Post Road, Weston, MA 02493  
617-679-2000 • www.biogenidec.com

In November 2003, Biogen Inc. of Cambridge and Idec Pharmaceuticals Corp., both SBIR firms, completed their \$6.4 billion merger in a stock swap that created at the time the nation's third-largest biotech firm. The firm is now named Biogen IDEC Inc. The company develops, manufactures and commercializes novel therapeutics in the areas of neurology, oncology, immunology, cardiopulmonary and hemophilia in the United States and internationally. The company's marketed products include AVONEX for the treatment of relapsing multiple sclerosis (MS); RITUXAN for treating relapsed or refractory, low-grade or follicular, CD20-positive, and B-cell Non-Hodgkins Lymphoma (NHL); TYSABRI to treat relapsing MS; and FUMADERM for the treatment of severe psoriasis. Its products under development consist of BG-12, a Phase III clinical trial product for the treatment of MS; Humanized Anti-CD20 MAb, a Phase III clinical trial product for the treatment of rheumatoid arthritis and lupus nephritis; Lixivaptan, a Phase III clinical drug for the treatment of Hyponatremia; Daclizumab, a Phase II monoclonal antibody that is being tested in relapsing MS; and Fampridine, an oral compound as a treatment to improve walking ability in people with MS. The company's products under preclinical stage comprise BIIB014, Ocrelizumab, Neublabin, LINGO, and BART for neurology; Hsp90 Inhibitor, GA101, Anti-IGF-1R, Volociximab, Anti-CRIPTO, RAF Inhibitor, and Anti-Fn14 for oncology; Anti-TWEAK, Anti-CD40L Fab, and Anti-FcRn for immunology; and Long-acting rFactor VIII for hemophilia. The company has collaboration agreements with Neurimmune SubOne AG; Cardiokine Biopharma LLC; UCB, S.A.; Swedish Orphan Biovitrum AB; Facet Biotech Corporation; Vernalis plc; and Schering AG.