

**Date:** March 28, 2011  
**From:** Douglas Limbaugh  
CEO  
Kutta Technologies, Inc.

**Subject: Written Statement Regarding Small Business Innovation Research Program Testimony**

**To:** Honorable Congressman Ben Quayle and other SBIR Reauthorization Committee Members

Thank you for selecting me to provide a written statement on behalf of Kutta Technologies, Inc. regarding the SBIR Program. The following written statement provides a summary of Kutta's history and how the SBIR program significantly changed our small business for the better. The second part of this testimony summarizes how Kutta's SBIR innovations have contributed to the nation, our warfighters, coal miners, and first responders. The last part of the statement identifies several items in particular that can make a great program even better.

In June of 2001, my business partner Matthew Savoca and I quit our engineering jobs at Honeywell to start Kutta – an aviation engineering consulting business. We both put \$5,000 into the company to buy used computers, monitors, printers, chairs, etc., and two very cheap four-legged plastic desks – the kind that barely have enough strength to hold the old desktop monitors of that day. We did not start in the garage. Instead we moved into a small 10 foot by 10 foot bedroom in my house. I did not charge the company rent because we could not afford it. Within a couple of weeks we landed our first consulting job. Things were going well, but we all know what happened on September 11, 2001. Needless to say our nation went through a rough patch and so did the aviation business. Also, outsourcing engineering services overseas by large American companies started to become a fad and slow the rapid growth of our consulting company. As many small entrepreneurs do in the United States every day, we learned from these tough lessons, adapted and overcame adversity. We determined that we needed more diversification in our company. We decided to become a product-based business. We wanted to control our own destiny and we wanted to create innovative technology that would make an impact in America and around the world – we turned to the SBIR program. Since 2001, we grew our two person company to nearly 45 employees. Because of the success we were having in the SBIR program, we decided to sell the consulting business to focus on our SBIR products. Since 2003, Kutta has won 13 Phase I grants and 11 Phase II grants for a total of \$8.5M in funding. Additionally, we have received \$19.4M in DoD sales and product commercialization of these SBIRs. We currently provide direct employment to 24 engineers and scientists with an average yearly salary in excess of \$100K a year, with full health-care benefits, 401(k), and profit sharing. In 2011 we achieved one of our strategic goals of winning a prestigious Small Business Association (SBA) Achievement award, the SBIR Tibbetts Award, for excellence in achieving the mission and goals of the SBIR program.

However, achieving this level of success was not without its challenges. After several unsuccessful attempts at writing a winning SBIR proposal, we became aware of a state program from the Arizona Department of Commerce called the AZ FAST program. The program allowed us to hire a grant writing specialist who helped us write better proposals and win SBIRs. In June of 2003, we won our first SBIR Phase I grant from the U.S. Army. The SBIR started as a Phase I in 2003, subsequently transitioned to Phase II, and is now in Phase III. This one SBIR alone has generated over \$4 million dollars in commercial sales and over \$8 million in Department of Defense (DoD) sales. It will have even more of an economic impact when it becomes inserted into a DoD Program of Record (POR) in the near future.

Besides the significant economic impact, the technology will revolutionize the way the U.S. Army utilizes unmanned aerial drones. With our new Bi-Directional Remote Viewing Terminal (BDRVT) technology,

front-line warfighters will be able to safely take control of an unmanned aerial system (UAS) and task the UAS to survey roads and borders for potential ambushes and Improvised Explosive Devices (IEDs), track enemy combatants while they flee a scene, and provide over watch capabilities to ground troops - all with a few simple inputs on a touchscreen panel. All of this will be demonstrated in the Army's manned unmanned system integration concept (MUSIC) demonstration in September of this year. It is not hard to envision this simple and easy-to-use device being used not only by our nation, but also by allied nations and along our borders – another commercialization avenue that we are exploring.

This technology would not have become a reality if the U.S. Army's Aviation Applied Technology (AATD) did not have the vision for the product. With a Phase I and Phase II SBIR from AATD, we worked diligently to shape the vision and build a prototype to show that it was possible. It then took the Program Management Unmanned Aerial Systems (PM UAS) division of the Army to recognize the innovation and provide the funding to insert it into the UAS war fighting machines. This SBIR did not fall into the "valley of death" (the struggle to bring a product to market after a SBIR Phase II) – the new, highly-competitive, Commercialization Pilot Program (CPP) prevented that. MILCOM Venture Partners and the PM SBIR office within the DoD provided the bridge funding to move the product from a Phase II prototype into a mainstream product and reduce the risk of further procurement by PM UAS. That is, the CPP provided the infusion of funding to refine the product and reduce the risk for acquisition into the Army's supply chain. This was a winning program for everyone. The Warfighter receives a new innovation, the taxpayers save money by selecting Kutta instead of a large prime contractor, Kutta employs engineers, and our employees thrive on creating the innovation – not to mention the fact that it allows the Army to break the stove-piped and proprietary nature of many military systems. This is a success that we share with our nation, the taxpayers, and our Army sponsors; for without them we would not be here today.

Furthermore, our enemy's tactics and creativity are unencumbered by the fair and formal procurement found in America, and our enemy's tactics can be very disruptive. Our enemies are becoming more adept at utilizing commercial off the shelf (COTS) technologies (e.g. cell phones to explode IEDs) and our defense budgets are shrinking. It is a known fact that small, entrepreneurial companies can innovate much faster than the large business. The DoD budgets may shrink, but our nation will still need ways to quickly adapt to our enemy's ever changing tactics. Therefore, to counter the fast-moving and evolving tactics of our enemies, I believe the DoD needs the SBIR program more than ever to out-innovate our enemies in a cost efficient manner.

I am also compelled to discuss another success story that has even much more far ranging impacts throughout the world than Kutta's UAS controller technology. As many of you may recall on January 2, 2006, an underground coal blast occurred in Sago, West Virginia. After the blast, 13 miners survived for nearly two days. Eventually, all of the miners except one survivor, Randal McCloy, were overcome by poisonous methane gas. The outcome of the MSHA investigation showed that those miners could have survived if they had a two-way communication device and if rescuers had known where the miners were located. The U.S. queried the DoD for technology that could fill this capability gap in the mining industry. To our knowledge, we were the only company in the United States working to solve a similar subterranean communication problem for the Army. We had also just completed a successful SBIR Phase I grant and were patiently waiting to receive our Phase II award – a wait of about 6 months. We were between the Phase I and Phase II contract stages, and we had no funding. However, the Mine Safety Health Administration (MSHA) wanted to conduct an independent survey of underground communication technology. They selected Kutta and nearly 10 other technologies for their evaluation. We were confident that our technology would work, and luckily we had enough of our own funds to refine our Phase I prototype three weeks prior to the scheduled MSHA evaluation. The results of MSHA's independent test showed that our \$70,000 SBIR Phase I prototype exceeded everyone's expectations. We demonstrated wireless two-way, non line-of-sight (i.e. around corners), voice communication over two-miles in the underground mine. This was over six times further than any other wireless communication technology

tested and the signal could have traveled further. In fact, our production quality radios today can provide wireless, non-line of sight, two-way communication in a mine at over six miles. After these tests, MSHA realized that post-accident communication and tracking was possible. These results prompted a call from the late Congressman George Norwood. Congressman Norwood was acting as the Chairman of the House and Education Labor Committee at the time and was excited about our technology. Subsequently, Congress passed the MINER Act and President Bush signed it into law. The MINER Act appropriated \$10 million dollars to the National Institute of Occupational Safety and Health (NIOSH) to foster research into underground mine post-accident technologies (e.g. communications, tracking, rescue chambers, etc.). Kutta worked with NIOSH to receive \$2.1 Million in funding to transition the SBIR Phase I prototype into a prototype for coal mines. The Army provided SBIR Phase II Plus funding of \$500K for a total of \$2.6 Million in funding. Although the NIOSH and Army collaboration was successful, it still only produced a prototype system for the miners. Kutta, using its own funds, spent nearly \$2 Million additional dollars to bring the product to market. To this day, we are the only MSHA approved post-accident communication device available to the mining industry. Furthermore, it is the most economical two-way wireless communication device available to the mining industry. We have received orders from the largest underground coal companies in the U.S. and are currently exporting our technology worldwide.

Moreover, last year we discovered that this technology could be used by first responders to solve challenging situations where communications is not available in high-rise buildings and subterranean environments – a large problem experienced by first responders in the 9/11 disaster. We demonstrated wireless interoperable communications to the Fire Department of New York in a subway tunnel and in a high-rise building. FDNY was astonished by the capabilities of the system. However, neither FDNY nor Kutta have enough funds to modify the mining product for the first responders, although we are both trying to find a way. Furthermore, we demonstrated the capability to Border Patrol to communicate within border tunnels and to map the tunnels on the surface. The Border Patrol agents liked the technology, but they too do not have the budget to purchase the system. Lastly, the U.S. Army's 911<sup>th</sup> Technical Rescue crew received two demonstrations of our technology and they were amazed with its ease of use and its capabilities. They have been working for nearly six months through their procurement process to purchase two of our systems. I mention these struggles to illustrate how difficult it is to bring a new product to market. Marketing and selling products takes just as much time and money as does building the prototype (Phase II Objective).

I believe it in the best interest of all SBIR-based companies, as well as those in Congress and the President, to review Mr. Glover's report on the SBIR program as recorded in his February 11<sup>th</sup> testimony. This report not only provides the quantitative justification for the SBIR program, it makes a strong case for increasing the funding for the program. When you listen to the President's State of the Union address about small business innovators, when you look at the state of unemployment in our nation, and you consider the fact that small business is the biggest employer and the largest catalyst for new innovations, the SBIR program is the program that is too valuable to fail. Why wouldn't taxpayers want a Government program that has a positive Return on Investment (ROI) and not a negative?

Obviously the SBIR program, as fathered by Roland Tibbetts, is a resounding success for our country. I firmly believe that without the SBIR program, innovation in this country would be stifled, fewer jobs would be created, and our taxpayers would be paying much more to acquire state-of-the-art military capabilities. However, just as it is good business to continuously improve a product, so should our government look to improve the SBIR program. The following are specific suggestions for consideration that I offer from first-hand experience within the program.

**Recommendation 1:** Reduce the time for award notification (win or lose) to less than 60 days for a Phase I and a Phase II SBIR.

**Rationale:** A company can make better business decisions regarding resource allocation if they know if they won or lost as opposed to waiting for months on end to find out the result. Waiting puts a financial toll on the company and an emotional toll on those employees that put their hearts and souls into writing the proposals. Giving the companies a “yes” or “no” as soon as possible allows them to make more informed decisions sooner rather than later.

**Recommendation 2:** Allow the Phase I to be recognized as a grant.

**Rational:** Allowing the Phase I to be recognized as a grant would simplify contracting and prevent lengthy negotiations regarding IP and Statements of Work. It will reduce the overhead of the contracting agency and speed the flow of money to a small business.

**Recommendation 3:** Reduce the time for contract negotiation and award to 45 days from receiving award notification of a Phase II.

**Rational:** Funding for a small startup company working under an SBIR grant is vital. Small startups have a harder time acquiring a short term line of credit or a loan from a bank. Furthermore, a Phase I grant might be the only source of income to the startup company. If the company has to wait 4 to 6 months to receive funding for the next phase, it could be highly detrimental to them. From a business perspective, time to market can be critical. Allowing the small company to build a prototype and start its marketing efforts earlier could also increase commercialization success.

**Recommendation 4:** Within the DoD, create a more centralized contracting process that allows funding to be provided to the small companies in a more expedited manner.

**Rational:** Although the SBIR program has been around since 1982, the program does not garner much affinity to those in DoD contracting departments. Many times the SBIR program is seen as a tax to them and requires them to administer a contract that they know little about or have had little training on how to handle. Having a centralized contracting team at PM SBIR to administer contracts or provide guidance to contracting officers would streamline the award process.

**Recommendation 5:** Educate contract representatives and encourage other government organizations to utilize the sole source SBIR Phase III processes to provide contract vehicles for small business.

**Rationale:** Establishing a contract with an acquisition authority in the DoD is very difficult. Therefore, commercialization with the acquisition arm of the DoD is stifled. This problem is compounded by the fact that the contracting officers in the acquisition offices are not familiar with SBIR contracts since SBIRs are mostly administered by the Research and Development of the DoD. Contract officers in acquisition inherently shy away from SBIRs because of lack of understanding and they sometimes wrongly question that a SBIR Phase III satisfies the Federal Acquisition Regulations (FARs) for competition. That leaves the contracting officers with few options: one, to not acquire the technology; two, to rebid or open the technology for other offers, which cost the government time and money; and three, find an existing contract mechanism to role the technology into. When option number three is invoked, the small business has to typically deal with a large prime contractor. Typically, these prime contractors already have an established relationship with the acquisition authorities and an existing contract vehicle is in place and the technology can be acquired. On the surface that may sound good and in some cases it works out great. However, this places a small company in a very precarious situation. That is, negotiating intellectual property, payable terms, and complex DoD contracts with multi-billion dollar companies with terms that are always more favorable to the large firms than the small one. It also introduces mark ups and overhead which cost the government more money.

**Recommendation 6:** Consider establishing a competitive SBIR Phase III program for SBIR Phase II winners that focuses on marketing only (not technical development).

**Rationale:** Most SBIR funding and the newly added Commercialization Pilot Program are still focused on technology enhancements and technology maturation. It would be useful if a competitive SBIR process was started by the Department of Commerce. The program should be open to all SBIR Phase II winners across the SBIR landscape. However, the proposal should be structured more like a sales and marketing proposal for the product – not a technically oriented proposal. Providing funds to market and advertise a SBIR-generated product would increase commercialization.

**Recommendation 7:** Within the DoD, be very careful in allowing Venture Capital based companies into the system.

**Rationale:** VC funding for primarily DoD-based SBIR companies would encourage small business to concentrate more on commercial benefits and may not be in direct alignment with DoD goals. Furthermore, large conglomerate VC firms are entrenched with the government and may work the system to have SBIR's written to focus on their company's strength rather than the innovation needed for the warfighter. It also makes it very difficult for small, startup companies to compete with VC-funded companies, and appears to defeat the intent of the SBIR program.

**Recommendation 8:** Raise the total allocation to SBIR R & D budget

**Rationale:** The SBIR program creates jobs and does so more efficiently than universities. It also creates new products - products that can be sold nationally and internationally. New products create new jobs across the workforce spectrum (e.g. accounting, shipping, manufacturing, marketing, engineering, travel, etc.). It's a no-brainer. If you want new jobs, the SBIR program will deliver. It always has and it always will because it is aligned with America's core economic principles of fair competition and free markets.

Based on our experience and based on the quantitative statistics related to the SBIR program, the program is a tremendous government success and it returns more tax revenue than is used to fund it. It also creates sustainable, high-paying jobs in critical areas of technology that make America more competitive throughout the world. A reauthorization of the SBIR program is absolutely vital for our nation to remain competitive, to provide jobs for highly-educated engineers and scientists, to invent new technologies rapidly and efficiently, and to reduce our trade deficit. I firmly support the SBIR program for all its benefits. And, if you really want to prime a job creation engine, I implore you to find a way to re-authorize the SBIR and to re-authorize it with additional funding.