The Rapid Innovation Fund Program

The Rapid Innovation Fund (RIF), created by the Defense Authorization Act of 2011, is a competitive, merit based series of annual announcements designed to accelerate fielding of innovative small business technologies into military systems. The goals for use of the funds were designed to reflect the DoD's emphasis on rapid, responsive acquisition of promising technologies that meet specific defense needs, and the engagement of small innovative businesses across the country in solving defense problems.

Specifically, NDAA language requires the DOD to target and utilize SBIR Phase II technologies for this program **"to the greatest extent practicable**". This language was included in the National Defense Authorization Act of 2012 that contains the SBIR/STTR reauthorization provisions [Appendix I] and includes major new language that indicates strong Congressional intent to improve the process of rapidly transitioning SBIR/STTR (hereafter SBIR) innovative technologies for insertion into DOD fielded systems and platforms. The law specifically states:

> "Sec. 5108: To the **greatest extent practicable**, Federal agencies and Federal prime contractors **shall** issue Phase III awards relating to technology, including sole source awards, to the SBIR and STTR award recipients that developed the technology."[1] [Emphasis added.] [Phase III is further defined as, see Sec. 5125 – "for work that derives from, extends, or completes efforts made under prior funding agreements under the SBIR program."]

The law now requires that the Secretary of Defense shall:

(A) set a goal to increase the number of Phase II SBIR contracts and the number of Phase II STTR contracts awarded by the Secretary that lead to technology transition into programs of record or fielded systems;
(B) insert incentive language from paper
(C) insert report language.

Past Congressional and DOD Phase III efforts

The RIF program is just the latest in a long series of efforts by Congress and the DOD to better utilize technologies that have been produced by R&D expenditures, and help transition those technologies to the warfighter. Since 1996, there has been a multitude of hearings, proposals and programs before Congress concerning transitioning technology at DOD, especially SBIR technology. DOD, on the other hand, has launched a number of Congressionally-sanctioned technology transition programs not focusing on SBIR such as Defense Acquisition Challenge, Technology Transition Initiative, Quick Reaction Fund and Rapid Technology Transition. DOD has almost 50 external funding programs with 20 of those programs designed to rapidly transition technology. Unfortunately, none of these programs have been as successful

[1] 15 USC 638(e)(4)(C)

as Congress or DOD would have been hoped. None of these 20 external funding programs have focused on SBIR technology.

Top DOD leadership and many agency leaders have understood the value of the SBIR programs in providing advanced technology to the war fighters faster than many traditional acquisition strategies. Yet, more can be done to improve the process.

Examples of past DOD top leadership initiatives towards improved SBIR transition and insertion include:

- Jacques Gansler, USD (A&T) wrote in his 24 February 1998 memo, *SBIR Program*, "I am requesting that you…establish quantifiable, performance-based metrics of SBIR program outcomes in phase III…"
- Dr. James Finley, DUSD-Acq. & Tech., in late 2006 declared his intention to lead improvement of DOD technology transition overall. "My duties," he said, "are to support the Secretary … with matters relating to acquisition and the integration of technology. I have three major goals: One to reduce cycle time; two, to increase competitiveness; and three to broaden communications." (Dr. Finley received the Tibbett's award in 2007 for his leadership.)
- DOD component SBIR programs – led by the Navy – have pushed down the technology transition path, securing over $21 billion in cumulative commercialization reported by over 7,500 projects since the inception of the Program. As a rough comparative indicator the direct SBIR investment over the 2000-2009 periods was $9.6 billion."[7]. In 2008 the Navy issued a report on their successes, entitled, *A Report on the Navy SBIR Program: Best Practices, Roadblocks and Recommendations for Technology Transition*, [5] in which they reported:

  > "As a whole, the Navy SBIR program has the highest transition success across the DOD and has that honor because of the dedication of the people that are involved. Nevertheless, we must continually study our processes and techniques in our desire to increase Phase III transitions and value to the Fleet." [Page IV.]

- DOD has issued guidelines to agency program managers to improve the process of incorporation of SBIR innovations into fielded programs such as:
  - *Small Business Innovation Research, Small Business Technology Transfer, Program Manager Checklist*, v02-04/29/11
  - *DOD Program Manager Tools, Using SBIR for Risk mitigation*; which states:

    > "SBIR can be employed during the Technology Development Phase for technology risk reduction, competitive prototyping and the identification of the appropriate set of technologies to be integrated into a full system. One way to derive maximum value from SBIR is to include specific award fee clauses in contract language to target and reward incorporation of SBIR technologies by prime contractors. This following is an example of appropriate language to encourage use of SBIR technology:
    > "Two percent of the total award fee pool shall be dedicated to an evaluation of success in applying technology from SBIR projects."DOD component SBIR programs – led by the Navy – have pushed down the technology transition path, securing $2.8B in Phase III contracts since 2005."

Over the past decade Congress has also recognized the value of rapid transition of SBIR innovations to the war fighters and provided specific SBIR related programs supporting such efforts. These include:

- The Commercialization Pilot Program (Section 252 of the National Defense Authorization Act of 2006, PL 109-163), which was a successful SBIR-related pilot program and resulted in the language in the new law requiring commercialization programs at other agencies [Sec. 5123].

- PL 111-84, the FY2010 National Defense Authorization Act, extended the DOD SBIR Program in the absence of Congressional reauthorization of SBIR for all agencies.
- Public Law 111-383, The "Ike Skelton National Defense Authorization Act for Fiscal Year 2011" provided the Defense Research and Development Rapid Innovation Program [Sec. 1073] "to accelerate the fielding of technologies developed pursuant to Phase II SBIR projects … to rapidly insert such products directly in support of primarily major defense acquisition programs."
- House Report 112-331, House Defense Appropriations Subcommittee creates 200 million to transition technology to be spent on SBIR and other technology transition.
- In addition to these laws, the House Armed Services Committee has created a special panel on Challenges to Doing Business with the Department of Defense. This panel has held a number of 6 hearings around the country. This Panel issued its report on March 19, 2012. Much of this report deals with SBIR. The Panels hearings began with testimony on the importance of the SBIR Program to DOD.

In a hearing before this Panel on September 29, 2010 DOD reported its SBIR commercialization rate:

> "the DOD SBIR Program has over $21 billion in cumulative commercialization reported by over 7,500 projects since the inception of the Program. As a rough comparative indicator the direct SBIR investment over the 2000-2009 period was $9.6 billion."[2]

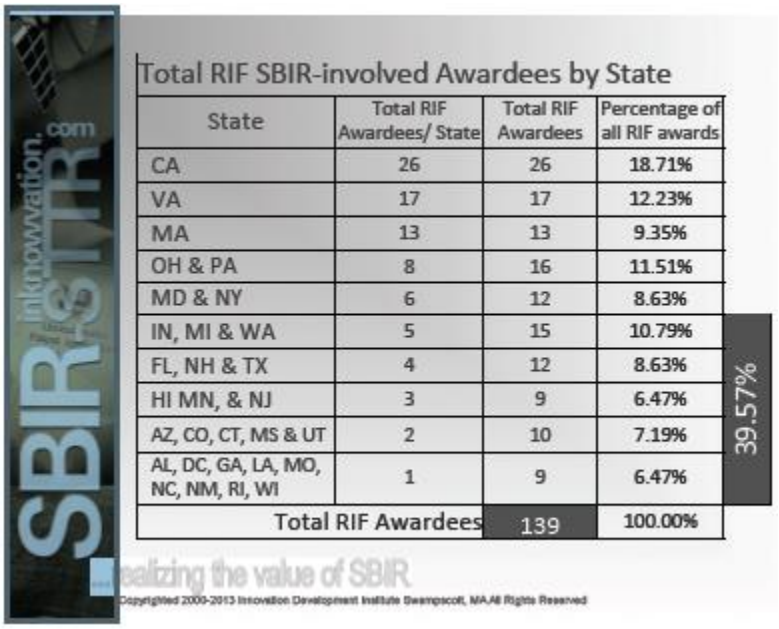
Congress has now recognized that not enough had been done to transition SBIR technology. As a result, the Armed Services Committees and the Small Business Committees included language to dramatically strengthen the SBIR Reauthorization Act to require better transitioning of SBIR technology.

[2] Testimony of Ms. Linda Oliver, Acting Director, Office of Small Business Programs, Office of the Under Secretary of Defense (Acquisition, Technology and Logistics) before the House ASC, Subcommittee on Terrorism, Unconventional Threats and Capabilities, September 29, 2010.

RIF has already been a success

Although still in its infancy, the RIF has been extremely successful in accomplishing the goals and objectives established by Congress and the DOD. The list of RIF winners is geographically diverse, representing companies from 29 states, and has included a surprising percentage of new companies. Two-thirds of RIF winners had never previously received any follow-on funding from the Government, and over 40% of RIF winners have won less than 10 SBIR awards. The net effect is rather than the awards being concentrated on a few larger companies clustered around cities on the coasts, as was feared by some, the RIF has dispersed the awards across the country, to a wide range of types of small businesses.

This chart shows just how geographically dispersed the RIF awards have been:



It is still far too soon to be able to judge what kind of impact the technologies accelerated by this program will have, or how successful they will be deployed in the field. But given the highly competitive nature of the program (over 3,000 submissions in 2011 vs 145 winners; fewer than 1 in 20 applicants won awards), and the prevalence of promising SBIR Phase II technologies that have already twice before won competitive federal R&D grants, the technologies selected by the RIF are the absolute best of the best available to suit the DOD's needs.

Because of the promising start the RIF program has had, the SBTC believes that this program should be allowed to continue and be further scrutinized, and should not be ended or defunded prematurely. After careful analyzing the RIF, every indication seems to be this is a healthy, successful program that could potentially help bring valuable and useful technologies to the field for the DOD while at the same time nurturing promising young small businesses all over the country for years and decades to come. We believe that, in time, the RIF could be a model program that other federal agencies could emulate and create Phase III programs based on it.

Appendix A

Rapid Innovation Fund (RIF) / Program: Examples of FY 2011 Awards Addressing DoD Needs			
Navy			
Project Name	**Company**	**Project Description**	**Operational Need**
Improvised Explosive Device (IED) Human Network Interdiction	Modus Operandi, Inc.	Improve counter-IED capabilities by assisting analysts in discovering, linking, analyzing, & sharing information about the key players and their activities.	Force Protection
Defeating A2/AD with Materials Identification Reflectivity Kernel (MIRK)	Prometheus Inc.	Reliably detect bottomed submarines and mines in real time with fewer false alarms.	Anti-Access / Area Denial
Ground Moving Target Indicator (GMTI) / Synthetic Aperture Radar (SAR) Payload	Trident Systems Inc.	A small, lightweight, modular radar payload for the RQ-21A Unmanned Aircraft System to detect and track targets over a large area, significantly improving surveillance and IED fetection.	ISR & Force Protection
Extended Range Wide Band Radio Frequency Distribution System	Out of the Fog Research, LLC	A shipboard mast-mounted communications component that will filter & attenuate the interfering signals so that very low level signals of interest can be received.	Threat Location
Integrated Solar Controller / Generator & Hybrid Power System	Iris Technology	A suite of power devices that combines solar power generation, energy storage, & diesel generator technology; seeks a 15% fuel savings for bases and outposts (vs. baseline generators).	Logistics: Reduce FOBs Power Dependency
Army			
Project Name	**Company**	**Project Description**	**Operational Need**
Advanced Combat Surveillance Kit	Camgian Microsystems	Small light-weight micro-radar system that provides unattended detection, classification, and tracking of dismounts and vehicles for several months in challenging operational environments.	Force Protection: Dismounts
Integrated Vehicle Platform Protection System	Corvid Technologies	An occupant centric crew cab platform that provides better protection from threats at a reduced weight.	Force Protection: Vehicles
Robotic Forward Base Resupply & Weight Reduction	Cybernet Systems Corporation	A robotic vehicle designed to autonomously deliver supplies and provide medical evacuation capabilities to Forward Operating Bases.	Force Support: Medical
Battlefield Seizure Detector for Traumatic Brain Injury (TBI) Assessment	NeuroWave Systems, Inc.	Miniaturization of existing NeuroFast system in a disposable, autonomous, smart sensor and compliance testing for relevant military & international standards.	Force Protection: Medical

Fueled, Man-Portable Generator Set	Precision Combustion, Inc.	A conversion kit that will enable small gasoline-powered commercial off the shelf generators to use JP-8 fuel, reducing the need for multiple fuel sources at forward operating bases; for expeditionary small unit operations	Logistics: Reduce fuel consumption
Air Force			
Project Name	**Company**	**Project Description**	**Operational Need**
Compact Anti-Jam Global Positioning System (GPS) Array for Emerging Threats	Applied EM, Inc.	A smaller, lighter antenna array that is scalable with a flexible configuration to address a variety of anti-jam GPS needs.	Command & Control
Single Fuel Forward Capable Air Vehicle Propulsion Platform	Engineered Propulsion Systems, Inc.	An efficient light weight engine that leverages new diesel injection technology; goal is delivering 43% of the energy in fuel directly into useable engine power.	Logistics: Reduce Costs
Aerial Deployment of Counter IED Sensor Suite for Dismounts	Guided Systems Technologies Inc.	A small, optimized autonomous aerial platform with plug and play sensor capability to significantly enhance ISR in counter IED operations.	ISR
Full-Rate Production of Missile Rail Repair	IBC Materials, Inc.	A micro plasma oxidation coating to address excessive wear and cracking of the missile launcher rails for the F-15, F-16 & F/A-18 aircraft.	Logistics: Reduce Costs
Real-Time Wind Sensor for Precision Airdrop	Optical Air Data Systems LLC	Real-time sensor system that significantly improves the safety, timeliness, and efficiency of cargo drops to forward operating bases and austere locations.	Logistics: Reduce Costs
Defense Agency / SOCOM			
Project Name	**Company**	**Project Description**	**Operational Need**
Secure Smartphone for Covert Operations	Chiral Software, Inc.	Low-profile secure communication smartphone for operators in the field that reduces risk of visual or electronic identification or interception in close-quarter urban operations.	Command & Control / Cyber Operations
Smart Mobile Identity	AOptix Technologies, Inc.	Handheld biometric data collection system based on the Apple iPhone and iOS platform that can gather and process iris, face, and fingerprint data and provide match against watch list data.	Biometrics
Multispectral Marker	LaserMax Inc.	A multi-spectral band targeting system that works with existing cameras and completely invisible to night vision goggles and cell phone cameras.	Force Application
Defense Agency / DTRA			
Project Name	**Company**	**Project Description**	**Operational Need**
Modular Electromagnetic Pulse (EMP) Source Using Photoconductive Semiconductor Switch	UES, Inc.	A modular light-weight, battery powered electromagnetic pulse module prototype that will increase the affordability, transportability, and use of testing systems.	Force Support: Improve Test & Evaluation

Checkpoint Explosive Detection System (CPEDS)	Alakai Defense Systems, Inc.	A small, ruggedized standoff explosives detection system with a five to fifty foot standoff range; reduces operator exposure to potentially hazardous situations.	Force Protection