

IMPROVING DoD TECHNOLOGY TRANSITION: AN EXECUTION STRATEGY FOR THE PROPOSED SBIR “RAPID INNOVATION PROGRAM”

Overview and Problem Statement

As the Congressional record suggests¹, DoD’s SBIR program has demonstrated its value to the warfighter. A partial list of SBIR technologies that are currently saving money, saving warfighter lives and helping them accomplish their missions in Iraq and Afghanistan includes the *Silver Fox* UAV, the *Double Shot* anti-sniper system, SAFI security software, rotor blade anti-corrosion coatings for Army Blackhawk helicopters, touch-screens for numerous platforms, night-vision optical devices, battlespace management communications and many others.

DoD component SBIR programs – led by the Navy – have pushed down the technology transition path, securing \$2.8B in Phase III contracts since 2005². *Yet, far more must be accomplished, and DoD SBIR is in fact starved for adequate support to transition innovative technologies to the warfighter*, as its officials have admitted.³ A RAND Corp. study of DoD SBIR⁴, and a landmark National Academy of Sciences study⁵, both cited the need for increased DoD SBIR transition outcomes. GAO’s Acquisition and Sourcing Management Group has published several reports to Congress critical of DoD’s technology transition process, calling for increased SBIR use⁶, and noting the precedent of small business technology innovation reducing cost for industry. The powerful DoD “Kubricky Report” made several recommendations for improving DoD’s technology transition process, many of which have yet to be implemented.⁷ Congress itself acknowledged DoD’s need to accelerate SBIR product transition in creating a DoD SBIR Commercialization Pilot Program⁸. Further, the FPDS record suggests that Phase III investment in DoD SBIR will peak under growing economic constraints – thus limiting transition of innovative SBIR technologies. And the DoD SBIR Phase III record suggests that not enough funding is available for the crucial task of DoD SBIR transition management⁹.

Transition obstacles and issues must be addressed if the SBIR Program is to deliver more innovative technology solutions¹⁰ to our warfighters facing asymmetric warfare challenges in Iraq and Afghanistan, and help meet the nation’s small business jobs goals, as an Administration S&T official told Congress in 2009¹¹. As the DoD SBIR Program is asked to respond to emerging national security issues, such as energy and cyber security, resolution of these problems becomes more and more vital.

The number and pace of DoD SBIR transitions of innovative, high-priority technologies can be accelerated chiefly through a Rapid Innovation Program dedicated to timely execution, high-level oversight and local funding decision/selection to transition SBIR products into DoD Programs of Record.

Other improvements, relative to internal DoD processes, include:

- fully including DoD SBIR in DoD Instruction 5000.02

¹ 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.

² Federal Procurement Data System reports, 2005-2009; OSD Office of Small Business Programs

³ Linda B. Oliver, Acting Director – OSD Office of Small Business Programs; *Can DoD Improve Innovation and Competition in Acquisition by Better Utilizing Small Business?*; testimony before House Armed Services Committee on 29 October 2009

⁴ Held, Bruce; *Evaluation and Recommendations for Improvement of the DoD SBIR Program*; RAND Corp; 7 December 2007

⁵ National Research Council; *An Assessment of the SBIR Program*; 2008; Sec. 5.9.8

⁶ E.g. GAO-06-883; *Stronger Practices Needed to Improve DoD Technology Transition Process*; Sept 2006

⁷ SECDEF; *DoD Report to Congress on Technology Transition*; Office of the Secretary of Defense; July 2007

⁸ PL 109-163; *National Defense Authorization Act*; Sec. 252; placed 20 May 2005 in HR 1815

⁹ Seong, Somi; *Estimating the Cost of Administering the DoD SBIR Program*; RAND Corp.; 2008

¹⁰ See, in this regard, *A Strategy for American Innovation* published by the Executive Office of the President, September 2009.

¹¹ John P. Holdren, Director – Office of Science & Technology Policy; *Letter to Hon. Mary Landrieu, Chairman – Senate Committee on Small Business*; 2 June 2009

- reforming SBIR topic development and approval to minimize transition barriers
- reforming SBIR contracting procedures to reduce delays
- Decision made at the PEO level
- Existing structures and organizations should be used. No more than 1% of the RIP funding should be used for administration See Attachment A, SBIR Cash Flow

Background

Since 1996, there has been a continuous pattern of information before Congress on DoD SBIR Phase III funding needs. Documents including legislation and hearings proceedings, DoD documents, GAO reports and other documents are noticed and summarized in *Fighting An Unconventional Enemy: How Small Businesses Can Better Meet Defense Acquisition Needs* (Small Business Technology Council; December 2004), and *Incentives and Technology Transition: Improving Commercialization of SBIR Products in Major Defense Acquisition Programs* (Small Business Technology Council; May 2007).

The issue was prominently raised in a seminal 21 July 2004, special hearing by a House Armed Services (HASC) subcommittee led by then-Rep. Curt Weldon (R-PA) on improving SBIR technology commercialization in DoD MDAPs.

In 2005, at an unprecedented symposium held by the National Research Council on “SBIR and the Phase III Challenge of Commercialization”, several DoD speakers, including USD (AT&L) Dr. Jacques Gansler and DUSD (S&T) Charles Holland, cited the need for dedicated Phase III funding. Indeed, Gansler cited internal DoD intent to expand Phase III funding since 1998. (NRC published a complete stand-alone 2005 study, *SBIR and the Phase III Challenge of Commercialization*.)

Also In 2005, Congress noted DoD’s need to accelerate SBIR product transition in creating a DoD SBIR Commercialization Pilot Program¹² or CPP, which was quickly embraced by the Sec. of Defense¹³. Navy SBIR sprinted ahead on CPP execution in 2007 with an accelerated transition testbed, and two parallel efforts to identify best SBIR transition practices – one in Navy and DoD, the other in industry – both of which resulted in widely-read, influential publications.¹⁴ At the Naval System Command level, SBIR Program Managers began in 2008 to use CPP funds to develop increasingly effective transition processes and tools, leading to 2009 Navy-wide efforts to begin coalescing SYSCOM CPP learnings on transition acceleration through the “Phase II.5” funding strategy. This strategy uses serial decision gates to ensure prudent SBIR investments up to \$2.25M for projects with maximum transition potential.

Air Force SBIR followed with a similar CPP approach, but significantly amended to focus on promoting industry-government acquisition program partnerships with SBIRs meeting priority warfighter needs. A close interface with key defense firms has encouraged launch of Primes’ SBIR management structures and key SBIR POCs for formal partnering investment, aligned with industry business models. AF CPP “transition agents”, working closely with AF acquisition programs, help drive SBIR transition.

Army evaluation of its unique SBIR CPP effort included the Army PM-SBIR office, Program Executive Offices (PEOs) and senior Army staff in both headquarters and the field. Its CPP initiative resulted in over 75 companies receiving additional funding for market research, business planning and/or research, test and evaluation. Many of the technologies selected under CPP have transitioned into Army weapons systems.

External to SBIR, DoD has launched other Congressionally-sanctioned technology transition programs such as Defense Acquisition Challenge, Technology Transition Initiative and Rapid Reaction Fund. While there is no formal study of these small (c. \$25M) programs’ effectiveness in delivering innovation quickly, Congressional concerns about transition acceleration are contrary to lengthy proposal review and serial approvals taking up to a year before awards are made in these programs. Because SBIR projects typically begin Phase III transition planning when Phase I awards are made, significant schedule

¹² PL 109-163 *National Defense Authorization Act*, Sec. 252; placed 20 May 2005 in HR 1815

¹³ Memoranda of USD (AT&L) 27 June 2006 and DUSD (A&T) 6 August 2007

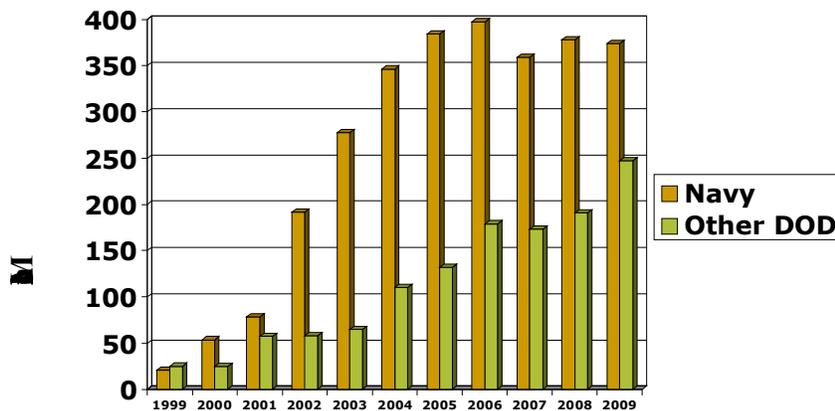
¹⁴ *Defense Contractors SBIR/STTR Partnering Manual*; Navy SBIR Program Office; August 2008 and *Best Technology Transition Practices*; Navy SBIR Program Office; April 2008

efficiencies are possible versus these programs. In one 2002 case, a DoD Quick Reaction Fund effort anticipated sufficient transition delays that the Navy SBIR Program was asked to participate, delivering competed awards for technologies meeting urgent OIF warfighter needs in about five months¹⁵. *Therefore, established DoD technology transition programs such as DAC and TTI should not be a model for execution of the proposed Rapid Innovation Program.*

Congress incubated yet another valuable DoD SBIR innovative technology testbed in three annual defense authorization measures beginning in FY08¹⁶. In the Navy’s case, this “Small Business Technology Insertion” pilot allowed NAVSEA PEO Submarine and PEO Integrated Warfare Systems to establish an important precedent: *the ACAT program integration value of selecting innovative technologies as an integral part of program development, with attendant funding decisions.* This precedent validated in practice the principal recommendation of the so-called DoD “Kubricky Report” on technology transition best practice, sent by the Secretary of Defense to Congress in July 2007.¹⁷ Moreover, PEO Submarine reported large cost savings in principal *Virginia*-class systems through this pilot SBIR integration effort¹⁸. (In 2009, NAVSEA PEO Ships also documented sizeable cost savings in the T-AKE cargo ship¹⁹ through SBIR integration.)

Pursuit of best transition practices for DoD SBIR programs, led by Navy, over the past decade through these and other pilot efforts has produced dramatic results readily measured by the cumulative dollar amounts of Phase III contracts awarded to SBIR Phase II projects. Some of these projects were the from Congressional plus up or adds.

FPDS Report Data on DOD-funded Phase III Contracts During FY99-FY09



- Total FY09 Navy Phase III funding was \$374M
- Total Navy funding obligated on Phase III’s has exceeded SBIR Phase I and II budget since 2002
- FPDS data shows Navy FY09 Phase III funding came from 134 separate contracts to 112 individual firms

CHART 1

As Navy SBIR performance shows, Phase III results may have already peaked absent the availability of

¹⁵ Navy SBIR “Directed Counter-Terrorism” project appeared in DoD SBIR Solicitation 2002.2, awards made by March 2003.

¹⁶ The so-called “Murtha Adds”, averaging \$85M annually across the Services, were in a “Small Business Technology Insertion” section of the HAC Reports accompanying these serial DCAAs. They included \$20M allocations to two NAVSEA PEOs to test SBIR projects’ ability to deliver technology innovation cost-effectively to priority ACAT programs; Navy reports back to Congress confirmed success in cost-effectively integrating SBIR technologies into submarine and anti-sub warfare fielded systems.

¹⁷ SECDEF; *DoD Report to Congress on Technology Transition*; Office of the Secretary of Defense; July 2007

¹⁸ NAVSEA; *Report on Small Business Technology Insertion Plan*; September 2008

¹⁹ *Transitions* Vol. 6; Dawnbreaker, 2009

additional Phase III funds. Further, the increasing DoD SBIR use of tools such as the GAO-recommended gated funding process for Phase IIs helps ensure that an increasing number of SBIR Phase IIs are capable of transition into DoD Programs of Record.

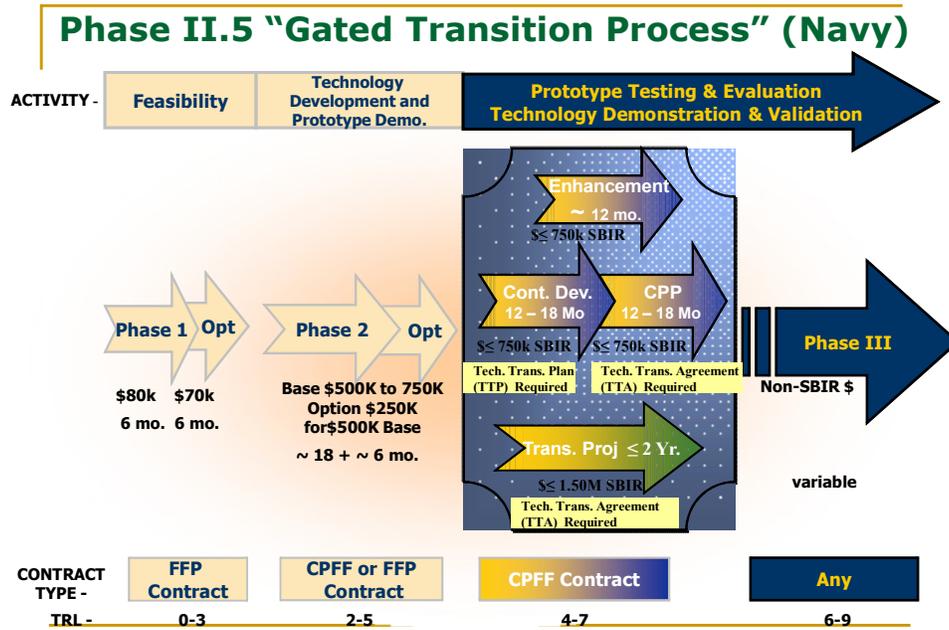


CHART 2

With SBIR technologies reaching warfighters in Afghanistan and Iraq from 2003²⁰, Congressional attention during SBIR reauthorization from mid-2008 focused again on commercialization improvement strategies in both House (HR 2965) and Senate (S 1233) reauthorization bills. Compromise proved evasive; HASC and SASC, recognizing SBIR value, moved in November 2009 to extend DoD SBIR and CPP through FY2010²¹.

Subsequent discussions of a SBIR-dedicated, large Phase III transition fund are captured in the current HR 1536 Defense Authorization bill as a "Rapid Innovation Program"²², which could definitively address the long-standing and well-documented need for increased transition of high-priority innovative DoD SBIR technologies. While the bill language only references SECDEF working with the Assistant Secretary of Defense for Research & Engineering as regards delegation of management²³, the accompanying Committee Report 111-491 makes reference for RIP implementation to USD AT&L and – citing as transition precedent the work of NAVSEA PEO Submarine through the FY2008-2010 Small Business Technology Insertion pilot – provides a general description of RIP structure.²⁴

DoD has almost 50 external funding programs, with 20 of those programs designed to rapidly transition technology in the DoD systems such as: Defense Acquisition Challenge, Quick Reaction Fund and Rapid Technology Transition. While these programs have been successful to a degree most are not helpful to small businesses and SBIR winners. As discussed above the SBIR program has been

²⁰ A partial list includes *Silver Fox* UAV, *Double Shot* anti-sniper system, SAFI security software, rotor blade anti-corrosion coatings for Army Blackhawk helicopters, touch-screens for numerous platforms, night-vision optical devices, battlespace management communications and other technologies.

²¹ PL 111-84; *National Defense Authorization Act*; placed October 2009 in HR 2647

²² HR 5136; *National Defense Authorization Act for FY2011*; Sec. 1054 and Committee Report 111-491 "Other Matters"

²³ HR 5136; *National Defense Authorization Act for FY2011*; Sec. 1054 (c)

²⁴ HR 5136; *National Defense Authorization Act for FY2011*; Report 111-491; pp. 356-357

21 July 2010

extremely successful. We believe the entire RIP funding should be used to transition SBIR technology. Under no circumstances should more than 20% be used for non-SBIR purposes. If funds are allocated to non SBIR programs, then it should be allocated to programs that have are successful in fielding technology in less than one year.

Transition Issues and Obstacles for SBIR Innovations

1. Planning for successful transition of SBIR projects is limited by funding available to mature promising SBIR innovations for integration into high-priority acquisition programs, with their attendant cost efficiencies.
2. Restrictions on SBIR Program management funding hinders transition planning, execution, oversight and support work.
3. SBIR inclusion in the Integrated Defense AT&L Life Cycle Management System is ineffective.
4. SBIR topics requirements by DDR&E focus on early-stage S&T work, thus necessitating transition timelines and funding levels significantly beyond current SBIR Phase II potential.
5. SBIR contracting delays increase risk and challenge SBIR firms to keep key personnel and stay solvent.
6. Standardized sole source contracts for Phase III fiscal events should be developed by each Service to expedite the awards process.

This White Paper focuses on the first issue, as it's addressed in the proposed Rapid Innovation Program, with additional reference to the latter three internal DoD process issues.

Solutions

1.0 An SBIR Rapid Innovation Program: timely execution, oversight and local decision-making.

Proven SBIR transition strategies, such as the Air Force and Navy CPP testbeds, should be normalized and leveraged as added transition funding is made available. A "Rapid Innovation (pilot) Program" using current RDT&E funds shall be dedicated to Phase II project maturation (buying down transition risk), with high-level oversight but competed awards made and managed at acquisition program level with SBIR Program management support. RIP should prioritize matching funds, if available, for acquisition program investments in high-priority SBIR projects. This increased focus on buying-down SBIR risk would also leverage rapid fielding and other DoD funds, and increase SBIR contribution to Total Ownership Cost reduction, making SBIR technologies more viable for integration into DoD ACAT programs. *Emphasis must be on timely execution of technology selection decision, made by the PEO*

Committee Report 111-491, accompanying H.R. 5136, makes reference for RIP implementation to USD AT&L and provides a general description of RIP structure. The proposed SBIR RIP leverages the infrastructure and success of the SBIR program now in place.²⁵

A more specific description of RIP structure to ensure localized technology selection decisions would include the following guidance:

1.1 Reporting and program management

While policy and reporting for the SBIR RIP pilot should be vested in USD AT&L and the Office of Small Business Programs, management of SBIR RIP awards should be delegated to the lowest practical

²⁵ HR 5136; *National Defense Authorization Act for FY2011*; Report 111-491; pp. 356-357. Congressman Norm Dicks has also indicated his support for transitioning SBIR technology http://appropriations.house.gov/images/stories/pdf/2010_Earmark_Reforms_Release-3.10.2010.pdf http://www.rollcall.com/issues/55_148/lobbying/47359-1.html. The RIP Program complements the role of Phase I and Phase II which often fund high risk basic research.

21 July 2010

level within the Services—the PEOs and SBIR Program Managers—to ensure localized innovation selection and related transition decisions. Thus, RIP projects management should be shared by a SBIR Program officer and a DoD acquisition program officer.

Within 90 days of RIP funding availability, a plan for use of these funds shall be provided by DoD to the Small Business and Armed Services Committees of the Senate and the House. Included will be a one-page Quad chart and one-page description of the SBIR topic, company and innovation to be applied. SBIR RIP funding, program matching funds and source and contracting mechanisms shall be included. This plan will be used to measure progress; reallocation of RIP funds within or across Services shall be allowed if committed RIP funds are not on track to be 100% obligated by 12 months after funding availability. A second report due no later than 10 months following funding availability will provide the financial obligation status at the 9 month mark.

1.2 Funding

While SBIR RIP funding shall be provided in a new P/E to each Service's SBIR Program Office, DoD RIP funds should be shared equally by the Army, Air Force and Navy for SBIR transitions only. If this RIP funding is not vested in Service-level SBIR Program accounts, localized technology transition selection cannot be ensured vice Congressional intent in establishing RIP, due to the possibility of funding vested at the DDR&E level being diverted to other than SBIR rapid innovation transition.

1.3 Award eligibility

Each PEO shall develop a process for selecting winning RIP firms. Plans for SBIR RIP funding shall be devised by PEO and their acquisition program managers and shall be contracted directly to the SBIR firm. Criteria might include matching program funding, warfighter requirements or specific program needs among others.

1.4 Award decisions

Selections and awards are made by the PEO and program managers, Service SBIR Program Manager and lower tier Command-level SBIR PMs will collect and inventory the selections to insure TTAs and funding obligations are satisfied. Multiple layers of review circumvent the rapid transitioning to technology. RIP decisions should be made at the PEO level.

The following supplemental process issues can be addressed by DoD internally.

2.0 Full inclusion of DoD SBIR in DoD Instruction 5000.02

SBIR inclusion in the Integrated Defense AT&L Life Cycle Management System is ineffective. DoDI 5000.02 mandates only "favorable consideration" of SBIR technologies for pre-Milestone A materiel development decisions in ACAT I through III programs by Acquisition Executives²⁶. Five days after release of this updated DoDI, DUSD AT&L issued a memorandum on SBIR that said, in part: "Consistent with DoD policy, program managers should include SBIR as part of ongoing program planning and give favorable consideration...for funding successful SBIR technologies. ACAT I programs should address plans for funding and insertion of SBIR-funded technologies at milestone reviews."

In order to ensure improved SBIR/STTR contractor access to the DoD Acquisition Management Framework, which is enabled by DoDI 5000.02 but not ensured by this Instruction, additional language is needed in four areas.

²⁶ DoD Instruction 5000.02; December 2, 2008; p.14 and 32

2.1 SBIR reporting by government at DoD Milestone reviews

Defense Acquisition Executives of DoD ACAT I and IA programs, and Component Acquisition Executives of DoD ACAT II and III programs, shall request reports from Program Managers at annual ACAT program/Milestone reviews on the exact nature of consideration and integration of SBIR technology solutions into their programs. These reports should identify specific SBIR technology solutions being considered and those selected for integration into a program system or subsystem.

2.2 SBIR inclusion in DoD acquisition program proposals

The Secretary of Defense shall require DoD Prime contractor applicants for ACAT I and II programs to include in their proposed subcontracting plans the incorporation of SBIR/STTR subcontractor participation. These will be evaluated criteria for calculation of award fees.

2.3 Incentivization of DoD contractors to use SBIR participants and resources

The Secretary of Defense shall encourage the use of award or incentive fees for ACAT I and II contractors that attain SBIR/STTR subcontracting goals cited in their ACAT program proposals, and later specified in program Acquisition Plans, as determined by the PEO.

2.4 SBIR reporting by DoD contractors

The DoD Office of Small Business Programs should encourage ACAT I and II programs in their required annual Small Business Subcontracting Reports of small business subcontract activity to specify the amount and percentage of SBIR/STTR Phase III awards made to SBIR/STTR contractors. Finally, related Service-level documents such as Navy Instruction 5000.2E should incorporate these amendments.

3.0 Reforming SBIR topic development to minimize transition barriers

SBIR topics requirements by DDR&E focus on early-stage S&T work, thus necessitating transition timelines and funding levels significantly beyond current SBIR Phase II potential. During the 2009 DoD SBIR Program Improvement Initiative led by OSD Office of Small Business Programs, it was noted that the current SBIR Topic process and criteria have not been updated since 1996 to reflect changing DoD needs and Congressional intent regarding DoD transition of SBIR technologies to meet priority defense needs. This finding echoed a similar RAND Corp. finding in its 2007 study of the DoD SBIR program.²⁷ Concerns were noted in balancing efforts along the entire R&D spectrum, increasingly needed T&E work, improving probability of transition in concert with Congressional intent, and in other areas. SBIR Topic generation, Topic review and review criteria should be evaluated in order to update the 1996 Topic foundation documents to align them with current legislation, regulations and the needs of the warfighter. Substantial savings can be achieved by allowing SBIR topics to address the total spectrum of program life cycle from program initiation through disposal and not limiting SBIR to only the very early stages of technology development.

4.0 SBIR contracting reforms to reduce delays and incorporate new contract vehicles

Funding gaps between phase I and II for Navy SBIR firms is averaging 11 months for most commands. This not only destroys the small business but it also makes it difficult to plan for the transition

²⁷ Held, Bruce et al; *Evaluation and Recommendations for Improvement of the Department of Defense Small Business Innovation Research (SBIR) Program*; RAND Corp.; December 7, 2007

21 July 2010

of the innovation. There is a need for DPAP to direct, improved and standardized contract practices for all Phase II awards. This must include the level and method of cost analysis; Address the issues of risk to reward associated with very extended cost review verse delay in contract award; reduce the excessive time requirement on already over extended contracting officer and DCAA staff. If standard processes for the auditing of the firm and its costs can be developed, one can then develop standard web-based training for the SBIR firms and contracting officers, which would lead to award times being cut in half.



For more information, contact Jere W. Glover at 202-662-9700 or jglover@brandlawgroup.com

ATTACHMENT A: SBIR Cash Flow

