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Small Businesses Solve Real-World Issues on the Battlefield

What do small businesses Quantum Devices, Inc.; Pressure Profile Systems, Inc.; and ObjectVideo have in common?

Quantum Devices and the Medical College of Wisconsin teams have demonstrated the feasibility of rapid healing of acute eye injuries caused by military lasers.

Pressure Profile Systems developed a tactile sensing system used to evaluate hand functions after injury and stroke.

ObjectVideo developed a robust, real-time surveillance system to detect unauthorized intrusions.

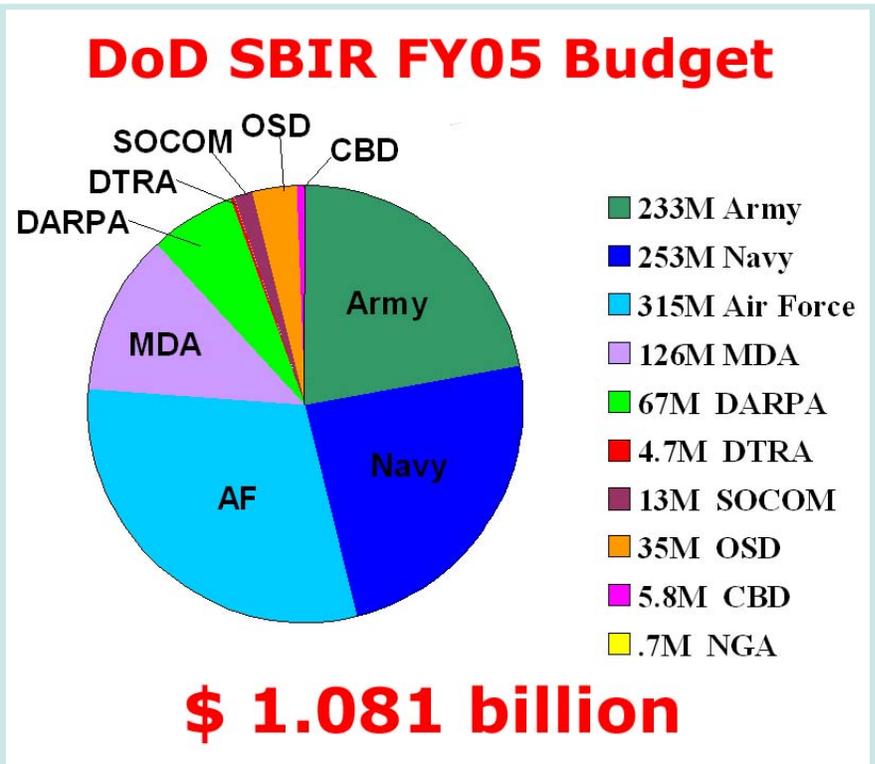
Each of these small businesses was funded under the DARPA Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs.

Eleven Federal agencies participate in the SBIR program, and five agencies participate in the STTR program. The combined budget for fiscal year 2005 for both programs is over \$2 billion. Of that, the Department of Defense (DoD) set aside over \$1 billion. DARPA's SBIR budget, which is included in the \$1 billion, is approximately \$67 million.

Congress reauthorized the SBIR program through October 2008

and the STTR program through October 2009. Small businesses still have plenty of time to participate in both programs.

DoD develops topics specific to Soldier needs and publishes three solicitations each year. DoD is the only department that posts the topic author's name, telephone number, and email address with each topic and encourages a technical dialogue. This ensures small businesses understand the topic, understand the potential end user (e.g., Army, Navy, Air Force), and make educated bidding decisions. This information empowers the small business community with access to the program managers who have the other 97.2 percent of the DoD budget.



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Approximately 150 FY 2005.3 DoD SBIR solicitation topics were posted to the DoD website on August 1. Small businesses have until September 14 to have technical dialogues with the topic authors. Topics may be viewed via the DARPA homepage (www.darpa.mil), and clicking on “SBIR.”

The SBIR program is restricted to small businesses, defined as those with 500 employees or less. However, DoD statistics show that approximately 80 percent of SBIR awards go to companies with 25 people or less. Of that 80 percent, over 60 percent of the awards go to companies with 10 people or less.

Data rights developed under an SBIR contract belong to the company. DoD wants small businesses to successfully commercialize items of benefit to both DoD and the public sector. The Federal Government has royalty-free rights to technology developed under SBIR/STTR research

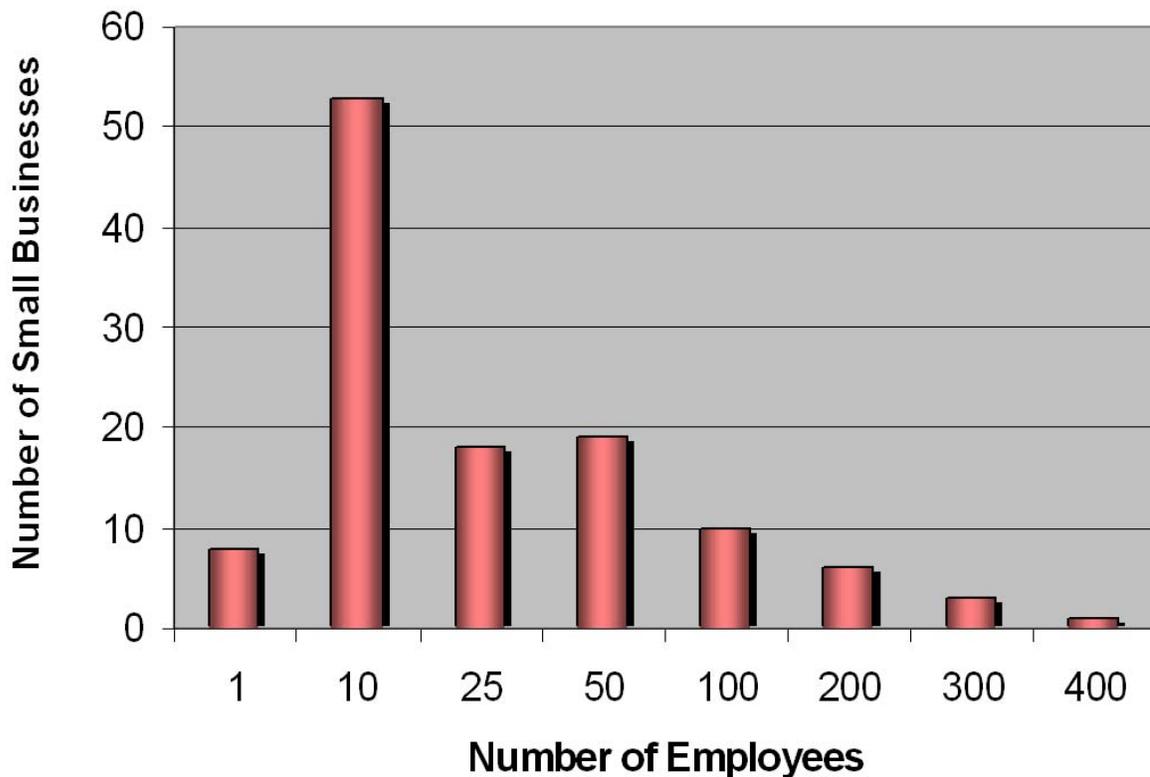
efforts for specific military applications, which is far less restrictive than typical Government contracts.

An SBIR program has three phases. Phase I is where the small business thoroughly researches a selected topic, has detailed dialogues with the topic author, compares the topic to their specific technological niche and business plan, and develops a 25-page feasibility study. The Phase I contract is generally 6 months long and generally funded at \$100,000. If the small business is successful in its Phase I feasibility study, the DoD topic program manager invites a Phase II proposal.

A Phase II effort is the proof-of-principle phase in which small businesses develop a prototype. The Phase II contract is generally 2 years and generally funded at \$750,000.

A Phase III contract requires non-SBIR funds to continue the effort to commercialization.

Histogram of FY 2004 SBIR/STTR Company Size



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SBIR proposals are evaluated against three criteria.

- Soundness of technical approach, technical merit, and innovation
- Scientific and technical qualifications of the principal investigator (PI)
- Commercialization

A frequent question asked is, “Does the principal investigator need to have a Ph.D.?” The answer is no. The principal investigator has to be highly qualified to perform the research and must have a commercialization vision.

For DoD, commercialization means military agencies are actually using a product developed that enables the Soldier in battle. Commercialization also means having the vision to identify nonwarfighter applications for the technology and developing a product for the public sector.

A small business can conduct all the SBIR research itself or choose to subcontract up to one-third of the Phase I and up to one-half the of Phase II effort. A small business should consider subcontracting when it brings value to the effort. Universities make great partners, especially Historically Black Colleges and Universities and Minority Institutes.

DARPA participated in one solicitation this year, the 2005.2 solicitation that closed July 15 and will award over 50 Phase I efforts. DARPA program managers develop the topics, evaluate the proposals, and make funding recommendations. Generally, DARPA awards one Phase I contract for every 10 meritorious proposals received, with about 50 percent of the Phase I awards moving into Phase II contracts.

DARPA collaborates with the Army, Navy, and Air Force and co-funds SBIR programs of mutual interest. Although Phase II contracts are generally funded at \$750,000, we have several Phase II efforts valued at over \$2 million each. It is not unusual for DARPA program managers to augment their SBIR with project funds from their ongoing DARPA programs.

Small Business Technology Transfer (STTR) related, but distinct, from the SBIR. But few companies and universities are reaping the benefits of this very important and valuable program. STTR represents a potential source of funding that is under utilized. Five Federal agencies participate in the STTR program. The DoD STTR budget is about \$100 million each year, of which DARPA’s portion is about \$8 million.

Within DoD, the STTR program topics are selected in a similar process to the SBIR program. Topics are developed by program managers and are consolidated into one DoD solicitation each year. The 2006 DoD STTR solicitation will be posted on the web on February 1, 2006.

The STTR program differs from SBIR, on three distinct issues.

- Small business must have a partner. The small business receives the contract; however, it cannot submit a proposal and win an award without a research institute as a partner. A research institute is defined as any university, nonprofit institution, or Department of Energy Federally Funded Research and Development Center.
- Small businesses must complete 40 percent of the research, and the partner must complete 30 percent. The other 30 percent is at the discretion of the small business. Small businesses may also bring in a third partner or increase both original partners’ percentages.
- The PI may be employed by the small business or the research institute. This allows university personnel to keep their jobs with the university and participate in high-tech research and development with the small business at the same time.

STTR is also a three-phase program:

- Phase I is a feasibility study.

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- Phase II is proof of principle.
- Phase III is commercialization.

STTR proposals are evaluated against the same criteria as SBIR. The STTR Phase I and II funding is generally the same as SBIR funding.

DARPA program managers submit 8 to 10 topics each year, which are featured in the DoD STTR solicitation. As with SBIRs, postings of STTR topics include the author's name, telephone number, and email address. Small businesses are

encouraged to contact the topic authors February 1 through March 13, 2006, to discuss topic specifics.

SBIR and STTR programs allow small high-tech companies to participate in real-world research and solve military issues. SBIR and STTR companies flourish when they have DARPA's faith and the funds to put innovative products into the hands of our military. Each program is a win-win situation for the company, the Soldier, and our economic development.