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# ARMY AL&T

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JANUARY-MARCH 2016

# SMALL BUSINESS BIG OPPORTUNITY

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# ARMY AL&T

JANUARY–MARCH 2016



## FEATURES

### FROM THE AAE



### ACQUISITION




**ON THE COVER**

Small businesses are a critical part of the Army's industrial base. They're also a key part of the national economy. The Army has led all of the services in meeting its goals, but could still make it easier for small entities to provide products and services.



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JANUARY–MARCH 2016

# FEATURES

## LOGISTICS



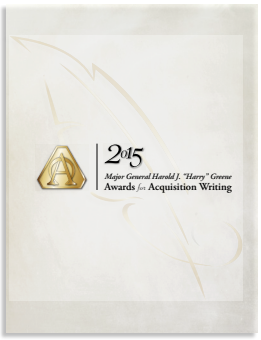
## SCIENCE & TECHNOLOGY



## $ BBP 3.0








Also accompanying this issue, the Major General Harold J. 'Harry' Greene Awards for Acquisition Writing

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## WORKFORCE



## THEN & NOW





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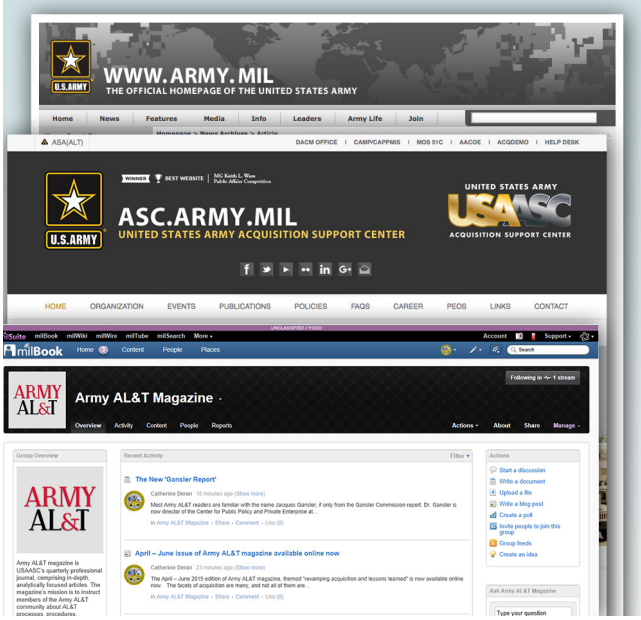


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## Dig deeper with Army AL&T's ELECTRONIC EXTRAS

That plus sign means there's more! More information, that is. There's only so much room between the front and back covers of Army AL&T, and that's why even die-hard hard-copy readers will want to check out the electronic extras available on the app and online version of Army AL&T.

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Delve into the details of OUSD(AT&L)'s report "Performance of the Defense Acquisition System," referenced in the article "**'SHOULD' DOES**."

See what the Army Office of Small Business Programs has to offer in the Tommy Marks Q&A, "**IT'S ALL IN THE DELIVERY**."

Get the facts behind the facts. "**ENGINEERING CONNECTIONS**" cites a study showing that small business money stays in the community. Read the Andersonville Study of Retail Economics, on the impacts that chains and local retailers have had on local economies in one Chicago neighborhood. Local businesses generate much more local economic activity than national chains, a finding that has been replicated in Texas, Maine and Ohio.

Find more information on the small businesses participating in our Critical Thinking roundtable, "**AN HONOR AND A CHALLENGE**."

Get the scoop on the background for the article "**SINGING FROM THE SAME SHEET OF MUSIC**" in "Managing the Development of Large Software Systems," by Dr. Winston W. Royce.

Click on the icon wherever you see it in the issue to view additional photos and read additional articles.

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# From the Editor-in-Chief

OK, what do Yankee Candle Co., Mattel Inc. and Apple Inc. have in common? While they are titans of industry today, they all started out as small businesses and grew to dominate their markets. No overnight successes here, just a vision for a product or service and, in most cases, decades of hard work to get to where they are now. So, what does this have to do with Army acquisition, you might ask?

Well, just like those companies, there are small businesses out there today with cutting-edge technology or products. Small business provides many of the same services and products that large companies do: aircraft, ships, land vehicles, electronic equipment, weapons and ammunition, medical services and even research and development. With a little help from the Army, that technology or product will provide our Soldiers a decisive advantage in any mission.

They may be small, but these businesses have a huge impact on America and the Army. According to President Obama, "Small businesses are the backbone of our economy and the cornerstones of our communities. They create two of every three new jobs in America, spur economic growth, and spark new industries across the country." Along those lines, the Army, as part of DOD's commitment to maximizing the contributions of small business in acquisitions, leads all the other services in supporting small businesses and ensuring that they have a place at the table. For 2015, the Army obligated more than $17 billion in "small business eligible" dollars to more than 20,000 businesses. In doing so, the Army blew past its target obligation goal of 26.5 percent for those eligible dollars, as measured against overall small business-eligible contract spending, and reached a DOD best of 31.6 percent!

Far from a jobs program, the Army's focus on small businesses is just good sense. Small businesses increase competition and broaden the industrial base, resulting in better value, cost and contract performance—all vital elements of the Hon. Frank Kendall's Better Buying Power 3.0. Also, small businesses have several advantages over large businesses: They tend to be nimbler and quicker to innovate. An owner can make a decision quickly without going through a huge bureaucracy if she or he thinks an idea will work. Small businesses interact with their customers on a daily basis and know them personally. Your business is their livelihood, not just another account; and they want to expand their revenue and market share to possibly become the next Apple, so performance is critical.

Much of the $17 billion the Army obligates to small business is courtesy of Army acquisition—which makes sense because everything the Soldier uses on the battlefield is acquired by us. In this issue, we feature Tommy Marks, director of the Army's Office of Small Business Programs. Learn how he and his office identify small businesses and help them compete for Army contracts, and why small is good. See how our Program Executive Office for Ammunition is working with small business to fill a capability gap that large manufacturers haven't filled: replacing brass casings with a polymer that could lead to as much as a 30 percent reduction in the weight of small-caliber ammunition! Think you have what it takes to sell to the Army? Just like the popular TV show "Shark Tank," experience how small (even minute) businesses compete in the Army's first Cyber Innovation Challenge to sell their promising technologies for cyber Soldiers to use.

Finally, we bid farewell to our leader of the past five years, Ms. Heidi Shyu. Along with her keen sense of humor, we'll miss her staunch advocacy for budget certainty, research and development investments, small business and the Army Acquisition Workforce. Best wishes, Ms. Shyu, on your future endeavors from your acquisition family!

As always, if you have suggestions, comments or story ideas to help make the magazine better, please contact me at **ArmyALT@gmail.com**. And, don't forget, there is more content online with our digital platform. See what you're missing at **http://usaasc.armyalt.com**. Cheers!

***Nelson McCouch III***
*Editor-in-Chief*


**SMALL BUSINESS AT WORK**
A contractor performs a visual inspection before starting work on a project at Fort Drum, NY. The construction division of the 925th Contracting Battalion (CBN), U.S. Army Garrison – Fort Drum and the U.S. Army Mission and Installation Contracting Command (MICC) – Fort Drum manage the contract, held by a small business. (Photo by MAJ Sean Kwoun, MICC – Fort Drum and 925th CBN)

**A FORCE FOR FACILITIES**
SGT Miriam M. Weeden of the 19th Expeditionary Sustainment Command is served at the newly opened dining facility at Camp Henry, South Korea, in February 2015. Facility-related services are one of three portfolios in the Army's acquisition of services where small businesses play a leading role. The other two are knowledge-based services, such as project management, engineering and translation, and electronic and communication services. (Photo by PO3 Ali Flockerzi)

FROM THE ARMY
ACQUISITION EXECUTIVE
THE HONORABLE HEIDI SHYU

# 'Small' *has* BIG MEANING

## Small businesses are no small part of the Army's acquisition mission

**WINNING EFFORT**
BG Jeffrey A. Gabbert, MICC commanding general, talks with MICC small business specialists from across the country during a roundtable workshop in June 2015 at Joint Base San Antonio – Fort Sam Houston, TX. In FY15, for the first time since the command was established in 2009, MICC met all five of its small business socioeconomic goals. In all, the command executed more than 36,000 contract actions valued at $5.2 billion in FY15 in support of Soldiers and their families, with approximately $2.25 billion of that awarded to American small businesses, including four specific socioeconomic categories. (Photo by Daniel P. Elkins, MICC Public Affairs)

Small businesses are critically important to all of us as consumers, Americans and members of the Army profession. According to the U.S. Small Business Administration, small business makes up roughly two-thirds of all new private-sector jobs and nearly half of the American workforce.

The U.S. government is the world's largest single buyer of goods and services, spending roughly $500 billion on contracts annually. Federal executive agencies established a series of statutory guidelines that set a number of goals for small business procurement, notably that at least 23 percent of federal contract dollars must be awarded to small businesses. DOD is responsible for a considerable portion of small business contracts, with the Army consistently awarding the most contract dollars.

In FY15, the Army awarded over $17.5 billion in contracts to small businesses. That constituted 31.6 percent of the total procurement dollars. The Army exceeded its

goals in four small business subcategories: small disadvantaged business, women-owned small business, service-disabled veteran-owned small business, and certified HUBZone [Historically Underutilized Business Zone] small business. We continue to exceed our annual small business goals, and I'm very proud of our exceptional performance.

## AGILE AND INNOVATIVE

Small businesses play a vital role in our nation's security. In general, they are able to move faster, and with greater flexibility in their niche core-competency areas, than larger companies. Small companies are also critical to large companies because they constitute a large share of lower-tier suppliers' innovation. I had the opportunity to visit several small companies in the past year and was very impressed with their focus on delivering high-quality products, their ability to innovate rapidly and their pride in helping our Soldiers.

These small companies cover a broad spectrum, from performing analysis on technical problems, to producing software applications for design engineers, to machining rapid prototypes, to designing and producing rucksacks for a variety of applications, to developing low-cost virtual training for Soldiers.

Small businesses lead the way in three of the Army's key service acquisition portfolios: knowledge-based services, facility-related services, and electronic and communication services. In FY15, more than $9 billion was awarded in these three service areas.

## CONCLUSION

DOD's Better Buying Power initiative is fostering small business partnerships. DOD's Office of Small Business Programs has helped the Army accomplish our tough small business goals. As an example, at the Program Executive Office for Ammunition, the Combat Ammunition Team developed a business model that highlights small business innovation and rapid response capability while reducing cost, risk and cycle time. This multiple-award, indefinite-delivery, indefinite-quantity, best-value, 100 percent small business set-aside plan for recurring production of ammunition eliminated an estimated $60 million in labor costs and potentially years in the average time from receipt of a requirement to delivery order award.

The Army remains dedicated to working with the small business community to innovate rapidly, enhance competition, reduce cost and deliver solutions to our Soldiers.

**SET-ASIDE STRATEGY**

Mortarmen assigned to 1st Battalion, 503rd Infantry Regiment, 173rd Airborne Brigade out of Vicenza, Italy, load an M224 60 mm mortar during a live-fire exercise at Novo Selo Training Area, Bulgaria, in September 2015. Under a single acquisition strategy developed by the Combat Ammunition Team at the Program Executive Office for Ammunition, 53 artillery and mortar components are procured through a 100 percent set-aside for small business. The multiple-award, indefinite-delivery, indefinite-quantity vehicle for recurring production of ammunition created efficiencies so significant as to earn the team a David Packard Excellence in Acquisition Award, the highest award in DOD acquisition, in 2012. (Photo by SSG Brooks Fletcher, 16th Mobile Public Affairs Detachment)

FROM THE PRINCIPAL DEPUTY
ASSISTANT SECRETARY OF THE ARMY
FOR ACQUISITION, LOGISTICS
AND TECHNOLOGY
MR. GABRIEL CAMARILLO

# INSTILLING EXCELLENCE

## Heidi Shyu's legacy in Army acquisition

**A MEMORABLE BEGINNING**
Shyu is sworn in as the ASA(ALT) by Undersecretary of the Army Joseph W. Westphal on Oct. 4, 2012, at the Pentagon. She had served as acting ASA(ALT) since June 4, 2011. Shyu is retiring at the end of January. (Photo by SSG Bernardo Fuller)

Throughout a five-year period of remarkable change and instability, Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) Heidi Shyu has left a remarkable legacy as a leader, professional—and, to many, a mentor. Her tenure in the ASA(ALT) organization has left not only lasting impacts on the warfighter and the acquisition process, but also an indelible mark on the Army acquisition community, and all those she worked with and alongside during her time with the Army. We will miss her significant contributions to the Army.

Ms. Shyu first joined ASA(ALT) in November 2010 as the principal deputy. She was nominated to serve as the ASA(ALT) in February 2012 and confirmed that September. During her tenure, I have had the distinct privilege and pleasure to serve as both her special assistant and principal deputy—a proximity that enabled me to learn a great deal. Watching her gracefully assume and execute the heavy responsibilities of leading a workforce of nearly 5,000 people and managing more than 600 Army programs, I quickly came to appreciate her business acumen, strong technical expertise, unparalleled leadership and, above all else, her unwavering commitment to the warfighter.

**LEADER OF LEADERS**
Shyu, flanked by the author and LTG Michael E. Williamson, principal military deputy to the ASA(ALT), joins senior leaders from across the Army acquisition community—primarily program executive officers (PEOs) and deputy assistant secretaries of the Army (DASAs)—at the PEO-DASA Summit in December 2015 in Orlando, FL. (Photo by 1LT Brittany Kluck, 143rd Sustainment Command (Expeditionary) Public Affairs)

**A PERSONAL APPROACH**
Typical of her ASA(ALT) leadership style combining a disarming sense of humor with a solemn dedication to the warfighter, Shyu shares a lighthearted moment with the Soldiers of 4th Battalion, 27th Field Artillery Regiment, 2nd Brigade Combat Team, 1st Armored Division during Network Integration Evaluation 15.2 in May 2015. (Photo by SGT Jessica Littlejohn, 24th Press Camp Headquarters)

Her time in the Office of the ASA(ALT) spanned one of the most austere fiscal climates in the history of the service, with steeply declining budgets across DOD, and saw a significant drawdown of personnel and equipment from two theaters. Despite these challenges, I was always impressed by her commitment to a future that needed preparation: capabilities that required investment, threats that required a planned response and future leaders in the organization that called for mentoring. Throughout it all, she infused our work—the Army's mission—with an uncommon humanity and disarming sense of humor. Working in Army acquisition became more than a noble calling; it became an exciting and enjoyable endeavor on behalf of our Soldiers.

## MANAGING WELL ON MULTIPLE LEVELS

Secretary Shyu's accomplishments are too numerous to describe here, but three stand out as she leaves ASA(ALT). First, she established a successful emphasis on core competencies for the enterprise. Sound program planning, risk management and detailed execution reviews were her hallmarks. She worked tirelessly on evenings and weekends, often summoning us to technical "deep dives" that lasted hours to help define a program strategy. The result was a set of programs that were managed well with clear direction and strategy. This no-nonsense approach to acquisition offered a lasting counterpoint to critics who pointed to a history of program cancellations and false starts.

Second, Secretary Shyu succeeded in guiding the Army's equipping efforts beyond the immediate needs of current operations to focus on capabilities required in the future. Her push for a comprehensive approach fundamentally changed the processes used to plan investment in research, development and acquisition to allow for extended planning over a 30-year horizon.

This had the effect of linking processes for defining investment in science and technology with existing acquisition programs and Army sustainment efforts in new ways. These effects will be appreciated for years to come.

Finally, in yet another era of acquisition reform, Secretary Shyu reminded us all of an often unheard voice in the debate—that of the program manager. Contrasting what she saw in acquisition with her own experience in the private sector, she highlighted the differences experienced by government program managers who often lack the ability to flexibly use resources—both fiscal and personnel—to overcome technical challenges and achieve innovative results. She often relied on humorous analogies about the burdens on the program manager who faces accountability for results but shares responsibility across a diffuse set of stakeholders. Army acquisition will miss her ability to communicate these challenges so effectively using inimitable charm and engaging personality.

## CONCLUSION

Without question, Secretary Shyu has left an indelible mark on the heart of the Army and DOD acquisition communities. While I know we will all miss her greatly, I remain confident that her commendable dedication to our Army will continue to inspire us long after her departure. I am profoundly grateful to have had the opportunity to learn from her and serve with her. She has earned a well-deserved break from those five-hour technical deep dives, and I wish her all the best in her next challenge.

**IN THE THICK OF IT**
CW2 Pedro Alvarado, right, retrosort yard accountability officer attached to the 82nd Sustainment Brigade (SB) – U.S. Central Command Materiel Recovery Element (CMRE), briefs Shyu and GEN Dennis L. Via, left, commanding general of U.S. Army Materiel Command, on CMRE materiel reduction efforts at Kandahar Airfield, Afghanistan, in March 2014. Shyu established a holistic, forward-looking approach to acquisition planning, linking processes for investment in science and technology with existing programs and Army sustainment efforts in new ways. (U.S. Army photo by SFC Jon Cupp, 82nd SB-CMRE Public Affairs)

**GETTING TECHNICAL**
SSG Micah Hitchcock, U.S. Special Operations Command (USSOCOM) air operations noncommissioned officer in charge, instructs Shyu on how to fire the Precision Sniper Rifle MK 21 MOD 0 during the Special Operations Forces Acquisition Summit at MacDill AFB, FL, in October 2014. Formerly vice president of technology strategy for Raytheon Company's Space and Airborne Systems, Shyu, who holds advanced degrees in mathematics and electrical engineering, brought strong technical expertise to the job of ASA(ALT). (Photo by TSgt Angelita Lawrence, USSOCOM)

# SPOTLIGHT:

## MR. LONNIE JOHNSON

### International agreement work leverages law degree, active-duty experience

**MR. LONNIE JOHNSON**

**COMMAND/ORGANIZATION:**
Deputy Assistant Secretary of the Army for Defense Exports and Cooperation; Assistant Secretary of the Army for Acquisition, Logistics and Technology

**TITLE:**
International armaments cooperation staff officer, international agreements team lead

**DAWIA CERTIFICATIONS:**
Level III in program management

**YEARS OF SERVICE IN WORKFORCE:** 3

**EDUCATION:**
J.D., College of William & Mary; B.A. in history, Norfolk State University

In ensuring that Soldiers have the best equipment for mission success, acquisition professionals often look outside the United States, to partner nations or U.S. allies. That's where Lonnie Johnson comes in. As a team lead for international agreements for the deputy assistant secretary of the Army for defense exports and cooperation (DASA(DE&C)), Johnson negotiates and develops international cooperative research, development and acquisition (ICRDA) agreements that put the world's state-of-the-art technology in the hands of U.S. warfighters.

The goal of ICRDA agreements is to promote research, development and acquisition collaboration that improve coalition warfare, maximize scarce program resources and leverage the global technology and industrial base. The Army enters into such agreements when there's a technology it sees as promising, with the U.S. government and the developer paying for its development.

"As an agreements negotiator, you often have to be able to decipher what the intended objectives of joint collaboration are and then determine how best to achieve those objectives through development of international agreements that authorize specific cooperative activities," Johnson said. That can be challenging, he conceded, "but proponents rely on negotiators to help them fulfill their requirements for joint cooperation. The ability to do so successfully builds confidence in our organizational core competencies and individual subject-matter expertise."

Before coming to the Army Acquisition Workforce, Johnson, a self-described "Army brat," spent three years on active duty, including a deployment to Iraq. "My father served for 30 years, and I joined the Army in part because I felt indebted for all that his career had allowed him to provide for us," he said. Johnson left the Army in 2004.

Before going on active duty, he obtained his law degree from the College of William & Mary Law School. "Having a law degree definitely helps [in my work]," he said. "A key part of our work is negotiation, and my legal background helps with that skill. Also, experience in interpreting the law has enabled me to review the legal authorities that authorize armaments cooperation more critically so that I can recommend specific mechanisms to achieve intended objectives."

He's been in acquisition for three years and counts an agreement he helped to develop with representatives from India as one of his proudest accomplishments. "The Next Generation Protection Ensemble Project Agreement has the potential to lead to the next chemical protection garment for the

warfighter and supports the U.S.-India Defense Technology and Trade Initiative," he explained. "The agreement required intense coordination between DOD and the India Ministry of Defense, which resulted in the agreement being developed at an unprecedented pace."

**What do you do in your position, and why is it important to the Army or the warfighter?**

I negotiate and develop ICRDA agreements that enable the Army to provide materiel solutions to the warfighter. The goal is to ensure that Soldiers have the best tools at their disposal, and often those tools are developed in cooperation with a U.S. ally.

**How did you become part of the Army Acquisition Workforce, and why?**

After working several years as an international policy and agreements specialist for the Joint Improvised Explosive Device Defeat Organization, I had an opportunity to join the Army Acquisition Workforce supporting DASA(DE&C), an organization whose personnel I regularly coordinated with and respected for their expertise. Ultimately, I applied for and was offered a position working as an agreements negotiator, which is the position I hold now.

**What do you see as the most important points in your career with the Army Acquisition Workforce, and why?**

Obtaining my Level III DAWIA certification in program management was an important accomplishment. Certification training provided me with a better understanding of DODI 5000.02, "Operation of the Defense Acquisition System," and how the development of ICRDA agreements plays a part in the acquisition life cycle. From materiel solution analysis to production and deployment to operations and support, international cooperative agreements can have an impact on each phase of the life cycle. In addition to being able to potentially satisfy joint acquisition requirements, the cooperation conducted under international agreements enables resource sharing and reduces redundancy in effort, which saves both nations money and time.

**Can you name a particular mentor or mentors who helped you in your career? How did they help you? Have you been a mentor?**

The former deputy director of the International Armaments Cooperation Directorate at DASA(DE&C). Even before I joined DASA(DE&C), he was someone I could reach out to for advice. When I got the opportunity to work directly with him on a daily basis, I was able to learn more in two years than I had in the previous four working for another organization. The former deputy director took his craft seriously and always took time to ensure that he provided the agreements team with opportunities for professional development, whether that be sharing lessons learned, notifying the team of changes to regulations and the agreements development process, or encouraging his staff to continue DAWIA training and certification. I haven't had an opportunity to serve as a mentor yet, but would love to someday mentor someone new to the international agreements development process.

**In addition to knowing that your work contributes to mission success for the warfighter, what's the greatest satisfaction you have in being a part of the Army Acquisition Workforce?**

I really value being a part of a specialized community with unique skill sets that have an impact on the Army as a whole; however, the greatest satisfaction I have in being a part of the Army Acquisition Workforce is providing assistance to the warfighter. As a veteran of Operation Iraqi Freedom, I fully understand the importance of having the material capabilities required to perform your job. As a civilian, I like to think that I aid the effort to provide the warfighter with what they need through development of ICRDA agreements. The cooperation afforded by international agreements helps fulfill warfighter requirements and, at the same time, allows the U.S. Army to leverage foreign funding and technology. That represents tremendous cost savings for the United States, which is significant, considering current defense budget constraints.

**If you could break the rules or make the rules, what would you change or do?**

Although the international agreements we develop enable cost-sharing with our foreign partners, funding sometimes can be a challenge—especially when there is no money allocated for collaborative projects. If I could change anything, I would increase the number of programs that offer research and development funds to help kick-start new projects and keep them running until proponents are able to fund and sustain those projects.

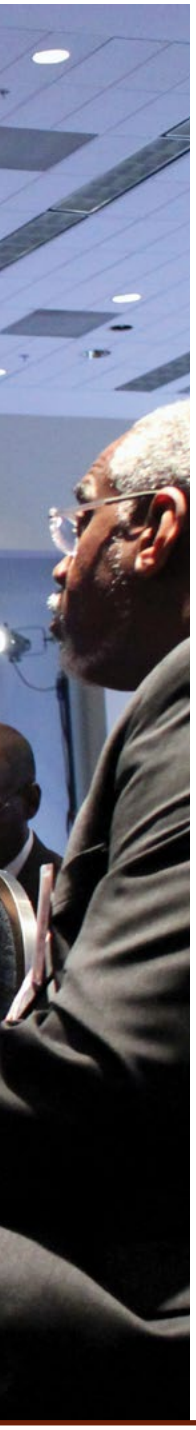
**What advice would you give to someone who aspires to a career similar to yours?**

Although your career path may not directly lead you to where you want to be, stay motivated and continue to strive for opportunities to perform work that interests you, and chances are you will find a job that will provide you with both personal and professional fulfillment.

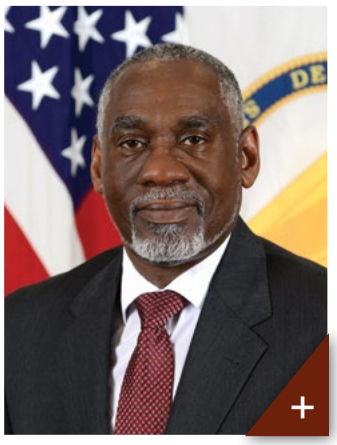
***—MS. SUSAN L. FOLLETT***

**SMALL BUSINESS EDUCATION**
LTG Robert S. Ferrell, Army chief information officer/G-6, speaks to an audience of small business and government procurement representatives during the Army Small Business Seminar at the AUSA Annual Meeting & Exposition in October 2015. (Photo courtesy of Army OSBP)

# *IT'S ALL IN* THE DELIVERY



Army small business director Tommy Marks seeks to build on a strong foundation with four program pillars—mission, compliance, outreach and training—in line with Better Buying Power principles. The objective: to cultivate and sustain a broad and diverse base of small businesses that can deliver needed capabilities to the warfighter.



Since he left college in 1977, Tommy Marks, director of the Army's Office of Small Business Programs (OSBP), hasn't had a job that wasn't related to the Army. "It's been all Army," he said, and that includes 24 years on active duty.

He retired as a lieutenant colonel in 2001, and spent time as a defense contractor working for the Army, then with a small business that supported the U.S. Army Materiel Command (AMC). Later, he spent six years deployed to Kuwait for the Army's Logistics Civil Augmentation Program (LOGCAP), overseeing the execution of more than $30 billion worth of contracts. He ended his LOGCAP tenure as executive director.

Marks brings a wealth of Army knowledge to his leadership of OSBP, where he took over as director in April 2015. According to Marks, he hardly saw himself as having a lock on the job. "I was blessed enough to get selected out of a panel of folks that applied for the job," he said. "I'm humbled that the secretary and the undersecretary thought enough of me to be the one to lead the Army's program," following Tracey L. Pinson, who had been director since 1995. "There were other folks as qualified, or probably more qualified."

Marks said that his "first baptism, really, into small business, was meeting Tracey Pinson when I came to the Pentagon as the policy chief for services contracts. I'd briefly met her once in the field."

Pinson led OSBP from 1995 until mid-2014, when she retired to go to work for the Small/Diverse Business & Strategic Alliances unit at Boeing Defense, Space & Security. Shortly after her retirement from public service, she was diagnosed with cancer and died in December 2014. During her tenure, the share of total Army contracting dollars awarded to small business increased from 25 percent to 32 percent.

Perhaps most notable was her impact on service-disabled veteran-owned small businesses (SDVOSBs). She launched the National Veteran Small Business Conference and Expo in 2005, which grew to become the biggest event of its kind and led the Army in exceeding the statutory 3 percent contracting goal for SDVOSBs for the first time in 2012. Marks said of his predecessor, "Those are some tough stilettos to put my feet in and follow."

We interviewed Marks on Oct. 20 2015, shortly after the Association of the United States Army (AUSA) Annual Meeting & Exposition, at which OSBP held its third Army Small Business Seminar.

**Army AL&T:** You've been on the job with the Army Office of Small Business Programs since April 2015, so you're the new kid on the block. Do you foresee changing direction in any way? For example, some of your stated priorities are outreach to small businesses and increased internal advocacy for small business involvement in contracting—what else should we stay tuned for?

**Marks:** Let me start by saying this: Number one, what I inherited from my predecessor, Ms. Tracey Pinson, was really a solid foundation for the Army, which has led the small business community in DOD for years.

I'm not changing anything, really. I'm just emphasizing what senior leadership—which includes [Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)] Ms. [Heidi] Shyu, as our acquisition executive—and the Army look for us to do: focus on the four pillars of mission, compliance, outreach and training, which is in line with Better Buying Power.

So, added to that, what we're trying to do is establish some in-house training that will be provided both to industry and to our acquisition professionals—including the latest legislative updates affecting small businesses, which are a moving target sometimes. (See "Training Possibilities.")

## TRAINING POSSIBILITIES

Here are some of the topics on which the Army OSBP is contemplating in-house training for industry and the acquisition workforce.

- Using the federal procurement system as a market research tool for small businesses.
- Army OSBP website tools.
- Army Procurement 101.
- Effective proposal writing.
- Women-owned small business program basics.
- Long-range acquisition forecast.
- Army command spotlight.
- Mentor-protégé program.
- HUBZone utilization.
- 8(a) training series.
- Small business professional boot camp.

**Army AL&T:** What is the return on investment for the Army Office of Small Business Programs? In the discussion at AUSA regarding the Small Business Innovation Research (SBIR, rhymes with "fibber") program, it was said that the taxes paid by Qualcomm, which got its start as a SBIR, could fund the program. Do you consider the Army Office of Small Business Programs a "profit center" for the Army or the government?

**Marks:** Well, I think when you couch it in those terms, return on investment, that's really what everyone is looking for, and, of course, we're not a profit center in the government.

But the return on investment can be defined as other than just profit centers. So, for us, the industrial base—which is most important to our mission support in order for our warfighters to do their mission—is where we look for return on investment. Do we have the right mix of companies that can come to the table and do the things that we need done to provide those weapon systems, those services and the maintenance that covers the weapon systems after production? Small businesses take part in that. So that's really the foundation.

It's not that we just give contracts to them. What we do is ensure that those small businesses with the right capabilities, that can support our mission requirements, get a fair shot at providing their products and services to the Army. (See Figure 1, Page 19, for a breakdown of small business spending by portfolio.)


**THE NEW KID'S IN TOWN**
Marks meets with Team Redstone [AL] small business professionals in August 2015 for the first time since undertaking his new leadership role. (U.S. Army photo)

**Army AL&T:** Do you think it's simple enough for small businesses to come to the Army, and say, "Hey, I've got a great idea," and the Army might say, "Sure. Let's give it a shot"? Or do you think it could be simplified?

**Marks:** I think there's always room to make it simpler. But I think we have things in place to make it—"easy" is really not the right word, but to show them that there are opportunities that are part of SBIR.

That's been around for years. It's one of the tools, avenues for small businesses out there whereby some guy, Tommy Marks, develops a capability in his garage and can potentially show that to the Army to see if it fits in a mission. It has to be tied to some mission requirement to really be of value to us.

We try to make Army contracting easier for small businesses by helping them understand Army mission requirements so they can mold their products and services to what we need. We then connect them with the small business specialist at the appropriate installation or contracting office who can keep them updated on specific Army requirements and continue to help them hone their capabilities.

**Army AL&T:** You've been involved in small business from both that side of the fence and government. In "Unintended Outcomes of Small Business Legislation and Policy: Opportunities for Improvement," released in early 2015, Jacques Gansler and his colleagues found significant disconnects between the original purposes of small business programs and the way they are currently administered. For example, the report says that with respect to the goals that each of the services has for small business participation, "no one we interviewed understood the rationale or methodology for developing the goals, or whether one even existed." Do you think that the Army Office of Small Business Programs' work is fulfilling a deliberate and well-thought-out purpose?

**Marks:** I read the report months ago, right after I took the job. I actually went to an outbrief that they had. You know, some of the things that they said in there surprised me. But I would say that the Army program, again, that I inherited and have taken over from Ms. Pinson has a solid foundation.

Now, when it comes to the goals, I will tell you that in the community, the goals are what everybody talks about. And not everybody clearly understands them. In my six months in the job, even all the way up through the SBA [U.S. Small Business Administration] and OMB [Office of Management and Budget], which are actually where those goals come from—as they try to implement what Congress has written, the execution is not always the same as when somebody just wrote policy. In the Army, we have a clear rationale and methodology. In fact, what we do [is] we start with the spending projections.

Then the commands look at what they've done in the current fiscal year in terms of small business utilization. They make adjustments based on their requirements forecast for the coming year and send a final projected goal up to my office.

We get an overall goal from DOD. Last year [FY15], it was 26.5 percent, meaning that 26.5 percent of total small-business-eligible Army contracting dollars should go to small business. Then that's further broken down, based on spend across the federal government, [into] what percentages we should try to award in the socioeconomic categories of service-disabled veteran-owned small business, HUBZone [Historically Underutilized Business Zones, an SBA program] small business, small disadvantaged business and women-owned small business. (See Figure 3 on Page 23.)

Our commands—you know, that's where the rubber really meets the road. Out there in the field are five HCAs—the heads of

contracting authority—who are actually responsible for the execution. They are GEN Dennis Via at Army Materiel Command; LTG Thomas Bostick at the [U.S. Army] Corps of Engineers [USACE]; Monte Kapec at Army Medical Command; Harry Hallock at the Intelligence [and Security] Command at Fort Belvoir; and GEN Frank Grass at the National Guard Bureau contracting centers, which is a joint operation that the Army's responsible for. Those are our five major buying commands for everything that the Army does. (See Figure 2, Page 20.)

And so we work together as a team on what the goals ought to be. When we get the OSD goals, we then look at what OSD has asked us to do. And if there has to be some adjustment, that's done in a teaming effort with the commands—nothing dictated from here like, "Hey, you owe me 20 percent," because we [OSBP] don't write any contracts. We don't own any requirements in this office. That's all out in the field, based on mission requirements.

**Army AL&T:** So you're the middleman, in a sense, or you're the broker? How would you put it?

**Marks:** I'm the Army's lead advocate for small business. And so on behalf of the secretary, I'm the guy who talks to our commands and to DOD about what the Army will do, based on what our commands are able to bring to the table.

**Army AL&T:** How do the linkages work between all of the small business programs and your office and the other Army small business offices, such as the ones at AMC, the Army Corps of Engineers and many other major commands?

**Marks:** The Army is all about chains of command, right? And so, having been raised in a chain-of-command environment, it wasn't too tough for me to tie together, you know, who does what to whom and who's responsible for what on the linkages. So the Small Business Administration, at the federal level, is responsible on behalf of [the president for] everything to do with small business. SBA has assigned DOD a small business utilization goal of 23 percent for the past few years. DOD, in turn, assigns small business goals to the services based on this goal as well as other facts. We, in turn, assign goals to the commands based on the methodology I described earlier. We then work with the small business offices at these commands to provide them with the guidance and support they need to achieve their goals.

*It's not that we just give contracts to them. What we do is ensure that those small businesses with the right capabilities, that can support our mission requirements, get a fair shot at providing their products and services to the Army.*

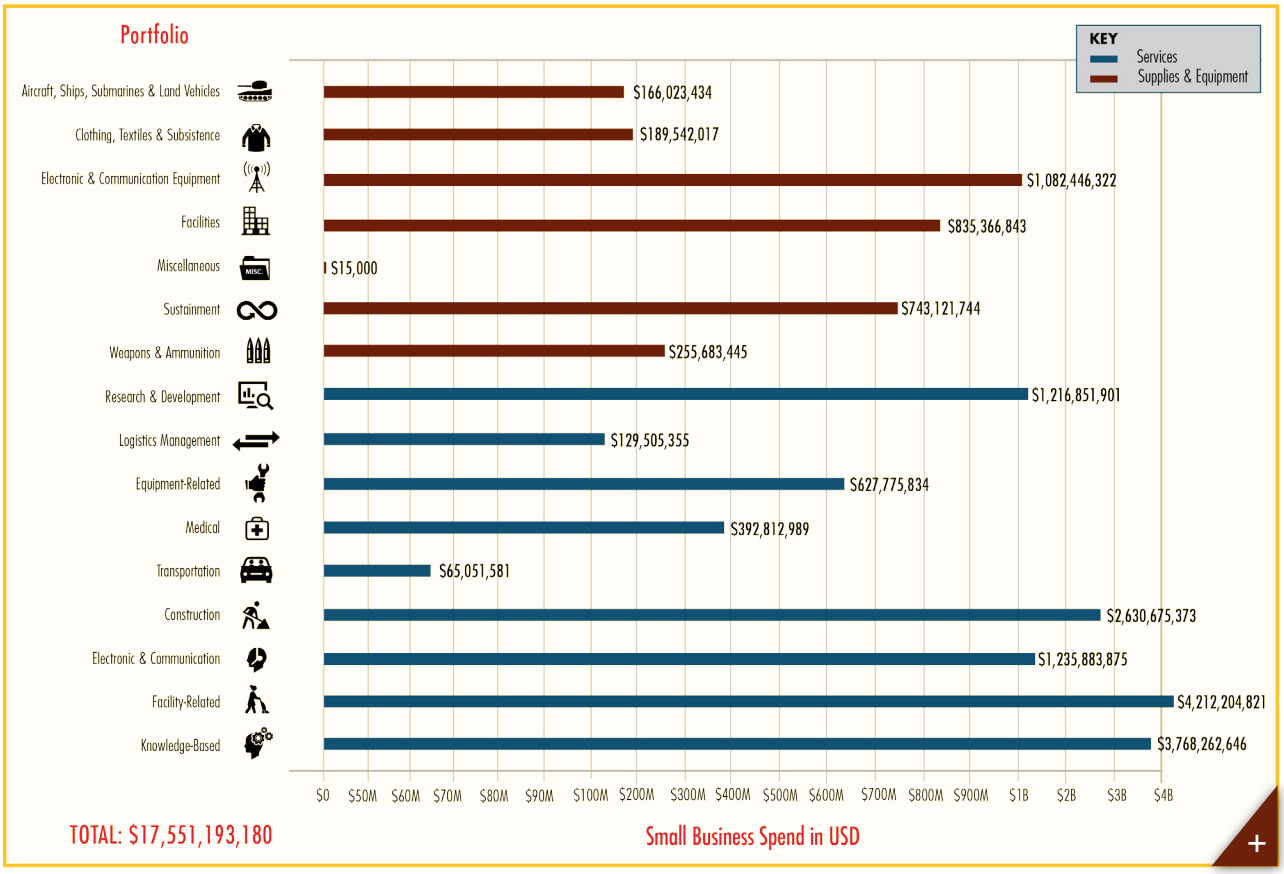
**Army AL&T:** The Army has succeeded in making its goals for a long time. What makes the Army different from the other services, which didn't make their goals until recently?

**Marks:** I think what made the Army different was the command emphasis on the role that small businesses play in the overall picture of the Army's industrial base. With that emphasis, the whole team pulled together to ensure that we had the right mix. There's no magic formula to that, but you've got to have large and small businesses to make a good industrial base. And where most of the ideas come from—and I think even in Gansler ["Unintended Outcomes of Small Business Legislation and Policy: Opportunities for Improvement"], they will tell you this—small business is where a lot of those up-and-coming ideas, especially in technology, come from now. A lot of those small businesses start small, but they do what? They grow based on the rules, they end up growing themselves. But that's just the nature of the business.

**Army AL&T:** Do you find that there are small businesses that do one thing really well and just stick to that thing?

**Marks:** Well, I think we find a variety, actually, across the spectrum. There are those guys that when they went into it, they knew this is what they want to do, and they're satisfied with that and they perfect that. So that's where they stay. Then there are those that are really into growing their companies, and eventually, a lot of those grow not to be a large business, but they grow out of being small. You hear them talking about how it's hard for them to compete against the very large businesses of the world, because, at this point, they can't compete against the small businesses. So we're starting to get a lot of that. But again, that's all a good

FIGURE 1




**PRODUCTS AND SERVICES**

The Army OSBP slices and dices its small business data in a variety of ways. One of those is by portfolio. This chart shows the breakdown of small business-eligible dollars in FY15 by Army portfolio. About 81 percent of the total Army spend with small business is on services, with 19 percent spent on products. (SOURCE: Army OSBP)

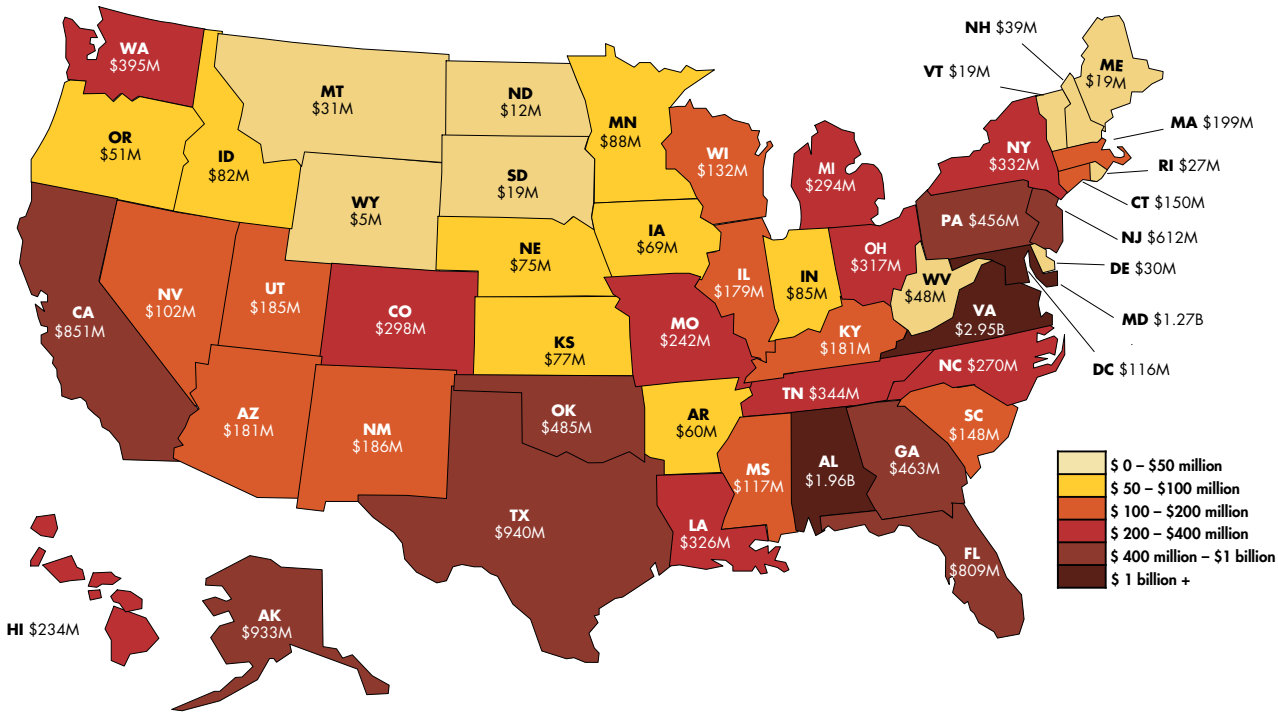
balance for what we need in the industrial base because it keeps things competitive. I mean, if you didn't have small businesses or your mid-tier [companies] and all you had was large businesses, then they just would control everything.

**Army AL&T:** The small business arena is complicated by numerous categories and subcategories of congressionally mandated set-asides and incentives. In your experience, is this complex system stable and functioning smoothly? If not, are there any initiatives pending in DOD to work with Congress on improving it?

**Marks:** Each year, there are changes and recommendations going in. The latest thing that has come out is that Congress looked at how women-owned businesses are treated. So, as of October, you can now set aside, as a sole-source award, to a woman-owned small business if there's one that's capable and qualified to do the job, based on a certain dollar threshold. Those are ways that, when Congress looks at contract spending overall, they know whether we need to provide additional help to certain socioeconomic categories.

It's not a giveaway, which sometimes is what people think. There are qualifications you've got to meet. Ultimately, it's about capabilities that can support Army missions. If it can't support what we need to do for our warfighters, we don't have the money to spend on just anything.

FIGURE 2




**MAPPING IT OUT**

A state-by-state breakdown of the $17.56 billion total Army small business spending in FY15 shows, not surprisingly, that small businesses tend to cluster where more Army personnel and programs are concentrated. For example, AMC is headquartered at Redstone Arsenal in Alabama; the U.S. Army Medical Command, National Guard Bureau, and U.S. Army Intelligence and Security Command are in Virginia, as is the Pentagon, and USACE headquarters is in Washington, DC. (SOURCE: Federal Procurement Data System – Next Generation Small Business Achievements by Awarding Organization Report Ad-Hoc with Vendor State, October 2015)

And second, we don't need it just to have it on the shelf. So that's the message that I'm trying to deliver. Now, you'll hear folks say that, "Well, that's going to cut out small businesses." Well, small businesses have to do like everyone else: You've got to be innovative and you've got to be forward-thinking. If you're doing that, then I think you'll survive. Those companies that survive, whether they're large, medium or small, are those that are able to think outside the box and look down the road, not just to what's happening now.

A lot of [businesses] were born out of the war. Now we know the war is not over-over, but it isn't anywhere near what it used to be back in 2003 until about '10 or '11. Money was just plentiful. Those days are gone. If you're not willing to look at yourself and how you can make changes, then you'll be left behind.

**Army AL&T:** For the first time, in 2014, all of the services, not just the Army, met their small business goals, probably in part as a result of Better Buying Power (BBP). What do the BBP initiatives mean for small businesses working with the Army? How is this different than before BBP?

**Marks:** I was raised in an environment where units do best when the boss checks. It's not that better buying power wasn't already here. It started with Dr. Ash Carter, now the SecDef [secretary of defense], and then continued with Mr. Kendall [the Hon. Frank Kendall, undersecretary of defense for acquisition, technology and logistics]. So they named it.

It's just the emphasis that was put on [BBP] from the top. So, with that, people started paying more attention to it. For example,


**ARMY BUSINESS**
Marks, second from left, and James Lloyd, second from right, manager for Army service-disabled veteran-owned and HUBZone small business programs, meet with representatives from the U.S. General Services Administration at the Army OSBP booth during the Government Procurement Conference in April 2015 in Washington, DC. (Photo courtesy of Army OSBP)

part of Better Buying Power is that every senior executive has to have small business language in their performance evaluations. Somewhere, if you're seeing an executive in the Army, you are potentially touching small business. And so those are types of things that Better Buying Power brought. It just pulled together those requirements that were already there, and we got that command emphasis.

**Army AL&T:** That command emphasis comes across in things like the annual reviews that you were just mentioning?

**Marks:** Exactly. For example, even for major weapon systems, I've got a seat at the table for small business. So as we're going through acquisition strategies, small business is a part of that. Even though it was required, that wasn't always the case. And so Ms. Shyu expects me or somebody from my office to be in the room when they're talking about those strategies. That's both on the weapon systems side and the services side.

That has permeated throughout our Army to those commands I told you about, the heads of contracting authorities. So our requiring activities, who actually have the mission, have the funding that is budgeted for them and have to come up with the requirements to support their mission. That triad, if you will, works together to ensure that the field is diversified and that our industrial base is diversified in order to meet our mission needs.

**Army AL&T:** Partnerships are a big part of working in and with small businesses. For the businesses themselves, how is the Army fostering effective partnerships?

**Marks:** Better Buying Power says they want us to do more outreach, number one, with our industry partners. It used to be that we would be very secretive about upcoming requirements. Today, we hold advance planning briefs with industry throughout the Army with our commands. You've got industry in the room, you've got the government in the room, and we're sharing that we might need X coming up in the next five years. So that helps them with their planning. And that's shared with all of industry—small, mid-tier and large.

That's how we try to formulate those partnerships. Our PEOs, our program executive offices, that work for Ms. Shyu, they're all into the outreach business. Our main commands, too, hold these planning briefs that industry comes to. Inside the Army itself, it's a total team effort, you know. And teams can get complicated at times, but everybody understands that it's about mission support to the warfighters, and we try to pull the best teams together to get there. That would include the small business capabilities that we can find that will assist us, both in services and weapon systems, to do that job that the secretary and the chief [Army chief of staff] direct our commanders to do.

**Army AL&T:** You have particular expertise in the government's acquisition of services. Do small businesses have a particular role to play in providing services to the government, as opposed to providing a physical product?

**Marks:** There is not a thing that we do in the Army that a small business does not touch. Say we need a linguist to

deploy to support our forces in Afghanistan. A lot of those linguists come from small businesses, up to the scientist that helps work on a research and development project with the [U.S. Army] Research, Development and Engineering Command at Aberdeen Proving Ground [MD]. In terms of services, the Army spend with small business is about 81 percent on services versus 19 percent on products. (See Figure 1 on Page 19.) Small business plays such a big role in services that sometimes we can't find enough of them.

**Army AL&T:** One of the things that the commands seem to be very accustomed to doing is measuring their success in the amount of dollars spent. How do you measure success with small business?

**Marks:** Well, the true measure of success is when requiring activities, our commands, want to keep them on their team. That's really the true measure of success, the capabilities that they brought to the table.

**Army AL&T:** How would you rate the information systems support to the Army's small business effort? Is the Army, first, doing enough to make it easier for small business to qualify and compete? And, second, is the Army making it easy enough for program managers to track those small businesses and their performance?

**Marks:** We've created some in-house things here. We have a website that small businesses can go to—any business, but in particular our small businesses. They can search for every small business specialist that we have employed by the Army, by command, on that list. So if you're looking for the AMC small business advocate, it pulls up the contact information for Nancy Small [director of the small business office at AMC] and her folks, or somebody down at the Army Contracting Command, or the Mission and Installation Contracting Command in San Antonio.

We also have on that website a step-by-step guide on how to do business with us. And we include an acquisition forecast that our commands put together, which we update throughout the year, because things change in what the out-years look like based on mission requirements. And we work with CIO [the Army chief information officer]/G-6 to try to get the right information support systems in place.

When we get those forecasts—all posted by those five major commands—businesses can go there, click and see what's hot on the shopping list for AMC. I will tell you, we've got commanders in the field today, like GEN Via at AMC and LTG Bostick at USACE, that really believe in small businesses and want to see them succeed. As long as small businesses can bring the right capability to the table to support those mission requirements, they have an opportunity to compete.

**Army AL&T:** Can you give us some examples, if necessary without naming them, of small businesses that have succeeded as the result of working with the Army Office of Small Business Programs?

**Marks:** What comes to mind, even before I came here, is the mentor-protégé program. That's been around for several years. To date, we've had 80 small

**SMALL BUSINESS DEVELOPMENT**
Pamela Monroe, program manager, Army mentor-protégé and subcontracting programs, leads the DOD panel discussion at the Montgomery County [MD] Chamber of Commerce GovConNet Procurement Conference in May 2015. Seated, from left, are Sandra Broadnax, director, Office of Small Business Programs (OSBP), National Geospatial-Intelligence Agency; Patricia Obey, acting director, Department of the Navy OSBP; and Kenyata Wesley, acting director, DOD OSBP. (Photo by Jordan Silverman)

businesses that have graduated from that program and have gone on to be successful. The mentor-protégé program pairs a large business with a small business in order for that large business to help enhance the capabilities of that small business.

One of the mentor programs took a small company and helped them be very successful with overseas deployment processing of their people, which, number one, reduced some of the dollars on the contract. Number two, it provided a forward deployment center in Dubai, which aided the buildup in Afghanistan.

So, today, we've got about 21 mentor-protégé agreements that are in place that are working very well between the partners.

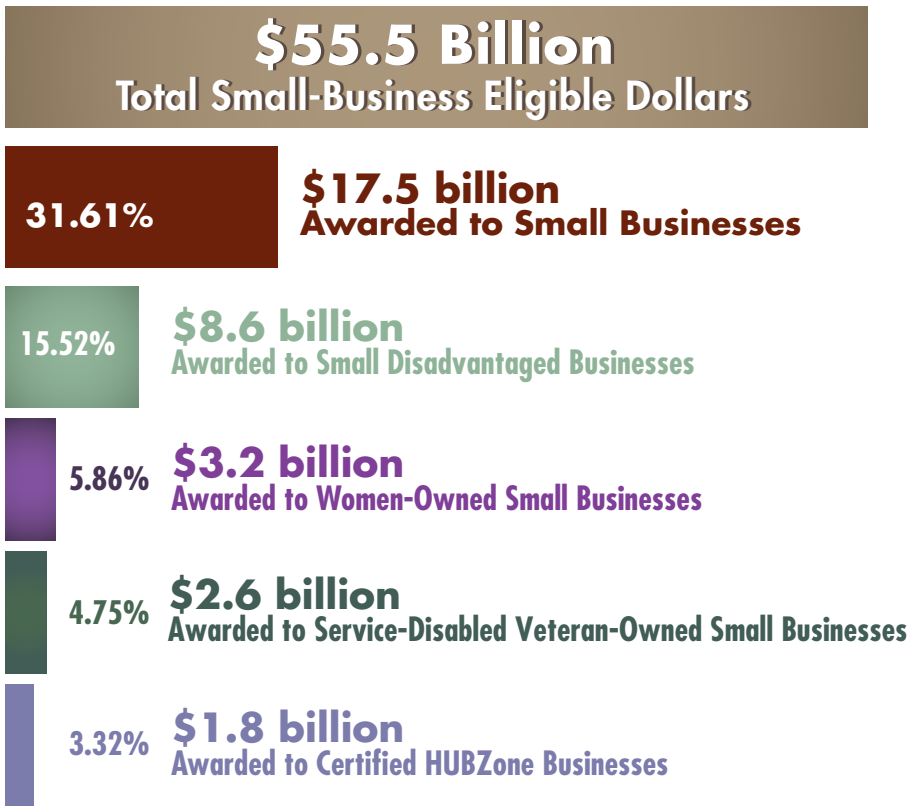
**Army AL&T:** Lots of Army Acquisition Workforce members may think, "This is an Army-level program; nothing I can do." But is that true? How can the individual members of the Army Acquisition Workforce help in working with small businesses? The program executive offices? The Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology?

**Marks:** The Army's about chain of command. So, on the green-suit side, we always talked to the term "commander," and I wore the green suit. And commanders are responsible, right? On the civilian side, Ms. Shyu, who owns the PEOs, the program executive offices that are responsible for the design, the research and development of those products that our warfighters need: She is on board. She is the number one fan of our small businesses. On the green-suit side of the house, down through the secretary to the chief, the commanders with the stars, they, too, have given direction and guidance that small business is an integral part of the industrial base.

We need to ensure that we're diversifying that portfolio of contractors when we're spending those dollars in support of mission requirements. I've been to every one of those major commands in my six months, and they're all on board. Again, it's not about a giveaway. It's about looking at what that mission requirement is, and how, when we get ready to put that team together, we have the right players on the team in order to be successful.

*For more information on Army small business programs, including the mentor-protégé program and other opportunities for small businesses as well as information for government small business offices, go to the website of Marks' office at* ***http://www.sellingtoarmy.info/.***

FIGURE 3




**THE DEMOGRAPHICS OF SMALL BUSINESS**

The Army's small business goals reflect congressionally mandated set-asides, administered by the SBA, to support certain socioeconomic groups. Each of these set-asides equates to a percentage of what are known as small business-eligible dollars, the pool of money that the Army can spend in a given fiscal year on work that small businesses could theoretically perform. For FY15, the Army beat its goal of awarding 26.5 percent of eligible dollars to small businesses overall by obligating 31.61 percent, or $17.5 billion, according to numbers subject to SBA verification. (SOURCE: Army OSBP)

**ANTENNAS UP**
Soldiers assigned to 2nd Brigade Combat Team, 82nd Airborne Division (2-82 ABN) and the 3rd Armored BCT, 1st Armored Division conduct a combined arms live-fire exercise using the Rifleman Radio, near White Sands Missile Range, NM, in October 2015. Though a large company (General Dynamics) produced the Rifleman Radio, SBIRs allowed the Army to quickly get several enabling add-ons that result in a radio that does more of what Soldiers want, without adding too much to their load. (U.S. Army photo by SSG Jason Hull, 2-82 ABN Public Affairs.)

# STRENGTH IN *(SMALL)* NUMBERS

The high-tech Army is creating opportunities as small businesses play an increasingly pivotal role in the evolution of the tactical network, and sensible use of the SBIR program is a strong reason why.

*by Ms. Nancy Jones-Bonbrest*

It's no secret that big business dominates the battlefield. Yet, as the Army turns its focus to an agile force, able to deploy on short notice to locations anywhere in the world—all while staying connected with uninterrupted mission command and situational awareness—small businesses are playing a pivotal role in the evolution of the tactical network.

They may not be as big as some of today's industry giants, but in an ever-evolving high-tech Army, their strength lies in their dexterity.

To help give small business a fair shake and increase competition, thus providing better products at more competitive prices, the government is empowering them through the Small Business Innovation Research (SBIR) program. This effort funds viable solutions to develop a capability in stages, often resulting in a targeted effort to meet a niche need that can be filled by small business.

## A DIFFERENT PERSPECTIVE

While developing radios and testing them in the field, the Army's Project Manager for Tactical Radios (PM TR) in the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T) saw issues in radio performance, requirements, logistics and networking. PM TR worked to come up with new design ideas and to gain funding that was in line with the program schedule and maintenance. This proactive engagement, guidance and support in design and testing, along with identifying vendors who were up for the task, resulted in successful partnerships with small businesses.

Take the Army's Rifleman Radio, a lightweight, rugged, handheld radio that allows dismounted Soldiers to communicate through voice and data beyond line of sight. Today, the fielded Rifleman Radios used by Soldiers require one antenna, but performance can vary depending on where the antenna is placed. The antenna works best when positioned high on the body. However, with

**TACTICAL TECH**
The Army's tactical communications network is an integral part of current and future missions. As the battlefield gets more high-tech, keeping Soldiers' edge means keeping up with the cutting edge—and small businesses, with their ability to move quickly, can help. (U.S. Army photo by Amy Walker, PEO C3T Public Affairs)

this increased height comes the increased risk of snagging the antenna, as well as the chance that it could break in harsh environments.

In response to user feedback, PEO C3T sought out an antenna solution through the SBIR program. Each Army PEO can submit two Phase I SBIR topics annually. From there, small businesses produce white papers that are evaluated by a team of experts, who then choose two from the pool of responses. After careful analysis, the two choices are narrowed to one topic for Phase II prototyping.

For PEO C3T, a SBIR contract often answers the need for a specific capability that is part of a larger program. This allows the prime contractor to focus on the overall product while the SBIR targets a particular necessity that's often based on user feedback.

"SBIRs provide the Army with a tremendous benefit," said Michael Badger, chief for PEO C3T's Futures, Systems Engineering and Architectures Branch. "Small businesses, through SBIRs, have the ability to focus on a particular aspect of a system and can utilize innovative methods to take some risks. Their expertise in that niche area can make a big difference."

In the case of the Rifleman Radio antenna, the SBIR selection process resulted in a flexible, body-conforming antenna developed by Massachusetts-based MegaWave Corp. "By utilizing SBIRs in concert with the standard acquisition process, we can get the state of the art, we can get improvements in our performance and we can reduce costs," Badger said. "It's a risk-balancing approach. You still have the prime program going on, but you also have a subject-matter expert and an alternative perspective that is on the cutting edge, as an infusion into a program."

For MegaWave, a company of fewer than 10 employees, the SBIR program helped level the playing field. Once they had their foot in the door, it was a matter of doing what they do best as a small company: moving quickly.

"Just the way small businesses work—we like to keep things moving," said John Yorko, senior antenna and radio frequency systems engineer for MegaWave. "With large companies, it takes a long time for them to get things done. We can make it happen quickly. We don't have the same level of bureaucracy and we don't have to go through layers of internal permissions. We can just go."

MegaWave's Body-worn Conformal Antenna (BCA) works seamlessly with the Rifleman Radio, providing a flexible, durable antenna that conforms and clips securely to uniforms, so Soldiers can maneuver through any obstacle they might encounter. In preliminary tests, the antenna also increases the range of the radio in the majority of cases.

With positive assessment results, the Army is now procuring approximately 70 BCAs for additional assessment, and MegaWave is working on a new SBIR project to produce a vehicle-mounted Mobile User Objective System ultra-high frequency satellite communications antenna, which provides users with secure voice and data on demand. Yorko said the key to success with the BCA was establishing open communications with both the prime and the contracting officer's representative.

"Being able to coordinate with the prime contractor on the testing was very important and valuable," Yorko said. "We were given unlimited access with their engineering folks so we could get our questions answered, and that was key."

## WHERE SBIRS FIT IN

SBIRs were created to stimulate technological advancement by increasing small

business participation in federally funded research and development projects. The three-phase competitive process allows proposals to be submitted in response to DOD solicitations. With SBIRs, the Army can see what the leading edge of research is. They allow an environment where the Army can meet with industry, discuss specific technological needs, evaluate pioneering concepts and, if viable, choose a solution that shows promise.

For example, when the Army needed a networking solution to enhance situational awareness and information sharing during severe conditions with poor connectivity, PEO C3T turned to a SBIR. Currently in Phase II, the Robust Command and Control Networking (C2NET) capability provides a robust multicast solution by linking disconnected communications to the most direct, clear network path. Without C2NET, the network would simply restart using the same prior path instead of the fastest or clearest path that saves time and troubleshooting efforts.

And when a Bluetooth or Wi-Fi connection was needed between the Army's newest waveform radios and the Soldier's smartphone-like end user device (EUD), a SBIR with Arizona-based DataSoft Corp. produced SideBridge, which attaches directly to the radio and wirelessly expands the personal area network communications. With SideBridge, a Phase II SBIR, a hardware module provides Bluetooth connectivity between the radio and EUD for the wireless transfer of images, messaging and video.

Vik Patel, chief executive officer for DataSoft, said that without question, SBIRs allow small businesses to develop a capability and expand product offerings.

"SBIRs are very valuable and have increased our recognition by customers and put us in touch with both prime contractors and government to develop technology at a lower cost and in a shortened time," Patel said. "They also let us develop technology and capabilities without a loss of control of the company or having to borrow money."

Often, SBIRs can be used to fill a very specific need. For example, an additional requirement arose in the case of the Rifleman Radio: the need for a GPS selective availability anti-spoofing module (SAASM), more easily understood as a military-level encrypted GPS.

There are a few companies that are authorized to develop SAASM receivers. The Massachusetts-based Mayflower Communications Company Inc., the only small business among them, developed a competitively-priced NavAssure SAASM dongle that can attach to the radio.

"Before Mayflower, the SAASM receivers were bulky, expensive and used a lot of power," said Naresh Babu Jarmale, vice president of engineering for Mayflower. "We developed one of the smallest SAASM receivers in the world, leveraging the technology developed under a Navy-sponsored SBIR program. Because of this technology, it is now possible to integrate SAASMs into smaller systems like Soldier tactical radios and other small platforms."

Jarmale said that in order for a small business such as Mayflower to compete, SBIR programs are essential.


**MORE FUNCTION, LESS WEIGHT**
SBIRs give small businesses the structure and funds needed to hone a niche capability. For example, from top right, DataSoft produced SideBridge, which expands the personal area network communications without wires; MegaWave produced a flexible antenna that conforms and clips securely to uniforms; and Mayflower Communications developed a small dongle that provides encrypted GPS. (SOURCE: Denise Rule, PEO C3T)

*"By utilizing SBIRs in concert with the standard acquisition process, we can get the state of the art, we can get improvements in our performance and we can reduce costs."*

"With SBIR funding, that's where a lot of innovation happens," Jarmale said. "It is still competitive among all the small companies, but if you are good at it, you will be able to develop superior technologies and superior products. We have used technologies out of SBIR programs and developed successful products."

## FROM INNOVATION TO PRODUCT

If there is a challenge when it comes to SBIRs, it's the time involved to develop a mature product. Even though the pace is faster than for most Army acquisition programs, often it's not fast enough for a small business that needs a constant infusion of funding to stay viable.

"As a small business, we have to work with the government and prime companies to integrate our products into systems," Jarmale said. "The biggest hurdle to overcome is they want mature products. Unless there's enough funding and desire from the government or the platform primes to help move the innovative technologies to maturity, there's very little chance they'll get picked up. There should be more support to assist small businesses in transitioning capabilities, especially when you see very promising technologies developed in SBIRs."

Patel agreed, saying that funding to offset the time lapse is often unavailable for small businesses.

"The downside is the time it takes for a SBIR to be developed and enter into production," Patel said. "There's a backlog and there's no funding after a product is developed, so many SBIRs have died."

This feedback from small businesses is being heard. The delay between Phase II, when the SBIR funding ends, and the product's development into an existing capability or program of record can be as long as 12 to 24 months—a relatively short time period by Army acquisition standards, but not in the fast-moving world of small businesses.

"Army requirements drive funding," Badger said. "If it's a small business, that process may take a year or two, and they have to try to bridge that. However, an advantage of this process is that small businesses maintain the intellectual property, and many times these innovations find dual use in the military and commercial worlds. If they can 'productize' their product into the commercial space, that's one way to bridge the time gap."

## CONCLUSION

The network is an integral part of current and future Army missions. Keeping pace with technology requires new approaches, and small businesses can play a vital role. SBIRs are one such approach. They give small businesses insight into military markets, which they traditionally would not have.

Small businesses also receive development funds to produce prototypes of their enhanced concepts. Through this unique step, the Army plays a role similar to that of a venture capitalist, with small businesses receiving feedback on their prototypes that can assist them in being first to market with a proven solution. Additionally, because the Army allows them to retain the intellectual property rights for their products, small businesses have the opportunity to commercialize products with dual use for military and civilian applications. Thus, a small company with a great idea can grow into a producer of state-of-the-art capabilities.

By introducing these products first and putting them into the hands of Soldiers, the Army also benefits from SBIRs. As the collaboration between small businesses and the Army continues through the use of SBIRs, cutting-edge capabilities can be incorporated into established programs, empowering the joint force with the most technologically effective tools available.

*For more information, see the PEO C3T website at* ***http://peoc3t.army.mil/c3t/****.*

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# Communicating a Need

As battlefield communications grow ever more complex with the rapid evolution of technology, the Army seeks to involve industry players of all sizes to keep Soldiers connected. As a result, the opportunities for small business to help build the Army's tactical network are more numerous and varied than ever.

*by Mr. Paul D. Mehney*

Once, battlefield communication meant pushing a button to talk on a radio or sending up a signal flare. Things have changed.

Now, battlefield communication potentially means executing a digital call-for-fire from a vehicle on-the-move, or using sophisticated software to draw routes, plot hazards and stay synchronized with friendly forces. It means text-messaging another squad leader to coordinate a raid, or reaching back through a satellite to get an analysis from half a world away. And changes keep coming at a dizzying pace.

As the Army's tactical network has expanded and diversified, so have the opportunities for small business. The radical shift from simple communications hardware to an advanced hybrid mix of technologies has fueled participation by small business, which now provides a substantial array of products and services that include field support, technology, technical expertise and training.

Throwing small business into the acquisition mix can reveal novel and effective ideas, foster new relationships and lead to more efficient approaches.

## SPECIALIZED FIELD SUPPORT

Providing a "tool kit" of applications and hardware that allow Soldiers to connect to the mobile tactical network, capability sets bring real-time information and mobile network connectivity so that Soldiers can plan and execute their missions—whether in the command post, in a tactical vehicle or dismounted.

A key challenge in fielding capability sets over the past two years has been the level of expertise required to integrate the newest battlefield technology into the network. Not only do the experts supporting the fielding need to understand the ins and outs of the Army's newest radios, mission command systems and the on-the-move tactical network, but they also must understand how these systems work together. This highly specialized work demands personnel who are not system-specific experts, but instead are cross-trained on multiple network capabilities, including potential joint and coalition aspects. The perfect fit for the job: a small business.

With unparalleled flexibility, experience and expertise, the Capability Set Integration Team of approximately a dozen highly trained systems engineers helps provide the fielding and integration of the Army's capability sets. The team is overseen by the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T) Readiness Management Division.

Putting in long hours to coordinate activities, this team works alongside Soldiers, Army project manager representatives and field support personnel to ensure that mission-critical capabilities are in constant working order. These specialists, most of whom are former military and all of whom have previously deployed to Iraq or Afghanistan, are required to maintain equipment readiness and deliver technical support for brigade combat teams (BCTs) as they are fielded and train with their new capability set equipment.

Working as a small, lean group, the Capability Set Integration Team leverages Soldier knowledge to ensure familiarity with the new technology. The team delivers a train-the-trainer concept with its

**TEAM-TO-TEAM SUPPORT**
Many members of PEO C3T's Capability Set Integration Team are former military, and all have deployed to Iraq or Afghanistan—invaluable experience that helps them in their roles fielding new, complex systems to Soldiers. (Photo courtesy of Netorian LLC)

*Creating an environment that allows the quick adaptation of commercial hardware and software to Army purposes will continue to open up new markets to small businesses.*

Super User Course, whereby team members work with a "slice" of the brigade to ensure that certain Soldiers are trained and familiar with the equipment before the full brigade begins its collective training exercises.

The team provides expertise for the unit while at home station and during training exercises. The initial eight- to nine-week fielding and integration process, which takes place at select Army installations across the country, requires the integration of 50-60 key leader vehicles, a Super User Course for Soldiers, and leadership for the loading, validation and communications exercises. Although capability set fieldings began only two years ago, the Capability Set Integration Team has completed 14 fieldings with either a BCT or division headquarters.

Before capability set fieldings, the Army installed capabilities individually. When troubleshooting was necessary, units called in system-specific field support. Now, platforms and command posts are shifting to a system-of-systems environment, with individual systems working as one, which requires a tight process to ensure that the various radios, mission command and network technologies all work in unison.

## SPURRING COMPETITION

More small business opportunities are expected to arise as the Army moves to the Common Operating Environment (COE) to solve the problem of stovepiped systems and begins to move to an integrated Web-based environment with user-friendly apps delivering warfighting functions across a common view of the battlefield. PEO C3T's Project Manager for Mission Command (PM MC) is implementing two of the COE's computing environments (CEs)—the mounted CE and command post CE.

**SMALL BUSINESS, BIG TASK**
Fielding the Army's newest technology requires unparalleled flexibility and expertise, not to mention long hours. PEO C3T found that a small business was a good choice to supply the highly trained specialists who, in turn, train and support BCTs as they receive new capability sets. (Photo courtesy of Netorian LLC)

**OPEN STANDARDS = OPEN OPPORTUNITIES**
PEO C3T is implementing the Army's Common Operating Environment for both command post and mounted CEs. As the Army opens standards and moves to a common architecture, industry and government alike will be able to develop warfighting apps—opening up more opportunities for small businesses. (U.S. Army photo)

**INFLATE TO COMMUNICATE**
Soldiers at the Command and Control Center for the Network Integration Evaluation 16.1 in fall 2015 at White Sands Missile Range, NM, use the GATR inflatable antenna. The result of a small business effort for PM WIN-T, GATR is lighter and draws less power than current deployable antennas, thus bringing high-bandwidth communications to austere environments. (Photo by Jett Loe, Las Cruces Sun-News)

Both government and industry will be able to create apps that run on this architecture. The Army is opening up standards for the COE architecture, which in turn will reduce complexity as the Army modernizes its current family of systems.

PM MC has a track record of providing small business opportunities. For example, a small business is providing highly technical support at PM MC's Network Operations Center (NOC). Workers provide performance maintenance, troubleshooting and monitoring of tactical networks, including Blue Force Tracking. This satellite network provides position location and mapping information, as well as secure data encryption, increased mission command on-the-move capabilities and situational awareness for Soldiers anywhere in the world.

NOC operations are 24/7, and personnel who man the NOC are responsible for incident response, communications management and elevating problems to a higher level of authority if needed. This highly technical work, previously contracted to a large business, requires constant surveillance and assurance that the network is secure and stable. By using a small business, PM MC reduced costs and successfully consolidated operations. PEO C3T is now using this model—and contract—to consolidate additional operations centers.

PM MC is also looking to small business for new contracts in field support for its portfolio. This decision came after market research indicated that small businesses were capable of performing the mission. The Army has split what used to be a large business contract into two, separating product support from product distribution. Because the two represent unique requirements—one being fielding support and installation, while the other comprises documentation and technical manuals—the reasoning was that separating them would make for better checks and balances and could uncover new approaches. Since it hit the market, this unique approach of breaking up a contract and competing portions as small business opportunities has sparked strong interest from industry.

Believing that competition drives innovation, PM MC will continue to incorporate small businesses in support of the program's acquisition strategy.

## 'GATR' TIME

Creating an environment that allows the quick adaptation of commercial hardware and software to Army purposes will continue to open up new markets to small businesses. For example, a small business effort through PEO C3T's Project Manager for the Warfighter Information Network – Tactical (PM WIN-T) deployed inflatable ground satellite antennas that enable U.S. and coalition forces to achieve high-bandwidth network connectivity anywhere in the world.

The lightweight Ground Antenna Transmit & Receive (GATR) is an inflatable antenna that looks like a large beach ball. It reduces size, weight and power requirements compared with the current capability, enabling smaller units to deploy quickly to austere environments and achieve high-bandwidth connectivity.

The antenna can connect Soldiers in remote locations to the Army's tactical communication WIN-T network backbone, as well as support other services and first responders. GATR is compatible with the same modems, baseband and encryption equipment as traditional terminals, so it can use the existing network and services.

GATR was developed and purchased under the Small Business Innovation Research (SBIR) program. Now PEO C3T is working on other SBIR efforts that enable advanced tactical radios and mission command capabilities. SBIR projects fund viable solutions to develop a capability in stages, often resulting in a targeted effort to meet a niche need that can be filled by small business. (See "Strength in (Small) Numbers" on Page 24.)

***The radical shift from simple communications hardware to an advanced hybrid mix of technologies has fueled participation by small business, which now provides a substantial array of products and services that include field support, technology, technical expertise and training.***

In other efforts to leverage the innovation and efficiencies that small business can provide, the Army uses the Global Tactical Advanced Communication Systems (GTACS) and Services contract, also managed by PM WIN-T. GTACS is a $10 billion, five-year indefinite-delivery, indefinite-quantity contract with an extensive scope, covering the hardware, software, equipment and data necessary to support PEO C3T and other DOD organizations.

Under the GTACS contract, a group of 20 prequalified defense contractors, both large and small, compete for awards, enabling the Army to achieve the best value and enabling industry to fill needed mission requirements quickly with innovative solutions. Total small business awards under GTACS reached more than $445.5 million in FY15, including all options.

## CONCLUSION

In FY15, PEO C3T met its small business achievement goals by diversifying small business partnerships and opportunities. Small businesses will continue to play an integral role in providing PEO C3T with technical support, engineering, readiness support, technology equipment, software and research.

Likewise, the Army will rely significantly on commercial partners to deliver a wide array of products that are integrated into its network and systems. As the service moves to open standards and system-of-systems technology, and speeds the way it adapts new capabilities, opportunities will continue to increase for small business. In return, small business can provide the Army with reduced costs and timelines, delivering innovative and effective solutions to support continued network modernization. It's a win for both parties.

*For more information, go to the PEO C3T website at* ***http://peoc3t.army.mil/c3t/****, or contact the Public Affairs Office at 443-395-6489 or* ***usarmy.APG.peo-c3t.mbx.pao-peoc3t@mail.mil****.*

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**EQUIPPED AND PREPARED**
SGT David Hill, an infantryman with the 3rd Battalion, 69th Armor Regiment, 1st Armor Brigade Combat Team, 3rd Infantry Division, provides security for his squad during battle drills conducted in December 2015 at Pabrade Training Area, Lithuania. AMC is responsible for ensuring that warfighters have everything they need to respond to any new conflict, and its OSBP is responsible for ensuring that small businesses are considered at every step of Army acquisition. (U.S. Army photo by SSG Michael Behlin, 10th Press Camp Headquarters)

# DRIVING *SMALL BUSINESS* SUCCESS

With AMC accounting for more than half of the Army's total small business awards, its Offices of Small Business Programs use numerous approaches to set the stage for success in changing—and challenging—times.

*by Ms. Beth Scherr*

The numbers may not tell the whole story, but they do say a lot. In FY15, for the second consecutive year, the U.S. Army Materiel Command (AMC) surpassed all its assigned goals for total contract awards to small businesses and to the various socioeconomic small business programs. AMC's accomplishments in FY14 allowed both DA and DOD to exceed their goals for the first time.

In FY15, AMC awarded over $9.2 billion in 63,039 contract actions to small businesses, representing more than 50 percent of the Army total of $17.5 billion in 126,963 contract actions. (See Figure 1 on Page 37.)

AMC is responsible for continuing to ensure that the Army and its warfighters have the equipment and services they need to respond at a moment's notice to any new conflict, whatever its size, nature or location. The AMC Office of Small Business Programs (OSBP), in turn, is responsible for ensuring that small businesses are considered at every step of Army acquisition, in accordance with policy and statutory and regulatory requirements. OSBP has small business offices at AMC headquarters and at seven major subordinate commands, including the four centers of excellence.

AMC's major subordinate commands manage systems throughout their life cycle, from concept to sustainment to divestiture, and report directly to the higher

**PERSONAL ENGAGEMENT**
MG Kevin G. O'Connell, commanding general of the U.S. Army Sustainment Command (ASC), speaks with John Nelson, sales manager at ESCP Corp., during the annual Midwest Small Business Government Contracting Symposium in June 2015 in Moline, IL. The event included remarks from GEN Dennis L. Via, AMC commanding general, about the importance of advance planning briefings for industry, which are designed to ensure that industry and the Army have a mutual understanding of future requirements and industry's capabilities. (Photo by Justin Graff, ASC Public Affairs)

headquarters on their small business programs on a monthly basis. As GEN Dennis L. Via, AMC commanding general, put it, "Small business is big business at AMC. Even with declining resources, business opportunities will still exist, especially in the small business community." Subordinate commanders are well aware of the distinct qualities of innovation and agility that small businesses can bring to AMC's mission, and how small businesses strengthen the industrial base.

The Army OSBP negotiates and assigns AMC its small business goals, based on the Small Business Act of 1958 (Public Law 85-536) and other statutory requirements. Small business programs have four distinct socioeconomic categories: small disadvantaged business programs; women-owned small businesses (WOSBs); certified Historically Underutilized Business Zone (HUBZone) small businesses; and service-disabled veteran-owned small businesses.

*AMC's overhaul and modernization efforts are enhancing and upgrading major weapon systems — not just making them like new, but inserting technology to make them better. These efforts create opportunities.*

AMC awarded 23.72 percent of its contract dollars to small businesses in FY14, surpassing its assigned small business goal of 19 percent, and 24.72 percent to small businesses in FY15 against an assigned goal of 19.5 percent. All seven AMC major subordinate commands exceeded their overall small business goals, and four of the seven commands met all their socioeconomic goals as well. (See Figure 2 on Page 39.)

But goals, on their own, will not drive the actions needed to meet them, such as the outreach to small businesses, engagement with industry and the training necessary for government contracting personnel to make the necessary awards properly. Success requires support from leadership at all levels.

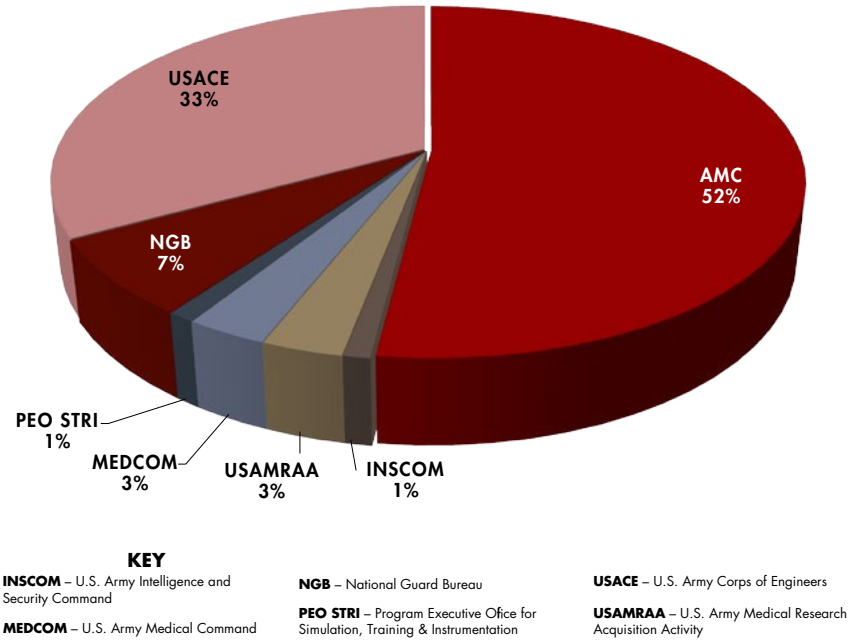
"The reason AMC is so successful is because of the mandatory performance requirements the Department of Defense leverages on senior executive performance objectives," said Nancy Small, AMC's director of small business programs. "These objectives are intended to support and promote the right command and program climate that are responsive to small business concerns," she added.

## LEADING BY EXAMPLE

AMC sets the example for the federal government, awarding a higher percentage of contract dollars to small firms than any other federal agency or military service, Small said.

AMC negotiations with DA for its FY16 small business goals resulted in DA assigning the command an overall small business goal of 19 percent of eligible contracting dollars. Determining these goals is a process that uses a trend analysis of historical and current performance,

**FIGURE 1**




**A BIG CHUNK OF PIE**
AMC awarded more than $9.2 billion in contract actions to small businesses in FY15, representing 52 percent of the Army total of $17.5 billion in 126,963 contract actions. (SOURCE: AMC OSBP)

while considering economic factors that may pose challenges to meeting the goals.

These factors include the economy; the command's mission; the procurement environment; budgetary constraints, such as sequestration; the inclusion of contracts performed outside of the United States instead of just awards for stateside actions; requirements consolidation; strategic sourcing initiatives to provide for standardization of contract awards across service categories; requirements not eligible for small business, such as the award of a major weapon system; and statutory and regulatory changes.

A number of recent legislative, regulatory and policy changes are having an impact on small businesses and OSBPs, including:

- The Small Business Subcontracting Transparency Act (S. 2138), a bill being considered in Congress to improve the review and acceptance of subcontracting plans. This legislation resulted from challenges that small businesses experienced with the federal procurement process and their role as subcontractors.

- Improving Small Business Innovative Research and Technologies Act (S. 2136), also pending in Congress, which would establish a pilot program aimed at increasing opportunities for small innovators in rural states to develop new technologies and commercialize them through the Small Business Innovation Research (SBIR) program.

- A move by the U.S. Small Business Administration (SBA) to include contracts performed overseas in determining prime contract goals as of FY16, in accordance with the National Defense Authorization Act for Fiscal Year 2013. Through FY15, the baseline included only contracts performed in the United States. Including contracts performed overseas would increase the base against which the percentage of small business awards is measured and would result in a lower percentage of awards to all small business socioeconomic programs, at least initially until opportunities increase for small businesses to perform overseas.

- An SBA final rule, effective Oct. 14, 2015, implementing Section 825 of the National Defense Authorization Act for Fiscal Year 2015, which granted authority to award sole-source contracts to WOSBs in appropriate circumstances. In sum, if a contracting officer, after conducting market research in an industry for which a WOSB set-aside is authorized, cannot identify two or more such businesses but identifies only one that can perform at a fair and reasonable price, a contract may be awarded on a sole-source basis with the proviso that the anticipated value of the contract, including options, does not exceed $6.5 million for manufacturing contracts and $4 million for all other contracts. This section also changed the deadline for SBA to conduct a study to determine the industries in which WOSBs are underrepresented to Jan. 2, 2016.

- "Inflation Adjustment of Acquisition-Related Thresholds" for FY16 (Federal Acquisition Regulation Case 2014-022, dated July 2, 2015; see ***https://acc.dau.mil/CommunityBrowser.aspx?id=734185***).

**FINDING NEW OPPORTUNITIES**
GEN Dennis L. Via, AMC commanding general, meets with an attendee of the National Defense Industrial Association's annual Midwest Small Business Government Contracting Symposium in June 2015 in Moline, IL. Events like this one, which featured the Rock Island Center of Excellence advance planning briefing for industry, give attendees the chance to learn of upcoming opportunities and to explore networking and teaming opportunities. (Photo by Liz Adrian, U.S. Army Contracting Command)


**FOUNDATION FOR SUCCESS**
Via addresses attendees at the November 2015 National Veterans Small Business Engagement in Pittsburgh, PA. Via was among about 300 government leaders and procurement representatives at the annual event, which aims to help set up veteran-owned businesses for success. AMC has obligated more than $18 billion in contracts to small businesses over the past two years, which represents more than half of the small business dollars spent Armywide. (Courtesy photo)

## OSBP INITIATIVES

Better Buying Power (BBP) is based on the principle that continuous improvement is the best approach to improving the performance of the defense acquisition enterprise. AMC has various initiatives to improve subcontracting performance in accordance with the principles of BBP 3.0, which include increasing small business participation as a means to deliver better value to the taxpayer and warfighter.

These initiatives, implemented across all small business offices of the major subordinate commands, are designed to reduce barriers for small businesses and to strategically align the commands' small business programs with DA and AMC commander's initiatives.

Reflecting the BBP 3.0 focus on incentivizing innovation in industry and government, AMC is seeking to increase the return on SBIR initiatives by more tightly relating its SBIR investments to a commander's strategic priority. The goal is to use the SBIR investment to develop and commercialize the technology, then move the product beyond development and into the hands of warfighters.

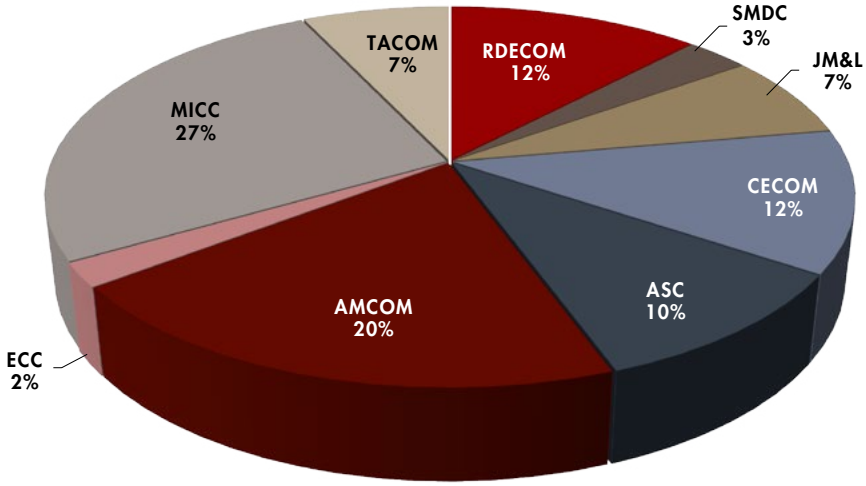
Drawing on the BBP 3.0 initiative to promote effective competition by creating and maintaining competitive environments, AMC OSBP participates in acquisition planning with the requirements, technical and contracting leads for the effort, and completes a thorough review of the acquisition strategy documents—including the market research results, the acquisition plan, subcontracting plan and small business participation plan, as applicable—to ensure maximum small business participation when appropriate.

In FY14, AMC established this emphasis on small business participation in all

procurement actions through the use of contract award evaluation factors or subfactors. These factors look at the use of small businesses in performing a proposed acquisition, the contractor's use of small businesses on previous government contracts and ways to include small business performance in award fee contracts. Thus, if all things are equal among competitors, small business performance could be a deciding factor in the award. Poor small business subcontracting performance could also affect prime contractor incentive fees.

In another move to ensure the consideration of small businesses at the very earliest stage of the acquisition process, AMC's major subordinate commands' small business assistant directors participate in peer reviews with the members of the acquisition team for all planned acquisitions above $100 million, with the objective of ensuring consideration of small business opportunities. As part of this initiative, military department and defense agency small business directors similarly review all planned acquisitions above $500 million.

**FIGURE 2**




**KEY**

**AMCOM** – U.S. Army Aviation and Missile Life Cycle Management Command
**ASC** – U.S. Army Sustainment Command
**CECOM** – U.S. Army Communications-Electronics Command
**ECC** – U.S. Army Expeditionary Contracting Command
**JM&L** – Joint Munitions & Lethality Life Cycle Management Command
**MICC** – U.S. Army Mission and Installation Contracting Command
**RDECOM** – U.S. Army Research, Development and Engineering Command
**SMDC** – U.S. Army Space & Missile Defense Command
**TACOM** – U.S. Army TACOM Life Cycle Management Command

**SUPERLATIVE PERFORMANCE**
All of AMC's major subordinate commands exceeded their overall small business goals for FY15, thanks in part to initiatives designed to reduce barriers for small businesses and to align the commands' small business programs with DA and AMC strategic objectives. (SOURCE: AMC OSBP)

Active oversight and management of small business goals, including use of data metrics and more effective use of market research, is another primary initiative whereby the AMC OSBP works to increase small business participation. This oversight helps to ensure that we are aware of the capabilities of small businesses and that they are aware of DOD's needs. The DOD OSBP is leading the way within the federal government on a new market research technique called Small Business Maximum Practicable Opportunity (MaxPrac) analysis. In essence, MaxPrac identifies specific contracts being awarded to large businesses that could potentially be satisfied by small businesses.

Another of AMC's long-term initiatives is developing and training Army acquisition's small business workforce, supporting the professional growth of the small business specialist as a member of the Army Acquisition Workforce and, in turn, facilitating the expansion of small business training and information at their disposal to increase knowledge and awareness of the value of small business. Small businesses play a vital role in sustaining military readiness, providing economic security and advancing technology. Ensuring that the acquisition workforce understands how small businesses can best fit into the contracting puzzle will help to maximize opportunities for them.

## FISCAL IMPACTS

The current fiscal environment poses several challenges to DOD's ability to provide small business opportunities, however.

First, the reliance on continuing resolutions to fund federal spending has a potential impact on the overall defense industrial base, but potentially more profound consequences for small businesses whose viability is more sensitive to variations and gaps in cash flow. New contracts that may have been planned for award to a small business may be placed on hold pending a fully approved budget, and agencies with existing contracts may be forced to slow their planned levels of

effort as the availability of funds shrinks. Large businesses often can continue to operate in these challenging circumstances without an impact on their workforce, but small businesses may be forced to delay hiring or reduce staffing.

Also, in managing programs such as SBIR, budget calculations and allocations are more difficult under a continuing resolution, creating greater execution challenges for the SBIR workforce.

Second, the lapse over the past couple of years in DOD's compliance with Title 15, U.S.C., Section 637(a)(12)(C), which required DOD to prepare and furnish a forecast of expected contract opportunities to the SBA and the director of DOD's OSBP, not only made it difficult for small businesses to find out about opportunities but also created a challenge in forecasting goals.

Early in FY15, with the assistance and support of the program executive offices, commanders and all requirement holders, DOD took the first steps toward creating a comprehensive long-range acquisition forecast. This forecast contains requirements from DOD agencies that are valued at $150,000 or more for the upcoming and future fiscal years. While the forecast does not constitute a specific offer or commitment by the responsible DOD agency to fund the opportunities it outlines, it does provide information for marketing and planning purposes.

This information will foster communication between DOD and industry as well as increase competition. Additionally, the forecast will promote industry planning by providing advance knowledge of requirements and will help the AMC commands with acquisition planning, forecasting, setting goals and locating additional sources of supply. The development of a comprehensive acquisition forecast that identifies small business opportunities by industry, as well as contracting, teaming and subcontracting opportunities, is a primary focus area for the AMC, DA and DOD OSBPs, and the DOD Long-Range Acquisition Forecast will be an invaluable tool.

Finally, the inability to enforce subcontracting compliance is having a negative impact on the ability to ensure that large businesses are providing small businesses with opportunities in accordance with their subcontracting plans. Section 1653 of the National Defense Authorization Act for Fiscal Year 2013 provides for penalties to large businesses for failing to comply in good faith with their small business subcontracting plans, and AMC established contract award evaluation factors to implement the law. However, because of constraints on the electronic Subcontracting Reporting System (eSRS), the current subcontracting evaluation system, a major challenge for OSBP is assessing alternatives for determining compliance and subcontracting achievement for AMC components based on the contracts they award.

## OUTREACH AND OPPORTUNITIES

It is critical to AMC to continue to grow the industrial base. The command is engaged in the development, support and sustainment of the future Army, while at the same time supporting and sustaining the current Army. Through its 23 organic industrial base facilities, consisting of ammunition plants, Army depots and arsenals, AMC's overhaul and modernization efforts are enhancing and upgrading major weapon systems—not just making them like new, but inserting technology to make them better. These efforts create opportunities.

Each of AMC's major subordinate commands has associate directors of small business and small business specialists

**EYES ON SMALL BUSINESS**
CPT Robert Turner, assigned to the U.S. Army Mission and Installation Contracting Command and deployed in support of Operation Inherent Resolve, briefs vendors during an outreach event at Camp Taji, Iraq, in September 2015. The goal of the event was to educate potential contractors on the process of working with the U.S. government. Engaging vendors early in the process increases competition and ensures that the best-qualified companies get the work. (Photo by SGT William Reinier, 2nd Brigade Combat Team, 82nd Airborne Division Public Affairs)

*Another of AMC's long-term initiatives is developing and training Army acquisition's small business workforce, supporting the professional growth of the small business specialist as a member of the Army Acquisition Workforce.*

committed to helping small businesses explore opportunities to do business with their commands. These specialists are an excellent starting place to market a small business's capabilities effectively. The AMC OSBP website identifies the points of contact at each major subordinate command. The website also links to the March 2015 guide "How to Do Business with the U.S. Army Materiel Command."

A primary reason for the overall success of AMC's OSBP results from engaging program executive officers, commanders and contracting professionals over the past two years in the outreach program it developed. The office hosts one of the premier small business outreach events in the Army, the annual Team Redstone (AL) Small Business Industry Outreach, which has grown from 200 small business attendees to over 500 small business attendees and 100 government personnel in only two years.

A key reason for the success of this event is the far-reaching agenda, which includes keynote speakers, presentations and panel discussions involving the commanding generals of AMC and subordinate commands, senior leaders, principal assistants responsible for contracting, the Army and DOD OSBPs, the deputy assistant secretary of the Army for procurement, the assistant secretary of the Army for acquisition, logistics and technology, program executive officers, the civilian aide to the secretary of the Army, SBA, the Defense Contract Audit Agency and U.S. General Services Administration. The FY16 event is scheduled for March 14 in Huntsville, AL, as the kickoff to the Association of the United States Army Global Force Symposium and Exposition.

Another primary source of outreach for AMC is the advance planning briefings for industry, held quarterly at one of the four centers of excellence. The tentative dates and locations for 2016 are: Team Redstone, March 8-9; Team Rock Island (IL), May; Team Warren (MI), August; and Team Aberdeen Proving Ground, (MD), November. These two- or three-day events provide a great opportunity to learn of upcoming opportunities at AMC's four centers of excellence, as well as to network and develop teaming opportunities.

## CONCLUSION

As a result of AMC's record-breaking efforts in FY14, the command's OSBP received the National Veteran Small Business Coalition 2014 Champions of Veteran Enterprise Award for exceptional support of service-disabled veteran-owned small businesses; DA's FY14 Women-Owned Small Business Award for Exceptional Program Support; and DA's FY14 Service-Disabled Veteran-Owned Small Business Award for Exceptional Program Support.

In FY15, Via reiterated the importance of AMC achieving its small business goals and the commitment of AMC leadership to supporting small businesses by emphasizing how critical small business is to our nation's economy. This unprecedented high-level emphasis on making small business a priority carried through to the leadership of the command's OSBP and of the U.S. Army Contracting Command, contributing directly to AMC's exceeding all goals in its small business program in back-to-back years.

AMC is open for business and remains committed to ensuring that warfighting formations are prepared when the call comes. Small business will continue to play a critical role in enabling AMC to develop and deliver readiness solutions. AMC's work with small business is all about the Soldier, and it's critical that we never lose sight of that.

*For more information, contact Nancy Small, director of AMC's OSBP, at* ***usarmy.redstone.usamc.mbx.small-business@mail.mil****; or go to the AMC OSBP website at* ***http://www.amc.army.mil/amc/smallbusiness.html.***

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**BRASS OFF**
Dragoons assigned to 1st Squadron, 2d Cavalry Regiment participate in a live-fire exercise at Grafenwoehr Training Area near Rose Barracks, Germany, in March 2015. Troopers conducted group and tactical movements while attacking an objective, assisted by Strykers and mortar fire. The Army will always need small caliber ammunition, but eliminating brass for shell casings in favor of a lighter material could significantly reduce the load that Soldiers must carry. (U.S. Army photo by SGT William A. Tanner)

# Small Ammo, BIG Benefits

PM MAS partners with small businesses to develop the next generation of small caliber ammunition, designed to reduce the weight by up to 30 percent.

*by Ms. Natasha Owens*

When it comes to small caliber ammunition acquisition, many instinctively think of large ammunition production companies manufacturing massive quantities of tactical and training ammunition. For the past five years, the production levels of the 7.62 mm caliber ammunition alone have consistently exceeded 160 million rounds annually. Meeting the high-volume production levels for small caliber ammunition is challenging for small companies, to say the least.

The Army has taken great strides to partner with small companies to develop small caliber ammunition technologies to address capability improvements. Prior to the development of the Enhanced Performance Round (EPR), research and development (R&D) efforts in the area of small caliber ammunition were limited and difficult to initiate because, until only very recently, the Army had not captured small arms ammunition capability needs in capability development documents (CDDs), which meant that there were no approved operational requirements and no funding. In recent years, greater emphasis has been placed on improving small caliber ammunition performance to address documented capability gaps.

This led to developing 5.56 mm- and 7.62 mm-caliber specific CDDs, which were approved through the Joint Capabilities Integration and Development System in early 2015. With these in place, the Army could seek help from industry in identifying and maturing technologies to eliminate these gaps. And because there was little interest from traditional ammunition manufacturers in spending a significant amount of resources in lighter case material, that meant looking to small business.

## SMALL BUSINESS STEPS IN

One of the Army's top priorities is to lighten Soldier combat loads. Reducing the weight of equipment carried by the warfighter, often referred to as "Soldier load," increases

**SMALL CALIBER BUSINESS**
U.S. paratroopers from 2nd Battalion, 503rd Infantry Regiment, 173rd Airborne Brigade engage targets with the M240 machine gun during a live-fire exercise as part of Exercise Rock Proof V at Pocek Range in Postonja, Slovenia, in October 2015. The exercise focused on small-unit tactics and building interoperability between allied forces. Building alliances and interoperability between small businesses and ammunition manufacturing standards could enable new technologies in small caliber ammunition. (U.S. Army photo by Visual Information Specialist Davide Dalla Massara)

agility and endurance. In post-combat surveys, Soldier load ranks among the top concerns of combat veterans. Emerging light ammunition designs offer substantial reduction in combat load given the necessary R&D to develop the technology for military use. For example, replacing the current brass cases with lighter-weight materials would reduce the Soldier's ammunition load by 20 to 30 percent.

Since 2013, the Project Manager for Maneuver Ammunition Systems (PM MAS) has worked with small companies in developing the 7.62 mm Lightweight Small Caliber Ammunition. Efforts to reduce the weight of 7.62 mm ammunition are underway through a DOD Ordnance Technology Consortium (DOTC) initiative, a vehicle whereby small businesses partner with DOD to develop cutting-edge solutions. Through DOTC, PM MAS and the U.S. Army Armament Research, Development and Engineering Center are working with multiple small companies to develop lightweight polymer cartridge cases for 7.62 mm machine gun ammunition. Although the small businesses have made improvements in lightweight cartridges, the path has not been without its challenges.

Small companies are bringing innovative and novel solutions to many of the Army's problems, including small caliber ammunition capability gaps, often taking technology from another commercial industry application and applying it to ammunition to meet warfighter needs. Today, small businesses have been able to reduce the weight of 7.62 mm cartridges by approximately 20 to 25 percent compared with the same cartridges with brass cases.

The difference between the traditional brass case and new polymer cases is more significant than just weight. To be as good as or better than brass, such polymer cases must interface with the weapon system in the same way that brass does. As such, the small business contractors must be aware of how, for example, an M240 machine gun functions and how it grips the ammunition. This understanding of the weapon helps the contractor in the design of their polymer case and can provide insight into key stress areas that can cause cracks or ruptures. However, small companies have encountered challenges in this regard as a result of their limited knowledge base and experience with the weapons and ammunition as a system.

## THE PARTNER CHALLENGE

Small companies provide a level of energy, focused subject matter expertise and innovation that is valuable to R&D efforts. Their passion for analyzing problems and defining solutions is a great asset to the Army. However, partnering with small businesses presents challenges that can affect government program schedules.

Although small companies maintain control of their design and have the ability to make design changes quickly, unlike their large industry counterparts, they sometimes lack the resources to quickly test and evaluate the impact of the changes they make. Additionally, small companies that PM MAS has worked with in small caliber ammunition R&D tend to rely more heavily on subcontractors for production. Their reliance on subcontractors to implement their design changes and produce new test assets can increase build-test cycles, which in turn can result in schedule delays.

For example, the small businesses performing work on the DOTC initiative can only partner with the limited number of companies working on non-traditional ammunition cases for their components (i.e., metal head inserts, bullets and propellant) and polymer injection molding.

Typically, the small business orders tend to get lower priority when competing with other high-volume customers from the government or commercial industry. And when designs change, there tends to be considerable back and forth between the lightweight ammunition small business contractors and their component-manufacturing and injection-molding subcontractors to obtain an optimal solution. The iterative design process of build-test-fix becomes more cumbersome because the small businesses don't have all of the functions under one roof. This, in turn, can make it more difficult for them to meet scheduled delivery orders.

## FROM PROTOTYPE TO PRODUCTION

An additional challenge when working with small companies is the high-volume production levels typically required for small caliber ammunition during production and deployment.

Small companies tend to focus on developing and providing a solution. At the same time, they may have limited understanding or expertise on the impacts of transitioning from prototype to high-volume production. Integrating those solutions in development with manufacturing technology becomes more challenging.

This often requires the government to act as facilitator between the solution developer and the ammunition manufacturer


**WORKING THE LINE**
Personnel pack ammunition on the line at LCAAP, part of the Army's organic industrial base. The government-owned, contractor-operated facility has been in operation since 1939, and has the capacity to meet production demands that small businesses cannot match. (U.S. Army photo)


**CASTING THE CASE**
An engineer from Frontier Performance Polymers Corp. works on the molds for the 7.62 mm M80 polymer cases. PM MAS is working with a number of small companies to come up with the right design for lightweight 7.62 mm ammunition. (Photo by Yong Lei, Frontier Performance Polymers Corp.)

to ensure appropriate manufacturing readiness levels before transitioning from prototype to production. Both the Army and small company partners need to properly understand and plan for the impacts of concept or technology transition to high-volume production early in development.

Since 1939, a large portion of DOD small caliber ammunition production capability has been built at Lake City Army Ammunition Plant (LCAAP) in Independence, MO, a government-owned, contractor-operated facility. With a capacity of nearly 1.5 billion rounds of ammunition per year, LCAAP has the capability to meet high production demands that are uncommon to many smaller companies.

Small businesses often consider transitioning to production, but cannot achieve the volume or surge capability required by the Army. They can also be daunted by the exacting standards that the Army requires. Because of this, the government often seeks to obtain "government purpose rights" when partnering with such small companies.

Government purpose rights enable the Army to hire small businesses to solve a particular problem that larger businesses can't or won't tackle, but then transition those solutions to manufacturing by soliciting production contracts from larger businesses that are capable of meeting the high volume of small caliber ammunition production required by DOD. Technical data initiated by small business is often proprietary; therefore, obtaining the rights for transition to production requires substantial negotiation because the DOTC initiative does not allow the Army the opportunity to obtain technical data rights.

**DROP A QUARTER**
PCP Ammunition's polymer-cased ammunition reduces weight while maintaining the performance requirements of traditional brass-cased ammunition in currently fielded U.S. military weapon systems. (Photo by Clayton Cassidy, Close Quarters Media Group)

## THE BENEFITS OF PARTNERING

There is no doubt that partnering with small businesses presents its own set of challenges, but there are also significant benefits for the small caliber ammunition R&D programs. As was the situation with lightweight ammunition, small businesses are more likely to already be exploring new and novel corners of the market and are able to make great strides with relatively little investment. With smaller amounts of funding available for initial technology maturation and demonstration, the Army is able to provide additional funding in an area that a small business has already begun exploring.

Additionally, the Army is able to team with the small business by providing technical expertise to which the small business may otherwise not have access. For instance, the Army has extensive experience in the M240 weapon system and in-depth understanding of the system-level stresses through tools such as finite element analysis, a computer tool that can predict how the ammunition would react to real-world use.

With that kind of technical feedback, small businesses are able to effect change in the design and process much more rapidly than large defense contractors. This is the result, in part, of small businesses typically offering flatter organizational structures and, in turn, streamlined decision-making processes. The small business is able to implement changes in the process and product much more quickly and less expensively than larger contractors.

The ability to communicate openly and make nearly instantaneous decisions is key to developing unconventional solutions such as polymer-cased ammunition. It is their years of experience in working with polymers and their understanding of how the material responds that make the partnership between the government


**PUTTING THE PIECES TOGETHER**
One of the small companies working with PM MAS to develop lighter ammunition is PCP Ammunition. Its polymer case components are shown at incremental steps of manufacturing. PCP manufactures the cases in two parts and then assembles them using laser welding to produce a complete polymer case. The complete case is then loaded on traditional equipment with standard projectiles and energetics to produce a cartridge that weighs 20-25 percent less than brass-cased cartridges while maintaining the military specification for performance. A challenge is to produce the ammunition in the quantities the government needs. (Photo by Clayton Cassidy, Close Quarters Media Group)

**LASER-BONDED**
PCP Ammunition's polymer case production uses a laser welding system to permanently bond the polymer components together prior to loading on traditional loading equipment. PCP Ammunition is working to solve a weight problem with its ammunition. Innovative solutions often solve other problems, too. For example, according to the company, weapons don't get as hot with polymer-cased ammo. (Photo by Clayton Cassidy, Close Quarters Media Group)

and small businesses essential for the development of lightweight ammunition.

## BUILDING A RELATIONSHIP

Aside from early planning for obtaining government purpose rights, there are some lessons learned that should be considered in developing professional relationships between the government and small businesses. The most effective way of overcoming issues is communicating a common understanding of the end state. It is the government's responsibility to inform industry partners at the outset of its strategy and expectations. This can be done through industry day events, market surveys and early communication of performance expectations and future production requirements. The government must view the relationship as a partnership, acknowledging and overcoming the various challenges to establish mutual understanding and trust.

## CONCLUSION

As the Army and PM MAS seek to fill small caliber ammunition capability gaps, there are opportunities to leverage the strengths that small businesses have to offer. The benefits of working with these small companies far outweigh the challenges, which can be addressed through early communication of program milestones, realistic deliverables and a clearly defined end state.

For PM MAS, the journey in developing innovative solutions, such as lightweight cases, and transitioning them into high-volume production is just beginning. In the end, it's crucial for the Army and industry partners of all sizes to work together in developing and fielding innovative solutions to ensure that our warfighters maintain small arms overmatch for years to come.

*For more information on PM MAS, go to* ***https://peoammo.army.mil/mas/****.*

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(SOURCE: U.S. Army Acquisition Support Center/ iStock/Thinkstock)

# GROUND TRUTH

## Increasing communication to foster cooperation between industry and government can yield significant benefits for both parties.

*by Ms. Janet O'May*

Army acquisition professionals ensure that warfighters receive the best equipment in a timely manner. The equipment might be obtained through a development process, might be readily available or could be procured or modified to meet a need. Whether dealing with large or small businesses, good communication between government and industry is critical to the acquisition process. There are best practices that can be employed to facilitate communication that leverage market research and the use of industry days. The Army Acquisition Lessons Learned Portal (ALLP) is a resource for members of the acquisition community to share lessons learned and best practices on a range of topics. The following lessons from the ALLP highlight the importance of open communication with industry.

### MARKET RESEARCH

**LL_84: Conduct thorough market research during all phases of a program to leverage industry capabilities. Using alternatives to traditional acquisition programs can increase efficiency.**

*Background*

In January 2003, an urgent need to enhance the performance of a Soldier's capability was identified. The product was previously procured by the government, and commercial alternatives were reviewed for cost, schedule and performance as potential solutions.

The program manager determined that the prior government contractor could not meet the schedule, while industry could provide a product that would meet key needs in a timely manner at a reasonable cost. The prior product received low user acceptability ratings, and the contractor was unable to deliver sufficient quantities to support user needs. Industry possessed the capabilities to quickly adjust their processes to meet users' needs and produce large quantities of the item in a timely manner by providing commercial off-the-shelf products.

*Recommendation*

Conduct thorough market research during all phases of a program. This allows the government to leverage industry capabilities, when available, to meet user requirements. It also allows the government to leverage the industrial base and use existing technologies instead of duplicating efforts. The government should take advantage of alternatives to traditional acquisition programs when appropriate, as these options increase efficiency and save time and money while meeting user needs.

**10,000 ROUNDS; 2 MONTHS**

Crane Army Ammunition Activity, a Joint Munitions Command facility located in Indiana, delivered the first 10,000 M1122 training rounds ahead of schedule on Sept. 29, 2015—faster than a contractor could, according to Project Manager for Combat Ammunition Systems staff. Market research and a willingness to look at all acquisition options helped the government avoid $100 million in costs by using the Crane facility. (Photo by Thomas Peske, U.S. Army Materiel Command)

**LL_912: Good market research is a source selection best practice.**

*Background*

The U.S. Army Contracting Command's Source Selection Support Center of Excellence at Aberdeen Proving Ground, MD, developed a white paper on best practices for market research, acquisition planning, pre-solicitation activities, evaluation and post-award activities.

*Recommendation*

The white paper highlights several ways to improve and incorporate market research for source selection:

- Start early, and ensure that market research efforts are continuous. The Army Office of Small Business Programs (OSBP) can help by providing resources for conducting market research. The OSBP website contains a tutorial on using the Federal Procurement Data System as a market research tool for small businesses and serves as a one-stop site for both the government and small businesses. The site contains information on policies and regulations and houses pertinent publications.
- Be sure that market research addresses the availability of commercial or nondevelopmental items.
- Avoid duplication. Before issuing a request for information or a sources-sought notice, check existing contract vehicles or governmentwide acquisition contracts sources.
- When documenting market research activities, be sure to record dates and times of industry visits.
- Keep in mind that market research is time-critical; research older than 12 months is usually considered outdated.

**IN ON THE GROUND FLOOR**
Tobyhanna Army Depot's Mike Wartella briefs industry day attendees on the depot's support of the Long-Range Advance Scout Surveillance System. Holding industry days early and often, and sharing draft product requirements as they're refined, ease the path to efficient procurements. (Photo by Steve Grzezdzinski, U.S. Army Communications-Electronics Command)

## INDUSTRY DAYS

**LL_1003: Establish a foundation early in the program for ongoing collaboration with industry partners through the use of industry days and iterative releases of draft program documentation.**

*Background*
A product manager structured a series of industry day events supported by multiple releases of draft documentation to inform industry of program requirements and schedule, and to receive industry feedback. The initial industry day was a virtual event and provided a program plan and requirements overview. The product manager conducted a second industry day four months later, with 87 industry members from 42 companies participating. This face-to-face event included program plan updates, requirements discussions, a technical workshop addressing modeling and simulation and one-on-one sessions with government and company representatives.

Eight months later, the product manager released a draft product description (PD) for industry review and comment. The next month, a third industry day was held in which 72 industry members from 41 companies participated. This provided participants with an open forum to discuss the latest program planning and the draft PD, as well as an opportunity for additional one-on-one sessions.

One year after the first face-to-face industry day, the government released the draft request for proposal (RFP) for industry review and comment. One month later, the contracting office sponsored a pre-solicitation meeting with participation from 73 industry partners from 33 companies. The contracting office provided an overview of the solicitation requirements, draft contract structure, statement of work, and proposal instructions and evaluation criteria for the draft RFP. The product manager provided updates on the technical documentation and conducted 13 one-on-one sessions with industry representatives.

**ONE-STOP COTS SHOP**
The Common Hardware Systems program office—the single Army office that oversees all tactical hardware procurement such as rugged laptops and gear for use in the field—offers a standard marketplace for Army users to buy tactical commercial off-the-shelf (COTS) information technology. Thorough market research may show that purchasing COTS technology is the most efficient procurement approach. (Photo by Nancy Jones-Bonbrest, Program Executive Office for Command, Control and Communications – Tactical)

*Recommendation*
A significant amount of collaboration and information-sharing between government and industry is critical to accomplishing program objectives. Face-to-face events enable detailed working sessions to refine technical documentation, demonstrate hardware and facilitate discussions of proprietary and sensitive information. Industry days foster robust and open competition, and are an important source of information from industry regarding state-of-the-art technology developments. Such events also facilitate small business innovations that can be incorporated into designs by prime contractors.

Hold industry day events as early as possible before the RFP release, and hold multiple events as new information becomes available that can be shared with industry. Additionally, release draft RFP products prior to industry days to give industry partners the opportunity to provide valuable feedback during the events.

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**LL_87: If the case for sole-source is truly strong, and when all the Federal Acquisition Regulation clauses support sole-source, perhaps sole-source is the correct path.**

*Background*
A low-density Acquisition Category III system for which expertise was very limited in the contracting community had had the same contractor since 1994. The incumbent remained the only bidder, despite efforts to conduct industry days and provide other opportunities for contractors to participate, including making all source code available to bidders. After receiving the single bid, the source-selection board was disbanded and the solicitation reverted to sole-source. The program office and system experts firmly believed that the contract for post-production upgrades to the system should have been sole-source; the recommendation was rejected. The move from sole-source to competitive action took several years, yet still resulted in a single bid from the incumbent.

*Recommendation*
Do not be afraid to go with sole-source selection when the case for doing so is strong. Significant time and money can be wasted in the transition to open competition when industry cannot support the program. Industry days can assist in making a case for sole-source selection if competition among multiple contractors is not possible.

## IMPORTANCE OF COMMUNICATION WITH INDUSTRY

**LL_51: Maintain clear and open lines of communication with industry to build trust and a solid relationship between the program manager and industry and to facilitate knowledge transfer.**

*Background*
One program actively engaged industry in preparation for the engineering and manufacturing development (EMD) phase. Through the use of various forums,

the program provided avenues for industry to comment on and critique the requirements, schedule, funding profile and procurement package solicited to build prototype systems. These forums were intended to give industry representatives an opportunity to provide the program manager comprehensive feedback on draft EMD requirements. This sent the message to industry that the program had taken positive steps to reduce technical risk, validate designs and cost estimates, evaluate manufacturing processes and refine requirements during the technology development phase.

*Recommendation*
Maintain clear and open lines of communication with industry. Doing so will yield a number of benefits to the existing program and to other programs about to embark on EMD by:

- Ensuring that requirements are clear, concise and understood by industry.
- Facilitating knowledge transfer.
- Informing participants of potential contracting opportunities for the lifecycle phase.
- Increasing industry's knowledge and awareness of the program and seeking their feedback.
- Developing interaction on requirements, schedule and funding.
- Allowing the program manager to assume control of communicating program requirements to minimize rumors, untruths and third-party feedback.
- Allowing early industry buy-in.
- Establishing support and confidence between the program manager and industry.

**LL_49: Early communication and interaction with industry is imperative to improve competition during contract source selection.**

*Background*
In preparation for the recompete of a development contract, the program manager began discussions with industry 24 months ahead of the anticipated award date. By starting early, the program manager engaged industry with requirements and gathered information about best practices, optimal contract vehicles, the context of the performance work statement (PWS), and development and deployment methodologies. The program manager was able to maintain an open dialogue, and the information gathered was instrumental in building a comprehensive PWS with sufficient details to ensure that all requirements were addressed. By starting early, the program manager generated interest from a wide range of industry partners who otherwise might not have bid on the work.

*Recommendation*
Promote competition for software development and integration contracts. Begin the market research process very early, and build time into the schedule for protest. Per Office of Federal Procurement Policy dated Feb. 2, 2011, "Early, frequent, and constructive engagement with industry is especially important for complex, high-risk procurements, including (but not limited to) those for large information technology projects."

**LL_998: Ensure that all stakeholders are in alignment from the beginning of the program and share a common understanding and vision, as well as common expectations for execution.**

*Background*
A nondevelopmental effort was supported by a small business that had other government contracts, including one with the U.S. Air Force. The Air Force tailored the requirements for documentation, and the manuals were simple and without great detail. When the Army awarded its project to the contractor, more detailed documentation was expected. The contractor did not know that at the time of award, and the government team did not understand the level of detail required for the documents. Hence, the contractor delivered documents that did not meet the Army's requirement. To overcome this issue, the government brought on additional support to develop the manuals.

*Recommendation*
At the project kickoff meeting, spend sufficient time defining expectations for deliverables. Ensure that everyone understands the level of detail required to meet the intent of the contract data requirements list.

*For more information on these and other lessons learned within the ALLP, go to* ***https://allp.amsaa.army.mil****.*

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**MATCHMAKING**

One example of how USACE engineers connections between small businesses that want to win government contracts and the Army agencies that want to work with them is this matchmaking session in October 2015. It brought together small business 8(a) contractors from Iowa with federal small business program managers at the USACE Rock Island (IL) District headquarters to talk about needed capabilities briefings and contracting opportunities. From left are Dawnelle Conley, SBA; Dianne Wheeler, U.S. Army Materiel Command; Beth White, Iowa State University Center for Industrial Research and Service; and Bob Hickman, Kelly Wainwright and Tony Bell, Chenhall's Staffing & HR Network. (Photo by John Dengler, USACE Rock Island District)

# Engineering Connections

The U.S. Army Corps of Engineers offers five lessons learned for building relationships with and between small businesses.

*by Ms. Crystal E. Teed*

At its core, running a successful small business program for a federal agency is about connecting people and business organizations that want to do business with each other.

It makes sense for the government to contract with responsible small businesses. According to a study by the U.S. Army Research Institute for the Behavioral and Social Sciences, the top predictors of a person's ability to run a successful small business are four personality traits: work drive, emotional resilience, social networking and goal-setting. Each of those traits is conducive to completing government contracts with changing requirements, on time and under budget.

In addition, for every $100 spent with a small independent business, $68 remains in the local economy, as opposed to $43 for large national competitors, according to the Andersonville Study of Retail Economics, a study conducted in Chicago's Andersonville neighborhood in 2004. The study found that local businesses (often small businesses) generate more economic activity—63 percent more in the case of retail establishments, 90 percent more in the case of services—than nonlocal chains. Researchers have replicated the core finding that small, local businesses create more economic impact in Texas, Maine and Ohio.

The federal government is not the only one that benefits from these interactions. Small businesses want to work with the government because we buy things the commercial marketplace does not, and the timing of cash flows we offer is attractive. Large businesses

**SELLING SMALL BUSINESS**
Su-Chen Chen of the Facilities Reduction Program at the U.S. Army Engineering and Support Center, Huntsville, AL, speaks with Victor Curry of Vision Centric Inc.—a service-disabled veteran-owned small business—during the 2015 Small Business Forum Oct. 15 in Huntsville. Events such as these give small businesses a chance to talk face to face with the contracting officials who will be soliciting work, forging connections that can lead to later success. (Photo by Amy Newcomb)

want to work with small business to harness specialized products, skills or resources. Small businesses want to work with large businesses and other small businesses, which they can do through teaming arrangements or formal mentor-protégé programs.

The U.S. Army Corps of Engineers (USACE), which has met its overall small-business utilization targets for the past five years, offers five tips on how to succeed in making the necessary connections, and more.

## TIP #1: REDEFINE SMALL BUSINESS 'GOALS'

Grace Fontana, associate director of the Office of Small Business Programs (OSBP) in USACE, attributes the command's success to a concentrated focus on maximizing small business participation, as opposed to numerical targets or goals.

For example, the Galveston District has significantly exceeded its HUBZone (Historically Underutilized Business Zone) participation rates on a regular basis. However, Melea Crouse, assistant director, Southwestern Division OSBP, does not view this as a major accomplishment because there are an unusually high number of HUBZones in the region. (The HUBZone program of the U.S. Small Business Administration (SBA) helps small businesses in urban and rural communities gain preferential access to federal procurement opportunities.)

Instead of focusing on goals as raw numbers, Fontana's division focuses on finding and connecting people and businesses who want to work together.

## TIP #2: GATHER CONTACTS

As engineers know, connections require connection points. The same is true in small business: If you want to make connections, you first need points of contact.

Industry outreach is critical. Small businesses typically make sales based on relationships. Giving them a personal point of contact can help acclimate them to the government contracting culture. All USACE divisions perform outreach through traditional industry days as well as at conferences and other venues as appropriate, in addition to posting to Federal Business Opportunities (FedBizOpps), at **www.fbo.gov**. FedBizOpps is the central website that all federal agencies use to post open procurements that exceed $25,000.

Gathering contacts doesn't stop with current contractors and potential offerors. It includes all professional resources necessary for building bridges—the earlier, the better. Involving interested people and potential resources early in the process yields benefits. For example, acquisitions with elements that will need review at any point by the principal assistant responsible for contracting (PARC)—a high-ranking contracting official who fulfills responsibilities defined by Army Federal Acquisition Regulation Supplement and HQDA policy, including nominating contracting officers, appointing source selection authorities, ratifying unauthorized commitments and approving determinations and findings—or someone higher call for the PARC to be invited to the initial kickoff and subsequent meetings.

### TIP #3: PROVIDE BUILDING BLOCKS FOR PAST PERFORMANCE

One of the biggest hurdles new businesses face is gaining past performance. Without positive past performance, it may be difficult to win a competitive contract award. Doing business with large contractors as a subcontractor helps small businesses maintain positive cash flow while gaining federal government industry experience and building relevant past performance. (Contrary to popular misconception, relevant past performance can take many forms; it is not limited to prime contracting with the government.)

USACE divisions maintain a database of prime contractors that would like to be matched with subcontractors. When subcontractors contact USACE districts and centers for information on teaming, small business specialists are available to help make that connection.

### TIP #4: BUY LOCAL

When a local project is likely to have significant economic, infrastructure or political impact on a specific region, USACE typically conducts one or more industry days with local residents. For example, when a recent development project for more than $2 billion was in its initial development phase in El Paso, TX, USACE collaborated with the local chamber of commerce and the SBA to conduct an industry day. Roughly 50 attendees contributed to a discussion of how to best serve the community and ensure that local small businesses had a fair chance to compete for the work. Once the pre-solicitation was prepared and USACE went back to the public, more than 700 interested businesses registered and attended a second industry day.

A strong working relationship with the SBA helps. USACE small business specialists at the Great Lakes and Ohio River Division OSBP take advantage of the fact that they share a facility with the SBA to maintain informal face-to-face working relationships with SBA employees and stop by periodically to chat. When the division learns of a new acquisition, learning more about how to involve small businesses is as simple as stopping by the desk of an SBA acquaintance, who quickly pulls up potential qualified sources.

Not everyone gets to share facility space with the SBA, but in-person and virtual visits via videoconference can help develop solid working relationships with the local SBA office.

### TIP #5: CHALLENGE BUSINESS AS USUAL

Use past information from the Federal Procurement Data System – Next Generation (FPDS-NG) to the future advantage of small business and the government, and as a tool to make sure "business as usual" isn't keeping small businesses from competing. In a recent example from the Southwest Division, a prior indefinite-delivery, indefinite-quantity contract required that offerors have the capability to simultaneously work up to three task orders. But in FPDS-NG, there was no evidence that more than one task order was ever issued simultaneously under the prior contract vehicle. After working with the contracting officer to redefine contract requirements, it was awarded to a small business that went on to perform successfully.

### CONCLUSION

The USACE approach to successful small business contracting involves a focus on success that goes beyond the numbers. By seeking to build contacts and connect them, and by challenging the process to work better each time, the USACE Office of Small Business Programs is strengthening U.S. Army contracting.

*For more information, contact the USACE OSBP at **SmallBusinessOffice@usace.army.mil**, or go to **http://www.usace.army.mil/BusinessWithUs/SmallBusiness.aspx**.*

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*MS. CRYSTAL E. TEED is the chief of policy for the USACE OSBP. A former small business owner in the financial services sector and a licensed attorney, she oversaw the purchasing systems of several major contractors in her time as a corporate administrative contracting officer with the Defense Contract Management Agency. She holds a J.D. from Washington & Lee University School of Law and a B.S. in financial management from The Catholic University of America, and is Level III certified in contracting.*

*For every $100 spent with a small independent business, $68 remains in the local economy, as opposed to $43 for large national competitors, according to the Andersonville Study of Retail Economics, a study conducted in Chicago's Andersonville neighborhood in 2004.*

# SPOTLIGHT:

## MR. EVERETT F. 'FRANK' SMITH

### Helping to keep UAS aloft

**MR. EVERETT F. 'FRANK' SMITH**

**COMMAND/ORGANIZATION:**
Project Manager for Unmanned Aircraft Systems, Program Executive Office for Aviation

**TITLE:**
Logistics management specialist, Shadow Technical Publications

**DAWIA CERTIFICATIONS:**
Level III in life cycle logistics, Level I in program management

**YEARS OF SERVICE IN WORKFORCE:** 5

**YEARS OF MILITARY SERVICE:** 23

**EDUCATION:**
B.S. in multidisciplinary studies, Grantham University (expected in 2016)

**AWARDS:**
Commander's Award for Civilian Service (3), Non-Article 5 NATO Award for Civilian Service, Global War on Terrorism Award (2); Meritorious Service Medal (3 Oak Leaf Clusters (OLC)), Army Commendation Medal (4 OLC) and Army Achievement Medal (4 OLC); Army Aviation Association of America Soldier of the Year Award; Workforce Achievement Award for Logistics from the Office of the Undersecretary of Defense for Acquisition, Technology and Logistics; industry award for contributing to 25,000 accident-free flight hours for the Shadow Unmanned Aircraft System

Frank Smith's first reaction to the news that he was the 2015 winner of the Workforce Achievement Award for Logistics from the Office of the Undersecretary of Defense for Acquisition, Technology and Logistics "was shock and dismay," he said. "Not because I felt I did not earn the award, but rather that there are many other DA civilians who are deserving of [it]. I have had the opportunity to work with a few and have learned many things from these outstanding folks."

Modesty aside, Smith has made some impressive contributions to unmanned aircraft systems (UAS). Working with the Forward Operations Team from the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (OASA(ALT)) and U.S. Forces Afghanistan, he oversaw UAS forward repair activity operations in support of the U.S. Army Special Operations Command, Army National Guard and coalition forces. He managed more than 400 deployed contractor personnel across 17 forward operating bases, supporting the Gray Eagle, Hunter, Sky Warrior A, Shadow, Raven and Puma UAS fleets. Thanks in large part to his contributions, UAS operational readiness rates consistently exceeded 95 percent. He also led the transition of a radar sensor from a Navy platform to the Hunter UAS under a compressed timeline, and assisted in UAS retrograde planning efforts.

Smith has spent five years in the acquisition workforce, following 23 years on active duty in the Army and eight years as a contractor, including stints as a publications editor supporting the RAH-66 Comanche program, a deployment to Iraq as a helicopter maintenance team leader, an assignment as a maintenance consultant in Abu Dhabi in support of an AH-64A Apache squadron, and time as a system analyst supporting Future Combat Systems. And he brings that wealth of experience to his current role: logistics management specialist for technical publications for the Shadow UAS, in the Tactical Unmanned Aircraft System Product Management Office.

"The hardest part of my job is being a member of a government and industry team that strives to deliver accurate publication updates that contribute to enhancing Shadow

UAS readiness by reducing the mean time to repair and the mishap rate, at the lowest possible cost to the program manager," he added. "It's a challenge that we all accept and take very seriously."

**What do you do in your position, and why is it important to the Army or the warfighter?**

As a member of a government and industry team, my job is to provide subject matter expertise, oversee the technical authoring of publications tasks and ensure that these publications are written in accordance with military standards and incorporate change requests from Soldier customers. In other words, I help to write the technical manuals that Soldiers use to operate and maintain a complex weapon system.

**What one skill or ability is most important in doing your job effectively?**

Listening. Simply listening to customer input and letting the customer know that their issues are important and deserve an answer is vital to solving problems. I use listening to critically think issues out in order to develop the best solution that will help the customer while considering the cost to the program.

**How did you become part of the Army Acquisition Workforce, and why?**

I transferred from my job as an Army civilian—I was a logistics assistance representative for the Army Aviation and Missile Command. I chose this position because I knew it would allow me to manage and support the sustainment effort, which in turn supports our Soldiers in the field. My background as a Soldier and my experience with developing the logistics effort for the AH-64D Longbow Apache were instrumental in my ability to provide sustainment support and assist with technical publications.

**What's the biggest challenge your program faces, and how do you overcome it?**

There are several challenges that we face as the project manager for an Acquisition Category I weapon system, including fielding an entirely new variant of the Shadow UAS, continuing our support to several platoons deployed in combat theaters, and ongoing efforts to insert new technology and upgrades to improve reliability and decrease Soldier workload. I assist with overcoming these issues by ensuring that the technical publications are constantly and accurately updated as the Shadow marches through its evolutionary cycle.

**TEAM EFFORT**
Smith, right, poses with a team from Textron Systems that supported the One System Remote Video Terminal and the Shadow Unmanned Aircraft System, during a 2013 assignment in Bagram, Afghanistan. (Photo by Richard James, U.S. Army Aviation and Missile Life Cycle Management Command)

**What do you see as the most important points in your career with the Army Acquisition Workforce, and why?**

Attaining my DAWIA Level III certification in life cycle logistics was certainly a key point in my career, because of the rigorous and fully encompassing program of instruction that the certification involves. This training has been helpful with executing my assigned duties, and helps me to understand the bigger picture regarding cost, schedule and performance. My deployments into combat theaters where I worked for the forward director for the ASA(ALT) have also been important in enhancing my strategic understanding of how acquisition efforts directly support Soldiers.

**What advice would you give to someone who aspires to a career similar to yours?**

Concentrate on and become proficient at the small things. Get out of your comfort zone and learn something new every day. Never let a day pass without being able to say that you did something for a Soldier. And get out there and serve alongside Soldiers when the opportunity arises.

**If you could break the rules or make the rules, what would you change or do?**

I would not break any of the current rules or processes that we use to support Soldiers. However, I would expedite some of the rules that we are currently developing, which would accelerate new capabilities to our Soldiers while incrementally decreasing cost to the program manager, such as UAS readiness reporting and completing the migration of technical skills from contracted support to a completely organic capability at the Soldier level.

***—MS. SUSAN L. FOLLETT***

**SERVING UP A SERVICE CONTRACT**
Army Sustainment Command contracts with many small businesses, including those that provide food services to Army personnel around the world. (Photo by Jon Connor, ASC Public Affairs)

# Opening Doors

ASC and JMC, who together support "big Army" in a big way, used set-asides, a regional symposium with other commands and an industry week to award $916 million in work to small businesses in FY15.

*by Mr. Justin Graff and Mr. Tony Lopez*

The U.S. Army Sustainment Command (ASC) and the Joint Munitions Command (JMC) together represent the largest number of employees at Rock Island Arsenal, IL. From the middle of the United States, the two commands support a global array of mission requirements from major commands, and many of these requirements become the responsibility of the ASC/JMC Office of Small Business Programs (OSBP).

ASC has a mission to provide globally responsive, strategic logistics capability and materiel readiness that enable combatant commanders to conduct the full range of military operations. ASC is the Army's global logistics center—a multibillion dollar enterprise that supports the Army's ability to regenerate, equip and sustain its fighting force. Through the Enhanced Army Global Logistics Enterprise (EAGLE) program and the Logistics Civil Augmentation Program (LOGCAP), many small businesses have an opportunity to support these logistics requirements. LOGCAP's mission is to provide the Army's premier capability to support global contingencies by leveraging corporate assets to augment the sustainment force structure.

JMC manages a nationwide network of 14 industrial base installations across the country. Its core competences are to produce, distribute, store and demilitarize ammunition. As the single manager for conventional ammunition, providing a variety of items that support all services and other government agencies, JMC manages ammunition ranging from small-caliber rounds used by all military services to bunker-buster bombs used by the Navy and Air Force. Small businesses across the country play a major role


**SMALL BUSINESS CONTACTS**
MG Kevin G. O'Connell, ASC commanding general, meets small business owners at the 2015 Midwest Small Business and Government Contracting Symposium at the iWireless Center in Moline, IL. The annual event gives small businesses a unique opportunity to connect with the Army. (Photo by SFC Shannon Wright, ASC Public Affairs)

in the JMC mission, providing many services and ammunition components under contract with the Army.

Beginning in 2004, when the 40 mm grenade program was set aside for small business through efforts by JMC, the Army and the U.S. Small Business Administration (SBA), the ASC/JMC OSBP has worked with U.S. Army Contracting Command – Rock Island (ACC-RI) to award $2.62 billion to small businesses. This includes awards to several small business machine shops that produce metal parts used in 40 mm grenade production, in addition to awards for other ammunition components, environmental remediation and professional services.

How to define which businesses are small businesses? For service contracts, there's a revenue maximum; for manufacturing contracts, a maximum number of employees. Small businesses competing for a service contract must not exceed $37.5 million in average annual revenue (averaged over the past three years). Small businesses competing for manufacturing contracts must have a maximum of 1,500 employees (again, calculated as an average of the past three years). The North American Industry Classification System codes lay out these standards, created by the U.S. Census Bureau in consultation with the SBA.

## CREATING OPPORTUNITIES

The Midwest Small Business Government Contracting Symposium, initiated in January 2008 by the National Defense Industrial Association, is now held every May as part of ongoing efforts to create opportunities for small businesses. In addition to ASC and JMC, representatives from U.S. Army Garrison – Rock Island, the Rock Island Arsenal Joint Manufacturing and Technology Center, the U.S. Army Corps of Engineers and ACC-RI provide information on potential future contracts for each group.

Beginning in 2014, the event also included the Advance Planning Briefing for Industry for all six major commands based on Rock Island Arsenal, as well as a few customers based elsewhere. The Quad Cities Chamber of Commerce has coordinated the annual event since 2013, giving small businesses the opportunity to connect with government representatives who may be interested in their services or products.

The symposium has grown from 34 attendees who met the first year in a small office space to an average of approximately 400 participants in recent years. As the symposium grew, it moved from smaller venues to the iWireless Center in Moline, IL, with more than 7,000 square feet of meeting space as well as an arena floor for industry displays. On average, more than 100 industry vendors participate each year with displays. Representatives have the opportunity to attend briefings and obtain information on contracting opportunities as well as sign up for one-on-one business matchmaking sessions.

*"I don't know if we are unique in the Army, but I would say from our standpoint, we can't accomplish our mission without small business."*

From its inception, the vision and sole purpose of the symposium committee was to assist and educate small businesses to do business with the federal government, specifically the commands based on Rock Island Arsenal. The symposium is by no means the only form of outreach to small business, however.

"Outreach is performed every time we receive inquiries from small business through emails, phone calls, in person, capability presentations, conference attendance, participation in events sponsored by the procurement technical assistance centers [PTACs] in Iowa and Illinois and other events that draw small business," said Robert Matthys, associate director of the ASC/JMC OSBP. PTACs provide expert government contracting help at little or no charge through training, one-on-one counseling, classes, seminars and matchmaking sessions, ensuring that small businesses are registered for and aware of potential government contract opportunities.

**A SET-ASIDE SUCCESS**
An employee from the Iowa Army Ammunition Plant, managed by JMC, places a fuze on the 40 mm grenade during production. The 2004 decision to acquire some of the components for the grenade from small-business machine shops was a success, and spurred further awards to small businesses from Rock Island. (Photo by Tony Lopez, JMC Public and Congressional Affairs)

## EAGLE HAS LANDED

In October 2015, ASC held an industry week that, in part, featured updates and forecasts for EAGLE contracting. The EAGLE program affords small businesses a unique opportunity: Specific Army installations in 19 different locations across the country are set aside for small business competition. Examples of potential small business contract opportunities include maintenance and field sustainment of equipment; retail and wholesale supply services; and transportation support. The program also encourages teaming arrangements and joint ventures, so businesses of various sizes can work together to provide high-quality services on larger contracts.

The EAGLE program was established in February 2012 to create a single logistics provider at each of ASC's 71 logistics readiness centers with a contracted requirement greater than $1 million annually, combining legacy contracts that fell under various programs.

Having EAGLE as the single provider eliminates redundancy and overlap of services at each location, resulting in cost avoidance. The Army benefits by having uniformity of contracts, performance work statements, high-quality surveillance plans, solid performance requirements and better communication across the enterprise.

EAGLE allows standardization of performance work statements and greater competition among the basic ordering agreement (BOA) holders, with the goals of reducing cost and increasing small business participation. A BOA is a pool of qualified companies that can submit proposals in response to task order solicitations. EAGLE also reduces administrative contracting costs by using one acquisition strategy for multiple contracts in many locations.

During the industry week, government employees, including the ASC/JMC OSBP, met with EAGLE BOA holders—19 of the 38 in attendance represented small businesses—to engage with any industry representatives interested in government work.

During a meeting with the BOA holders, Jay Carr, executive director of ASC's Acquisition Integration Management Directorate, said that the command manages a $2 billion budget and that 60 to 70 percent of the mission is executed through contracts.

"I don't know if we are unique in the Army, but I would say from our standpoint, we can't accomplish our mission without


**EAGLE FORECASTING**
Jody Fasko, chief of the EAGLE Business Office at ASC, briefs small business leaders on contract opportunities during industry week, October 2015. The EAGLE program opens up entire Army installations to small businesses. (Photo by Tony Lopez, JMC Public and Congressional Affairs)

small business," said Carr. "That's why we ask you to provide frank feedback and comments and use this unique opportunity in this forum to address your concerns and your issues as we go forward."

Jody Fasko, chief of the EAGLE Business Office at ASC, said EAGLE had awarded 27 task orders as of October 2015, including 15 new awards in FY15 and the reconfirmation of the Fort Benning, GA, EAGLE site award. Of those 27 awards, 20 were set aside for small business companies. "We've really been impacting that segment of the market," said Fasko. "The 20 awards represent 45 percent of the total dollars we've awarded."

While increasing competition by 42 percent between FY13 and FY15, EAGLE has reduced the average adjusted days to award by 40 percent, from 292 days in FY13 to 175 in FY15, which falls below the EAGLE acquisition strategy target of 180 days to award, according to Fasko.

"As we look at what the acquisition strategy called for and what we said we were going to do, which was increase competition, increase small business [use] and establish efficiencies within the logistics, supply, transportation and maintenance functions at ASC, we have done all of those things, but we have done them all with your help," said Carr.

## CONCLUSION

In FY15, the ASC/JMC OSBP exceeded its percentage goals in all five small business categories. For that year, $916.1 million was awarded to small businesses for goods or services acquired by ASC and JMC. The awards include small disadvantaged businesses, $365.5 million; women-owned businesses, $197.8 million; Historically Underutilized Business (HUB) Zone, $30.9 million; veteran-owned small businesses, $153.9 million; and service-disabled veteran-owned businesses, $168 million.

Small manufacturing companies face a number of challenges to stay in business and remain competitive, including the constant pressure to grow their customer base. Also, companies often overlook or bypass opportunities in government contracting as the result of paperwork that they consider burdensome.

"If you have questions, we have answers, because small business is OUR business." That's the motto of the ASC/JMC OSBP.

"Our office works closely with contracting to ensure all procurements give small businesses the maximum practicable opportunity to compete," said Matthys. "We try to remove any roadblocks or barriers that may make it difficult or impossible for small businesses."

For example, the OSBP strives to ensure that the scope of work is understandable to all small businesses. During the solicitation period, when companies can bid on a contract, the OSBP can extend the bid preparation time to allow small businesses additional time to compete.

*For more information, contact the ASC/JMC OSBP at 309-782-7302 or go to* ***http://www.aschq.army.mil/home/SmallBusiness.aspx.***

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*MR. JUSTIN GRAFF is a public affairs specialist with ASC. He holds an M.A in business and a B.S. in audio engineering from Full Sail University.*

*MR. TONY LOPEZ is a public affairs specialist with JMC. He holds a B.A. in journalism from the University of Iowa.*


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# SPOTLIGHT:

## DR. TONY THAMPAN

### Supporting CERDEC's 'whiz-bang stuff'

**DR. TONY THAMPAN**

**COMMAND/ORGANIZATION:**
Power Division, Command, Power and Integration Directorate, U.S. Army Communications-Electronics Research, Development and Engineering Center

**TITLE:** Subject-matter expert, tactical power

**DAWIA CERTIFICATIONS:**
Level II in engineering

**YEARS OF SERVICE IN WORKFORCE:** 4

**EDUCATION:**
Ph.D. and M.S. in chemical engineering, Worcester Polytechnic Institute; B.S in biochemical and chemical engineering, University of Iowa

**AWARDS:**
DOD Scientist of the Quarter

Soldiers could one day be carrying less weight in the field, thanks in part to two things: Dr. Tony Thampan's desire to stick close to home and a chance conversation at a conference. "I was working for Air Liquide [an industrial gas company], and the company wanted to send me on an overseas assignment, which I wasn't excited about," said Thampan, now a research chemical engineer at the U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC). "I met someone from ARL [the U.S. Army Research Laboratory] at a conference, and he encouraged me to reach out to CERDEC." In exploring the organization, he found that it "worked on some whiz-bang stuff," which he found appealing.

He started on laboratory development of small power systems for CERDEC's Command, Power and Integration Directorate, and progressed into wearable power systems with a focus on wearable fuel cells. "We work on advanced technology that's application-driven and high-risk: We are attempting to develop technologies to meet our requirements that haven't been used before, at least not in the published literature or in patents. But we use our expertise to choose a developmental plan to maximize the probability of success."

Thampan noted that the most important component of his work "is interactions with Soldiers, Marines and other warfighters and the feedback from various demonstrations and field exercises. This facilitates better understanding of the challenges and issues encountered, which helps to define the problem clearly, and that results in appropriate development of a technical solution."

That feedback was a vital part of his work on a wearable power system that uses a fuel cell membrane to improve power efficiency while cutting the Soldier's weight burden. CERDEC tested the system during summer 2015, collecting user feedback. The system has been endorsed for transition to Project Manager Soldier Warrior under the Program Executive Office for Soldier, and Thampan was chosen as DOD's Scientist of the Quarter in late 2015 as a result of his work on the project.

**PACKED WITH POWER**
At CERDEC, Thampan looks at advanced technologies to increase the amount of power a Soldier can carry without adding too much weight. Private-sector R&D and government R&D aren't that different, says Thampan; they share a focus on creating value for the shareholder or customer who is driving exploration. (Photo by Allison Barrow, CERDEC)

"The hardest part of my job is also the best part," he added. "Every requirement met allows new capabilities to be considered, which then drives a new set of requirements. It requires us to constantly innovate, which is exciting."

**What do you do in your position, and why is it important to the Army or the warfighter?**

I work with the requirements and acquisition community to provide improved power and energy capabilities for the Army. These include lighter-weight alternatives for wearable Soldier use and more resilient electrical grids for basing applications. Specifically, this involves solving technical hurdles related to developing and transitioning prototype systems. This includes developing the engineering and scientific tools required to design a military-relevant system, and a combination of experimental characterization and simulation.

**What's the greatest satisfaction you have in being a part of the Army Acquisition Workforce (AAW)?**

Although we leverage a large amount of commercial solutions, our requirements drive us to develop advanced technology. This results in us advancing the state of the art, which is very satisfying, as it not only benefits the warfighter but potentially the economic strength of the nation.

**During your tenure with your organization or command, what was the biggest challenge your program faced, and how did you overcome it?**

Early on in the program, there was a requirement for a form factor that could be worn on the tactical vest while meeting power requirements. No other fuel system had been able to provide this capability. Based on Soldier feedback and rapid prototyping, it was possible to develop a product that met this requirement. The potential weight saving is impressive—almost four times lighter for extended missions than the existing rechargeable battery. This translates into a battery weight savings of 14 pounds and enables fielding of Soldier systems that provide increased capability but usually require larger amounts of power.

**If you could break the rules or make the rules, what would you change or do?**

I would simplify the contracting process. Presently the contracting process is too long, making it hard to partner with innovative companies that thrive in fast-moving, agile partnerships.

**You joined the AAW from the private sector. What do you see as the biggest difference between working in the private sector and working in Army acquisition?**

Actually, the research and development [R&D] environment is more similar than different. In my corporate position, the largest focus was on increasing shareholder value, which usually translated into developing useful products for customers. In the Army, the largest focus is on providing value to the warfighter—in other words, transitioning useful products.

**What one skill or ability is most important in doing your job effectively?**

Perseverance. The R&D process takes a long time. Also, DOD is a big organization, and it's not simple to affect the course of a big organization. To effect meaningful change, you have to be committed for the long haul.

**Is there a skill that you learned outside your present career that has come in handy in your work for Army acquisition?**

Communication skills. Air Liquide is a French multinational corporation, and when I worked there, I realized the importance of learning from folks with different experiences. This was important because transitioning a product successfully requires consideration of a number of different stakeholders.

**Can you name a particular mentor or mentors who helped you in your career? How did they help you?**

There are far too many people to mention who have provided mentoring to me. The entire Power Division has been very helpful, which makes work an enjoyable experience. Especially helpful was the focus on transitioning technology—in other words, how will this help the Soldier? Sometimes that means pointing out problems and then going the extra mile in providing ideas and guidance on the solutions. It also helps that we have world experts in our technology space, specifically power and energy.

**What advice would you give to someone who aspires to a career similar to yours?**

Plan your work, and then work your plan hard. As much as you can control it, all your work should have an end product that you believe will improve something. This means getting lots of feedback and separating the hype from the reality. Also, set up and achieve milestones to ensure forward progress: a requirement, a test bed, a technical report, a patent, a prototype, etc. Finally, be flexible. Being a scientist or an engineer includes inventing, and sometimes you have to reinvent yourself.

***—MS. SUSAN L. FOLLETT***

**CALIBRATING INTENSITY**
Soldiers take part in a road march during Ranger assessment at Fort Benning, GA. The "precision medicine" approach based on an individual's documented physiological responses could be particularly useful in high-intensity Ranger training where march and run paces are adjusted for environmental conditions. Pacing currently is based on estimates of environmental effects but could be based on individual data in the future. (U.S. Army photo by SGT William E. Henry, Indiana National Guard Public Affairs)

# The FUTURE *of* WEARABLE TECH

Working Soldiers to failure is a costly mistake, and until recently it's been anybody's guess at what temperature and exertion rate a given Soldier would max out. But now, wearable, chest-based sensors (far more accurate and informative than current wrist-worn models) can tell when a Soldier is nearing cardiac and temperature limits—protecting Soldiers, preventing heat casualties and generating data to help predict how Soldiers will perform under new environmental conditions.

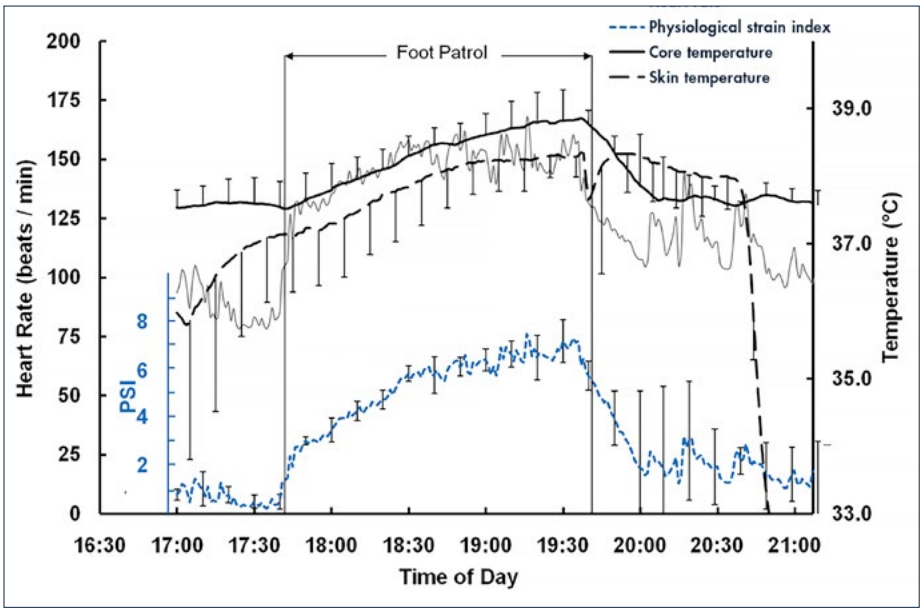
*by Dr. Reed W. Hoyt and Dr. Karl E. Friedl (COL, USA Ret.)*

The Army uses wired and wireless monitoring systems to monitor real-time performance and safe operating limits of vehicles and aircraft, but no comparable systems exist for Soldiers.

The limiter to real-time physiological status monitoring (RT-PSM) has not been engineering technology. More than 50 years ago, John Glenn blasted off from Cape Canaveral while his medical team monitored a modest heart rate increase to 110 beats per minute. This ability to remotely monitor physiological signals has improved in terms of size, weight, comfort, cost and power. Today, for example, recreational athletes commonly monitor their heart rate with commercial, body-worn systems.

For at least as long as the space program has been around, the Army has conducted research on wearable monitoring technologies. When then-U.S. Sen. John Glenn flew on the shuttle Discovery in 1998, he swallowed a thermometer pill that monitored circadian body temperature rhythms in orbit, using a temperature monitoring system provided by the U.S. Army Research Institute of Environmental Medicine (USARIEM). A chest-worn system created through a successfully completed Army science and technology objective monitored the physiological responses of Austrian daredevil Felix Baumgartner during his 2012 jump from a helium balloon in the stratosphere. Soldier-monitoring capabilities have now matured to the point that they can be used to enhance safety and performance during work in hot environments. This

**FIGURE 1**




**HOW MUCH STRAIN IS TOO MUCH?**
Average responses of team members of a foot patrol in an operational mission illustrate typical thermal burdens in a hot, dry climate. Tracking individuals who might range into a higher physiological strain index could help guide adjustments to pace and load distribution among team members to ensure continued performance and mission success. (SOURCE: Dr. Mark Buller, USARIEM)

**LAYER UP FOR DATA**
A chest-worn physiological sensor system such as this one can provide information on a Soldier's work- and heat-related strain to team members downrange and leaders at a command post. (Photo by William Tharion, USARIEM)

first application of RT-PSM is being prepared for transition to the Program Executive Office for Soldier's Integrated Soldier Sensor System program, through a technology transfer agreement with the U.S. Army Medical Research and Materiel Command.

Turning physiological data into actionable information needed by Soldiers makes the system worth the extra cost, weight, training and complexity. Raw data is interesting but not easily interpreted, even by a medic. For example, a high heart rate can variously indicate normal sympathetic activation needed to perform a task, cardiac compensation for hemorrhage or peripheral vasodilation in the heat, or response to an extreme psychological event. Similarly, measurement of core temperature is not, by itself, as useful as it might seem.

The wide range of normal core body temperature among warfighters was not well described until USARIEM field studies using wearable physiological monitors revealed how low core temperatures went in metabolically challenged Ranger School students, and how high they went during Marine patrolling activities in Iraq and Afghanistan. Laboratory studies would never have revealed these extremes of normal warfighter physiology. Clearly, contextual information and mathematical models that automatically interpret wearable sensor data streams are needed to interpret core temperature and provide actionable, individualized safety and performance information.

## APPLYING THE TECHNOLOGY

Applications of RT-PSM technologies include dismounted route-planning decision support tools; performance and safety monitoring in high-risk chemical and biological threat environments requiring full protective gear;

and performance and safety training for individuals and small-unit leaders. The use of RT-PSM to enhance Soldier performance and to avoid heat casualties is very different from medical management of casualties after they occur. Medics will bring their own U.S. Food and Drug Administration-certified medical devices to diagnose and treat casualties, upload secure medical data to central repositories and conduct remote telemedicine. In contrast, RT-PSM is not a medical system providing data for medical decisions, but rather a source of useful safety and performance information.

The Army National Guard (ARNG), an early adopter of thermal- or work-strain monitoring, is working with the USARIEM and Massachusetts Institute of Technology (MIT) Lincoln Laboratory to define requirements and concepts of operation. The ARNG's Weapons of Mass Destruction Civil Support Teams (WMD-CSTs) train and respond to emergency events in full chemical, biological, radiological, nuclear and explosive protective gear. Chest-mounted physiological sensors provide work- and heat-strain data to downrange team members and to leaders at a command post (See Figure 1.) Other applications include the use of wearable sensors to quantify human thermal or work strain during field evaluations of new jungle uniforms performed by the Marine Expeditionary Rifle Squad "Gruntworks," the human systems integration center at the Marine Corps Jungle Warfare Training Center, Camp Gonsalves, Okinawa, Japan.

In another Marine Corps research collaboration with USARIEM, RT-PSM technologies documented the physiological responses of Marines during foot patrols in Iraq and Afghanistan, resulting in knowledge that influenced Marine Corps field doctrine and tactics, techniques and procedures related to the conduct of patrols.

The current concept is to provide a read-out for the individual Soldier or squad leader that is comparable to a combination of engine temperature and tachometer—i.e., a thermal work-strain index based on heart rate and core temperature. According to extensive lab and field research by USARIEM, a high index indicates that someone is working close to his or her upper limit of cardiovascular performance and thermal tolerance and is likely to be stopped by the individual's own physiological limits. This index has also been tested as a simplified, green-yellow-red stoplight risk designation for overall squad and individual squad member status.

Additional research by USARIEM, conducted in collaboration with the Gruntworks and with the Australian military's Defence Science and Technology Group – Melbourne under a project arrangement, demonstrated that heart rate over time can be used to accurately estimate core body temperature, eliminating the need for temperature pills. This work has been validated as a patent submission and in peer-reviewed publications.

Most recently, a task force composed of USARIEM, MIT Lincoln Laboratory and the Marine Expeditionary Rifle Squad conducted a first test of thermal work-strain monitoring during Marine Corps training at Camp Geiger, NC, using a chest-mounted RT-PSM system that communicated status information to instructors via an operationally acceptable wireless data link. An important lesson learned: the training cadre, realizing that the trainees were at relatively


**YOU OK IN THERE?**
Thermal-strain monitoring helps when protective encapsulating equipment makes it hard to see how team members are doing. In studies with National Guard Bureau WMD-CSTs, USARIEM's William Tharion tested a prominently displayed numeric readout for a thermal work-strain index that can also be transmitted using the team's communications links. (Photo by Dr. Mark Buller, USARIEM)

**HOT DOG DATA**
A military working dog wears RT-PSM chest sensors and a collar-worn acoustic sensor to detect panting frequency. A rising core temperature in a dog is not, by itself, a reliable predictor of impending heat injury, as with humans, and the susceptibility to performance degradation in the heat may be quite different between sweating humans and panting dogs. (Photo by Anthony Karis, USARIEM)

low thermal work strains and could be further challenged, wanted to use the information to push trainees harder than they would have without the monitoring. This demonstrates the kind of innovation that comes from the end users themselves during iterative field testing, suggesting, in this case, a "precision medicine" application of RT-PSM to more effectively train each individual according to his or her current level of fitness and acclimatization.

## A MORE CAPABLE SOLDIER

Information from RT-PSM can also be used in mission planning and route finding. In collaboration with the U.S. Department of Agriculture's Beltsville, MD, Human Nutrition Research Center, USARIEM's Dr. Mark Buller tested the use of RT-PSM and novel algorithms to provide continuous pacing guidance to individuals who were tasked with completing a five-mile run within one hour under thermally challenging conditions. They were to pace themselves to complete the mission on time but not overheat, and to arrive as cool and physically capable as possible.

The pacing feedback supplied by Buller significantly improved their performance in comparison to a separate trial in which each individual used his or her own pacing strategy.

This approach could be used to train optimal movement strategies and guide redistribution of the workload among individuals in a team. The route planning and pacing algorithms are also excellent candidates for integration into the U.S. Army Geospatial Center route-planning tools under development.

Robert A. Heinlein captured the imagination of many when he described a wearable physiological status monitor on every soldier in his sci-fi novel "Starship Troopers." Today, that is as quaint as the old Tom Swift books that imagined a day when spaceships might land on the moon. Although the current, affordable wrist-worn technologies have already far surpassed Heinlein's vision, the Army's interest centers on chest-based sensors. Current wrist- and arm-based sensors are power-hungry, largely proprietary and prone to motion artifacts; use militarily unacceptable modes of wireless communication; and cannot provide information obtained from the chest, such as respiration rates and body position.

An alternate approach to directly monitoring individual physiological responses is to use rational mathematical models to predict Soldier limits. Well-validated USARIEM thermal models can provide mission planning guidance and generalized predictions but are not intended for real-time use and will not precisely predict individual responses. A special exception is the USARIEM Probability of Survival Decision Aid used by U.S. Coast Guard Search and Rescue (***https://www.uscg.mil/announcements/ALCOAST/325-10_alcoast.txt***).

Key targets beyond thermal-work strain include assessments of hydration state, readiness and alertness, and musculoskeletal fatigue and strain. These may include unobtrusive sensors to monitor water consumption and loss; goggles that monitor eye responses; communication systems that also measure voice changes, speech content and breath chemistry; skin sensors that assess stress and alertness; and sensors to monitor extremity temperatures to protect and sustain performance in cold weather. Simple helmet or boot sensors could detect ground impact forces and lower extremity patterns of movement that can provide useful information about impending injury, fatigue and even behavioral changes.

## CONCLUSION

USARIEM and Lincoln Laboratory have a longer-range plan to combine physiological monitoring with outward-looking detectors to trigger threat alarms that allow Soldiers to don protective ensembles. Even military working dogs may benefit from current work to develop thermal work-strain monitors based on collar-worn acoustic sensor systems analyzing panting patterns. Miniature, possibly implantable, body-heat powered sensors will be even better and are around the corner, leveraged in part by Small Business

Innovation Research contracts and by an earlier Army program called Technologies for Metabolic Monitoring. The Army is also leveraging the National Science Foundation's Center for Advanced Self-Powered Systems of Integrated Sensors and Technologies program that is developing the next-generation, ultra-low-power RT-PSM "system on a chip."

Wearable physiological monitoring technologies are essential tools needed to understand Soldier physiology in training and operational field environments.

**PACE YOURSELF**
People directed to walk or run five miles in one hour without overheating or excess fatigue performed better when given pacing guidance derived from real-time monitoring of their physiological signs. This finding could help the Army plan routes, taking into account optimal pace and workload for each team member. (Photo by Dr. Mark Buller, USARIEM)

## WHY IS THIS TECHNOLOGY AVAILABLE NOW?

It wasn't a bolt out of the blue—rather, it was the result of years of field and lab research coupled with a few breakthroughs.

Previous efforts to analyze temperature data couldn't distinguish between peak performance and imminent heat injury. But when an equation was developed to predict core temperature rise based on heart-rate monitoring over time—the kind of data that these chest-worn sensors provide—real-time physiological monitoring became a tool of practical use. Mathematical models that combine workload and thermal strain more reliably warn of approaching performance limits based on individual cardiovascular responses.

Other applications hold promise, too: real-time neuropsychological status for alertness, wearable biomechanical performance assessments that signal optimal performance and impending musculoskeletal injury, and better thermal-strain monitoring for military working dogs.

Knowledge gained will lead to new insights into individual and small-unit leader readiness and help guide changes in field doctrine, materiel development targets and strategies, and trade-space analyses. Physiological models can embody knowledge gained from field and lab studies, and enable predictions for conditions not yet experienced. This capability goes beyond simply duplicating the roles of good leadership and training; it is an important part of what makes real-time monitoring useful.

Working Soldiers until failure is costly—there are the long-term costs of musculoskeletal injury and health management, lost expertise and time and expense of training replacements. RT-PSM systems can identify markers of compromised performance or safety, enabling early intervention when a known need exists.

*For more information go to* ***http://www.usariem.army.mil/index.cfm/about/divisions/bbmd****.*

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# INNOVATION *ENGINE*

The Small Business Innovation Research program enables RDECOM to ride a wave of small business ingenuity to help the warfighter, bringing transformative technologies to existing programs at low cost.

*by Mr. John O'Brien, Mr. Larry Bickford, Mr. Robert Auer, Mr. Michael J. Statkus and Mr. Steve Olevnik*

Small business involvement in Army technology procurement is thriving, and one place where that's happening is the U.S. Army Research, Development and Engineering Command (RDECOM), in part through the Small Business Innovation Research (SBIR) program and the companion Small Business Technology Transfer (STTR) program.

SBIR, a governmentwide program, plays a big part in RDECOM's engagement with small businesses, opening avenues to funding and ingenuity that RDECOM, a subordinate element of U.S. Army Materiel Command, would not have otherwise.

Congress created the SBIR program in 1982 to foster the involvement of U.S.-based small businesses with fewer than 500 employees in federal research and development (R&D). Each participating government agency with an extramural R&D budget of at least $100 million must reserve 2.5 percent of its extramural R&D budget for competitively selected SBIR awards to small businesses.

There are three phases to the SBIR program, and a request for proposals is issued three times a year. The goal of the program is to stimulate technological innovation, use small businesses to meet federal R&D needs, foster and encourage their participation in technological innovation and increase private-sector commercialization of innovations derived from federal R&D.

The deputy assistant secretary of the Army for research and technology (DASA(R&T)) is the executive agent for the Army's SBIR program. DASA(R&T), in turn, has delegated administration of the SBIR program to the Programs and Engineering Office at HQ, RDECOM. The Army Research Office of the U.S. Army Research Laboratory administers the STTR program for the benefit of RDECOM and the rest of the Army science and technology and acquisition communities.

Like SBIR, STTR is a governmentwide program. Congress created it in 1992, and it launched in FY94 as a three-year pilot program, since reauthorized through FY17. The STTR budget is separate from

**MAKING SMOKE SAFER**
Air Force SSgt Alex D. Braatz, a joint terminal attack controller assigned to 2nd Air Support Operations Squadron in direct support of 2nd Squadron, 2nd Cavalry Regiment (2nd Cav), throws a smoke grenade to mark a landing zone for incoming UH-60 Black Hawk helicopters at Smardan Training Area, Romania, during the multinational Exercise Wind Spring in April 2015. ECBC's Smoke & Target Defeat Branch undertook a SBIR project to identify nonexplosive dispersal technologies for the Army's obscurants to spread solid particulate aerosols without the hazards of pyrotechnic dissemination. (U.S. Army photo by SGT William A. Tanner, 2nd Cav)

SBIR's; it is a percentage set-aside from the Army's extramural R&D budget that increases every year. STTR is executed in essentially the same manner as SBIR, but with distinct differences:

- While STTR and SBIR have the same objectives, the STTR program requires participation by universities, federally funded R&D centers and other nonprofit research institutions.

- Each STTR proposal must be submitted by a team including a small business as the prime contractor, for contracting purposes, and at least one research institution. The small business must perform at least 40 percent of the work and the research institution(s) at least 30 percent; the remaining 30 percent of the work may be performed by either party or a third party.

The difference made by SBIR and STTR spans the breadth of RDECOM activities, from cutting-edge warfighting capabilities to more effective test and evaluation techniques and better components for major weapon systems. While not every SBIR or STTR project has a big impact, following are three success stories.

## SMOKING OUT A SOLUTION

The Army has used smoke grenades since at least World War I. Recently, the Smoke & Target Defeat Branch of the U.S. Army Edgewood Chemical Biological Center (ECBC), which is responsible for the development of obscurants, has breathed new life into old warfare technology by bringing in fresh perspectives in technological advances. The branch partnered with small technology firms from the private sector that are on the cusp of developing the next generation of obscurants.

Through the SBIR program at RDECOM's ECBC, the Smoke & Target Defeat Branch, which is housed in the Toxicology and Obscurants Division at Aberdeen Proving Ground, MD, has partnered with small businesses around the country to solve complex problems. The Army SBIR Program Management Office usually allocates one or two SBIR projects a year to the Smoke & Target Defeat Branch.

Technical Team Chief Jim Shomo said that ECBC has benefited from several SBIR contracts. "We're very fortunate. We have more of an inside track because we've had a consistently good experience with our SBIR partners. We're maximizing our potential by leveraging this program," Shomo said.

Facing budgetary constraints, as most governmental agencies do, ECBC has found the SBIR program to be a windfall. Business units like the Smoke & Target Defeat Branch can tap into some of the nation's best technological minds at small technology firms without spending from their own budgets, because funds for these projects come directly from the SBIR program budget to the contractors who win the award.

The smoke grenade project focuses on developing nonexplosive dispersal technology for the Army's obscurants to spread solid particulate aerosols. Obscurants are key to the warfighter's ability to hide friendly forces, confuse the enemy and enhance survivability and lethality. But explosive dispersal can present some fragmentation hazards to friendly forces. Pyrotechnic dissemination can cause fires. An alternative but highly efficient and inherently hazard-reducing dispersal method is being sought for a nonexploding grenade.

*"Small businesses are our engine of innovation for emerging capabilities such as vehicle electronics and safety systems, autonomous driving, robotics, modeling and simulation, vehicle light-weighting and energy-efficient technologies."*

The ECBC unit provides support to the project, such as managing the contract and testing the work; this effort is worth the information that ECBC receives from the project. ECBC is an information-based organization, and these projects provide data, research and other information that the business unit can share with other ECBC units across a spectrum of related projects and research efforts. Thus the SBIR program stretches not only ECBC's budgetary dollars even further, but also the center's programmatic reach.

The SBIR selection process is competitive. The Smoke & Target Defeat Branch has had as many as 46 and as few as 10 companies compete for a single contract. Some small companies partner with previous SBIR awardees who have complementary expertise; for example, an expert on a novel dissemination system may partner with the developer of an obscurant material or new testing techniques.

SBIR contractors bring new ideas and new technologies to the Army to modify or mature. For the smoke grenade project, ECBC's scientists found that some of the competing firms had great technology but had no idea what makes a great obscurant, which was the goal of the SBIR contract. Those companies that contacted ECBC during the question-and-answer period received information on what makes a great obscurant and the program's technological goals.

ECBC has defined various metrics and goals for its contractors. In the case of this dissemination technology, the main goal is to maximize the amount of particulate that is aerosolized in the air.

Shomo and his team of trained evaluators reached out to the SBIR community for alternative ways to spread the contents of the grenade. Their mission was to find small businesses with existing technology that the Smoke & Target Defeat Branch could use; or discover small tech firms with innovative solutions ready to move into the R&D stage.

## SMALL BUSINESS STEPS UP

Hy-Tek Manufacturing Co., a small technology firm based in the Chicago area, won the Smoke & Target Defeat Branch contract and is currently in phase 2 of the program.

Phase 2 involves actual demonstration of a device or material that solves the problem stated in the contract. On average, this phase can take two to three years and cost up to $1 million in research funds provided to the contract by the SBIR

**CARRYING THE LOAD**

CPL James Farran, U.S. Army Reserve combat engineer squad leader from the 374th Engineer Company (Sapper), runs up a hill as part of Sapper Leader Course Prerequisite Training in July 2015 at Camp San Luis Obispo Military Installation, CA. NSRDEC's work in human performance optimization seeks to define how encumbrances on Soldiers and small units affect task performance by changing physiological factors—for example, heat stress and hydration—or creating interference, such as limited field of view. (U.S. Army photo by MSG Michel Sauret, 416th Theater Engineer Command)

program. The result is a prototype that ECBC can develop further or take to the Soldier community.

What set Hy-Tek apart from its competition was the company's understanding of how to handle powders and aerosols. Hy-Tek is also driving toward the need for a compact system, which is a next step in the development process. The company also deserves credit for looking at practicalities: If the product has mostly standard parts, production is more cost-effective.

## SBIR SYNERGIES

An obscurants project often will spawn complementary projects that can be competed separately under SBIR, creating even more opportunity. For example, another SBIR partner is developing a field test technique that can measure key cloud parameters in the field. That technique can be applied to future testing of Hy-Tek's product.

SBIR partnerships are not just a coup for ECBC, but also offer a host of benefits to SBIR contractors. Contractors' continual motivation to improve design throughout the process, as well as their willingness to have ECBC's team help improve their firm's processes, creates partnerships that produce results for both sides. The Army offers more rigorous standards for measuring progress than many civilian industries, and the small business partners find that these standards generate useful feedback. Ultimately, the resulting technology could be transitioned to a military materiel developer or commercialized for future sales by the company.

*Smaller organizations also can readily tap into the creativity of their employees, who often bring a variety of experiences and technological expertise that differ considerably from Army personnel's.*

SBIR contractors also benefit from access to ECBC's world-class infrastructure. Hy-Tek did modeling early on to observe the flow of gases and how they influenced obscurant dispersal, and was able to use ECBC's testing chamber in December 2015 to test the accuracy of its models. ECBC encourages SBIR contractors to take advantage of its obscurant characterization facilities to gain technical feedback that will only improve the quality of the product provided to the government.

"We approach them as partners, and we have team spirit between us and our partners," Shomo said.

## OPTIMIZING HUMANS

A SBIR program participant is also bringing that entrepreneurial and team spirit to the U.S. Army Natick Soldier Research, Development and Engineering Center (NSRDEC) in Natick, MA, which is employing a new technology to

**A PROVEN CAPABILITY**

SPC Cole D. Coxon, an infantryman assigned to 2nd Battalion, 87th Infantry Regiment, 2nd Brigade Combat Team, 10th Mountain Division, examines an M18 colored smoke grenade before a simulated complex convoy ambush on Fort McCoy, WI, in June 2015. The Army has used smoke grenades since at least World War I. (U.S. Army photo by SPC Michael McDevitt, 78th Training Division)

improve computer modeling for human performance optimization.

NSRDEC, a subordinate organization of RDECOM, worked with Massachusetts-based TSE Inc. in a partnership developed through SBIR and STTR to improve the accuracy and functionality of present military modeling and simulation software, such as the Infantry Warrior Simulation. The SBIR project involved research to develop and implement methodologies and algorithms to address the impacts of encumbrance on Soldiers and small units (SSUs).

"Task-related encumbrance" is the impact that equipment, systems and environmental and operational factors have on SSU task performance and mission effectiveness, an element of the evaluation and assessment phase of the human performance optimization work. NSRDEC is the Army's lead organization for human performance optimization.

"Encumbrances on SSUs impact task performance through a change in physiological state—for example, heat stress and hydration—or interference, such as limited field of view, and this can result in degraded performance," said Thomas Gilroy, the NSRDEC team chief for SBIRs regarding simulation and modeling for acquisition, requirements and training technologies. (See Figure 1.)

Working with NSRDEC through February 2014, TSE developed a set of physiological representations for military modeling-and-simulation applications to enable researchers to study and answer critical questions about human performance and assess the operational costs of encumbrance. The collaborative effort resulted in an interactive Web application that uses military algorithms and methodologies to calculate the maximum speed a Soldier can move while carrying a load, based on research conducted in NSRDEC's biomechanics laboratory.

"The integration of these new capabilities into simulation applications will enable military analysts and decision-makers to analyze the trade-off between the impact of equipment and operational environment and Soldier task performance. Having the ability to examine the task-related effects of encumbrance through the use of simulation models will further the goal of improving analysis capabilities for military decision-makers, ultimately contributing to the improvement of Soldiers' survivability, sustainability, mobility, combat-effectiveness and quality of life," said Gilroy.

Other applications developed by TSE calculate power usage and the total equipment and battery weight carried during a mission. Soldiers in the field typically carry more than 100 pounds of equipment, including nearly 20 pounds of batteries. Another TSE capability predicts the impact of encumbrance on task performance, and another feature computes a Soldier's temperature based on environmental and human characteristics over time.

"This work is part of a larger, more comprehensive effort in human performance optimization, both at the Soldier and squad level. We are working with many collaborative partners and value the input and assistance we get from small business on this important project. The

**FIGURE 1**


**CAUSES AND EFFECTS**

TSE Performance Suite™ (PS), used to assess the operational impacts of Soldier encumbrance more fully, has a number of components. NSRDEC worked with TSE Inc. through the SBIR and STTR programs to develop the new technology as a means to improve computer modeling for human performance optimization. (SOURCE: TSE Inc.)

**SMALL BUSINESS, BIG DIFFERENCE**
An M1A2 Abrams tank belonging to 1st Battalion, 63rd Armor Regiment fires a round downrange during a live-fire exercise at the Udari Range Complex near Camp Buehring, Kuwait, in December 2015. Tactical engagements such as industry days connect businesses with TARDEC to discuss research goals and capability gaps, information critical for these prospective partners to develop effective proposals. As a result, senior leaders can engage with small business innovators to move ground vehicle innovations forward. (U.S. Army photo by SGT James J. Bunn, 19th Public Affairs Detachment, U.S. Army Central Public Affairs)

Small Business Innovation Research program and the Small Business Technology Transfer program are essential for our future success, especially in a resource-constrained environment," said Douglas Tamilio, NSRDEC director.

The key benefits provided by this project have been more realistic Soldier agent behavior in the constructive modeling, simulation and analysis tools needed to study the impact of encumbrances on Soldier performance. This can be especially relevant as a planning aid to help commanders make better informed operational decisions before executing a mission. Additionally, the products can decrease the time required by analysts to build scenarios in constructive simulations such as the Infantry Warrior Simulation.

## THINKING SMALL FOR BIG EFFECT

After launching a long-term science and technology strategy in 2013 based on the Army Operating Concept and other strategic documents, RDECOM's U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) wanted to bring the full resources of industry to bear in supporting the Army's vision for future ground vehicles while improving existing ground vehicles in the sustainment phase of their life cycle.

"Small businesses are our engine of innovation for emerging capabilities such as vehicle electronics and safety systems, autonomous driving, robotics, modeling and simulation, vehicle light-weighting and energy-efficient technologies," said Dr. Paul Rogers, TARDEC's director. "Our economic welfare and national security depend upon the creativity of people in these fields and the products and ideas they bring to the table."

A case in point is Global Embedded Technologies Inc. (Global ET), a Michigan-based high-tech small business that creates and supplies power control electronics for military ground vehicle systems. Global ET is currently transitioning a SBIR-funded technology—a generator control unit essential to the upgraded smart power system in the Abrams tank—through General Dynamics Land Systems.

Mark Stanczak, the president and co-founder of Global ET, said, "We have an outstanding collaborative relationship with the Army technical community at TARDEC that has grown from the

ability to interact with leadership at industry outreach events, especially TARDEC industry days and GVSETS," the Ground Vehicle Systems Engineering and Technology Symposium. "These events allow us to align and validate our efforts with the Army's current and future 'big picture' needs and to provide updates on our own internal initiatives and pursuits."

An added bonus, Stanczak said, is simultaneous networking with vehicle program managers and original equipment manufacturers. "Global ET is always ready to collaborate with larger companies to create complete, robust solutions that can be rapidly integrated in support of our ultimate customer, the warfighter," he said. "Communication across the boundaries of government and industry drives success for everyone involved."

## CONCLUSION

Small businesses are agile. Less encumbered by bureaucracy than larger companies or other military or governmental agencies, small businesses can manage projects more efficiently because the contracted project is often their sole or primary contract. That enables them to focus on the client's problem and needs. More entrepreneurial in their thinking and approach, small technology firms are also effective in delivering solutions that might represent a high risk for a larger company. Smaller organizations also can readily tap into the creativity of their employees, who often bring a variety of experiences and technological expertise that differ considerably from Army personnel's.

The SBIR and STTR programs allow small, high-tech U.S. businesses and academia the opportunity to deliver innovative R&D solutions to critical Army needs. Everyone benefits by capturing the talents of our agile U.S. small business community: DOD, the Army, the private sector and our national economy.

*For more information, go to the Army SBIR website at* ***https://www.armysbir.army.mil.***

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*"The integration of these new capabilities into simulation applications will enable military analysts and decision-makers to analyze the trade-off between the impact of equipment and operational environment and Soldier task performance."*

**CYBER SOLDIERS AT WORK**

Prototypes produced by small and micro businesses in the consortium can be tested by cyber Soldiers, to assess the capability prior to fielding decisions. In June 2015, the U.S. Army's Cyber Center of Excellence at Fort Gordon, GA, hosted a multiservice "NetWar" to show and build cyber warrior capabilities. (Georgia Army National Guard photo by SSG Tracy J. Smith)

# In the 'SHARK TANK'

SoSE&I holds the Army's first Cyber Innovation Challenge, designed to discover developers of promising technologies for cyber Soldiers. To acquire such leading-edge technologies from mostly small businesses and micro companies, 'other transaction authority' enables the Army to enter into agreements with outside entities beyond traditional defense contractors, especially in cyber, where technology moves rapidly and solutions are most often found with small and very small businesses.

*by COL Bryan J. Stephens*

It was not your typical government-to-defense industry meeting: more jeans, fewer business cards, no tension tied to big-dollar awards. Just a handful of Army and Air Force cyber experts on one side, and mostly small business representatives on the other, each taking a turn to offer their prototypes for lightweight kits that cyber Soldiers could deploy with to defend Army networks.

As the technical exchange unfolded at the Cyber Battle Lab at Fort Gordon, GA, over two days in August 2015, the environment quickly earned the nickname "Shark Tank," after the reality television show that puts up-and-coming entrepreneurs before a group of potential investors who hammer the contestants with questions before choosing whether to invest in their ideas. The Army version was a bit tamer—with engineers leading the discussion rather than brash billionaire Mark Cuban, who, himself, began as a small businessman in the mid-1990s—but the comparison highlighted the rare opportunity

to ask the vendors difficult and detailed questions, delving into a more fluid discussion and evaluation than what would generally constrain the typical contracting process.

The experiment—which resulted in awards to two nontraditional businesses for prototype equipment—was part of the Army's first Cyber Innovation Challenge, a model that targets small and micro companies by working through a consortium of nontraditional innovators. This little-known approach (almost a lost art) by project managers relies on "other transaction authority" (OTA), which permits the Army to enter into agreements with outside entities beyond traditional defense contractors. Used by the Army science and technology community, NASA, the Defense Advanced Research Projects Agency and several federal departments, the OTA mechanism provides cost-sharing, shortens the capability-development cycle and speeds the transition of prototypes to the government.

The approach is already paying off in the realm of cyber, where the innovators often reside at the small and micro business level and where we have to move fast to meet changing threats. Over the last few months, the Army has sparked considerable interest in the nontraditional vendor community, competitively procured prototype kits for cyber Soldiers and launched a second Innovation Challenge focused on situational awareness.

## BACKING NONTRADITIONAL INNOVATORS

We don't always know the nature of the cyber threat we will be facing in a few months, let alone a few budget cycles. But rather than seeking to change the acquisition process or create new policies, our approach at the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) Cyber Focal office is to tailor existing acquisition methods to support the demands of cyber, while opening doors for more small businesses to participate.

In 2015, the ASA(ALT) Cyber Focal office took a step in this direction by working through an existing consortium community to execute the first Innovation Challenge. A consortium is a voluntary organization with members from industry, academia and government, a mix that allows the Army to access technologies resident in universities, private and federal labs, incubators and especially small businesses. Each member pays a small annual fee, and in exchange becomes eligible to pitch its technologies and solutions in response to government requirements—without having to navigate the Federal Acquisition Regulation process. While any company can join the consortium, to receive an award the company has to be nontraditional—meaning it has worked with the government very little or not at all.

The goal is to attract the small and micro companies that have pioneering technologies but don't have the means to meet government contracting requirements. Through this model, the company running the consortium does the heavy lifting of interacting with the government, but the small or micro company gets the award, minus the consortium fee. Think of it as a "lightweight" model that promotes agility while maintaining the necessary technical and due diligence rigor for competitive prototype awards.

The consortium approach also offers a unique procurement structure. Under Section 845 of the National Defense Authorization Act for Fiscal Year 1994, DOD received OTA to carry out select prototype projects. This authority permits the Army to enter into transactions other than contracts, grants or cooperative agreements—commonly referred to as "other transaction" (OT) agreements—with small businesses and other nontraditional companies. Using the OT mechanism, the Army can purchase limited-quantity prototype equipment from a company that is part of the consortium.

To tailor the consortium-OTA approach to cyber, ASA(ALT) developed the Cyber Innovation Challenge, a repeatable framework that enables the Army to solicit solutions from a wide range of sources and quickly evaluate and purchase prototype capabilities using OT agreements. Each challenge, structured to address priority operational

*Start to finish, the innovation challenge process takes less than six months. It begins with an industry day and call for white paper submissions, which the ASA(ALT) SoSE&I Directorate evaluates for technical feasibility.*

**CUTTING EDGE**
A Soldier assigned to the 780th Military Intelligence Brigade at Fort Meade, MD, sets up Low Level Voice Intercept equipment during a cyber integration exercise at Joint Base Lewis-McChord, WA, in October 2015. Cyber needs and capabilities evolve so quickly that there's value in turning to nontraditional acquisition models like OTA. (Photo by CPT Meredith Mathis, 2nd Stryker Brigade Combat Team, 2nd Infantry Division)

requirements, is shaped in cooperation with relevant program executive offices (PEOs), the U.S. Army Training and Doctrine Command (TRADOC) Cyber Center of Excellence and U.S. Army Cyber Command (ARCYBER).

Start to finish, the innovation challenge process takes less than six months. It begins with an industry day and call for white paper submissions, which the ASA(ALT) System of Systems Engineering and Integration (SoSE&I) Directorate evaluates for technical feasibility. Selected vendors are then invited to demonstrate the proposed solutions for an Army evaluation team in a laboratory environment, which for the initial challenge was the TRADOC Cyber Battle Lab at Fort Gordon. The demonstration and assessment are followed by OT awards for prototype capabilities, which are put in the hands of cyber Soldiers for operational evaluation to inform specifications prior to fielding decisions and potential broader procurement.

Along with earning potential OT agreements, small business solutions demonstrated during an Innovation Challenge could also feed into CyberQuest, a TRADOC exercise beginning in 2016 that will examine priority Army cyber requirements and relevant capabilities in an experimental environment. Eventually, the Army's goal is to hold three to four Cyber Innovation Challenges per year to help investigate priority requirements and to feed into CyberQuest.

## CHALLENGE DELIVERS CYBERKITS

The initial challenge was launched on June 19, 2015, with the Army's release of the Deployable Defensive Cyberspace Operations Infrastructure (DDI) requirement. As a proof of concept for the consortium approach, we issued the request for information (RFI) through the Consortium for Command, Control, Communications and Computer Technologies (C5), which has an existing OT agreement with the Army through the U.S. Army Contracting Command – New Jersey (ACC-NJ), at Picatinny Arsenal, NJ.

Intended as an easily transportable kit of software and hardware, the DDI will support cyber protection teams (CPTs) providing active maneuver defense on friendly networks when they need to deploy quickly to counter threat activity. DDI will interface with other Army network capabilities, allowing CPTs to conduct countermeasures in real time and enabling commanders to take immediate action to execute network defense.

The Army received 12 white paper responses in response to the RFI solicitation and selected the four most likely to produce viable, innovative prototypes. Along the way, we found that OTA provided tremendous flexibility and several benefits for small businesses compared with the traditional contracting process. First, it did not require a large up-front capital investment to compete and engage with the government, allowing companies of any size to participate. Additionally, some of the businesses that responded to the RFI had promising technologies that we hadn't foreseen in the initial solicitation.

Under the usual rules, they would have been thrown out, or we would have had to reissue the RFI—losing either valuable innovation or valuable time. But with

OTA, we could adjust as we went along and evaluate all participants regardless of their means or the nature of their solution set. This broad participation was a boon to the government, enabling the Army to tap into leading innovators across the cyberspace community.

In August, the four qualifying vendors (or vendor partnerships) joined us in the Shark Tank. The evaluation team sat down individually with each of the four to go through their proposals in detail, and put the equipment through lab scenarios developed by SoSE&I, TRADOC and ARCYBER. The flexibility of OTA was once again on display, as the collaborative environment allowed the Army and the vendors to discuss a wide range of technical and form factor improvements for potential DDI solutions. The hands-on engagement also uncovered more valuable ideas that the white papers didn't originally reflect.


**CHALLENGE KICKOFF**
The Army's Cyber Innovation Challenge for small and micro businesses was introduced May 28, 2015, with the ASA(ALT) Cyberspace Industry and Innovation Day in McLean, VA. Speakers included Kevin Fahey, left, then-executive director of the ASA(ALT) SoSE&I Directorate, and Ronald Pontius, deputy to the commanding general, U.S. Army Cyber Command and Second Army. (U.S. Army photo by Nancy Jones-Bonbrest, PEO Command, Control and Communications – Tactical)

In September, based on the demonstration results, the Army entered into OT agreements with two small businesses to deliver limited-quantity prototype DDI equipment, which ARCYBER will now use operationally to determine the best end state for the capability, directly informing procurement decisions for broader fielding. These awards came less than four months after the RFI hit the street.

These results show that the first round of the Innovation Challenge was a success. The Army was able to engage small vendors with leading-edge technology and procure promising equipment in just a few months. Membership in the C5 consortium doubled when the Army announced plans to work through C5 for the initial challenge. Now, ACC-NJ is recompeting the Army's OT agreement so we can further shape the consortium to reach more nontraditional businesses and meet evolving cyber needs. In November 2015, we held an industry day to kick off the second Innovation Challenge, focused on prototype software solutions to enhance commanders' cyber situational awareness.

## CONCLUSION

With the Cyber Innovation Challenge, the Army opened the door to small businesses and met them on their terms, defying acquisition norms to quickly tap into technologies that otherwise might have been missed.

It was revealing to take advantage of mechanisms like OTA and a consortium, which exist to give the acquisition community more agile options but are underused. The ASA(ALT) Cyber Focal office will continue to seek out such innovative, effective approaches as more cyber equipment moves toward procurement. The tangible progress made so far is only the beginning: As we repeat these processes, we will only get better at execution, to the benefit of cyber Soldiers, small businesses and the greater Army.

*For more information, contact Larry Jennings, ASA(ALT) Cyber Focal office, at* ***larry.l.jennings8.ctr@mail.mil****.*

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*COL BRYAN J. STEPHENS is the Cyber Focal director, ASA(ALT) SoSE&I Directorate. He holds an M.A. in information management from Webster University and a B.A. in political science from Texas A&M University, and is Level III certified in program management. He is a member of the Army Acquisition Corps.*

# *From* BATTLE *to* BUSINESS

A U.S. Army Reserve officer's experience launching multiple startups illustrates, on an operational level, the degree to which military management and leadership skills can foster success in entrepreneurship—and how the skills honed by running a business can enhance the leadership of Army Reserve Soldiers. Further, understanding and knowing how to apply commander's intent or strategic vision is a useful approach in an entrepreneurial atmosphere.

*by MAJ Maurice G. Pritz Jr.*

LTC Kyle Teamey got bitten by the entrepreneurial bug when he came off active duty in 2005 and began to work with the Defense Advanced Research Projects Agency (DARPA) to help solve a problem that plagued the military: There was no efficient means of sharing information between units for recording patrol debriefs.

"I identified that as a major issue down at the tactical level," Teamey said. So he started working on the problem as a consultant with Dr. Mari Maeda, then a program manager at DARPA. That led to developing the cloud-based Tactical Ground Reporting System (TIGR), which the Army and Marine Corps ultimately fielded globally to their troops.

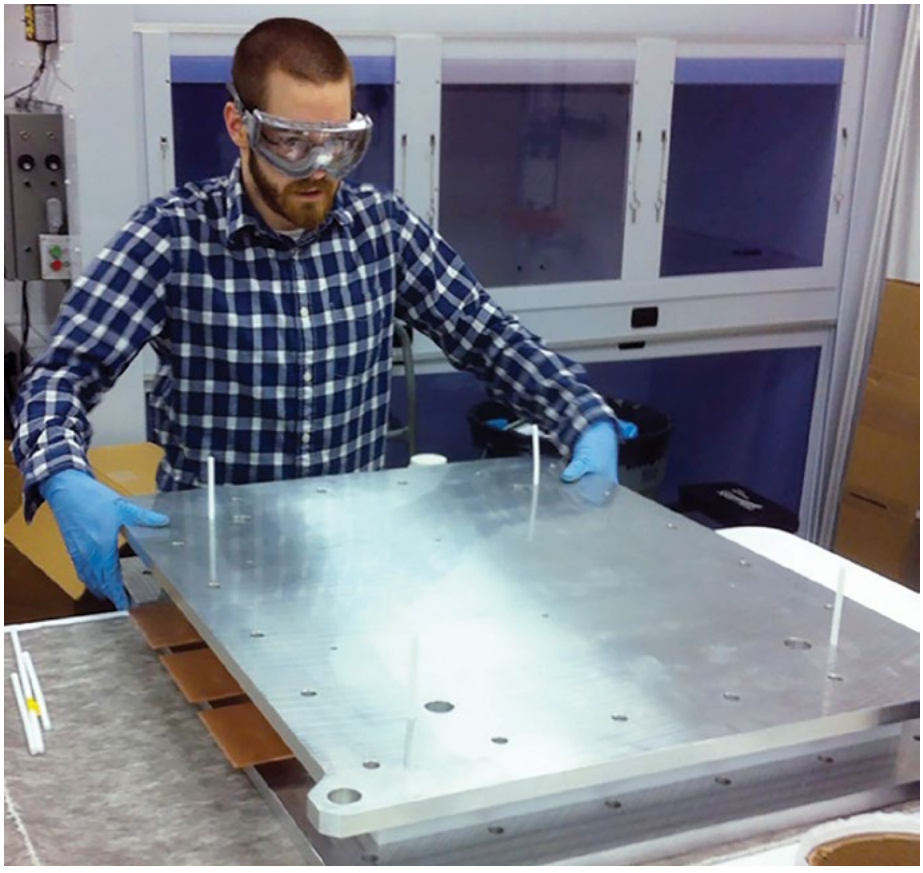
At DARPA, Teamey worked largely as a subject-matter expert, he said. "I wasn't there to program. I was there to explain to the programmers what the user interface should look like so it would be easy to use, and then explain how the connectivity should work so Soldiers at the company level and below could talk to each other. It was more to describe the vision and let somebody else figure out how to implement it."

Teamey, a military intelligence officer in the U.S. Army Reserve (USAR) and a recipient of the Bronze Star Medal and the Defense Meritorious Service Medal, finds

entrepreneurship to be an opportunity to do something new, unique and important with his many talents. Teamey holds two master's degrees—an M.A. from the Johns Hopkins University School of Advanced International Studies with a focus on energy and international finance, and an M.S. in materials science from Columbia University—in addition to a B.A. in environmental engineering from Dartmouth College.

While Teamey's association with DARPA came about as serendipity—on the referral of a friend whom DARPA had contacted after reading about his work in The Wall Street Journal—that can't be said of Teamey's efforts in other startups he has been involved with in energy, finance, and chemical technology. The common thread among these diverse endeavors is creative problem-solving—a skill that, as Teamey amply demonstrates, crisscrosses the boundary between uniformed service in the reserve component and civilian work throughout a reservist's career, regardless of the Soldier's military specialty or civilian field.

"The management and leadership skills are fungible regardless of whether you apply them in the military or a civilian occupation," Teamey said. "The skills that you develop in the Army and the Army Reserve can be directly applied to leading and managing people in a civilian career."



**SOMETHING FROM NOTHING**
A Liquid Light Inc. employee puts together reactors. Liquid Light is just one of Teamey's startups, founded with a vision to convert carbon dioxide—which is an abundant but essentially useless greenhouse gas—to useful materials. (Photo courtesy of LTC Kyle Teamey)

## IDENTIFYING AN ENTRY TO ENTREPRENEURSHIP

Teamey's work for DARPA was the first of several challenges that he has tackled as a civilian.

He knew from his friend Nick Ayers, an Army armor officer who was still on active duty, that DARPA was looking for someone to work with its Information Processing Techniques Office, a precursor to the present-day Information Innovation Office. Teamey got in touch with the agency and began to work for Maeda's team. "Collectively, we came up with the concept of TIGR," he said.

"It was an interesting problem. At the time, everybody was still using paper as a means of recording patrol debriefs, or they'd use Word documents or something like that. But there was no efficient means of sharing information between units."

DARPA developed TIGR, a Web-based software application that runs on the Secret Internet Protocol Router Network. TIGR's graphical, map-referenced user interface allows for easy collection and searching of multimedia data such as voice recordings, digital photo and GPS tracks. The system uses a state-of-the-art data distribution architecture to minimize load on the tactical network while allowing rapid exchange of digital imagery and other multimedia data.

With TIGR, ground troops can collect information on key infrastructure, landmarks and terrain; create photo overlays; and add information on routes, tribal areas and the like to support their

**BUILDING A TEAM**
This August 2009 photo shows the initial team that started Liquid Light Inc. in Monmouth Junction, NJ: from left, Nety Krishna, Narayanappa Sivasankar, Andrew Bocarsly, Teamey, Emily Cole, Thomas Mallouk, Shaaban Elnaggar and Fouad Elnaggar. Teamey, Fouad Elnaggar and Krishna were all working at a venture capital firm when the group launched Liquid Light. The concept of commander's intent transfers well to startups: defining a goal, but then letting collaborators find their own way to achieve it. (Photo courtesy of LTC Kyle Teamey)

mission. The system is also used to record and share meetings with religious leaders and encounters with local villagers or business owners.

TIGR was first introduced to users during a pre-deployment training exercise at Fort Hood, TX, in spring 2006. Fielding began in November 2007.

*A useful tool of entrepreneurship that Teamey adapted from his military experience is the after-action review, which he said the military, particularly the Army, does better than any other organization he has ever worked for.*

"That was my first taste of entrepreneurial activity," said Teamey, who worked at least part time on the project from 2005 to 2009. But it was just a beginning. Even while he was still working on the DARPA project, he started to get involved in what would be a string of startups.

## AND THEN, 'SWITCH'

In 2006, he helped launch Switch LLC, an energy company specializing in electric power generation primarily from wind, solar and biomass. About a year later, he left the company for another startup that he created with a group of friends from graduate school. That company, Dunia Frontier Consultants, was in the field of finance, providing support to investors by gathering essential information on possible new investments and determining if they made sense in light of an investor's goals.

Then, in 2008, he joined a venture capital fund, Redpoint Ventures, as an entrepreneur-in-residence and, while working there, founded Liquid Light Inc., a chemical technology company with a vision to convert carbon dioxide to useful materials—"take something that has effectively no value and make chemicals and fuels out of it."

"We devised multiple technologies for doing that," Teamey said. "The company grew to 25 people, and I have 18 issued patents out of that work." Examples of materials that can be made from carbon dioxide using these technologies range from JP-8 (jet fuel) to superglue.

## A STUDY IN LEADERSHIP

It is no surprise to Teamey, who served on active duty for 6 1/2 years and now serves as the deputy G-3 for the Military Intelligence Readiness Command at Fort Belvoir, VA, to see friends in business school doing case studies on the military. Military leadership experience is particularly advantageous in starting up a company, he said.

"You could say the job of a military officer is to create order out of chaos, and a startup company is chaos. It's pure, unadulterated chaos. You have nothing but an idea, and you have to focus that into something that eventually creates tangible value."

Many of the problem-solving methods learned in the military are useful to a startup, Teamey said. "You know, things such as allowing initiative within a commander's intent, right? That's a very useful

**ON THE GROUND**
Before leaving active-duty service in 2005, Teamey deployed to Ramadi in 2004. He observed that valuable information about hazards on patrol routes was being lost because there was no system for patrols to share debriefs outside of their units. (Photo courtesy of LTC Kyle Teamey)

**IRAQ-TESTED**
Then-CPT Teamey, second from left, joins with fellow officers from the 1st Brigade Combat Team, 1st Infantry Division—from left, CPT Nick Klem, 1LT Reynaldo Molina and CPT Tom Akin—for this August 2004 photo at Camp Junction City in Ramadi, Iraq. The skills Teamey developed as a military officer—creating order out of chaos, building trust with stakeholders—have transferred well to the world of entrepreneurship. (Photo courtesy of LTC Kyle Teamey)

approach from the military that works great in an entrepreneurial atmosphere because you have to create some order in this chaos, but you still have to allow a lot of creativity and initiative to occur."

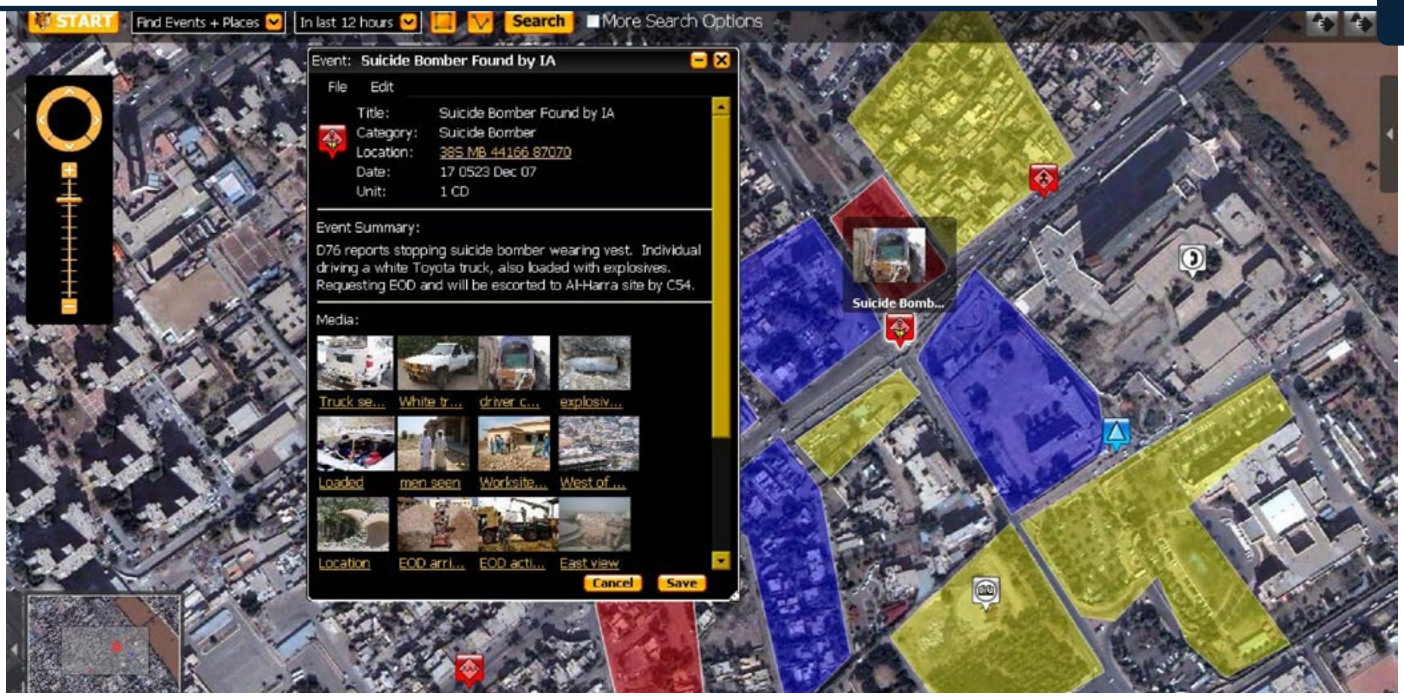
That said, the Army presents a variety of problems and skill sets for solving them, some better suited than others to starting a company, Teamey noted. "If you're in a tactical unit or another unit that's engaged right at the tip of the spear, you have to be creative. You absolutely have to be, because the situation is constantly evolving, constantly changing. You're trying to exert your will on the enemy. They're trying to exert their will on you. And I'd say that sort of circumstance benefits from an entrepreneurial mindset quite a lot, especially because things are evolving very rapidly."

By comparison, "if you're in a larger organization that's more bureaucratic, it's going to move much more slowly. Developing new initiatives that make the organization more effective is important, but the rate of change is slower, and it is less like a startup environment. If you're working at a high-level staff or a higher echelon, it's much more like being at a large corporation. It's much more like being in the government … rather than revolution, it's evolution. You still need to be able to be creative in your problem-solving. You just move more slowly."

## LESSONS LEARNED

Success in business is not the only teacher, of course. Failure offers its own valuable lessons.

Switch LLC, the first startup Teamey was involved in, did not succeed as intended, although it still exists as a small business. The reason? Lack of team building, he said. The biggest lesson from the company's relative failure—a lesson that




**NEIGHBORHOOD RECON**
Teamey worked with DARPA to build TIGR Patrol View, which, like Google Street View, lets Soldiers preview a route based on the input of users who've been there before—with photos and notes on obstacles and topography, collapsed buildings, roadblocks, potential sniper nests and other evolving hazards. In a battlespace that changes from day to day, TIGR represents a big improvement on a static map. (Image courtesy of DARPA)

"applies to all teams, military or otherwise"—was that "if you have people who can't work together, you're not going to be successful."

Another overarching lesson Teamey has learned about failure in both the military and the business world is that "your tactics and your strategy and your grand strategy have to be nested within one another. They have to mesh, because tactical failures can sometimes lead to strategic defeat. Poor strategy almost always leads to tactical failure." In business terms, "startup companies also need to have a good fit between their product and their market. The analogous situation, when looking at things from an intelligence context, is if you don't understand your operating environment, you will fail.

"It's true in business, and it's true in the military."

A useful tool of entrepreneurship that Teamey adapted from his military experience is the after-action review, which he said the military, particularly the Army, does better than any other organization he has ever worked for.

"You sit down afterward, go over what worked well, what didn't work well, and you gather those lessons learned and apply them the next time around so you get better and better. … That's something universal across the Army that the Army has done very well, and that's something that applies very much to life in a startup—you're going to constantly screw something up because you're moving so rapidly, because you never have full fidelity on the operating environment and because the environment itself is changing. You have to be able to very, very rapidly learn your lessons from a mistake and change direction."

## GOING FOR IT

In the same way that an intelligence officer has to understand the operating environment, going into business means doing extensive research, Teamey said.

"You have to get to the point where you understand the environment, and you need a match between your product, the market and a team that can actually make the whole thing happen. Those three things have to work together.

"You also want to actually test your hypotheses on product fit against the market as best you can. Sometimes it's more difficult than others, but basically, you go out and you talk to the people you think can be customers and you get feedback before you even build anything, whenever possible."

This is a time-intensive but necessary process, with no guarantees. The process of managing a business is, in simple terms, a process of managing risks, Teamey said. Smaller startup companies can afford to tolerate more risk, whereas larger companies have more to lose—in terms of image, reputation, goodwill and brand—and tend to be more risk-averse. "If you're in a small startup and you have two people and you crash and burn in a period of six months, that's OK, because you just start another one."

If he were a guest on the entrepreneurship reality show "Shark Tank" to get a business started, Teamey said he would emphasize the personal aspects of his plan more than the business presentation. "The first thing to understand is that, at the end of the day, they're buying you," he said. "Seventy percent of your communication is going to be nonverbal, so the way you look and speak and move can matter more than what you actually say.

"The next thing they're buying is your vision. And finally, the numbers and data related to the product and the market have to back up that vision."

So, people skills are paramount, followed closely by communication skills. "You have to be able to rapidly build trust and rapport with people you've never met, and you have to convey yourself as someone they can trust, because you're asking a stranger to give you money. Then, in terms of the actual content, you want to be able to convey your story really well in about 30 seconds, two minutes max, and it has to be something that's clear and concise and compelling."

Even with the best people and communication skills, every situation is different, Teamey said. "You could have a pitch that's perfect for one person and it just falls completely flat with someone else. There's a bit of a challenge there. You can't be all things to all people, but you can come up with something that, if your grandmother can understand it, probably anyone can."

The nature of authority in the business world is different than in the military world, Teamey noted. "There is the ability to exert authority within a chain of command and the ability to exert authority across a structure with peers," Teamey said. "The ability to influence people outside of the chain of command is definitely something you learn and develop, particularly in the staff organizations. For example, if you have an idea for the organization, you have to ask yourself, 'How am I going to pitch that across the rest of the organization?'

"That requires salesmanship with your peers and superiors. I'd say there is a certain amount of sales in many things we do" in uniform.

## CONCLUSION

Although salesmanship is highly important, the ultimate key to success, whether in business or as a member of the Army Reserve, is meeting the needs of the customers—or Soldiers. In battle as in the boardroom, leaders must create order from chaos while allowing and rewarding initiative and creativity to accomplish the mission or attain goals.

Converting those principles into a successful business is a complex equation with which Teamey is now deeply familiar. "By leveraging military and civilian skills, training and experiences from both the private and public sectors, we may remain committed to the meeting the needs of our Soldiers in this time of scarce resources."

*For more information, go to* ***http://www.army.mil/article/66559/*** *and* ***http://www.army.mil/article/28700/tigr-allows-soldiers-to-be-there-before-they-arrive/.***

> *"You could say the job of a military officer is to create order out of chaos, and a startup company is chaos. It's pure, unadulterated chaos. You have nothing but an idea, and you have to focus that into something that eventually creates tangible value."*

*MAJ MAURICE G. PRITZ JR. is a public affairs officer for the Military Intelligence Readiness Command, Fort Belvoir, VA, as well as a USAR finance officer. He holds a Master of Public Administration degree from Wichita State University's Hugo Wall School of Public Affairs and a B.S. from Wichita State. He also attained a graduate certificate in accounting from DeVry University's Keller Graduate School of Management, and has completed Intermediate-Level Education.*

TECHNICALLY SPEAKING

# Mechanical Advantage

An engineer explains the basic physics behind force multiplication.

*by Mr. James Robertson*

*A lot of very smart people work in science, technology, engineering and mathematics—STEM. Even for smart people not versed in the STEM fields, that work can seem entirely mysterious, often mind-bogglingly complex. Part of the mystery is the kind of thinking that those fields demand, but a large part is the result of the language used to describe STEM work; those in the STEM fields often speak in technical language that people outside their area of expertise simply don't understand. But when it comes to Army acquisition, it's important that taxpayers and members of Congress and their staffs understand STEMspeak, not just because taxpayers have a need and a right to know, but also because it's really hard to have a conversation when only one party speaks the language.*

*It's also important that kids be introduced to STEM pursuits, and that's a lot easier when those topics are presented in a way that isn't abstract but in fact solves concrete problems. Even the most complex feats of engineering rely on fundamental concepts we learn as kids, and starting to see the world in terms of these possibilities can be the first step in developing and inspiring budding engineers.*

*This issue's Technically Speaking author, James Robertson, an engineer who works for Fiat Chrysler Automobiles, realized as much when he became a father: How could he instill in his children the same love he has for engineering? His solution was to write a book for young readers, "Durometer O'Meter," which also is the name of the book's hero. Durometer is a technical term and method for measuring the hardness of rubber materials and their imperviousness to lasting indentations, which tells us something about the character. Yet it also tells us something about the author's intentions to make STEMspeak ordinary language for young readers.*

*Durometer is 10 when the novel opens. On her 11th birthday, she discovers that she's a member of a clan of time travelers, like her late engineer father, many of whom are also engineers, and some of whom are what you might call "black hat" engineers who would change the past and therefore the present. Another of the author's passions, fly fishing, plays a role—it's the means by which Durometer initiates her travel in time. Among other feats, she travels back in time to help the Wright brothers solve an engineering problem that could mean life or death for the pilot—the lift coefficient for the wings of their flying machine.*

*In this excerpt, which we adapted from the novel for Technically Speaking, Durometer is showing her treehouse to her new friend, Mac.*

"Holy smokes, Durometer, you even put in an elevator?" Mac said.

He was looking at the rope that was attached to a tray resting on the ground. The rope went up and up to above the top of the tree house.

"Don't be silly," Durometer said. "That's not an elevator for us. We have to use the rope ladder. This is just the way that I get things in and out of the tree house since I don't want to carry them. Watch this."

Durometer placed the fishing rod on the tray and grabbed the end of the rope that was nearest to her. She started pulling on it, and it was then that Mac noticed that the other end wasn't looped over a tree branch as he'd guessed, but rather went up and through a pulley.

"That is pretty clever," he said. "Looks like you could carry a lot more weight, too."

"My dad said that you can use 'mechanical advantage' with pulleys," Durometer said, working the rope up and down to loosen the pulley.

"What did you say?" asked Mac, pushing his disheveled brown hair out of his eyes.

"Mechanical advantage. You've heard of that before, haven't you?" Durometer asked.

"I think so," he said.

**NOT YOUR TYPICAL FORCE MULTIPLIER**
Durometer, the hero of a book designed to get kids interested in and inspired by engineering, uses a pulley system—a force multiplier—to move items into her tree house. (Image courtesy of the author)

*Durometer is a technical term and method for measuring the hardness of rubber materials and their imperviousness to lasting indentations, which tells us something about the character.*

"You know, it's when you use a tool or something to do most of the work for you," she tried explaining. "Have you ever heard of a lever or a fulcrum?"

"Of course."

"So it is kind of like that. Like when you pry a nail out of wood." She motioned as if she had a hammer in her hand and pulled back toward her body. "The longer the handle of the hammer, the more force I can exert on the nail."

"That's a lever, right?" Mac interrupted, pride overflowing in his voice. "So, it's kind of like the fly rod," Mac said, staring at the rod. He grabbed it from the tray and continued. "As I move the rod a short distance with my hand near my shoulder," he said, moving the rod back and forth like he was casting, "the tip of the rod moves a greater distance."

He moved the rod back and forth, this time paying attention to the short distance his hand moved and the large distance the rod tip moved.

"Exactly," Durometer said. "A hammer is also a fulcrum," she muttered under her breath, not wanting to sound too smart.

"You know what would be better?" Mac responded as if he hadn't heard her, placing the rod back on the tray. "If you had another pulley attached down here. Wouldn't that give you some more mechanical advantage?"

It was then that he noticed her pointing to the lump that was partially covered with leaves. Sticking out of that lump was a pulley that had been mounted to the dead log that rested just underneath the tree house. The end of the rope that she was pulling on was actually going through that pulley as well. There was a hook on the end of the rope that acted like a stopper so the rope would not travel all the way out of the pulley and then need to be fed back into it.

"I sometimes use a free pulley when I'm trying to lift something heavy up there," she said. "You'll see it on the wall when we climb up. I have all sorts of them for different occasions. I even have one that's a force multiplier."

"A what?" Mac responded, turning to look at her with an expression as if he had just smelled a skunk.

"A force multiplier. My dad made it for me," she said matter-of-factly. "It is a pulley that has a small wheel attached directly to a big wheel. The small wheel," she continued, holding her hands out in front of Mac in the shape of a circle the size of an orange, "has a line of rope coming out of it, kind of like a yo-yo that I can attach to a really heavy object. I can then wind the rope that I will lift with around the larger pulley wheel," she went on, moving her hands to mimic a circle the size of a basketball. "It is just another example of …"

"Mechanical advantage," the two of them said together.

She was mostly impressed that this new friend of hers seemed to understand things the same way that she did, even if he needed some help at first. It wasn't something she ran across with anyone else at school. Once she'd asked one of the girls if she wanted to come over after school. The girl had said that she wanted to hang out with her friends that were not "nerds." The comment seemed like flattery at the time, but now Durometer realized that the girl meant it to be mean. If being smarter than most made her a nerd, that was fine with her. She was fascinated with discovering how things worked and loved solving complex math problems.

Durometer smiled to herself. "Finally," she thought, "someone who understands."

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*MR. JAMES ROBERTSON is a mechanical engineer with Fiat Chrysler Automobiles, and has worked as an engineer in the automotive industry for 21 years. He holds a B.S. in mechanical engineering from Carnegie Mellon University. He has published papers for SAE and currently works as a corporate-recognized technical specialist in the chassis suspension systems group. He lives in Michigan with his wife, Elizabeth, and two children, Lorelei and Xavier, all of whom continue to provide inspiration and material for his second book. However, they have not quite learned how to fly fish.*

# SPOTLIGHT:

## MR. MICHAEL SZCZESNIAK

### Longevity backstops JLTV team

**MR. MICHAEL SZCZESNIAK**

**COMMAND/ORGANIZATION:**
Joint Program Office for Joint Light Tactical Vehicles, Program Executive Office for Combat Support and Combat Service Support

**TITLE:**
Procurement specialist

**DAWIA CERTIFICATIONS:**
Level III in contracting, Level II in program management

**YEARS OF SERVICE IN WORKFORCE:** 31

**EDUCATION:**
M.S. in administration, Central Michigan University; B.S. in psychology, Wayne State University

**AWARDS:**
Superior Civilian Service Award; Commander's Award for Civilian Service

*Get a variety of experiences early on. You'll be surprised at what you thought you would enjoy and don't, and what you didn't expect to like and what you will become passionate about.*

A background in psychology and experience in restaurant management might seem unlikely prerequisites for a career in military acquisition, but those tools have served Mike Szczesniak (pronounced SEZ-nee-ack) well during his 31-year career.

"A lot of those skills—working with people, conflict resolution, interpreting input from a lot of different stakeholders—I use every day," said Szczesniak, who has spent the past five years as a procurement specialist for the Joint Program Office for Joint Light Tactical Vehicles (JPO JLTV). He got his start in acquisition as an intern with TACOM, and has since held various positions in contracting, TACOM's Office of the Inspector General and a handful of program management offices.

Among his recent accomplishments is his involvement in the low-rate initial production contract for the JLTV. Szczesniak was a key contributor to the development of the production request for proposals and other elements of the Milestone C documentation. The program will provide 49,099 vehicles for the Army and 5,500 for the Marine Corps. A full-rate production decision is expected in FY18.

"I have had the opportunity to work with many talented, seasoned professionals," said Szczesniak. "My greatest satisfaction in being part of the acquisition workforce is knowing that my efforts exceeded my own expectations and that of my management."

**Why is what you do in your position important to the Army or the warfighter?**

I am a procurement specialist for JPO JLTV. In addition to working with JPO leadership, our product directors and Army Contracting Command on the program's technology development and engineering and manufacturing development (EMD) contracts, I am also a key participant in developing our acquisition and contracting strategy for the multibillion-dollar production phase of the program.

The JLTV is designed to fill the capability gap between the High-Mobility Multipurpose Wheeled Vehicle and Mine Resistant Ambush Protected vehicles. The program is a focal point of the Army and Marine Corps' tactical wheeled vehicle strategies in terms of modernization and protection, and it should make Soldiers and Marines safer and more capable.

**How did you become part of the Army Acquisition Workforce, and why?**

I started in August 1984 as a contracting intern with TACOM. I was looking for an opportunity to apply the knowledge and skills I gained acquiring my bachelor's degree with that of my work experience in restaurant management. Some of my family members worked for TACOM and encouraged me to apply for the internship program.

**What do you see as the most important points in your career with the Army Acquisition Workforce, and why?**

One of the most important milestones was being a member of the team that won the David Packard Excellence in Acquisition Award in 2013. The JPO JLTV team was directly responsible for implementing new processes outlined in Better Buying Power (BBP) initiatives and the Hon. Frank Kendall's "Improving Milestone Process Effectiveness" memorandum. The JLTV team incorporated the BBP initiatives across integrated program teams from a range of participants: engineering, logistics, test and evaluation, contracting, acquisition and legal. The team's efforts were instrumental in transitioning the JLTV program from the technology development phase to the EMD phase. *(Editor's note: The JPO JLTV team also received the 2015 David Packard Excellence in Acquisition Award. For more information, see [Honoring the Best], page 156.)*

**Can you name a particular mentor or mentors who helped you in your career? How did they help you? Have you been a mentor?**

LTC Steven Gravlin, who's now retired, allowed my responsibilities to grow along with me while I was in the inspector general's office by offering more diverse opportunities and challenges at a new stage in my career. He was an advocate for my development and nominated me to attend Army Management Staff College to obtain the requisite knowledge of the Army management systems and processes in responding to current challenges facing DA and how it all linked with public law, national security and military strategies. He gave me increased responsibilities and greater independence to work inspections, investigations and inquiries and command issues over TACOM's wide geographic area. LTC Gravlin led by example in his compassion and integrity dealing with TACOM's Soldiers and civilian workforce, and he instilled his values in his staff. He was the catalyst I needed to ignite my career, and he taught me how to navigate the politics of the organization and accept challenges.

Sandy Milford was truly passionate about his work. He treated everyone with unconditional respect—respect for our opinions, our functional knowledge and our visions of what we wanted to achieve for the program. He was selfless in sharing what he knew, and when he came across something that he didn't know, he sought out the right people or material to provide an answer or solution. Mostly, he believed in those he worked with and was always willing to step up and accept a challenge. Mr. Milford's untimely demise last year [Sept. 6, 2014] left a void in not only the JLTV program, but also in the lives of all those he touched. His tact and diplomacy helped build networks, and he dispensed with formalities to facilitate an open, lively dialogue.

I have mentored newly assigned personnel to the JLTV program on source selection planning and milestone documentation reviews.

**You started working for TACOM in 1984. When you started, did you think you'd still be here 31 years later? Why do you think you've stayed for so long?**

I definitely didn't think that I'd still be here after all these years. I've stayed because of all the changes that TACOM has gone through since I started and the opportunities I've had as a result. When I started, TACOM dealt mostly with tanks and trucks, and as it evolved into the TACOM Life Cycle Management Command, its mission expanded and there are now a lot of organizations underneath it. It has been exciting to see that change and to have opportunities to grow and work with some amazing people, including Scott Davis, while he was deputy program manager for Future Combat Systems (FCS) Brigade Combat Team program. I started out in contracting for research and development, and moved to the inspector general's office as a result of [reduction in force] changes. That was an unexpected blessing: It gave me the opportunity to learn about the command structure and work with the big picture of contracting and the program management side to see how senior leaders dealt with challenges that arose—experience that was very important when I was transferred to FCS. FCS was a great experience too, and taught me a great deal about operational requirements, program security and working with integrated process teams across multiple sites. And I took that experience with me when I transitioned to the JLTV program about five years ago.

**What advice would you give to someone who aspires to a career similar to yours?**

Get a variety of experiences early on. You'll be surprised at what you thought you would enjoy and don't, and what you didn't expect to like and what you will become passionate about. Ask questions—lots of them. Asking questions shows that you are engaged and that you value input from others.

Learn as much as you can from others, but don't be afraid to speak up if you have something to contribute. Be confident in your decisions and don't judge yourself against others. Go the extra mile; you'll feel more fulfilled, and someone will notice. Accept any task that is assigned to you. Showing dedication to your position shows a lot to your management and will help instill confidence in your supervisor that you can handle any task they give to you. Take initiative to take on more responsibility.

Go to work every day with enthusiasm, work with a sense of urgency, educate yourself and provide results.

***—MS. SUSAN L. FOLLETT***

**'SHOULD COST' LESS**

Soldiers from 2nd Battalion, 12th Cavalry Regiment, 1st Armored Brigade Combat Team, 1st Cavalry Division fire a Tube-launched, Optically tracked, Wire-guided (TOW) missile from their M2A3 Bradley Infantry Fighting Vehicle in August 2015 as part of Ironhorse Challenge at Fort Hood, TX. The TOW 2 missile program accrued large cost savings and avoidance through a multiyear contract awarded for FY12-16. (U.S. Army photo by SSG Keith Anderson, 1st Armored Brigade Combat Team Public Affairs, 1st Cav. Div.)

# 'SHOULD' DOES

Five years after its introduction, will-cost/should-cost has proved its value as a tool for boosting productivity and affordability in acquisition programs—more so in some circumstances than others. The question now is how to further that success.

*by Mr. Michael E. Lebrun and Mr. Dale N. Fletcher*

The evidence is in: The Better Buying Power (BBP) initiative known as "will-cost/should-cost management" has resulted, as intended, in improving cost and schedule performance of DOD acquisition programs. Because should-cost is a success, it makes sense to ask what parts are working and why, so that the success can be duplicated.

Dr. Ashton B. Carter, then the undersecretary of defense for acquisition, technology and logistics (USD(AT&L)) and now the secretary of defense, introduced the principles of will-cost/should-cost management, now commonly referred to simply as "should cost," among the original BBP initiatives in 2010. Carter directed program managers to look for innovative methods and approaches that could save money or avoid expenditure compared with the originally expected contract cost.

As the 2015 report "Performance of the Defense Acquisition System" describes it, should-cost management "requires our managers to actively seek ways to save money and to set targets for doing so, not just to stay within their budgets. This is a major cultural change that seems to be taking hold." This latest edition of the report, issued annually by the Office of the USD(AT&L), notes, "The number of MDAP [major defense acquisition program] contracts started since 2009 with price reductions has increased significantly compared to earlier contracts."

*The more challenging question is why programs do not pursue should-cost initiatives or find success in other phases of the acquisition life cycle and in other target activities.*

According to the report, 57 percent of MDAPs in the developmental phase of acquisition and 79 percent of programs in procurement experienced funding reductions in the period from 2009 to 2014. These results stem, in part, from should-cost management, the report states, as well as from DOD's efforts to increase the use of stronger, formula-type incentive contracts—such as cost-plus-incentive-fee and fixed-price-incentive contracts—that explicitly tie cost-over-target to contractor financial results.

DOD and the Army measure the success of should-cost management, broadly speaking, by the annual savings from all ongoing contracted activities as they execute to lower figures than budgeted. Follow-on iterations of BBP have strengthened and expanded should-cost management throughout an Army acquisition program's life cycle. BBP 2.0, unveiled by the Hon. Frank Kendall in November 2013, extended the application of should-cost to all phases of the acquisition life cycle and to the acquisition of related services. In his April 2015 guidance on the implementation of BBP 3.0, Kendall continued to emphasize the importance of making should-cost an enduring best practice in acquisition.

Looking more closely at how program managers are applying should-cost principles, however, it is clear that the success of should-cost management depends in large part on timing.

## BREAKING IT DOWN

The Army fully embraces should-cost as a critical BBP initiative and an outstanding device for helping program managers reduce the costs of their programs. Program executive officers (PEOs) are responsible for ensuring that program managers implement should-cost management by identifying opportunities for savings, known as should-cost initiatives, and developing should-cost estimates for their Acquisition Category (ACAT) I, II and III programs.

For example, the PEO for Missiles and Space successfully implemented a multiyear procurement contract for the TOW (Tube-launched, Optically tracked, Wire-guided) 2 missile system that resulted in annual savings from FY12 to FY16. (See Figure 1.) The savings represent the lower procurement costs compared with what the program's will-cost baseline projected.

In FY15, 88 percent of the Army's acquisition programs had should-cost initiatives in place. The Office of the Secretary of Defense (OSD) and the Army share a goal of 100 percent of all ACAT programs, regardless of where they fall within the acquisition life cycle.

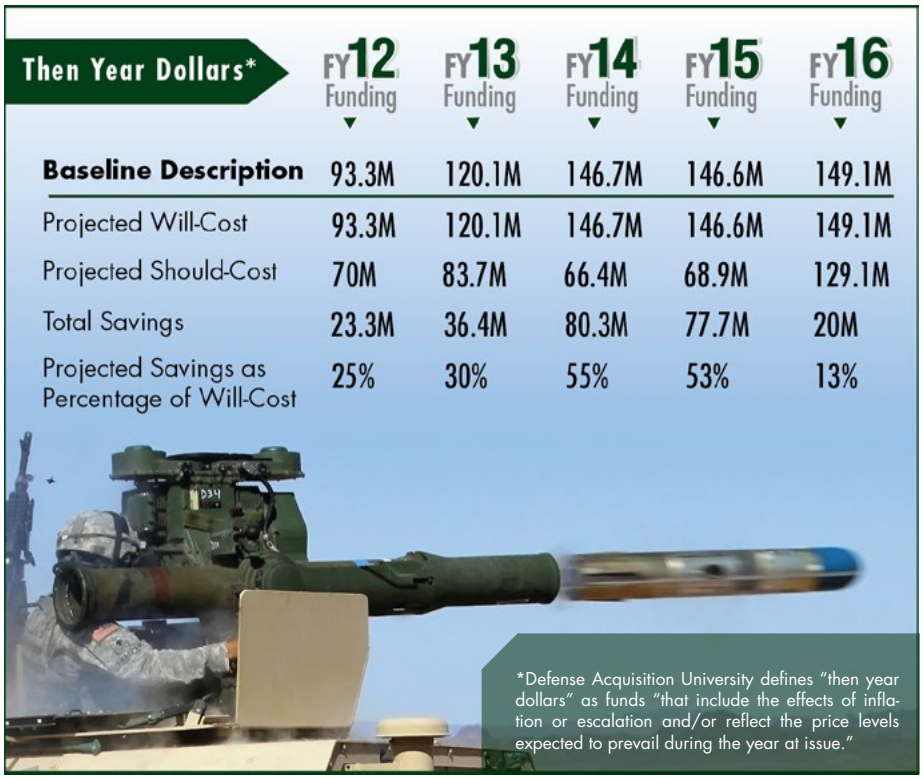
The Army acquisition executive (AAE) holds PEOs and program managers accountable for should-cost management. There are a number of avenues whereby the AAE receives reports from the PEOs on their progress in implementing should-cost initiatives across their portfolios, including annual reviews of their delegated ACAT II programs and annual summaries of their ACAT III programs.

Project managers for MDAPs or major automated information systems (MAIS) have the opportunity to update the defense acquisition executive (DAE) when they brief the monthly Defense Acquisition Executive Summary (DAES) Senior Meeting Forum. Finally, the AAE also provides the DAE and other senior OSD leaders a quarterly report on should-cost activities at the aggregate Army level during Business Senior Integration Group meetings. All of these forums help maintain a high degree of command emphasis on the importance of should-cost management as an ongoing effort.

## THE ARMY'S APPROACH

Within the Office of the Assistant Secretary of the Army for Acquisition,

**FIGURE 1**




**MISSED OPPORTUNITIES?**
PEOs are responsible for ensuring that program managers implement should-cost management by identifying should-cost initiatives and developing should-cost estimates for their Acquisition Category I, II and III programs. This chart itemizes annual savings achieved by PEO Missiles and Space from FY12 to FY16 after it successfully implemented a multiyear procurement contract for the TOW Missile system. (SOURCE: OASA(ALT) PARCA)

**SPREADING THE WORD**
James Lackey, executive director of the Aviation and Missile Research, Development and Engineering Center (AMRDEC), speaks with attendees for the BBP 3.0 open exchange forum. According to Lackey, AMRDEC will be operating under severe budget restrictions for the foreseeable future and BBP 3.0 guidance will help center their strategic attention on how to get the job done in an affordable, mutually leveraged manner. Meanwhile, the Army is teaming with National Defense University to develop more and better training in should-cost contracting. (Photo by Carlotta Maneice, AMRDEC Public Affairs)

Logistics and Technology (OASA(ALT)), the Office of Performance Assessments and Root Cause Analyses (PARCA) acts as the Army policy proponent and clearinghouse for should-cost activities. The PEOs and program managers provide quarterly updates on their initiatives to PARCA, which then compiles and analyzes the data for updates to the ASA(ALT) leadership and for briefings to the Business Senior Integration Group.

*Without question, should-cost management is an accepted best practice throughout the Army's acquisition enterprise. As a BBP initiative, it receives constant command emphasis from leadership in the Army and OSD.*

Based on should-cost data that the PEOs and program managers submitted in FY14 and FY15, PARCA identified certain patterns as the Army more consistently implements should-cost across the acquisition enterprise. PARCA's aim is to identify areas where the Army performs well and areas where the Army can improve. The Army realized a total cost savings of $225.7 million and an additional cost avoidance of $298.3 million for FY15.

One measure of successful implementation is the number of acquisition programs implementing should-cost initiatives. In FY14, 205 of 219 programs reported a total of 326 should-cost initiatives. In FY15, the numbers dropped, with 205 programs implementing 180 initiatives.

Fourteen programs requested and received approval for exemptions in FY14, compared with 25 requested and approved in FY15, allowing the programs to implement no should-cost initiatives. There are three reasons a program may request an exception: 1) It is a joint program with another service as the executive agent; 2) It has either met 90 percent of its fielding requirements or expended 90 percent of its total funding requirements; or 3) Its funding has been eliminated. Exemptions require the AAE's approval for MDAP and MAIS programs and PEO approval for ACAT II and III programs.

The extent to which acquisition programs implement should-cost initiatives across the breadth of the acquisition life cycle constitutes another measure of success. Beginning in FY14 and continuing in FY15, the Army programs reported should-cost initiatives in all five phases of acquisition, ranging from (pre-MS A) materiel-solution analysis to the operations and support phases.

**SHOULD-COST EVANGELIST**
Carter speaks with service members at Joint Base Pearl Harbor-Hickam during a visit to Hawaii in November 2015. Carter introduced the principles of should-cost among the original BBP initiatives in 2010, and directed managers to look for innovative methods and approaches that could save money or avoid expenditure compared with the originally expected contract cost. (U.S. Air Force photo by SMSgt Adrian Cadiz)

This cradle-to-grave planning for should-cost management of acquisition programs is possible only with the cooperation and support of Army organizations outside of ASA(ALT). Initiatives implemented before MS B require input and cooperation from the requirements community, whether that is the U.S. Army Training and Doctrine Command for weapon systems, or other functional proponents for defense business systems. At the other end of the life cycle, the successful implementation of a should-cost initiative must involve ASA(ALT)'s partners in the U.S. Army Materiel Command.

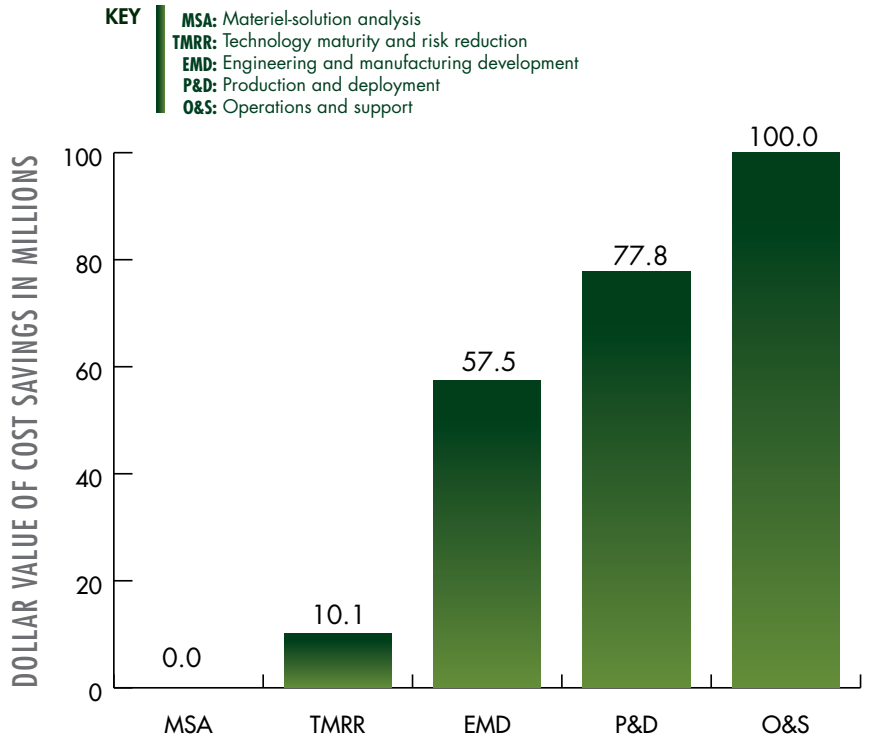
## DEGREES OF SUCCESS

Now that program managers are implementing should-cost initiatives across the entire acquisition life cycle, where are they finding the most success in terms of cost savings or avoidance? Statistics gathered at the ASA(ALT) level give some indications.

As noted, the PEOs and program managers generated $255.7 million in cost savings and another $298.3 million in cost avoidance in FY15. PARCA analyzes these results in order to identify where, by phase of the acquisition life-cycle and by general category of acquisition activity, the most successful initiatives concentrate.

Figure 2 shows the dollar value of cost savings and avoidance broken out by the phase of the acquisition life cycle. In FY15, the largest dollar value of savings and avoidance was from initiatives targeting the operations and support phase, with significant but decreasing amounts generated through initiatives in the production and deployment, engineering and manufacturing development, and technology maturity and risk reduction phases.

**FIGURE 2**




### A QUESTION OF TIMING

When broken down across all phases of the acquisition life cycle, the dollar value of cost savings and avoidance in FY15 was largest for initiatives targeting the operations and support phase, with decreasing amounts generated through initiatives in production and deployment, engineering and manufacturing development, and technology maturity and risk reduction. (SOURCE: OASA(ALT) PARCA)

The concentration of should-cost initiatives by acquisition activity is another telling indicator of the strengths and weaknesses of our current approach to driving costs out of Army programs. The Army applies should-cost to seven target acquisition processes in which programs may be active during any phase in the acquisition life cycle:

- Requirements of the Joint Capabilities Integration and Development System (JCIDS).
- Oversight and review.
- Contracting.
- Product deliverables, such as production and delivery of equipment and systems engineering.
- Logistics and sustainment.
- Test and evaluation.
- Miscellaneous activities.

As illustrated in Figure 3 (Page 105), should-cost initiatives targeting contracting activities yielded much greater cost savings and avoidance than any other acquisition activity in FY15.

Taken together, the data clearly show that program managers currently find the greatest success with should-cost initiatives in the operations and support phase

**BLACK HAWK (COSTS) DOWN**

Paratroopers assigned to 1st Battalion, 508th Parachute Infantry Regiment, 3rd Brigade Combat Team, 82nd Airborne Division take up a defensive position during an air assault using UH-60 Black Hawks at the Joint Readiness Training Center at Fort Polk, LA, Nov. 2, 2015. PEO Aviation's Project Manager for Utility Helicopters realized significant cost savings and avoidance through the ongoing multiyear contract for the UH-60M Black Hawk, a significant indicator of success for the Army's implementation of should-cost. (U.S. Army photo by SSG Jared Gehmann)

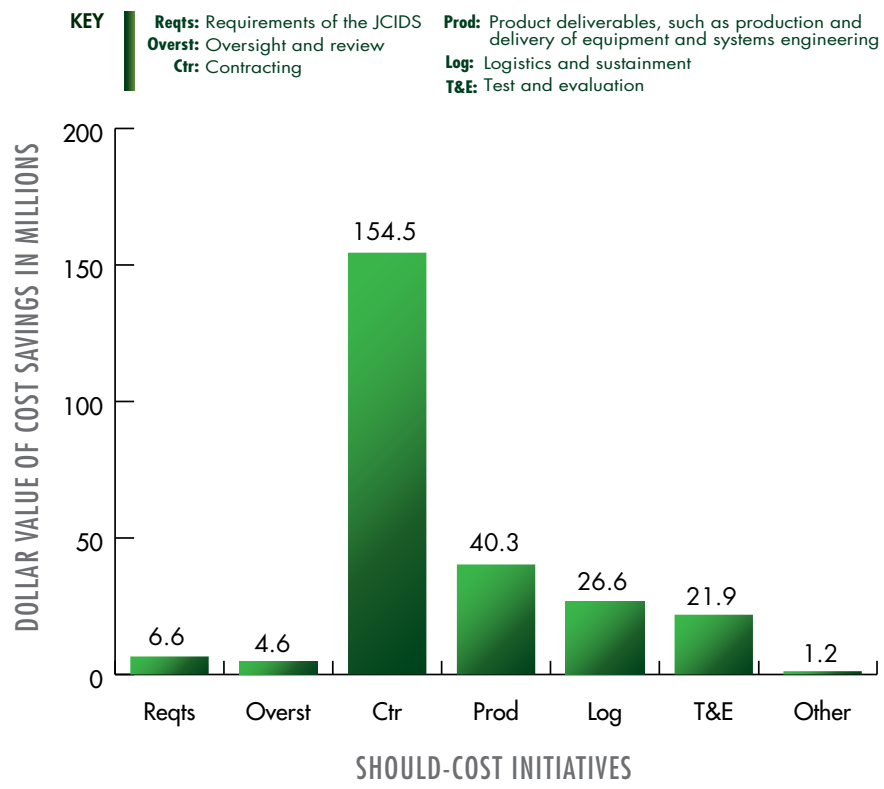
of the acquisition life cycle that target contracting activities. The questions that PARCA now wants to explore are why these results are occurring, and if we are missing opportunities to implement successful initiatives in other phases of the life cycle and by targeting other acquisition processes. In other words, are these results unique to 2015?

One possible answer is that many of the Army's largest acquisition programs are currently executing multiyear production contracts awarded in prior years. In this circumstance, the PEO and project manager take credit for the cost savings and avoidance in the year the contract is awarded, and the benefits are seen at that time rather than in later years. For example, the PEO for Aviation and its Project Manager for Utility Helicopters realized significant cost savings and avoidance through the ongoing multiyear contract for the UH-60M Black Hawk program, including $93.1 million in FY14. Similarly, the TOW 2 missile program accrued large cost savings and avoidance through a multiyear contract awarded for FY12 through FY16. The cost avoidance allowed the Army to reprogram funds from the TOW 2 program to other Army priorities. These results were booked in prior years even though the benefits would occur years after the initial award of the contract.

The more challenging question is why programs do not pursue should-cost initiatives or find success in other phases of the acquisition life cycle and in other target activities. In both FY14 and FY15, the target processes of JCIDS requirements, oversight and review and test and evaluation, yielded relatively small cost savings or avoidance for the Army despite the fact that program managers implemented nearly as many initiatives as in the contracting and production areas.

Is the lack of results in these areas a function of PEOs and project managers claiming success for initiatives in prior years? Have they, in essence, already harvested all of the low-hanging fruit? If this is the case, will we see new opportunities for initiatives in these areas as the Army

**FIGURE 3**




**MORE BANG FOR WHICH BUCKS?**

The Army applies should-cost to seven target acquisition processes in which programs may be active during any phase in the acquisition life cycle. Should-cost initiatives targeting contracting activities in FY15 yielded much greater cost savings and avoidance than all other acquisition activities combined. PARCA's next step is to take a closer look at the results, to determine if opportunities for implementing initiatives in other phases of the life cycle are being overlooked. (SOURCE: OASA(ALT) PARCA)

moves forward with new programs such as the Armored Multi-Purpose Vehicle and Joint Air-Ground Missile, both of which successfully accomplished MS B decisions in 2015 and will begin reporting in 2016?

## CONCLUSION

Without question, should-cost management is an accepted best practice throughout the Army's acquisition enterprise. As a BBP initiative, it receives constant command emphasis from leadership in the Army and OSD.

Should-cost is also a very successful BBP initiative. Since its initial implementation in 2012, the Army has documented $2.2 billion in cost savings. Programs that execute successful should-cost initiatives are able to reinvest the savings back into their programs, allowing some programs to buy down risk and others to procure greater quantities. Thus, should-cost as a BBP initiative impacts both affordability and productivity or efficiency.

Moving forward, ASA(ALT)'s goal is to streamline and simplify planning and reporting will-cost/should-cost initiatives for the PEOs and project managers. In addition, ASA(ALT) is working closely with the other services and National Defense University to increase should-cost training for all members of the Army acquisition enterprise.

*For more information, contact Dale Fletcher at* ***dale.n.fletcher.civ@mail.mil*** *or Michael Lebrun at* ***michael.e.lebrun2.civ@mail.mil****.*

*MR. MICHAEL E. LEBRUN is the PARCA director in OASA(ALT). He holds an M.A. in political science from the University of Maryland College Park, an M.S. in national resource management from the Industrial College of the Armed Forces and a B.S. in foreign service from Georgetown University. He is a member of the Army Acquisition Corps (AAC) with Level III certification in program management.*

*MR. DALE N. FLETCHER is PARCA's should-cost manager. He holds an M.S. in cost analysis from the Air Force Institute of Technology and a B.S. in mathematics from Chicago State University. He is an AAC member with Level III certifications in cost estimating, financial management and program management.*

# SPOTLIGHT:

## MS. VICTORIA WATKINS

### Making 'cool stuff' for Soldiers

**MS. VICTORIA WATKINS**

**COMMAND/ORGANIZATION:**
U.S. Army Contracting Command – Aberdeen Proving Ground

**TITLE:**
Lead contract specialist, Team Sensors and Laser

**DAWIA CERTIFICATIONS:**
Level III in contracting; Level III in purchasing

**YEARS OF SERVICE IN WORKFORCE:** 30

**EDUCATION:**
B.A. in business management, University of Maryland University College

**AWARDS:**
Army Achievement Medal for Civilian Service

Victoria Watkins first became interested in contracting in 1989, sparked by reading the paperwork she was tasked with typing as a clerk. She's been in contracting ever since, except for a three-year stint in supply, and her clerking days are long behind her. "Automation is the biggest change I've seen in my time here," she said. "No more typing, filing or mailing volumes of documents. Instead, we have email, online collaboration and electronic signatures."

Now lead contract specialist for Team Sensors and Laser at the Army Contracting Command – Aberdeen Proving Ground (ACC-APG), she has worked on several high-visibility programs, including the Thermal Weapon Sight, the Lightweight Laser Rangefinder Designator and the base environmental support contracts, to name just a few. But it's hard to say which she's liked the most: "I am very proud of all the work I have done." In her position, she said, "we get to make some pretty cool things for Soldiers," including the Enhanced Night Vision Goggle and the Aviator's Night Vision Imaging System. She's also proud of the work she has done in the environmental arena to protect bald eagles and clean up various areas in APG and the Edgewood Area, and the training she provides for Soldiers in the ordnance school before they deploy.

But her greatest satisfaction "is being able to provide state-of-the-art equipment to the warfighter and hearing how it is keeping them safer in combat."

**What do you do in your position, and why is it important to the Army or the warfighter?**

As the team leader for Team Sensors and Laser, my team solicits bids for the most advanced equipment for the warfighter and challenges industry to make new items that protect our Soldiers.

*Several years ago I trained four interns on my team ... and to see how much they have grown and learned makes my work worthwhile.*


**What one skill or ability is most important in doing your job effectively?**

Communication: We need to be sure everyone understands the same thing so we are all successful in what we do.

**How did you become part of the Army Acquisition Workforce, and why?**

I had worked for several years in the supply field, receiving and cataloging equipment, and I wanted something more challenging. I entered the Army Acquisition Workforce as a procurement clerk, handling typing and mail tasks. After typing several justifications and approvals, business clearance memorandums and statements of work and reading what we were doing, I wanted to learn how to prepare packages, so I continued with my education and moved up the ranks.

**When you first started, did you anticipate you'd still be here 30 years later?**

Not at all. When I started working in contracting in 1989, I was very interested in staying in the field. But we had a reduction in force in 1993, and I was sent back to supply for three years. During those three years, I applied for work in the contracting field and eventually returned, so I learned early that anything can happen.

**What do you see as the most important points in your career with the Army Acquisition Workforce, and why?**

Watching new employees learning and understanding what we do. Several years ago I trained four interns on my team and then they were eventually assigned to other units. Today, they are junior specialists, issuing RFPs [requests for proposals] for substantial amounts, and to see how much they have grown and learned makes my work worthwhile.

**If you could break the rules or make the rules, what would you change or do?**

I would try to streamline procedures and "lock" procedures for six months or a predetermined time so that no changes could be implemented. The constant changes in procedure are the most challenging aspect of my work.

**Can you name a particular mentor or mentors who helped you in your career? How did they help you? Have you been a mentor?**

Shirley Kelly [former branch chief for the Services Division at ACC-APG] and Kathy Bankerd [current branch chief at ACC-APG] were my mentors. They taught me not to accept "no" until I have exhausted all resources. Throughout my career, they both continuously challenged me, and each subsequent assignment was more difficult—and more rewarding when the effort was complete. I have mentored the specialists on my team, challenging them to move to the next level and teaching them what I have learned over the years.

**What advice would you give to someone who aspires to a career similar to yours?**

Work hard, and be open to continuously learning something new.

***—MS. SUSAN L. FOLLETT***

**KNOWLEDGE SHARING**
A key part of the 413 CSB's success in identifying small businesses came with consulting other contracting specialists around Hawaii to update their list of which businesses could do which kind of work. Such efforts yielded successes like this re-roofed helicopter hangar on Wheeler Army Air Field, HI. (Photos by LTC Edward Gosline, 413th CSB)

# Small BUSINESS Island

Short of qualified small businesses, the 413th CSB expanded its outreach, data collection and sharing to find ones that could meet its mission.

*by COL Kevin M. Nash*

When it comes to the Army meeting its small business goals, small businesses have their own demographic and every region is different in terms of the numbers of qualified small businesses. That may be most problematic when the region is Hawaii, as the 413th Contracting Support Brigade (CSB) has discovered.

The 413th CSB, one of six CSBs of the U.S. Army Expeditionary Contracting Command (ECC), supports U.S. Army Pacific. The 413th CSB provides garrison and expeditionary contracting to Army units and joint partners throughout the Pacific, except for Japan and Korea. From its regional contracting offices (RCOs) in Hawaii and Alaska, the CSB traditionally provides significant support to achieve the ECC's small business goals.

The ECC, a major subordinate command of U.S. Army Materiel Command, is a worldwide contracting organization with an authorized strength of more than 1,200 personnel operating in 30 permanent contracting offices and seven contingency contracting offices. The ECC maintains a robust small business program for its contracting brigades, both in and outside the continental United States (CONUS), with more than $97 million directed to small businesses in FY15 alone.

Operating primarily in Hawaii and Alaska for its garrison-support mission, the 413th CSB maintains the same socioeconomic goals as its counterparts in CONUS. James A. Mastin, the 413th CSB's current small business specialist, arrived in Hawaii in 2014 to find distinct differences in progress toward making small business goals in the categories of small businesses owned by disadvantaged Native Americans, HUBZone (Historically Underutilized Business Zone), service-disabled veterans, and women.

In Hawaii, where the 413th CSB is based at Fort Shafter, the brigade is fortunate that it can use the Native Hawaiian organization 8(a) category, one of the three "super 8(a)" contractor categories that are allowed additional

**EDUCATE, EDUCATE, EDUCATE**
Small Business Specialist James A. Mastin, with the 413th Contracting Support Brigade, provides training to unit Soldiers. Mastin expanded the role of the small business specialist to act as a fully engaged team member and proactively educate CSB staff about opportunities to use small businesses.


**TEAMING UP**
When the SBS is a part of the team, not a separate function, using small businesses can be woven into the fabric of the command. SBS Mastin discusses the unit's small business program with SFC Rashonda Jones, a contract specialist in the 413th.

benefits by the U.S. Small Business Administration. However, the SBS found that there were difficulties reaching the goal for contracting with service-disabled veteran-owned (SDVO) small businesses, and the brigade needed to develop a strategy to achieve this goal.

Three initiatives resulted to improve on the previous year's small business achievements through stronger outreach, better networking, improved information flow for market research, better training and more effective interaction between contracting professionals and Mastin's office. The brigade's small business office not only improved its performance over FY14 but achieved all of its goals during FY15.

## ASSESSING THE TASK

The purpose of the 413th CSB's small business program, like its counterparts within other units, is to provide small businesses with information about conducting business with the federal government. The small business specialist supports planning and implementation of efforts to increase small business opportunities in contracting with the federal government. Additionally, the small business specialist implements national policy to ensure the application of subcontracting requirements with respect to small business firms.

Mastin advises potential contractors on assistance available from government agencies, procedures for formal advertising and negotiated acquisitions, and registration with the Systems for Award Management (SAM), which is the official U.S. government database designed to hold information from businesses relevant to procurement and financial transactions; contractors must register in SAM to receive any government contract. Mastin also advises contractors on how to find requirements on the FedBizOpps Web page, and on submitting proposals


**SMALL ISLAND, SMALL BUSINESS**
As a small archipelago, Hawaii poses unique challenges to meeting small business goals. Nevertheless, with concerted outreach, work with other contracting specialists in Hawaii and education, the 413th CSB was able to exceed its DA-set goals for FY15, using a small business contract for this construction project on Wheeler Army Air Field, HI.

and information regarding bids and offers. Mastin is responsible for reviewing and making recommendations on DD Form 2579, "Small Business Coordination Record," for all acquisitions exceeding $10,000 before issuance of a solicitation.

Mastin began addressing the need for more business with SDVO firms by reaching out to the other SBSs on Oahu. As it turned out, the other government agencies on the island also struggled to meet their SDVO goal. Discussions with these agencies yielded a list of small businesses on Oahu that fell into the small disadvantaged business 8(a) category and also happened to be SDVO small businesses.

The SBS passed that information on to the local contracting office; if a requirement arose that would allow for an 8(a) direct award, the contracting office could use one of those 8(a) vendors that also possessed the SDVO designation. As a result, many of those contractors that held the 8(a) and SDVO category were awarded government contracts for supplies, services and minor construction.

## STEPS TO IMPROVEMENT

Then, the 413th CSB embarked on three initiatives to strengthen its approach to small businesses:

- Expanded outreach program to connect with Hawaiian and Alaskan small businesses on opportunities available for supporting the Army. Previous outreach efforts were limited to only a handful of events during the year. Mastin used more than a dozen outreach events, including the annual Hawaii Small Business Forum and various small business matchmaking functions, and expanded his open-door policy that allows vendors to come in and give capability briefings, which helps with market research. He used these outreach programs to inform the 413th CSB's regional contracting offices about the capable small businesses available as potential sources of supply or services for current and future acquisitions.

- Refined communication and market research data readily available to the 413th CSB's 51C (military contracting) and 1102 (civilian contracting) professionals to better depict what

## 413TH CSB SMALL BUSINESS PROGRAM RESULTS

| Category | FY14 | FY15 | ECC FY15 Goals |
|---|---|---|---|
| Percent of Eligible Dollars to Small Business | 64.3 | 66 | 57 |
| Percent to Small Disadvantaged Business | 32 | 38.4 | 27.5 |
| Percent to Service-Disabled Veteran-Owned Business | 2.1 | 3.4 | 2.2 |
| Percent to Women-Owned Small Business | 13.8 | 14.2 | 7.5 |
| Percent to HUBZone Small Business | 12.3 | 14.1 | 8 |

**REPORT CARD**

This chart shows the improvement in the 413th CSB small business program from FY14 to FY15 in all categories. (SOURCE: 413th CSB)

small businesses could provide. The SBS improved upon the existing information found in the small business resource folder on the brigade's internal, shared drive. The information previously provided on the shared drive was generic in its reflection of small business capability briefings, catalogs and brochures.

To improve the quality and accessibility of the information provided for 413th CSB 51Cs and 1102s, Mastin broke down the small business documents into their separate socioeconomic categories: women-owned, economically disadvantaged women-owned, veteran-owned, SDVO, HUBZone, small disadvantaged business or 8(a) businesses.

To show the most current information, he further categorized the information within the small business resource folder to reflect the fiscal year in which the information was received. This has proved to be a valuable tool for the regional contracting offices to use in their market research.

- The brigade tailored the role of the SBS to use his solid acquisition skills to improve communication between the 51C/1102 personnel and the SBS, so the SBS would be more fully engaged with the workforce and accepted as a value-added member of the team instead of someone in a separate specialty area. Now the SBS not only gives guidance, but also conducts numerous training sessions on the small business program and on the required forms that must be completed before the solicitation of any requirement.

Mastin maintains operational support to the CSB by serving not only as the small business advocate but as an ombudsman in a wide range of areas requiring a significant degree of business and technical knowledge, including labor, marketing and general business-related disciplines. He sees when acquisition circumstances inhibit small business participation or impact small businesses' overall operation or survival, and represents the interests of these segments of industry to all levels of management to resolve problems and ensure maximum small business opportunity consistent with the activity's requirements.

He coordinates all DD Form 2579s before issuance of any solicitations and reviews the corresponding market research to make sure that small businesses participate to the fullest extent possible. This results in many positive comments and feedback from the contracting workforce in Hawaii and Alaska and sets the standard for how the 413th CSB will proceed in FY16.

## CONCLUSION

The implementation of these innovations resulted in increased participation of small businesses and increased achievement of our small business goals as a percentage of available dollars from FY14 to FY15. Additionally, the brigade exceeded all of its assigned goals for FY15.

The warfighter gets the required supply or service while the American government achieves its desired socio-economic effect. The brigade intends to continue to refine and improve its SB program based on its recent success and achieve even better results in FY16.

*For more information on the 413th small business program, go to* ***http://www.acc.army.mil/ecc/413th/hawaii/rco-hi_small_business.html****.*

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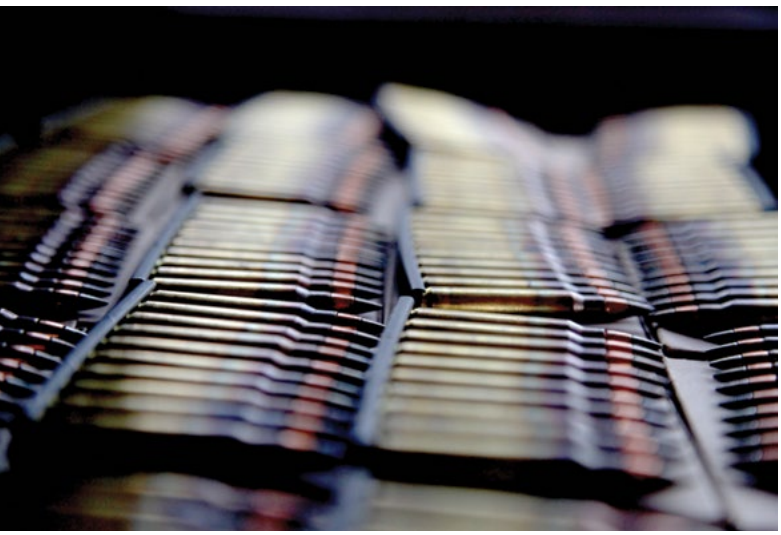
*COL KEVIN M. NASH is the commander of the 413th CSB, Fort Shafter. He holds a master's in management from the Naval Postgraduate School and a B.A. in economics from Washington and Lee University. He is Level III certified in contracting, Level II in program management, and a member of the Army Acquisition Corps.*

# *Clear* Requirements, Level *Playing Field*

ARDEC and JMC worked together to develop an ammunition standard that reduces ambiguity, ensures quality and safety for Soldiers and promotes competition by making the procurement process more transparent for all stakeholders.

*by Ms. Mary Kate Aylward*



**READY FOR LOCK AND LOAD**
No shortage of 5.56 mm rounds are ready for paratroopers from the 82nd Combat Aviation Brigade (CAB) 82nd Airborne Division to load into their M-4 carbines during a familiarization and qualification range at Fort Bragg, NC in July 2015. The SQI team wrote a review guide that expands on the CCC clause by providing examples and offering training opportunities at supplier facilities. (U.S. Army photo by SSG Christopher Freeman, 82nd CAB Public Affairs).

If the goal is to get more small businesses competing for government contracts, the government has several levers to pull to make that happen. One option is to make it easier for small businesses to compete—or, put another way, to level the playing field so that it's no harder for small businesses to play. Clarifying requirements can foster competition and provide an opening for small businesses to enter a marketplace, whether used alone or as part of a broader package of incentives to increase small-business participation.

The Supplier Quality Initiative (SQI), a joint-services effort sponsored by the U.S. Army Materiel Command's Armament, Research, Development and Engineering Center (ARDEC) and the Joint Munitions Command (JMC) to improve the reliability and quality of ammunition, is one example of just such a collaborative effort that has smoothed the way for greater competition.

Procuring high-quality ammunition wasn't a new goal, but the way the SQI set about to achieve it was. Before the mid-2000s, every time the government ordered ammunition, the requirements could and did change—slightly, but enough to slow the supply chain and to make the ammunition harder to regulate and inspect. There were different requirements on different contracts, making it difficult for integrated product team (IPT) members to agree on what was required from suppliers.


**SAFE PACKING**
Joshua Nelson, a materials handler leader in the Shipping and Storage Division of the Directorate of Depot Operations, McAlester Army Ammunition Plant, OK, talks to Soldiers from the 578th Forward Support Company, Fort Sill, OK, about the process of drawing small arms ammunition and repackaging it for shipment, during a July 2015 tour of the plant. The consensus from the ammunition community: The best way to prevent injury or death caused by defective ammunition is to keep it from leaving the ammo plant. (Photo by Kevin Jackson, U.S. Army Materiel Command)

The process wasn't transparent on either side: Suppliers weren't always clear on what the government needed, and the government didn't have a clear view of suppliers' manufacturing processes or an easy way to evaluate them for safety and reliability.

Safety and reliability requirements were scattered across several different documents; in such an environment, an incumbent who had navigated the system before had an advantage over potential new suppliers who had to attempt to piece together the full picture from scratch.

## SAFETY RISK, REDUNDANCY, CONFUSED SUPPLIERS

"From a warfighter's perspective, it can all be summed up by saying we want that ammo to go off at our enemies when it's supposed to and not when it's not supposed to—in other words, that it be reliable," said Greg Peterson, product quality manager at JMC.

The ammunition community had agreed that the best way to prevent the nightmare scenario (for example, a service member in a dangerous situation with ammunition that doesn't work, or an ammunition defect that kills or injures a service member) was to prevent defective ammunition from ever leaving the factory. Ammunition has such a long life cycle that one defect at one manufacturing facility can cause problems decades later.

"We want to reduce the probability of a defect leaving the production facility to one in a million," said Jorge Munoz, with the Small Caliber Munitions Quality, Reliability and Systems Engineering Branch at ARDEC, Picatinny Arsenal, NJ. But with different requirements and little transparency, there were gaps in the supply chain through which defective ammunition could escape. As engagements in Iraq and Afghanistan ramped up and demand for ammunition rose, it became clear it was time to fix the process.

## SIMPLIFY, CLARIFY REQUIREMENTS

In 2005-2006, a joint-services team was chartered to address these problems. The first change the team made was to round up all best practices and requirements tied to critical characteristics of a piece of ammunition—characteristics related to safety and reliability—and put them in a single document, the

critical characteristics control (CCC) clause. Lean Six Sigma principles helped the team develop the CCC clause. A single clause laying out all the safety-critical requirements for any ammunition reduces the amount of time and work it takes for the government to acquire ammunition. It reduces ambiguity for manufacturers, better enabling them to deliver. And it makes it easier to hold suppliers accountable and therefore deliver safer, more reliable ammunition to Soldiers, Marines, Sailors and Airmen.

"The system had a lot of noise prior to the implementation of a single clause accepted as the standard for ammunition quality," said Sanket Patel, chief engineer with the Expeditionary Systems Evaluation Division at the Crane Division of the Naval Surface Warfare Center Fallbrook Detachment. Now, every time the government orders ammunition, the CCC clause is a part of the order. The standards to keep the ammunition supply safe and reliable are in a single place, and they're the same every time. Clear requirements put an incumbent and a potential new supplier on a more level playing field, while unclear requirements give a strong advantage to an incumbent who has institutional knowledge from having performed the work before.

The clause-development team evolved into the Joint Munitions and Lethality Life Cycle Management Command's SQI. Not only was the SQI team successful, but the model it created continues to be used and has driven business-process innovation and improvement in other contract quality requirements. The model pioneered with the CCC clause has carried over to process control (Process Capability, Control and Improvement Clause) and inspection (Measurement System Evaluation clause).

*"[The review guide] is a very important tool—it gives the government and the contractors producing ammo a common framework to understand the requirements. We use the guide internally to help our new engineers and new QA specialists come up to speed."*

(See "Clause for Effect," Army AL&T magazine, April – June 2014, Page 130; and "Process Capability, Control, and Improvement Clause Allows Enhanced Process Monitoring and Control," Army AL&T magazine, January – March 2011, Page 66.)

## INVOLVE STAKEHOLDERS

Patel described the SQI as "a partnership, in many ways, between the government and private industry." The industrial base—made up of contractor-owned, contractor-operated manufacturing facilities, government-owned, contractor-operated facilities, and government-owned, government-operated manufacturers—was involved throughout the process.

At the outset, "we didn't just say, 'Here's the clause,' " Munoz noted. Each side had concerns to be acknowledged: Government needed industry to understand the real risk of critical defects—service members could be injured or killed, weapon systems damaged and defense capability decreased while supplies and systems are re-inspected or repaired. Suppliers, on the other hand, felt that government had been "gold-plating" requirements, disregarding the reality of a manufacturing environment.

An industry day was held where suppliers came to ARDEC and reviewed the draft critical characteristic requirements. Similar industry day events have been held for other clauses before implementation. This provides a frank and collaborative forum to raise questions and concerns and to preview the requirements so nothing in a contract or solicitation comes as a surprise.

The team also sought buy-in from in-house stakeholders, including management, contracting officers, contracting specialists and legal staff. Technical requirements that were not contractually or legally feasible would result in rework and potentially longer project schedules, so keeping all parties up to date saved time.

## HELP THEM HELP YOU

Before the development of the single, joint CCC clause, some contractors had problems interpreting requirements such as calculation of critical plan-of-action

**ADJUSTING THE LINKS**
Small caliber ammunition is as essential to Soldiers as food, water and boots. The SQI team aimed to make it safer, and the process of procuring it more transparent for both the government and suppliers. (U.S. Army photo)

threshold measures, or when a critical defect has officially "escaped" beyond the inspection point. To help contractors and manufacturers understand the requirements, the SQI team also wrote a review guide that expands on each paragraph of the clause, providing concrete examples, and offered training at supplier (government and contractor) facilities.

"[The review guide] is a very important tool—it gives the government and the contractors producing ammo a common framework to understand the requirements," Patel noted. "We use the guide internally to help our new engineers and new QA [quality assurance] specialists come up to speed." By being as clear as possible about what it wants and needs, government creates an environment where more suppliers can compete, and where suppliers can be transparent, too.

## MEASURING SUCCESS

Surveys of stakeholders, along with observations made over the years the CCC clause has been in effect, indicate that the SQI's innovations have been a success. Since 2007 and continuing every year through annual discussions at the Joint Ordnance Commanders Group, Quality Assurance Subgroup meetings, Single Manager for Conventional Ammunition Quality Assurance Day events, data calls to IPT representatives, and during SQI events themselves, ARDEC and JMC survey stakeholders and customers to

*"From a warfighter's perspective, it can all be summed up by saying we want that ammo to go off at our enemies when it's supposed to and not when it's not supposed to—in other words, that it be reliable."*

**SHARPENING FIRING SKILLS**
U.S. Army Reserve Soldiers from the 354th Military Police Company, St. Louis, MO, wait their turn to fire the M2 Browning .50-caliber machine gun during a familiarization range at Camp Atterbury, IN, in November 2015. The SQI goal is to improve the quality of ammunition Soldiers receive—and a benefit of the steps taken to that end is that more suppliers of all sizes can compete. (U.S. Army photo by MSG Michel Sauret)

gather feedback. "The result is it's been working out fine," Munoz said.

Collaborating with industry through training events at supplier sites and open communication has generated a particularly positive response: "[Suppliers] are always happy to see us," Peterson noted. "They always want more information." Much of the dialogue occurs between the SQI team and IPTs; the SQI team provides an independent, requirements-centric view to the IPT. In addition, these information exchanges offer multiple opportunities for feedback on how the clause and review guide are working on the ground. As a result of this active feedback, the review guide has been revised twice (2012 and 2015) since its original release in 2006 to improve the guidance and capture best practices.

Another key measurement of the SQI's success is the number of critical plans of action (CPOAs) filed by suppliers. CPOAs are an optional tool for suppliers to describe their plan to reduce the number of nonconformances at a facility. "The number of CPOAs we've been receiving has grown every year … compliance is growing," Patel said.

## CONCLUSION

"Clear requirements help current contractors do better, and they invite others into the supplier base, so it invites competition. We want a healthy supplier base, and we have to be clear about what we want," said Patel. More competition, better product and reliable ammunition in the hands of the warfighter: That's what the SQI's CCC clause has accomplished for the long term.

For more information, contact Melanie Lorber, CCC clause manager for JMC, at ***Melanie.p.lorber.civ@mail.mil***.

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*MS. MARY KATE AYLWARD provides contract support to the U.S. Army Acquisition Support Center. A writer and editor at SAIC, she holds a B.A. in international relations from the College of William & Mary.*

Image by enotmaks/iStock/Thinkstock

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CRITICAL THINKING

# An HONOR *and a* CHALLENGE

CEOs, founders and other entrepreneurs from the small business world sound off about what's right and what's wrong with how the Army engages with small business

For this issue of Army AL&T, we reached out to small businesses across the spectrum of products and services to find out what matters to them in doing business with the Army. We wanted to know how small businesses handle the ins and outs of working with the government, from dealing with bureaucracy to responding to requests for proposal (RFPs), to their thoughts on set-asides and contracting vehicles, to the surprising Catch-22s they face.

Most of our respondents are companies that provide services. Most are grateful to have the Army's business, but most also thought that the government could make it a lot easier for them to do business. Some find the set-aside system not as advantageous as it could or should be; in too many cases, they said, the small business ends up as a middleman between the government and a large business. Those few that provide products find that the system of small-business incentives doesn't really work for them. One frustration we heard was with NAICS (North American Industry Classification System) codes, which were never intended to classify businesses for the purpose of actually doing business. Instead, they were developed to categorize businesses for the purpose of gathering statistics.

The story we heard most often was what you might expect from the kinds of people who start small businesses: a story of resilience, determination and innovative thinking. Nearly everyone saw a niche to fill and had a better idea for how to fill it.

**DAWN HALFAKER**
**President and CEO**
**Halfaker and Associates**
**Arlington, VA**

HALFAKER & ASSOCIATES, LLC

*Continuing to serve...*

I started Halfaker and Associates over nine years ago as an individual providing consulting under a purchase order-based contract. As an Army veteran, I had a strong military background and expertise with the Army, but it was challenging to launch from a one-person business to a company competing for prime contracts.

When it comes to small business set-asides, there are definitely both benefits and downsides. Small business set-asides are great in that they try to ensure that small businesses are awarded a fair proportion of government contracts. However, it can be a double-edged sword if there is a $100 million opportunity set aside for small business and the small business cannot perform at that scale. Small business set-asides can also force small businesses to graduate [to the mid-tier] too early, before they've had time to build the necessary past performance, processes and internal infrastructure to compete with big companies. There's no gradual off-ramp for these types of businesses, and mid-sized companies would benefit greatly from that type of program.

Responding to RFPs can be challenging for small businesses. It's important to not waste time and energy chasing and capturing something that you don't have customer knowledge [of] or is outside of your capabilities. We focus on opportunities that [we] have a high probability to win, meaning we know the customer, have applicable past performance and have performed in-depth analysis and research on. It's also important to know how to leverage the strengths of your employees. Leveraging your own technical experts to provide input, draft content or review documents can help refine your proposal and allow for feedback that you may not have received if you kept your response with your proposal team.

*Small business set-asides can also force small businesses to graduate [to the mid-tier] too early, before they've had time to build the necessary past performance, processes and internal infrastructure to compete with big companies.*

**LARA AARON**
**Co-founder and Vice President**
**Simformotion LLC**
**Morton, IL**

cse software inc.

Simformotion is licensed by Cat Simulators—a subsidiary of Caterpillar Inc.—to create training simulators for the heavy equipment Caterpillar manufactures. It was founded in 2009 as a sister company to CSE Software Inc.

CSE develops the simulation software for each machine model [that Caterpillar makes]. Simulation, in and of itself, is a very specific niche, and heavy equipment simulation is even more so. We view our niche, developing Cat Simulators, as a positive one. It keeps our employees and leadership focused on specific goals and objectives. We've partnered with the top heavy equipment manufacturer in the world, and each machine is carefully modeled to Caterpillar's exacting standards. We work with subject-matter experts (SMEs) to ensure that each training exercise is technically correct and performed safely. We sell the simulators on a global scale, but are proud that Cat Simulators help Soldiers across the United States keep their skills sharp and ready for deployments or when needed during disasters at home. Cat Simulators can be found at several military units, including the schoolhouse at Fort Leonard Wood, MO.

While there may be obstacles for a small business, we see many more positives to doing business with the Army and have learned how to overcome any obstacles that we are faced with.

Our leadership takes a hands-on approach to running the day-to-day operations of the company. They have the ability to meet and make quick decisions that would take much longer in a large, bureaucratic company.

We are often asked if we can implement certain changes or ideas into our simulators. We continually conduct research and development and have a dedicated testing department to ensure that we can implement changes, upgrades and advances successfully into our simulators. Examples include everything from new training exercises and a motion system, to ongoing research on hardware such as virtual-reality head-mounted displays.

We cross-train staff to be able to scale our personnel resources as needed. For example, a software developer can conduct on-site training or technical support staff can assemble simulators at a military site. While we have dedicated personnel in every area of the company, cross-training allows us to meet deadlines without compromising the quality of our products and services.

We have access to Cat machines, SMEs and data whenever we need to consult on machine parts, talk about training or meet with decision-makers. Cat has a dedicated department for defense and federal products, and we work right alongside them, attending meetings and shows where Cat Simulators is present.

**JOHN ROGERS**
**President and CEO**
**TRINE Environmental Inc.**
**Novi, MI**

TRINE ENVIRONMENTAL, INC.

Throughout my career, I've been a dedicated field geologist. I had turned down growth opportunities because I wanted to be doing the hands-on work as long as I physically could. I was clueless on the administrative and business operating sides of the house, except [to] turn in my time sheet and expense report and be happy every second Friday. Life was good until 2008, when the economy took a turn for the worse and the environmental fields took a heavy hit.

Environmental consulting is a high-risk field because even though most companies preach that they want to do good by it, it's the first program to get slashed in times of economic crisis. By dumb luck, I was visiting some friends when one of them approached me about working for her oil and gas firm. She knew my background was in geophysics. So, I found myself transplanted from my home in Michigan to Oklahoma, working as a horizontal geosteerer for an oil and gas company [analyzing subsurface geological data in real time to ensure that horizontal drilling is on target]. After about one month, the signs were on the wall: I had made an "oops" decision. Sure, I was making tons of money, but I struggled to adjust to the physical environment. I missed home, which had never been the case throughout my life and seven years of military service.

I voluntarily relinquished my duties and headed home to start from scratch in the worst economic crisis our generation has seen. I started with a lawn and landscape company, since I had been mowing and landscaping since I was 8. I borrowed money to buy equipment and quickly found myself doing property management jobs for HUD [the U.S. Department of Housing and Urban Development] contracts. That went well until winter.

Then, again by dumb luck, a friend called me out the blue and asked what I knew about radon. He wanted to start a business installing radon mitigation systems. I called another friend, Pat, because he once ran an environmental business and was a well-respected environmental consultant taking a break from the risks of the field.

After a meeting, while Pat and I were walking to our trucks, he asked if I had ever considered starting my own environmental business. After my laughter had subsided, he said, "Well, John, you're a disabled veteran, look into it." Three days later, I was at a small gathering, and a gentlemen, Dave, approached me.

[Dave] was a 60 percent owner of a small environmental firm and lived in a really big house, with a boat—two of them, actually. He knew I was an Army veteran. He asked, "John, have you considered starting your own environmental business?" Instead of laughter, my face assumed a quizzical look and the word "karma" was running through my thoughts. My response was, "Let's talk." That following Monday, I was sitting in Dave's office. He wanted to invest.

I started learning all about government contracting, FAR [Federal Acquisition Regulation] clauses, FBO [Federal Business Opportunities] and what it meant to be a service-disabled veteran-owned small business [SDVOSB]. In May 2012, Dave made a small investment to get my company off the ground. TRINE Environmental Inc. was born. By October 2012, I had won my first contract—or so I thought. It was a [U.S. Department of] Veterans Affairs [VA] contract, but I didn't have CVE verification. [The Center for Verification and Evaluation, under VA's Office of Small and Disadvantaged Business Utilization, certifies veteran-owned businesses.] I had my CVE process complete by December 2012 and was awarded the contract—which I still hold—in January 2013.

Fast-forward to doing business with the Army: I have learned they have tremendous obstacles, with the biggest one being time in grade (how long have you been in business?), with "Can you do the job?" being a close second.

The trick I've learned to overcoming both of these obstacles is to have a good team supporting my company and be prepared to dig the trenches for a long fight if they say no. I have had to use the protest process (twice for one contract because contracting officers were changed) and won.

Overall, TRINE has been in business 3.5 years, and we've won about 21 contracts to date. We specialize in environmental consulting (investigations), geotechnical investigations, environmental remediation, asbestos abatement oversight and geophysical investigations.

**NO MATTER THE WEATHER**

Career geologist John Rogers performs groundwater sampling for a HUD project in Lenox, MI, in January 2015. (Photo by Patrick Houle)

**WORKING IN THE TRENCHES**

Rogers cuts a trench to properly set a silt fence in St. Clair Shores, MI, in August 2015. (Photo by Patrick Houle)

**PETER MOROSOFF**
**President**
**Electronic Mapping Systems Inc. (E-MAPS)**
**Woodbridge, VA**

E-MAPS focuses on information interoperability and management, computerized geographic information, bridging the gap between users and developers of information technology, and ontology [the study of reality and how it's represented, applied to how information is organized and shared; you take weather into account when designing a ship, and ontology into account when designing an information technology system]. In 25 years, E-MAPS, support has included an 18-month U.S. Army Corps of Engineers environmental survey, military experimentation, organizing repositories of information developed in advanced concept technology demonstrations (ACTDs) and studies on information sharing. Our customers have included the Army, ACTDs, the Marine Corps Warfighting Laboratory, the Office of Naval Research and the Air Force Research Laboratory.

If the Army wants to realize the potential benefit of small business innovation, the Army needs a knowledge management system whereby (1) information on small businesses' ideas, services and products can be placed and cataloged, and (2) government officials, developers and other contractors can discover these ideas, services and products when a need for them arises.

Representatives of the Army and other DOD organizations constantly talk with representatives of small businesses but usually do not (1) know who or what organization within the Army has or will have a need for the small business's idea, service or product or (2) have an enterprise knowledge system into which they can enter and catalog information provided by the small business. This is why a knowledge management system is needed where important information about an idea, service or product can be recorded and cataloged. Lacking such a system, the Army as an enterprise (or indeed DOD in general) remains unaware of almost every idea, service or product offered by small businesses.

[Such a] system should not be confused with repositories such as the Defense Technical Information Center, which does not separately list small business offerings and ideas. The lack of such a knowledge system leads the Army to (1) inadvertently duplicate development work that a small business has already completed and explained to an Army representative; or (2) fill a need by purchasing a second-rate product even though the Army has already been informed of a first-rate product that will fill the need.

**FRANCIS COVINGTON**
**Managing Partner and CEO**
**Covington & Associates LLC**
**Rolling Hills, CA**

Covington & Associates, LLC

Covington and Associates LLC is a federal and multistate designated small and minority business. While the company is not veteran-owned, our program management staff is primarily Army veterans. Our firm specializes in business continuity and disaster recovery planning. Additionally, we provide solutions in the area of automated systems availability management (ASAM) software.

Our owners have [in the aggregate] more than 35 years of business experience providing solutions to the government and commercial entities. We started this company over five years ago with an eye to provide a greater level of customer service to our clients than is currently available from our competitors. [We] started actively soliciting DOD divisions (including the DA) with guidance from the DOD Office of Small Business Programs.

We believe that the Army in particular is a prime candidate for our ASAM solutions. These solutions ensure up-time availability in a client-server environment. There is currently no other software available today that will assist the Army in maintaining its systems readiness state. Also, DOD states that systems readiness is a primary objective for all the services.

Small business set-asides and incentives are a great opportunity to get small businesses like ours to the table. Where we find challenges is in getting the invitation to the table. What I mean is [that] Army [organizations] do not know about our solutions and, as such, do not specify them in ongoing RFPs. Thus, if you have a problem and don't know that we have a solution, you don't ask for it.

We think it's extremely important to continue with small business set-asides. These, at least, give us an opportunity to open doors that potentially would have been closed except to the larger vendors.

When we see opportunities that manifest themselves within large corporations, we generally reach out to them with our solutions in an effort to subcontract under those large firms and to assist them in meeting their small business requirements.

There appears to be tremendous growth in the need to meet requirements for systems availability. Our strength is in providing an in-depth solution that gives us the ability to allow any Army division to meet its availability requirements.

If I could change one thing in the way that the Army does business, it would be to provide a doorway for new technologies.

We would welcome the opportunity to present our products to any IT facility that is challenged right now with up-time availability, or is concerned that its environment may not be recoverable 100 percent of the time.

**GREGORY GLAROS**
**CEO and Chief Technical Officer**
**SYNEXXUS Inc.**
**Arlington, VA**

SYNEXXUS is a CMMI Level 3 certified electronics design, manufacturing and engineering services company headquartered in Arlington, VA, and an SDVOSB. [The CMMI Institute certifies organizations in Capability Maturity Model Integration, an internationally recognized framework to guide organizations in benchmarking their capabilities and identifying performance gaps so that they can develop capabilities efficiently.]

As a program executive in the DOD Office of Force Transformation from 2001 to 2006, I was exposed to a number of challenges facing DOD. Specifically, we were charged with showing the DOD acquisition community that it was possible to deliver on a program ahead of schedule and under budget. I am proud to say that we did that with two of the programs I was associated with: the Stiletto (special operations intelligent boat operations) and Operational Responsive Space (a tactical micro-satellite effort). Both programs have grown considerably and are still supporting combatant commanders 10 years later.

When I left uniform in 2006 [as a Navy commander, a strike/fighter pilot], I was asked to introduce a cockpitlike architecture into the ground vehicle community so that Soldiers and Marines could have the same situational awareness that our aviation community enjoys, as well as data distribution systems that would allow all government-furnished equipment and software to work together. At the urging of the secretary of defense, I started SYNEXXUS with that goal in mind.

Starting a business is not for the faint of heart. Fortunately, I had a team of first-round draft picks to assist with this endeavor, as well as support and encouragement from senior military officers and business leaders. When SYNEXXUS was approached by the Rapid Equipping Force in 2008 to deliver this capability, I gave my team only one directive: Deliver a system where the driver or commander in the vehicle could access all communications equipment, sensors and weapons, as well as ground robots, all from the same display within an arm's reach, similar to the way my F/A-18 was configured.

*When it comes to return on investment, my shareholders are those men and women deployed who need to have access to information in order to be able to make a survivable life-or-death decision.*

Ground vehicles don't have the luxury of millions of dollars' worth of avionics gear, so alternative approaches were needed. SYNEXXUS accomplished this feat from design to fielding in Iraq in 96 days—and under the $70,000 firm fixed-price contract.

SYNEXXUS has cracked the code of solving complex engineering problems supporting programs such as ground control stations, smart munitions, fixed-perimeter security, communication centers, maritime patrol craft, mission command and network on-the-move. In fact, SYNEXXUS has been fortunate to have been awarded over 75 contracts in its history, averaging about six to seven contracts per year.

However, as an SDVOSB, we have yet to be awarded a set-aside contract as a result of this status. As we have discovered, the majority of those contracts are services-related. SYNEXXUS is one of the few [SDVOSB] design, manufacturing and integration companies that remain in business. Few if any of the SDVOSB set-aside contracts are for products, as those are considered reserved for the large traditional legacy electronic companies.

SYNEXXUS has made this point to numerous acquisition officials over the last several years, but we have seen little change—as they state, "If there are two SDVOSBs that could compete, we would make the RFP SDVOSB." And quite frankly, if a company like SYNEXXUS, which is now adept at maneuvering within contracting circles, is having issues with set-aside contracts, other companies must be having even more challenging issues.

It's actually gotten to a point now that SYNEXXUS does not consider small business set-asides as viable because in the past, while the RFP was for small business to participate, the government sponsor used the small business to act as the middleman for the government agency to procure a large business's products. The result was that the small business would take a cut for packaging (repackaging) large business products for the government customer so that the government service could take credit for small business participation.

With all that said, owning a small business supporting DOD is an honor and a responsibility that we cherish. In fact, it's quite personal. My son is a midshipman at the Naval Academy Prep School in Newport, RI, and would like to be a Marine infantry officer. I want him riding in the most technically advanced vehicle the United States has to offer.

I also take great pride in being able to employ individuals who, in turn, can provide for their families. Creating jobs and contributing to the economy are keys tenets of any small business, but when it comes to return on investment, my shareholders are those men and women deployed who need to have access to information in order to be able to make a survivable life-or-death decision.

**ROBERT SEVERSON**
**President and CEO**
**The Severson Group**
**San Marcos, CA**

I started Severson Group after retiring from the military in 2004 following 27 years in the Marines. It had always been my plan to start my own firm. My military experience in logistics provided me the skills to launch a small government-contracting business in San Diego, CA, as well as the insight and knowledge into how private industry conducts business with the federal government. I wanted the company to focus on service contracts because of the numerous contract opportunities in that space.

As a small 8(a) and SDVOSB firm, we believe our service offering adds a more direct and personal interface to the government in a way that large businesses will never be able to do. Small businesses add superior response time and robust capability without the red tape and the many approval processes [a decision] takes in large business.

[However,] the incentives for set-asides are grossly mismanaged and not properly monitored. Prime example: My primary NAICS code is in food service management. Every Army food service contract has a component that gives Randolph-Sheppard Act blind vendors priority. [The Randolph-Sheppard Act "provides persons who are blind with remunerative employment and self-support through the operation of vending facilities on federal property." For more information, go to **http://www2.ed.gov/programs/rsarsp/index.html**.]

Small businesses participating in contracts that give the Randolph-Sheppard program a priority is the big problem. If the Army small business office conducted a survey to determine how many food service contracts are under the Randolph-Sheppard Act and how many of those contracts have the same teaming partner, they would understand there is little to no opportunity for competitive small business participation because there are only one or two companies that the Randolph-Sheppard vendors are teaming with. Those teaming partners basically have these opportunities cornered.

I believe the way the program is set up, the system is being manipulated. The Army can fix this in two ways:

1. Make the set-aside whatever it chooses, such as 8(a), SDVOB, HUBZone or small business. However, demand that the teaming partner to the vendor also has to be in one of the set-aside categories. If the opportunity is set aside for one of the above categories, the contracting agencies should evaluate the set-aside company and then force the state's Randolph-Sheppard vendor to team with the company that the government has selected, based on that company's proposal meeting the RFP criteria. This will eliminate one company [that is not a small business] from getting all the set-aside teaming opportunities.

2. Continue to give the blind priority, but also have the Army sole-selection team approve the 8(a) or SDVOSB firm separately that would [team] with a blind vendor. Right now, the Army is allowing the state/blind vendor to make the final decision as to which company will provide food service to the Army DFAC [dining facility]. The vendor picks the teaming partner based on who will give him the highest percentage of profits from the project.

Investigate the Randolph-Sheppard program. Most of the small businesses that can do the work will not bid because they know that the blind vendor has already determined who its teaming partner is going to be, and, with an absolute priority, there is no chance of losing.

**KERRY THACHER**
**Founder and CEO**
**Librestream Technologies Inc.**
**Winnepeg, Manitoba**

# Librestream

Why not deploy proven technology to leverage assets in the field? It's a question we ask after working on many DOD technology-based initiatives over the years. We have observed a common thread across successful deployments: DOD initiatives that approach technology advancements in a similar manner to commercial, for-profit enterprises appear more likely to deliver positive results.

In the commercial sector, it is unusual to see an organization undertake a large custom project that results in a unique solution. Instead, commercial enterprises use proven solutions within existing workflows to realize immediate results. These companies continue to invest in new technologies that can deliver extended benefits in the future, but only after gaining initial results from proven technologies.

In DOD, commercial off-the-shelf (COTS) solutions can quickly be overlooked or swallowed up within a large custom project, often led by a systems integrator. This custom-first approach misses out on the value of deploying COTS and providing helpful tools to teams more quickly.

As background, Librestream provides virtual collaboration technology, which is a specialized offering to a niche market segment within DOD. For example, the National Guard Weapons of Mass Destruction Civil Support Team selected the Librestream COTS solution to review potentially hazardous situations instantly and securely. This particular solution used our EX-certified rugged cameras [an industrial teleconferencing camera] to provide visuals in potentially hazardous environments. In another case, the U.S. Air Force uses this same technology as part of its Joint Engineering Disposition Infrastructure program to remotely engage experts on inspections and diagnostics related to aircraft at various Air Force bases. While these are two examples of COTS-based initiatives, the majority of cases often involve futuristic technologies that result in highly customized solutions.

Librestream can offer this kind of niche solution, as the market size supports this degree of specialization for a small business. DOD and commercial customers benefit from a technology that is highly specialized in troubleshooting and assessing remotely from difficult environments. Our expertise in this area can assist with best practices for adoption and deployment strategies.

As a small business, it is highly rewarding when we can engage directly with DOD and commercial enterprises on projects that deliver immediate results. We feel there can be strong value in this more commercial approach to initiatives that incorporate COTS products and deliver results in stages. ?

# HEADS OR TAILS:

## Army AL&T asked program executive officers, DASAs and small business program leaders:

### What should small business know, either to do more business with the Army or to do business with the Army better?

**MG L. Neil Thurgood**
**Program Executive Officer for Missiles and Space**

It is important for a small business to demonstrate a strong past performance to be more appealing to government agencies. The government prefers less risk when awarding contracts, and a small business with a strong past performance gives the government confidence the delivery schedules will be met and the product or service will be reliable.

One unique characteristic in small businesses is the ability to search, data-mine and link legacy databases. For example, we initiated work with a small business to help us through the General Fund Enterprise Business Systems (GFEBS) transition. Our small business helped us data-mine GFEBS, the Standard Operations and Maintenance Army Research and Development System, the Logistics Modernization Program and other databases to give management an instant view of the status of funds, which for us covers over 30 types of funds on a continuing basis.

Small businesses should identify large businesses in their area that are willing to engage in mentorship and guidance.

Small business needs to show (or demonstrate) "large business" security, including cybersecurity, as well as financial stability and flexibility.

**Ann Cataldo**
**Deputy Assistant Secretary of the Army for Defense Exports and Cooperation**

To sell overseas, small businesses may need licenses. No matter the size of the company, marketing defense technologies to foreign users will require an export license. While the ongoing Export Control Reform initiative has eased the export of many defense items, U.S. companies still require case-by-case approvals for nearly all sensitive defense technologies. Learning the rules on how to comply with U.S. export regulations is an essential step for small businesses to compete effectively for sales and contracts with foreign customers.

**James Shields**
**Program Executive Officer for Ammunition**

For a very small fee (about $500), join the National Armaments Consortium and Defense Ordnance Technology Center for easy access to government requirements and programs with minimal Federal Acquisition Regulation [FAR]-based bureaucracy to weed through.

Keep checking FedBizOps and reach out to prime contractors with good ideas. Small businesses can do this by attending government-sponsored industry days and networking with the primes.

Submit unsolicited proposals. Each research, development and engineering center (RDEC) has an office that reviews them and staffs to the responsible organization for follow-up.

Get to know the RDEC organizations, especially those responsible for science and technology programs, as well as the competition advocate and small business points of contact. Ask the head of contracting for a list of projected small business set-asides.

**BG Michael D. Hoskin**
**Commanding General**
**U.S. Army Expeditionary Contracting Command**

Small businesses can benefit if they use the local procurement technical assistance center (PTAC) in their state to help with marketing and learning how to use the various search engines available, such as FedBizOps. Each state has at least one PTAC that is funded by both the state and the Defense

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# TWO SIDES OF THE **SMALL BUSINESS** COIN

**Army AL&T asked small business executives:**

**What surprised you the most after winning a contract with the government? Or, what do you wish you'd known before winning that you found out afterward?**

### Gregory Glaros
**CEO and Chief Technical Officer**
**SYNEXXUS Inc.**

After being awarded our first contract, we were surprised by the barriers to actually getting on contract, the time it took to get on contract and the sheer cost of negotiating a final contract. Instead of making sure the product was successful, in many cases, the program manager spent more time with contract payment schedules and issues related to internal government bickering or unresponsiveness. Had they taken into account many of the recommendations we originally suggested, we would have completed the tasks ahead of schedule and under budget and, more importantly, delivered a product faster to the men and women in the field.

Many of the acquisition professionals and the program manager we dealt with on our first contract and follow-on contracts had a lack of understanding of what it takes for a small business to compete, sustain interest and perform financially. From delayed-cash-flow issues to contract interruptions and particularly the lack of coordination between government agencies to fulfill the contract, they failed to grasp the impact these challenges would have and the associated risks small business incur. Once small businesses are given an opportunity to perform, they deliver.

### Richard Lueth
**Military Logistics Representative**
**Chromate Industrial Corp.**

When you're new to defense contracting, the hardest thing is figuring out who to go to, who can help you out and how to get things done properly. The biggest surprise that came to us was figuring out the difference between military and commercial packaging. We packaged our items in two separate packages but found out at inspection that it wasn't right. It took a lot of digging to find packaging information, and it was often difficult to find the right person at the Defense Logistics Agency to answer our questions. Knowing this earlier in the process would have made our first transaction a lot smoother.

### Staci Redmon
**Founder**
**Strategy and Management Services Inc.**

When I established Strategy and Management Services Inc. (SAMS), for the first 18 months, I prioritized building relationships instead of bidding on contracts. I got in front of anyone in the government who would see me—not to sell, but to learn what they needed from providers. The relationships I cultivated continue to benefit SAMS today. As SAMS became known for exceeding our customers' expectations with people who make a difference, the relationships I built generated a steady stream of business, resulting in multiple contract awards.

### Aaron J. Tilock
**Senior Vice President for Operations and Strategy**
**IP Network Solutions Inc.**

What surprised us most were the additional needs and requirements of the customer, beyond what was spelled out in the performance work statement. While we had a 60-day transition schedule, the outgoing contractor was leaving in 50. Thus, we had to surge right away. The kickoff meeting and really tight communications early on are critical for identifying gaps in common understanding and getting the contract up and running.

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Logistics Agency to promote business engagement with the federal and state governments. I have worked with the PTACs in Maryland, Ohio and Hawaii over the years and have been a guest instructor at a number of their training events. The PTACs will assist small businesses with using FedBizOps, the Federal Procurement Data System – Next Generation and other databases to research what government entities have purchased products and services with the same NAICS or similar product line. This can help the small businesses focus their marketing on the government entities buying their kind of products or services. PTACs also help with proposal writing and the formulation of business plans. Many of the Army contracting offices around the country team with the local PTACs to engage small businesses.

**Stephen D. Kreider**
**Program Executive Officer for Intelligence, Electronic Warfare & Sensors**

Small businesses need to understand the importance of business systems, earned value management (EVM) and rock-solid in-house systems and software engineering and program management support when competing for Army procurements. The ability to perform EVM, with an integrated risk- and resource-loaded level-of-effort and schedule plan, is essential to compete on the larger Army procurements.

Small businesses need to also understand their financial responsibility requirements in the context of an acquisition program and growth as well as the government payment procedures to enable timely cash flow. It is more complicated if the contract is cost-reimbursable and requires additional understanding.

In order to be qualified to compete on procurements requiring a facility clearance, small businesses should explore classified subcontracting opportunities with large businesses so they can obtain a facility clearance via the subcontract. This will give the small business the opportunity to participate in competitions requiring a facility clearance. A contractor or prospective contractor cannot apply for its own facility clearance. A procuring activity of the government or cleared contractor, in the case of subcontracting, may request the clearance when a definite, classified procurement need has been established. Consult the Defense Security Service for more information on obtaining a facility clearance.

In an effort for small businesses to receive more business, it is important to understand the importance of asking the questions during the request for proposal (RFP) phase, to fully understand the requirements, understand the performance-based payments clause to assist with cash flow, and the government solicitation process holistically.

In order to improve the quality of service to the Army and cash flow to the contractor, small businesses should meet with the contracting officer's representative and contracting officer and spend more time after award managing the new contract and ensuring that invoices are prepared correctly and submitted to the correct office or entered in the correct system.

**Randy Edney**
**Assistant Director for Small Business Programs**
**Program Executive Office for Simulation, Training & Instrumentation**

Small businesses should be familiar with the mission, organizational structure, products and services procured by the Army command. They should do an analysis of the products and services to identify how they can best support the mission.

Small businesses should contact the command's Office of Small Business Programs to discuss their areas of interest, capabilities and experience. They should participate in industry briefings, conferences or any opportunities to interact with acquisition and technical personnel. They should monitor the FedBizOps website or other portals where requirements are posted.

Most importantly, small businesses should actively respond to sources-sought notices and competitive requirements, and pursue teaming, joint venture and subcontract opportunities.

**Joanne McBride**
**Small Business Innovation Research (SBIR) Program Lead**
**U.S. Army Communications-Electronics Research, Development and Engineering Center**

I would tell small businesses to continually reach out to government, whether on the DOD, Office of the Secretary of Defense or component SBIR websites, for topics and guidance in submitting proposals, or attend the various small business events nationwide to personally speak with government representatives regarding their areas of expertise. As much as small businesses are looking for ways to work with government, the government is truly interested in working with small business to provide innovative research and development in project and program development.

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### Dawn Halfaker
**President and CEO**
**Halfaker and Associates**

What surprised me most after winning my first contract award was the big role that geography can play in your overall success. We're headquartered in Arlington, VA, and our first big contract was located in Kentucky. We needed to work twice as hard to build the close customer relationship needed to deliver a high level of service.

Also, one of the major obstacles in expanding my business with the Army was not having a facility security clearance that the majority of the contracts with the Army required. It was a Catch-22 situation of needing a facility clearance to win contracts, but also needing contracts to obtain the facility clearance. We were able to move past this obstacle by building relationships with other companies, which allowed us to gain enough relevant experience as a subcontractor to be able to win work and obtain the facility clearance needed to expand our presence with the Army.

### John Rogers
**President and CEO**
**TRINE Environmental Inc.**

The advice I'd give to any small business trying to work with the Army is [pay] attention to details. If you're prior service, you'll easily understand this concept. If you're not, learn it. To overcome obstacles, you must know your "enemy." The enemy for most small business is the RFP language. I had to learn to thoroughly read each RFP, look up each FAR clause—which is painful but beneficial—and then respond exactly as it's requested in the RFP.

Another key is to have no fear. Do not let the fear of being a young business deter you. If you can build the right team, age does not matter. A final key is to respond to sources-sought requests. Contracting officers pay attention to respondents. It's also a good way to encourage them to set aside potential solicitations. To date, I have two USACE [U.S. Army Corps of Engineers] contracts and [am] bidding on two more, one of which is a SDVOSB [service-disabled veteran-owned small business] set-aside.

### Francis Covington
**Managing Partner and CEO**
**Covington & Associates, LLC**

There is no open door currently that we have found that will allow new software to be reviewed and tested within the Army environment. What I mean by this is we have a dynamic solution and we have no door to open. We believe we have a niche market, but it's not working. We don't have a door to get into to present our solutions. Large firms have multiple doors that we just don't see.

### Manoj Bhatia
**President**
**Network Runners Inc.**

As a new small, disadvantaged business back in 2009, what surprised me the most was the importance given to the small business sector in the federal government procurement process. Our contracting officer was very supportive and understood the need for us to learn the process of working with the government. What I have learned since 2009—or, rather, have had reinforced to me—is the critical importance of small business performance. Without strong and reliable performance, we would not still have the work with the U.S. Department of Agriculture/National Institute of Food and Agriculture (USDA/NIFA), which was known as USDA/Cooperative Research, Education and Extension Service back then.

### Jacqueline K. Johnson, CFM
**Owner and CEO**
**Mercy Medical Supply LLC**

Being a small business owner has taught me to respect business owners and their businesses both small and great. I have learned that it takes a community. It is with this realization that I give my perspective of the small business set-asides, which are programs set up by the government to help small businesses to succeed. One of the greatest incentives that set-asides offer is that they gives minority-owned businesses, women-owned small businesses, 8(a), economically disadvantaged women-owned small business and SDVOSBs the opportunity to do business with the government. Set-asides give small businesses the opportunity to compete with larger businesses, and the opportunity to help grow the economy by creating jobs.

### Robert Severson
**President and CEO**
**The Severson Group**

As a small 8(a) and SDVOSB firm, we add the more direct and personal interface to the government in a way that large businesses will never be able to. Small businesses add superior response time and robust capability without the red tape and many approval processes for large business.

COMMENTARY

FROM THE DIRECTOR,
ACQUISITION CAREER MANAGEMENT
LTG MICHAEL E. WILLIAMSON

# HARNESSING *the* POWER *of* *SMALL*

## Our Soldiers count on the innovations of small business

The small businesses that make up a portion of our industrial base are as diverse as the men and women in uniform they support and, like our Army, they are unrivaled around the world. Small businesses make indispensable contributions to America's military strength and success. They are leaders in innovation, creating a wellspring of new technology, new products and more effective business processes.

Small companies introduce twice as many innovations per employee as large companies, including a disproportionately large share of the most significant innovations, according to a study commissioned by the U.S. Small Business Administration (SBA).

Think for a minute about some of the small business innovations that underpin our economic and military strength: the small computer from Apple, a company started with $1,350 in capital; the supercomputer from Cray; the planar integrated circuit originated by Fairchild; and the Xerox copier from a small business originally called Haloid. It is difficult to conceive of modern life without them.

**BATTLEFIELD ENABLER**
Soldiers assigned to the Arkansas National Guard conduct exercises in August 2015, during Decisive Action Rotation 15-09 at the National Training Center, Fort Irwin, CA. As the battlespace continues to evolve, small businesses will continue to play an essential role in addressing the Army's future defense needs. (U.S. Army photo by SPC Ashley Marble)

## GROUNDBREAKING CHANGE

In America's Army, we seek to harness these innovative talents for the benefit of our warfighters. Today, small business firms are critical enablers in the work we do. Take, for example, the PackBot by iRobot that deployed with our Soldiers to Afghanistan in 2002. First used to clear caves, it later performed a multitude of tasks to enhance situational awareness, reduce risk and increase the mission success of our men and women in uniform. Today, a great deal of groundbreaking technological change in the area of robotics comes from the commercial sector. We are constantly assessing which commercial innovations have military potential so that we can continue to achieve successes like the ones we've seen in robotics.

There are more than 29 million small businesses in the United States, creating seven of every 10 new jobs and employing just over half of the country's private-sector workforce. According to the latest SBA figures, small business accounted for 64 percent of new jobs in the 15 years from 1993 to 2012. In the post-recession period of 2009 to 2011, that figure was even higher, at 67 percent. These figures illustrate the strength of small businesses.

We are dedicated to increasing opportunities for small businesses to compete successfully for Army contracts, and to maintaining the Army's reputation as a premier organization for promoting and assisting small businesses.

Throughout the years, the Army has usually met or exceeded small business goals in every category, as assigned to it by DOD. Despite declining budgets, we have increased the percentage of contracts awarded to small businesses: in FY15, 31.6 percent of our procurements, equating to approximately $17.5 billion, went to small businesses. It is important that we maintain this level of support in the future.

## INHERENT INNOVATION

Evidence abounds that small business expertise and innovation help give our military its technological edge. Let me provide a few examples:

In the area of medical innovation, combat medics have one mission: keep the injured alive until they can be treated safely elsewhere. While survival rates have improved dramatically in

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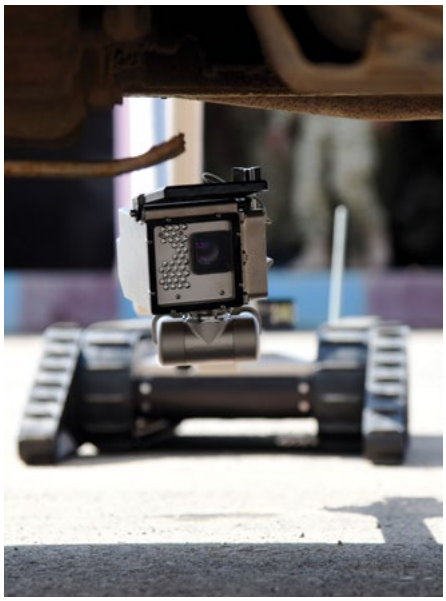


**SMALL OPERATOR MAKES BIG DIFFERENCE**
An iRobot 510 PackBot searches for explosive devices under a vehicle in Djibouti. Members of the Djibouti Armed Forces and explosive ordnance disposal technicians assigned to Camp Lemonnier learned how to operate the robot, an example of a capability that small business has made possible. (U.S. Air Force photo by SSgt Maria Bowman, 375th Air Mobility Wing)

**FILLING A GAP**
A hemostatic device called XStat, developed by a small business in Oregon called RevMedx, addresses one of the challenges that medics still face on the battlefield: uncontrolled bleeding. XStat aids in the battlefield treatment of gunshot and shrapnel wounds by allowing medics to inject compressed mini-sponges into open wounds. The mini-sponges expand up to 10 times their size and fill the cavity within 15 seconds of contact. (Photo courtesy of RevMedX)

the last few decades, one of the biggest challenges that medics still face is uncontrolled bleeding. RevMedx Inc., a small company in Wilsonville, OR, designed a first-of-its-kind hemostatic device called XStat for the battlefield treatment of gunshot and shrapnel wounds. It consists of a syringe 30 mm in diameter filled with compressed mini-sponges that, when in contact with blood or other fluid, expand up to 10 times their size and fill a cavity within 15 seconds of contact.

These sponges are designed to create a temporary barrier to blood flow and provide hemostatic pressure until the wounded can receive surgical care. Using a syringelike applicator, a medic can insert one end of the tube into a wound, push down on the plunger and release the sponges. To prevent the accidental retention of a mini-sponge in the wound, each one contains a radiopaque marker for easy detection with X-ray imaging, because X-rays will not pass through the marker. With approval from the U.S. Food and Drug Administration, the company made its first shipment of the XStat device to the U.S. military in April 2015.

The Hontek Corp., a small business in South Windsor, CT, received the U.S. Army Aviation Association of America's Materiel Readiness Award in 2009 for significant and lasting contributions to Army aviation by providing a solution to the severe and expensive damage to helicopter rotor blades caused by sand and debris erosion. Hontek developed and produced the HC05XP1 coating system, based on a heat-conductive, de-icing-capable, sprayable and moldable polyurethane, to protect rotor blades from rain and sand with no in-flight operational limitations.

Gone were blade tape, daily blade maintenance and extensive downtime based on

**SNOW JOB**
SGT Cody Hunt, with the Supreme Headquarters Allied Powers in Europe Helicopter Flight Detachment, checks the de-icing of the blades on top of a UH-60A Black Hawk helicopter, while SGT Alex Spaulding continues the flight checks before a logistical mission flight in February 2015, on Chièvres Air Base, Chièvres, Belgium. A small business, Hontek, makes the HC05XP1 coating system that protects rotor blades from the erosion that otherwise results from rain and sand exposure. (U.S. Army photo by Visual Information Specialist Pierre-Etienne Courtejoie, Training Support Activity Europe)

*In America's Army, we seek to harness these innovative talents for the benefit of our warfighters. Today, small business firms are critical enablers in the work we do.*

out-of-tolerance blades. Hontek-coated blades established a solid track record of zero main rotor blade replacements in Iraq and Afghanistan. When properly maintained, the coated blades should never erode.

Trace Systems Inc., a small business based in Tysons Corner, VA, has operated and maintained various networks and Warfighter Information Network – Tactical (WIN-T) satellite terminals in Afghanistan and managed more than 20 data centers throughout the region. Trace supports the defense of these networks by monitoring and detecting unauthorized applications, identifying and mitigating vulnerabilities and ensuring information assurance compliance across the network.

For example, Trace has upgraded WIN-T Increment 1 with colorless core capabilities that encrypt all classified and unclassified data as it is transported over satellites and line-of-sight links. This allows Soldiers to send information across the battlefield without fear of the enemy intercepting it.

## CONCLUSION

There are many other examples of small businesses that have contributed to our military and economic strength. My point is that the future readiness and effectiveness of our Army will be determined by our investment in discovery, creativity and innovation.

We know that tomorrow's battlespace will be different than any we've encountered. If we are to succeed in addressing the Army's future defense needs, we will need continued access to the most potent source of innovation and entrepreneurial talent in the U.S. economy: small businesses.

**HELP THE LITTLE GUY**
Small businesses without a dedicated government business development department can find it difficult to navigate the world of DOD procurement and compete with large companies that have staff dedicated to understanding DOD bureaucracy and processes. (Image by Jupiterimages/iStock/Thinkstock)

FROM THE ASA(ALT) SERGEANT MAJOR
SGM RORY L. MALLOY


# DIRECTION: 'MAIN STREET'

## Making the most of small businesses' strengths

Small businesses are the heartbeat of communities across America. During the recent Association of the United States Army (AUSA) convention, I had the privilege of engaging with several small businesses and saw firsthand the fine services and high-quality products they provide to our military. I like to engage with small businesses to ask how they are able to succeed in a marketplace that is not only tough to enter but filled with larger, experienced corporations that have vastly more resources to find opportunities and write the proposals that win government business.

One of the small businesspeople I spoke with represented a small, custom manufacturing firm that just two years ago had no prime defense contracts. Since then, the company undertook a defense market strategy, whereby it employs veterans in order to better understand warfighters' needs, to become a prime supplier to DOD with a commitment to bringing the highest quality and best value directly to the government. Through meticulous efforts, hard work and determination, this small business now holds multiple prime contracts with DOD and has made good on its commitment.

A program manager with the company summed up its success quite well. He said his company understood that, in the current budget environment, in order to be competitive it must provide warfighters the right product, at the best value and with the absolute best quality. An example is when the company was a subcontractor to a larger program in which they were making a carrying case for a product. The Army was faced with a challenge when the prime contract ended. There was a new need for the carrier, but the former prime was no longer interested in providing it. This small business saw the opportunity and competed and won the contract. Now it provides the same high-quality carrier to the government at a third of the cost. This is an example of a small business that doesn't just wait for opportunity to knock, but actively seeks it out.

## A HOST OF BENEFITS

We can gain much through acquiring the services and products of small businesses. In fact, the small business program was established not just to give "the little guy" a chance to compete on a level playing field, but also to:

- Realize higher potential for best value and critical cost savings.
- Reduce reliance on sole-source contracts and increase fair and healthy competition.
- Increase our base of first-tier prime suppliers and direct product manufacturers for the warfighter.
- Increase product response times by reducing corporate layers and by simplifying coordination and communications between the government and the prime supplier.
- Provide a higher quality of one-to-one direct customer support and bring customer service and support to a more personal level.
- Provide lower overhead with higher potential cost savings to the government.
- Reduce the risk to America's strategic defense industrial base, sustaining and providing responsible and responsive wartime surge capability at little or no additional cost.
- Provide mutually beneficial and positive social and economic impacts on local communities.

## REMOVING OBSTACLES

As successful as small businesses can be at providing what the Army needs, one of the issues that I hear small businesses discussing is the need to increase search visibility and small business awareness through proper North American Industry Classification System (NAICS, pronounced "nakes") code assignments. The problem with NAICS code assignments is that the system "was developed specifically for the collection and publication of statistical data to show the economic status of the United States," according to the NAICS website. The "definitions were not developed to meet the needs of procurement and/or regulatory applications," but they are used for that purpose.

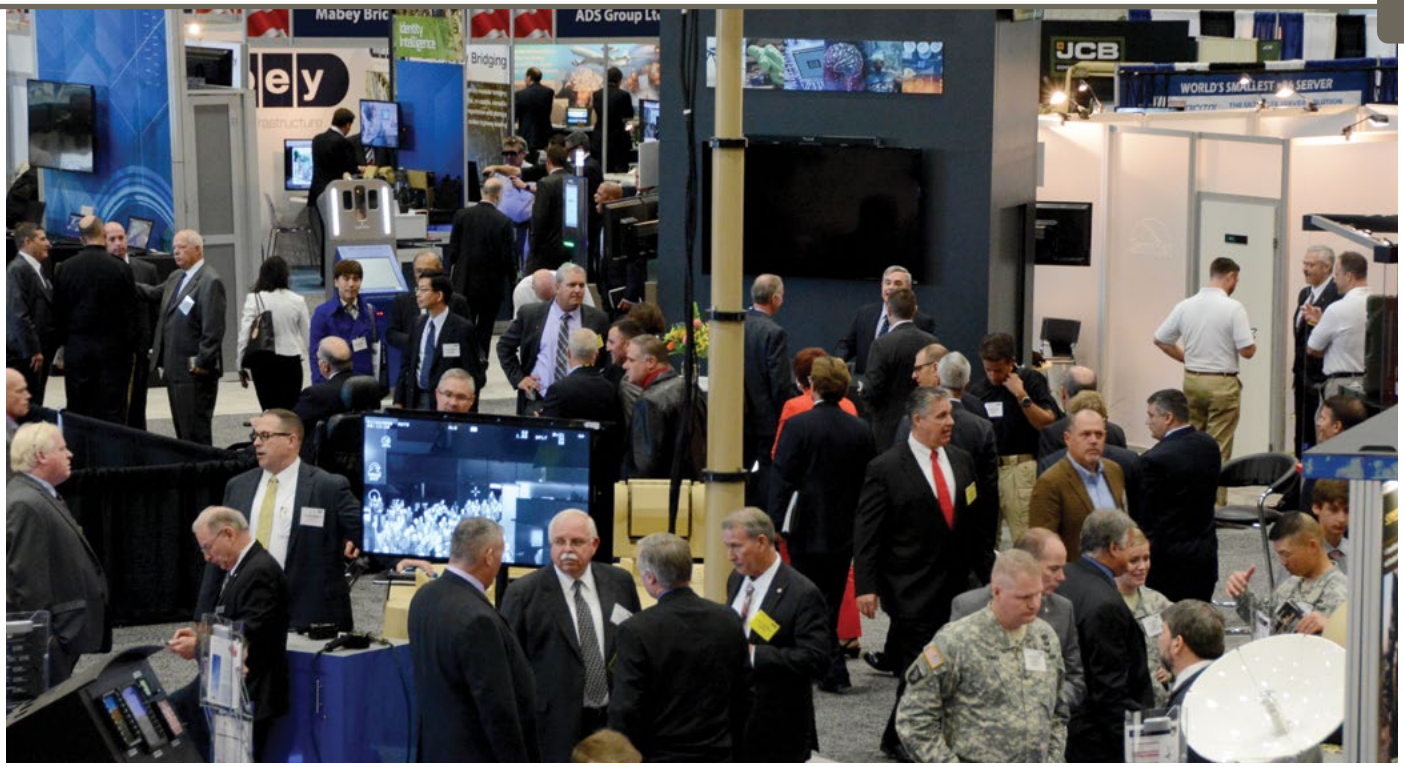
This is a significant reason for the inability of small businesses to comprehend and effectively participate in the DOD acquisition process. It often leads to mutually missed opportunities for small businesses and DOD. Currently, small businesses have a difficult time finding the right information in order to make a bid on a contract. The required process and language from the government pose disadvantages to small businesses. Large companies often have, as part of their business model, a department that specializes in government business development, contracting and proposals. Small businesses often lack the resources to invest in such resources.

Improving this process will benefit all businesses, small and large. Likewise, creating an automated, online system with prompts, defined selections and drop-down menus could immediately increase small business competition by simplifying and reducing processing times for the source approval request and alternate source approval request. Additionally, standardized entries may allow for a much quicker approval process by using common terms and required regulatory information for contracts, by means of a drop-down menu. Providing a single point of contact or a site to check on the status of a contract as well as any anticipated dates for approval and award of the contract would also attract small business. An automated system of this kind would allow interested small businesses to drill down into the requirements in more detail, to determine whether they have a viable opportunity to compete.

Finally, providing a face, instead of just a series of websites, may go a long way

**MEET AND GREET**

Reeg Allen, director of business development for RE2 Inc., demonstrates a TALON robot at an October 2015 Small Business Innovation Research event at Picatinny Arsenal, NJ. Increasing face-to-face interaction between small businesses and government might help expand small business opportunities even more than making automated processes more efficient. (Photo by Todd Mozes)




**SMALL BUSINESSES AT AUSA**
Small companies with unique products or services had their own showcase at the 2015 AUSA Annual Meeting and Exposition. Helping small businesses get more government work isn't altruism: The government benefits from more competition, more suppliers, better customer service and faster production. (Photo courtesy of AUSA)

in encouraging and assisting small businesses to participate in acquisition processes. We have all been discouraged in our personal lives by less-than-helpful FAQs on websites or emotionless automated phone systems. We could assign a single senior defense program manager for all DOD requirements. A responsive help line with real-time answers and assistance could provide a personal voice to answer potential vendors' process questions and attract more small business partners. Our goal should be to actively encourage full participation, not just passively accept the participation of only those businesses lucky enough to stumble on the right opportunity or large enough to have a staff capable of navigating the many levels of government bureaucracy.

Having a greater number of small businesses as part of the U.S. defense industrial base benefits not only the government, but also communities across America by providing employment opportunities and economic growth potential. Increased participation also strengthens civilian-military ties and encourages a sense of service among those supporting our military. As we continue to work toward more innovative ways to bring small business into DOD, we should not lose sight of the fact that although most victories are won on the battlefield, some are won on Main Street.

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*SGM RORY MALLOY assumed duties as the sergeant major to the principal military deputy of the assistant secretary of the Army for acquisition, logistics and technology in November 2014. He holds an MBA in human resource management, summa cum laude, from TUI University, and a B.S., cum laude, in business management from Excelsior University. He has served in every infantryman leadership position from team leader to sergeant major, including 12 years as a command sergeant major, drill sergeant, Drill Sergeant of the Year, ROTC senior instructor, operations sergeant major, battalion command sergeant major (Operation Iraqi Freedom (OIF) 1, 2003-04), brigade combat team command sergeant major (OIF 4, 2006-07), Joint Readiness Training Center and Fort Polk command sergeant major, division command sergeant major (OIF 2009-10) and the 20th commandant (second enlisted commandant) of the U.S. Army Sergeants Major Academy.*

**EQUIPPED FOR SUCCESS**
The search lights of MRAPs cut through the haze of a February 2010 sand storm as the U.S. Army 573rd Clearance Company, 1st Engineer Battalion, 4th Infantry Brigade Combat Team, 1st Infantry Division conduct a route clearing mission near Tikrit, Iraq. Working on the MRAP program at the height of the war effort, Fahey witnessed DOD's ability to move quickly in acquisition when it wants or needs to, and sought to bring that same energy to his subsequent projects. (Photo by CPO Michael Heckman, Joint Combat Camera Center Iraq)

# EXIT *STRATEGY*

## Shaping the Army system-of-systems mission completes a rewarding acquisition career.

*by Mr. Kevin Fahey*

My last job in the Army was also the strangest.

In the spring of 2014, I came to the Pentagon after spending 10 years in Michigan as Program Executive Officer (PEO) Ground Combat Systems, then PEO Combat Support and Combat Service Support. As a PEO, I was familiar with the System of Systems Engineering and Integration (SoSE&I) Directorate, under the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)). Like others in the PEO community, I thought SoSE&I sometimes brought value and much needed capability, but just as often got in the way.

Now I was taking over as SoSE&I's executive director, with direction from the Army acquisition executive (AAE) to work cross-portfolio integration on critical Army priorities. The list included not just the Network Integration Evaluation (NIE) and capability set (CS) fielding that had traditionally been SoSE&I's domain, but also cyber acquisition, the Common Operating Environment (COE) and eventually Assured Positioning, Navigation and Timing (A-PNT).

With these responsibilities, SoSE&I has become a unique hybrid within the Army: a staff organization that also executes. Unlike other staff elements or PEOs, we don't fall neatly into one category. We do the staff stuff, like review program protection plans and interpret systems engineering policy guidance for the PEOs. But we also execute the NIE, CS fielding, an integrated master schedule (IMS) of ASA(ALT) programs,

and other major efforts that directly touch Soldiers and Soldier capabilities.

So it is a strange space to operate in—but, in my view after 18 months on the job, an unequivocally necessary one. The Army has learned the hard way what happens when we deliver capabilities in stovepipes: higher costs, more training time, more field service representatives and more Soldiers struggling to use our systems to the intended effect.

The acquisition community owes them a better approach, one that is synchronized up front across PEOs and portfolios to develop, evaluate, deliver and support capabilities as a whole. We've made progress, but we're certainly not there yet. Long after I disappear into retirement, that is the central mission that will drive SoSE&I's continued evolution as an enduring Army resource.

**RECONNECTING**
Fahey speaks with leadership from SoSE&I's Capability Package Directorate about new vehicle designs enabling expeditionary command posts during a September 2015 visit to the Network Integration Evaluation (NIE) 16.1, Fort Bliss, TX. Stepping away from the "bureaucratic churn" and spending time with Soldiers in the field helps refresh and refocus, Fahey said. (Photo by Vanessa Flores, SoSE&I Public Affairs)

## FINDING A VOICE

To understand SoSE&I, you have to understand its roots. While the system-of-systems engineering methodology has long existed in the military and industry, the Army embraced it full-scale in the early 2000s with Future Combat Systems (FCS), the dazzling modernization program that combined a fleet of lightweight, electric-powered combat vehicles with a wireless communications network, drones, sensors, ground robots and other technologies into a complete package for brigade combat teams (BCTs).

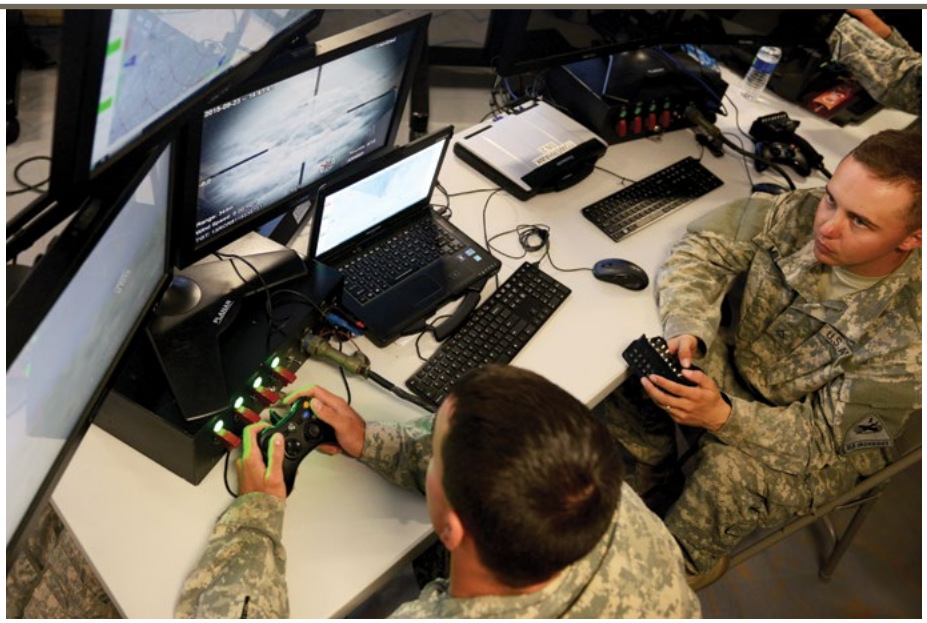
FCS was cancelled in 2009 by DOD, which concluded that the FCS vision had not kept up with the lessons of counterinsurgency and close quarters combat in Iraq and Afghanistan. But several technologies and concepts were salvaged—including the importance of the system-of-systems approach, where the Army imposes engineering discipline to emphasize interoperability throughout the capability development process, rather than building systems independently and integrating them after the fact.

After FCS, this engineering and integration mission fell to the newly created PEO Integration, which ASA(ALT) soon absorbed as a headquarters function known as the System of Systems Integration Directorate. The organization later combined with the existing ASA(ALT) team for engineering oversight, thus forming SoSE&I.

As this slightly convoluted history lesson shows, there hasn't been a natural and longstanding home in the Army for what we do. There is widespread agreement that cross-portfolio system-of-systems engineering and integration is required to deliver our best products to the Soldier. The questions arise in the details of what that encompasses and how we accomplish it.

When I arrived at SoSE&I, I sought to understand the same thing by completing an excruciating troop-to-task effort, stretching across our four major workforce locations of Fort Bliss, TX; Warren, MI; Aberdeen Proving Ground, MD; and the National Capital Region. This restructuring produced an organization better aligned to execute major Army priorities such as NIE, CS fielding, COE and Force 2025 and Beyond.

To keep ourselves honest—and frankly, to satisfy my own curiosity as a former PEO—I also used the troop-to-task exercise to explore whether any of the functions of SoSE&I would be better performed by the PEOs. But the more I looked at it, the more the answer was no. The PEOs do an excellent job precisely because they are so focused on executing within their portfolios and areas of expertise. This natural bias makes it hard for any single PEO, even with the best of intentions, to execute system-of-systems tasks that cut across several PEOs. I



**PATROLLING THE PERIMETER**
Soldiers inside their tactical operations center remotely control multiple weapon systems on the perimeter, reducing the number of troops needed for perimeter security, at an expeditionary base camp on Fort Bliss, TX, as part of NIE 16.1, conducted in September 2015. SoSE&I's hybrid mission—conducting staff and policy work while also executing direct efforts like NIE—presented a leadership challenge for Fahey in his last Army job. (Photo by David Vergun, Army News Service)

discovered that even in instances when I tried to give work away, the affected PEOs would rather have SoSE&I at the table to help facilitate. We are uniquely situated to play honest broker: to discover and raise the issues that arise from program interactions, to offer options backed by information and analysis and then to back off and let the PEOs decide how to execute. In this way, we don't step on toes, but try to make their jobs easier and be a headquarters-level champion when they need one.

For example, our team recently managed a major, cross-PEO analysis supporting the network modernization plans for armored BCTs. Incorporating such complex factors as the schedules for the Abrams, Bradley and Armored Multi-Purpose Vehicle (AMPV); the procurement availability of different tactical radio systems; and an Army leadership review of the appropriate network basis-of-issue across BCTs, SoSE&I collaborated with numerous program stakeholders to identify risks, opportunities and decision points. This effort was made possible by collaboration with the PEOs and use of the SoSE&I IMS, which tracks more than 100 ASA(ALT) programs to identify interdependencies and align fielding plans with Army modernization objectives such as the Mission Command Network of 2020 and the COE. It's a great tool and a huge step in the right direction to drive more coordinated and better informed testing, production, fielding and training.

## STILL EVOLVING

Even as the troop-to-task aligned SoSE&I resources to execute top Army priorities, we continued to inherit new missions. Within the last 18 months, the AAE assigned SoSE&I oversight of cyber acquisition and A-PNT, with the rationale that both are critical capability areas affecting all portfolios within ASA(ALT), and that the tools we field need to work together as a system of systems. Results thus far prove the benefits of a focused, coordinated effort.

SoSE&I's work has also expanded to include more coordination across the enterprise—not just within the Army, but across and outside of DOD. In PNT, for example, the services have adopted a common framework for describing PNT threat environments and capabilities, and the Navy and the Air Force have initiated development of PNT architectures modeled after the Army's system-of-systems architecture for A-PNT. The Army has also secured formal memorandums of understanding to leverage other agency funding, knowledge, technology and analytical efforts to improve Army PNT capabilities.

As our scope grew, my leadership challenge became less about explaining SoSE&I's role to our stakeholders and more about how to execute greater responsibilities with the same resources. Cyber, especially, is like an elephant feeding: It just keeps demanding more of our time and talent. And all of our diverse focus areas—such as cyber and COE—are also tied into the continuous NIE cycle, which requires rigorous preparation and integration efforts for each unique exercise.

Despite the demands, it was tremendously difficult for me to decide to leave this job in what I consider to be midstream. I am usually a three- to five-year guy: To make the most impact, I believe you should stay in a job at least three years and no more than five. I left this one after just 18 months, because, after 34 years of federal service, I knew I was ready to move on.

But I depart knowing that SoSE&I is flourishing in our hybrid role, focused on Army priorities. The organization's main

task now, in partnership with the PEOs and Army staff, is to build the processes, metrics and culture to make this hard work endure. For example, the PEOs are already leveraging the IMS to focus capability development on integrated fieldings to organizations like infantry, Stryker and armored BCTs. As we continue to use the tool and incorporate more information, their feedback will inform adjustments to make the IMS more valuable to decision makers across ASA(ALT) and the Army staff.

Additionally, by FY17, the Sustainable Readiness Model (SRM) will officially replace Army Force Generation—ARFORGEN—as the Army's sustaining readiness concept for force generation. The SRM requires the acquisition community to be tightly linked on fielding and training to units—there is no room for individual "drive-by" fieldings. The Army is leveraging the processes and lessons learned through SoSE&I's five years of experience in CS fielding to execute ASA(ALT) support to SRM development.

## FAREWELL TO A REWARDING CAREER

Strange as it sometimes could be, my experience at SoSE&I was actually a very appropriate capstone to my career as a systems engineer and in the Acquisition Corps. In any job in our field, the challenge is how to align the requirements, resources and acquisition decisions to move forward on a particular portfolio. Having worked on the Stryker and Mine Resistant Ambush Protected (MRAP) vehicle programs at the height of the war effort, I had witnessed DOD's ability to execute rapid acquisition when the desire is there to do it. That intense and rewarding experience informed my approach to SoSE&I's efforts in cyber, where we took the initiative to tailor existing acquisition methods to be responsive to evolving threats.

Working in acquisition, as I have for most of my career, it's easy to blame the process. To flourish within the bureaucracy, I found it more productive to focus on doing what it takes to get timely decisions—such as creating the right governance forums with the right stakeholders at the outset of a new initiative, so they didn't feel snubbed and try to intervene down the line. At the same time, I also made it a point to get away from the bureaucratic churn to spend time with units, Soldiers, test sites and industry, which deepened my understanding of the acquisition continuum and refreshed my well-being for the next round. It does not get any better than working side-by-side with those who serve our country.

That's why this retirement is bittersweet. Although I've been a part of exceptional programs, I'm most proud of the people who work like their lives depend on it, because somebody else's does. A lot of people in our business have truly been in a marathon for the past 15 years, and continue to stick with it because they are making a difference in Soldiers' lives. Their amazing efforts will stay with me long after I walk out the Pentagon door.

**AN AWARDING CAREER**
Fahey and COL Terrence Harris, director of the SoSE&I Capability Package Directorate, present awards in September 2015 to the SoSE&I Fort Bliss workforce. Fahey says that although he was part of incredible programs during his career, he is most proud of "the people who work like their lives depend on it, because somebody else's does." (Photo by Vanessa Flores, SoSE&I Public Affairs)

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*MR. KEVIN FAHEY retired from civil service on Dec. 1, 2015, as executive director for SoSE&I in the U.S. Army Office of the ASA(ALT). He was selected for the Senior Executive Service in 2000 and holds a B.S. in industrial engineering/operations research from the University of Massachusetts. He is Level III certified in program management; Level III certified in systems planning, research and development, and engineering - systems engineering; and Level II certified in systems planning, research and development, and engineering - program systems engineering. He has been a member of the Army Acquisition Corps since 1992.*

# Singing *from the* Same Sheet *of* Music

When a major new government business system debuts to a Bronx cheer rather than hearty applause, there's a reason, and it's probably not what most people expected.

*by Mr. Thom Hawkins and Mr. Matt Choinski*

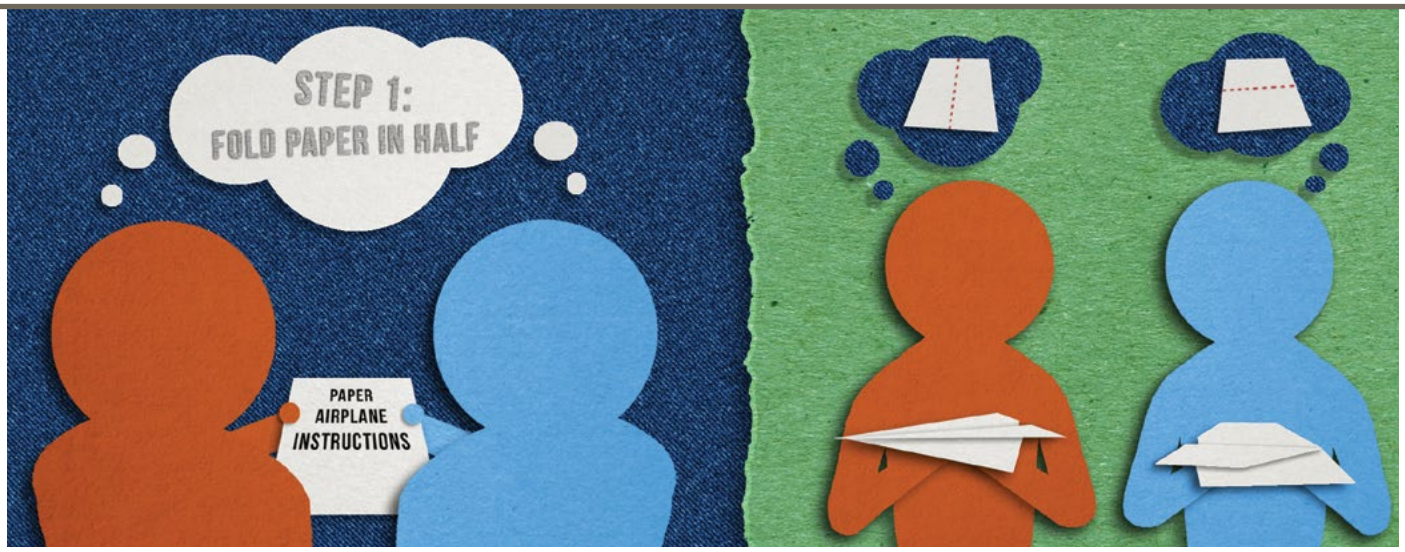
We all have that friend or relative who loves to sing, but they're terrible. They're onstage, giving it their all. Meanwhile, the audience cringes.

The problem is that, when it comes to debuting a new business system, sometimes we are the ones on that stage giving the cringeworthy performance.

More than once, government representatives introducing a shiny new business system have wound up with egg on their faces when the system failed to meet expectations. There's almost a thrill in reading the inevitable media postmortems, matching our own assessment as users of these systems.

While placing the blame on either the government or the development contractor can be entertaining, it ignores the environment in which this exchange takes place, the methods of communication and the process as a whole.

The result remains the same: a system that might meet the needs of its users as described in documentation, but does not meet their expectations. To leverage the terms of usability guru Donald Norman, there is a "gulf of execution" between




**DO WHAT?**
Poor feedback, coupled with the subjectivity and ambiguity of language, can hamper communication between user and developer. But providing opportunities to see a problem through another's perspective improves communication about requirements and expectations and yields a better product. (Image courtesy of PEO C3T)

expectations and results, meaning that users have an image of what they asked for, and it's not what was delivered—a promised "chicken dinner" turns out to be dinner for a chicken.

## MEASURING THE GULF

For business systems, which are based on the automation of business processes, there are three major reasons for this gulf:

- The software developer does not sufficiently understand the processes that the software is automating.
- The process owners do not sufficiently understand software development.
- The target process is not mature enough to be automated.

Bridging the gap between process owners and software developers is nominally covered with one or more documents capturing the requirements in terms of user needs or capability development. As it turns out, often these documents are the most direct interface between the owners of the process being automated and the developers performing the automation.

## COMMUNICATION BREAKDOWN

Many classes in effective communication include an exercise in which one person or group writes a set of instructions for a task—making a paper airplane, for example, or a peanut butter and jelly sandwich—and another person or group has to follow those instructions, literally, to produce the airplane or sandwich. The results are often hilariously disastrous.

Two lessons can be gained from this exercise. First, language can be subjective; the more ambiguous the instructions, the more variety in the outcome. (This is also known as "the semantic problem," which is to say that we don't all use the same words in the same ways.) Second, feedback between sender and receiver is crucial; without the ability of the instruction reader to follow up with the instruction writer, communication breaks down.

Documents communicating requirements for software development often suffer from both of these problems, further exacerbated by the lack of common experience between the process owner writing the document and the software developer reading it.

Traditional software development models, both sequential (e.g., waterfall) and incremental (e.g., evolutionary) do nothing to address this issue explicitly. The concept

*Even beyond testing, users will never be shy about providing assessments of our systems, and our attention to their detail will improve the usability of future systems.*

of the waterfall developmental model comes from Dr. Winston W. Royce's 1970 paper "Managing the Development of Large Software Systems," in which he described the waterfall model as "risky" and noted that it "invites failure," recommending an incremental model instead. At best, though, incremental models provide an opportunity for endless cycles of user evaluation and fixes based on an interpretation of user needs.

Agile software development often includes a user representative to provide that validation perspective in real time, but representation does not guarantee that the process owner and software developer understand each other, any more than a requirements document does.

## SWAPPING ROLES

The gulf of expectation can be better bridged by exchanging the traditional roles of developer and user. The more we create opportunities to see a problem through the other's perspective, the better our communication about requirements and expectations.

The user can become more involved in the development process, for both business systems and weapon systems, by evaluating mock-ups and prototypes through user juries and Soldier feedback, as the Army has done successfully with its situational awareness and friendly force-tracking tool Joint Battle Command – Platform (JBC-P) and its network backbone, Warfighter Information Network – Tactical (WIN-T); and through the semiannual test and evaluation process known as the Network Integration Evaluation (NIE).

The Army evolved JBC-P as the successor to Joint Capabilities Release and Force XXI Battle Command Brigade and Below/Blue Force Tracking by

**ALL SYSTEMS OPERATIONAL**
Using a joystick similar to one found on a video game console, a Soldier remotely maneuvers equipment at the Expeditionary Base Camp during NIE 16.1, held in September 2015 at Fort Bliss, TX, and White Sands Missile Range, NM. NIEs give Soldiers the opportunity to use and critique emerging technology; feedback from the exercises has been used to mature or restructure some programs and to reallocate resources to other priorities. (U.S. Army photo by Vanessa Flores, Assistant Secretary of the Army for Acquisition, Logistics and Technology System of Systems Engineering and Integration Directorate Public Affairs)

**PROVIDING THE USER PERSPECTIVE**
Soldiers with the 3rd Armored Brigade Combat Team, 3rd Infantry Division evaluate upgrades to JBC-P, the Army's next-generation situational awareness capability, during a user jury in August 2013 at Fort Benning, GA. Soldiers were involved early in the process of developing JBC-P, evaluating mock-ups and prototypes and providing feedback as the system evolved. (U.S. Army photo by Nancy Jones-Bonbrest, PEO C3T Public Affairs)

incorporating user feedback and lessons learned from several Soldier-based user juries, as well as testing and evaluations at the NIEs. Validation by the Army's customer—Soldiers—was of notable importance throughout the process, and their feedback was actively incorporated as JBC-P continued to evolve. The resulting capability, which was fielded to the first unit last year, includes a new user interface with intuitive features like touch-to-zoom maps, drag-and-drop icons, chat rooms and drop down menus.

*The gulf of expectation can be better bridged by exchanging the traditional roles of developer and user. The more we create opportunities to see a problem through the other's perspective, the better our communication about requirements and expectations.*

Even beyond testing, users will never be shy about providing assessments of our systems, and our attention to their detail will improve the usability of future systems. Soldier feedback from theater and several NIEs on the Army's tactical network infrastructure, WIN-T, led to reductions in the time and complexity of system startup, from a sophisticated system with dozens of buttons and switches that took 12 minutes to power up, to a streamlined system with a single button that could power up in less than half that time.

## PLAYING WELL TOGETHER

The Army conceived of the NIEs to put emerging technology into the hands of Soldiers in an integrated environment to get feedback. This feedback, along with lessons learned, has allowed the Army to mature certain programs, restructure or terminate others, reallocate resources to other priorities and deliver on nonnetwork and nonmaterial solutions.

**TALKING IT THROUGH**
Article co-authors Thom Hawkins, left, and Matt Choinski work on communicating requirements for an upcoming project. (U.S. Army photo by Nancy Jones-Bonbrest, PEO C3T Public Affairs)

Providing the system developer with the user's perspective can be more challenging, especially with weapon systems. For business systems, it should be less complicated. One solution is to embed the software developer in the process itself, shadowing the process owner to understand the process, how it works and the exceptions to the rules that often hamper acceptance of an automated process.

For example, knowing the best contract vehicle can give the developer and user flexibility. While a firm fixed-price contract would be best to use if the system specifications are well-developed, a cost-plus contract may be used if some of the specifications are unknown. This is an avenue for "software services," which could include in the scope having the developer learn about the process and how the user interacts with it, rather than automating based simply on interpretation of written specifications.

In many cases, the business processes themselves may simply be too immature to automate. In that case, the embedded

**MAKING PROGRESS**
Soldiers assigned to the 2nd Armored Brigade Combat Team, 1st Armored Division conduct patrols during NIE 16.1, held in September 2015 at Fort Bliss, TX, and White Sands Missile Range, NM. The Soldiers operated combat and tactical vehicles integrated with WIN-T Increment 2. Developed under a plan that incorporated Soldier feedback early and often, the system offers connectivity rivaling that found in a stationary command post. (U.S. Army photo by Amy Walker, PEO C3T Public Affairs)

developer could assist the process owner in maturing the process to the point where it can be automated. To effectively mature processes and gauge when they are ready for automation, we need a scale to measure process readiness, similar to what exists in DOD for technology or manufacturing.

## CONCLUSION

It's impossible to sing together if we can't hear each other. Building a common understanding of requirements and expectations by exchanging roles ensures that we're singing from the same sheet of music.

As employees of the federal government, funded by taxpayer dollars, we need to remember that we are the ones onstage. We must learn to not just minimally communicate with our users, system developers and other stakeholders: We must invite them to the chorus and learn to sing in harmony.

*For more information, go to* ***http://peoc3t.army.mil/c3t/****.*

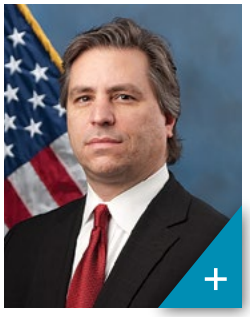
*MR. THOM HAWKINS is the continuous performance improvement program director and chief of program analysis for the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T). He holds a Master of Library and Information Science degree from Drexel University and a B.A. in English from Washington College. Hawkins is Level III certified in program management and Level I certified in financial management, and is a member of the Army Acquisition Corps. He is an Army-certified Lean Six Sigma Black Belt and holds Project Management Professional and Risk Management Professional credentials from the Project Management Institute.*

*MR. MATT CHOINSKI is a senior software developer at Data Systems Analysts Inc., currently supporting MilTech Solutions within PEO C3T's Project Lead Network Enablers. He holds an MBA from Loyola College and a B.A. in business administration from Towson University.*

USAASC PERSPECTIVE

FROM THE DIRECTOR,
U.S. ARMY ACQUISITION SUPPORT CENTER

# *Establishing* THE SMALL BUSINESS *Career Field*



***Craig A. Spisak***
*Director, U.S. Army*
*Acquisition Support Center*

## A continuous commitment to develop the Army Acquisition Workforce

In FY14, small businesses made up 23 percent of DOD's prime contracts, receiving about $53 billion in work. The Army's contribution to that total was just over $19 billion or 36 percent. In June 2015, the U.S. Small Business Administration recognized DOD for its commitment to improving small business procurement by giving it an "A" on its Small Business Federal Scorecard. This success emanates from the hard work, dedication and expertise of the DOD acquisition contracting professionals who have been fostering relationships with small businesses for decades.

For years, small business procurement was just one of the numerous duties performed by the already encumbered contracting specialists, and many were "dual hatted" as small business specialists. But as our goals for small business procurement progressed and we better understood that the process had many opportunities for greater effectiveness and efficiency, DOD realized the need to better equip and professionalize this community by creating the small business career field.

### A HEIGHTENED FOCUS

DOD launched the new small business acquisition career field, to better meet its need not only to work with small business, but also to track that work. The establishment of the new career field resulted from several years of work, beginning in 2012, by a small business functional integrated product team (FIPT). The FIPT's functional lead's mission was "to transform the small business workforce into a highly skilled, business-oriented force that provides innovative, efficient and effective influence to [DOD's] readiness and technological superiority," according to the DOD Office of Small Business information guide to the small business career field.

The Better Buying Power 2.0 memo, issued in April 2013, furthered that vision and directed the small business functional lead and Defense Acquisition University (DAU) to establish a certification curriculum. On Oct. 14, 2014, the small business career field was established to be aligned with the statutory authority and principles of the Defense Acquisition Workforce Improvement Act. DOD components have until Oct. 1, 2016,


**BIG TURNOUT FOR SMALL BUSINESS**
LTC Amanda Flint addresses attendees during the U.S. Army Mission and Installation Contracting Command's acquisition forecast open house, which was held in February 2015 and attracted more than 225 representatives from small businesses. The DACM's efforts to develop and implement the small business ACF aim to strengthen the Army's ability to leverage innovations and successes that often originate with small businesses—to ultimately benefit the warfighter. (Photo by Natasha Brown, Fayetteville Technical Community College)

to identify their acquisition workforce members who perform more than 50 percent of their duties on small business functions. This will allow the completion of the small business curriculum, which is currently in the pilot phase.

## BEGINNING THE JOURNEY

The USAASC Office of the Army Director, Acquisition Career Management (DACM) and the Army Office of Small Business Programs are partnering to implement the newly established career field.

As with all of our acquisition career fields (ACFs), we listen and learn from our workforce with a continual dialogue to better understand their needs and goals. We apply lessons learned from other ACFs to identify the gap between where we are today and where we see ourselves needing to be. As a collaborative community, we are addressing the gaps by developing and maintaining various training, educational and experiential programs, including DAU training classes, the Acquisition Leadership Challenge Program and the Competitive Development Group/Army Acquisition Fellowship, to name just a few. It is our enduring mission to provide the workforce, including small business specialists, the skill sets needed to be highly successful and competitive in an ever-changing and complex military acquisition environment.

## INTRODUCTION TO SMALL BUSINESS

DAU released the first course focused on small business, SBP 101, Introduction to Small Business Programs, Part A, as a pilot, distance-learning course in November 2015. The pilot was a forum of selected DOD small business professionals from various demographics, skill sets and experience levels, each offering insight and sharing experiences to help establish a certification curriculum for the newest ACF. It also featured small business cases and success stories that have contributed to the overall success of DOD procurement.

This January, DAU will roll out the next small business-focused course, SBP 102, Introduction to Small Business Programs, Part B, at DAU's Capital Northeast campus on Fort Belvoir, VA. Some of the participating students from SBP 101 will have the opportunity to attend and provide continuity to the training and development objectives.

## CONCLUSION

Together with the DACM office and the Army OSBP, we will develop an Army small business workforce email notification process to provide the Army Acquisition Workforce with updates and progress reports on the implementation of this new and vital career field. But it takes more than a notification process to build and maintain a successful career field.

The small businesses with which the Army does business, and those it will do business with in the future, constitute a community that is critical and integral to accomplishing the diverse missions of Army acquisition. Its history of innovative ideas and commitment has continually assisted our success, and it is to our advantage to find ways to train and develop the workforce to work effectively with small business. It is my hope that the creation of the small business career field will solidify our partnership with small business as we continually work to provide positive acquisition outcomes for our Soldiers.

# SPOTLIGHT:
## MS. BRITTANY CECIL

### Fact-finding internship leads to full-time position

**MS. BRITTANY CECIL**

**COMMAND/ORGANIZATION:**
Enhanced Army Global Logistics Enterprise and Sustainment Contracting Division; Army Contracting Command – Rock Island

**TITLE:**
Contract specialist

**DAWIA CERTIFICATIONS:**
Level II in contracting; Level I in program management

**YEARS OF SERVICE IN WORKFORCE:** 5

**EDUCATION:**
MBA, University of Iowa (expected in January); B.A. in accounting and business administration, Monmouth College

Call it a fact-finding mission: Brittany Cecil took a Student Career Experience Program internship at Rock Island Arsenal, IL, six years ago while still in college because she wanted to get work experience and learn more about the biggest employer in her hometown. When she started her internship, as a program assistant in the Army's Logistics Civil Augmentation Program, she wasn't sure what direction she'd take after it ended.

"I didn't know where I wanted to work after graduation," she said. "I was interested in seeing how the military operated, and I was also interested in finding out more about the arsenal." As it turns out, she liked what she saw. She came back after graduation and has been there ever since.

"I came back because the government had a lot to offer with respect to learning, opportunities, promotion and creating the perfect work-life balance. During my internship, I just got a glimpse of the different processes and programs related to Army contracting." She's now a contract specialist in the Enhanced Army Global Logistics Enterprise (EAGLE) and Sustainment Division with the Army Contracting Command – Rock Island, where she has worked for the past five years.

A few months ago, Cecil was one of 20 members selected for the Army Acquisition Workforce Advisory Board (AAWAB), created by LTG Michael E. Williamson, the principal military deputy to the assistant secretary of the Army for acquisition, logistics and technology and director, acquisition career management. Williamson put together the AAWAB to provide a forum for open and honest discussion among representatives of varying experience levels across acquisition, and to gather feedback and suggestions concerning career development initiatives.

She's learned a lot from her involvement with the AAWAB. "I'm probably the youngest person on the board, and I've been in contact with people from all different organizations and different roles and responsibilities. I've been

able to gain insight into what other groups are facing relative to training, education and recruitment, and get ideas from how they're responding to the issues they face."

**What do you do, and why is it important to the Army or the warfighter?**

I work on pre-award actions for the EAGLE Program for maintenance, supply and transportation services across the globe. This entails an extensive source selection process. We ensure that the warfighters are receiving the goods and services they need to accomplish their missions. Our command strives for the best value in our contracts, and procuring services at a fair and reasonable price means that any saved dollars can be applied to other Army programs and assist other Soldiers in need.

**What's the most challenging part of your work?**

The document review process is the biggest challenge, in terms of the time, people and revisions that are involved. But by anticipating the changes that leadership might make before we even submit the documentation, we're able to make that process go more smoothly. Most of my documents are reviewed by the same people, so I have an idea of what revisions they will request and can make those changes before sending it up the chain. Being proactive reduces the amount of time and the number of changes needed during reviews.

**What do you see as the most important points in your career with the Army Acquisition Workforce, and why?**

One important point was to successfully administer a multimillion-dollar contract by myself. This meant I had the knowledge and skill set to independently handle various issues as they arose. Another important point was being able to train new hires on the procurement process. This meant I knew enough to pass my knowledge to others. From an educational perspective, I took a class on management and organization as part of the coursework for my MBA. It helped me take a look at my own strengths and weaknesses and allowed me to figure out how I can be more effective at work by understanding how I react to certain situations and people. Overall, the course made me a better leader and showed me how to leverage the skills and experiences of the people I work with to help our team be more productive.

**Can you name a particular mentor or mentors who helped you in your career? How did they help you? Have you been a mentor?**

Christopher Dake, my current branch chief, has taught me to focus on the bigger picture during stressful situations. This has greatly helped because instead of falling apart during a crisis, I can remain calm and think from a broader perspective. This is a great leadership skill that I can use for the rest of my career. Susan Phares, my current division chief, has also been a mentor during my career. Sue was my branch chief when I was new to the source selection process, and was able to help me learn what I needed to address the complexities of the source selection process. This created the foundation I needed to become successful at future source selections and other contracting tasks. Chris and Sue continue to help guide me in my career.

I enjoy training and sharing any insights I have about acquisition with others. I have been a mentor in the sense that I help train interns on my team. I have found that I learn best through teaching others. Therefore, the process is mutually beneficial.

**What can you tell us about your involvement with the AAWAB?**

I can't go into the specifics—to maintain open communication among participants, we're prohibited from discussing the proceedings with anyone outside the board. Essentially, all of the participants have provided feedback on actions we've taken in regard to attracting, training and retaining personnel. We discussed what works well and what needs some improvement. We started with a long list of ideas and narrowed that down to a few initiatives that we're developing now. I have also given input on all of the training programs and tools and how well they work in our organization—the Acquisition Tuition Assistance Program, for example, and the Student Loan Repayment Program and DAU training.

**What advice would you give to someone who aspires to a career similar to yours?**

Be proactive, and take on as many challenging tasks as you can. You might struggle along the way, but one of the best ways to learn is through a challenge. I also recommend being proactive from a strategic perspective in your daily workload. There are many things that can go wrong or hold up the acquisition process. Thus, the more you can anticipate and plan for, the better position you will be in for your acquisition and your career.

***—MS. SUSAN L. FOLLETT***

# Honoring the Best

## DOD and Army acquisition award winners exemplify innovation, determination and excellence

*by Ms. Susan L. Follett*

Teams and individuals making noteworthy contributions to defense acquisition were honored for their efforts late last year, as the Office of the Undersecretary of Defense for Acquisition, Technology and Logistics (OUSD(AT&L)) and the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology released their annual Defense Acquisition Workforce Achievement Awards and Army Acquisition Executive (AAE) Excellence in Leadership Awards, respectively. The winners of the 2015 Major General Harold J. "Harry" Greene Awards for Acquisition Writing were also announced.

"It is important that we continue to recognize the outstanding contributions of our acquisition, technology and logistics professionals who are critical in supporting our warfighter and the defense mission," said the Hon. Frank Kendall, undersecretary of defense for acquisition, technology and logistics, in announcing the 2015 Defense Acquisition Workforce Achievement Awards.

Among the honorees is Joan L. Sable, chief of the Human Capital Initiatives Division for the U.S. Army Acquisition Support Center (USAASC), who received the AAE Acquisition Support Professional of the Year award. Sable used the Defense Acquisition Workforce Development Fund to add more than 230 new hires to the Army Acquisition Workforce (AAW), train more than 6,000 students and fund more than 150 training classes. She played key roles in several USAASC initiatives and programs, including on-boarding and mentoring, the Senior Rater Potential Evaluation and the Army Acquisition Leader Preparation Course. As a result of her efforts to professionalize the AAW, 98.5 percent are certified or within their allowed grace period.

"Since 1989, the Corps has provided an elite cadre of highly skilled, technically proficient professionals delivering world-class products to our Soldiers," said the Hon. Heidi Shyu, the AAE, during a Dec. 1, 2015, ceremony honoring the AAE award winners. "Today, more than 36,000 members are keeping our men and women in uniform well-equipped, well-protected and fully prepared for mission success in 140 countries around the globe. The support of our acquisition professionals to the Soldier is truly first-rate," she added.

One of the year's big winners was the Joint Program Office for the Joint Light Tactical Vehicle (JPO JLTV), which received awards from both organizations. The team received the OUSD(AT&L)'s David Packard Excellence in Acquisition Award—its second such award in three years—for innovative approaches to cost, schedule and performance execution and management. COL John R. Cavedo Jr., project manager for JPO JLTV, took home the AAE Award for Project Management/Product Director Office Professional at the O-6 level.

**AN AWARD TO DRIVE HOME PROFESSIONALISM**
LTG Michael E. Williamson looks on as the Hon. Heidi Shyu presents the JTLV team with the 2015 AAE Excellence in Leadership Award for Project Management/Product Director Office Team of the Year (O-6 Level) to COL Shane Fullmer, project manager; Brett Johnson, engineering chief; Anisah Zeghir, business chief; and Jennifer Beffrey, logistics chief. At right is Principal Deputy ASA(ALT) Gabriel Camarillo. (Photos by Doug Schaub, PEO for Simulation, Training & Instrumentation)

Also doubly honored was Dr. James C. Kirsch, chief engineer for the Joint Attack Munition Systems Project Office in Program Executive Office Missiles and Space (PEO MS). Kirsch received the OUSD(AT&L) Workforce Achievement Award for Engineering for his support of the Joint Air-to-Ground Missile (JAGM), and was named the AAE Engineering and Systems Integration Professional of the Year. "Simply stated, Kirsch is the single greatest contributor to the JAGM program's continued resurgence and success," stated MG L. Neil Thurgood, PEO MS, in nominating Kirsch.

The U.S. Army Contracting Command – Aberdeen Proving Ground, MD, received two AAE awards, with its 926th Contracting Battalion receiving Contracting Battalion/Defense Contract Management Agency (DCMA) Team of the Year honors, and Danielle M. Moyer taking home the award for Contracting Professional of the Year.

Winners of the 2015 Major General Harold J. "Harry" Greene Awards for Acquisition Writing were selected in four areas: acquisition reform and better buying power, future operations, innovation and lessons learned. The full text of the entries from the winners and those receiving honorable mention appear in the supplement to this issue of the magazine.

The complete list of award winners is below; Army recipients are highlighted in blue.

## 2015 UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY AND LOGISTICS ACQUISITION AWARDS

**David Packard Excellence in Acquisition Award**
Space Based Infrared System Geostationary Earth Orbit 5/6 Team, U.S. Air Force (USAF)
Ground/Air Task Oriented Radar Team, U.S. Marine Corps (USMC)
**Joint Program Office Joint Light Tactical Vehicles Team, U.S. Army and USMC**

**Should Cost and Innovation Award**
Armament Directorate, Air Force Materiel Command
E-2/C-2 Airborne Tactical Data System Program Office, Naval Air Systems Command

**Individual Achievement Award**
**Acquisition in an Expeditionary Environment:** Maj Rowdy E. Yates, USAF
**Auditing:** Peter Herman, DCMA
**Contracting and Procurement:** Ryan Connell, DCMA

RECOGNIZING LEADERSHIP
LTC Kevin S. Chaney, product manager for Aircraft Survivability Equipment Countermeasures in PEO Intelligence, Electronic Warfare & Sensors, accepts the award for Product Management/Product Director Office Professional of the Year (O-5 Level) from the Hon. Heidi Shyu as LTG Michael E. Williamson looks on.

EXCELLENCE IN CONTRACTING
The Hon. Heidi Shyu presents Danielle M. Moyer of ACC-APG with the Contracting Professional of the Year award.

**Engineering: Dr. James C. Kirsch, U.S. Army**
**Facilities Engineering:** 1st Lt Jose R. Peña, USAF
**Financial Management:** John R. Carlson, USAF
**Industrial Property:** Rodney D. Felder, Missile Defense Agency
**Information Technology:** Capt Ryan Atkinson, USAF
**Life Cycle Logistics: Everett F. Smith, U.S. Army**
**Production, Quality and Manufacturing:** Marsha Barron, Defense Logistics Agency
**Program Management:** Laura M. Price, USAF
**Requirements Management:** CDR Scott Wilson, U.S. Navy (USN)
**Science and Technology Manager:** Dr. David M. Hone, Defense Threat Reduction Agency
**Services Acquisition:** Emilio Varacarcel, USAF
**Small Business:** Douglas Packard, Defense Information Systems Agency
**Test and Evaluation:** Anastasia Dimitriu, USN

**Workforce Development Award (Large Organization)**
**Gold:** Space and Naval Warfare Systems Center Pacific, San Diego, CA
**Silver:** Missile Defense Agency, Fort Belvoir, VA

**Workforce Development Award (Small Organization)**
**Gold:** U.S. Special Operations Command – Special Operations Forces Acquisition, Technology and Logistics Center, MacDill Air Force Base, FL
**Silver:** Engineering and Technical Management Division, Air Force Sustainment Center, Tinker Air Force Base, OK
**Bronze:** Sea Warrior Program, USN, Arlington, VA

## 2015 AAE EXCELLENCE IN LEADERSHIP AWARDS

**Acquisition Support Professional of the Year: Joan L. Sable**, U.S. Army Acquisition Support Center

**Business Operations Professional of the Year: Veronica Ewing**, Program Executive Office (PEO) Command, Control and Communications – Tactical

**Defense Exportability and Cooperation Professional of the Year: Timothy Schimpp**, Office of the Deputy Assistant Secretary of the Army for Defense Exports and Cooperation

**Engineering and Systems Integration Professional of the Year: Dr. James C. Kirsch,** PEO MS

**Logistician of the Year: Michael R. McAllister**, PEO Enterprise Information Systems

**Science and Technology Professional of the Year: G. Dan Bailey**, U.S. Army Aviation and Missile Research, Development and Engineering Center (AMRDEC)

**Product Management/Product Director Office Professional of the Year (O-5 Level): LTC Kevin S. Chaney**, Product Manager for Aircraft Survivability Equipment Countermeasures, PEO Intelligence, Electronic Warfare & Sensors (IEW&S)

**Project Management/Product Director Office Professional of the Year (O-6 Level): COL John R. Cavedo Jr.**, Project Manager for JPO JLTV, PEO Combat Support and Combat Service Support (CS&CSS)

**Contracting Professional of the Year: Danielle M. Moyer**, U.S. Army Contracting Command (ACC) – Aberdeen Proving Ground (APG)

**Contracting NCO of the Year: SFC Jonathan M. Turner**, ACC-Redstone Arsenal

**Contracting Battalion/DCMA Team of the Year: 926th Contracting Battalion, ACC-APG**

**Contracting Brigade/DCMA Team of the Year: 418th Contracting Support Brigade**, U.S. Army Mission and Installation Contracting Command

**Product Management/Product Director Office Team of the Year (O-5 Level): Indirect Fire Protection Capability Increment 2 – Intercept Product Office and AMRDEC Multi-Mission Launcher Development Team**, PEO MS

**Project Management/Product Director Office Team of the Year (O-6 Level): JPO JLTV**, PEO CS&CSS

## 2015 MAJOR GENERAL HAROLD J. "HARRY" GREENE AWARDS FOR ACQUISITION WRITING

**Category: Acquisition Reform/Better Buying Power**
**Winner: Joe Novick**, Joint PEO for Chemical and Biological Defense
**Honorable Mention: Paul Manz**, PEO Ammunition, and Thomas H. Miller, USMC Mine Resistant Ambush Protected Vehicle Program

**WRITING REWARD**
The Hon. Heidi Shyu presents the 2015 Major General Harold J. "Harry" Greene Award for Acquisition Writing in the category of Innovation to Dr. Kurt T. Preston, U.S. Army Corps of Engineers Engineer Research and Development Center (ERDC) liaison to the Office of the Deputy Assistant Secretary of the Army for Research & Technology, for his paper, "Acquiring the Unknown." Shyu was accompanied by, from left, LTG Michael E. Williamson, SGM Rory Malloy, Dr. Susan Myers, Greene's widow, and Gabriel Camarillo, principal deputy ASA(ALT).

**Category: Future Operations**
**Winner: Clair Guthrie** and **Dr. Christina Bates**, PEO IEW&S
**Honorable Mention: CPT(P) Hassan M. Kamara**, PEO MS

**Category: Innovation**
**Winner: Dr. Kurt T. Preston**, ERDC
**Honorable Mention: Jason Regnier**, PEO Soldier

**Category: Lessons Learned**
**Winner: Mark J. Jeude**, PEO Aviation
**Honorable Mention: MAJ Eric Makepeace**, U.S. Army Reserve, 915th Contingency Contracting Battalion

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*MS. SUSAN L. FOLLETT provides contracting support to USAASC for SAIC. She holds a B.A. in English literature from St. Lawrence University. She has more than two decades of experience as a journalist and has written on a variety of public- and private-sector topics, including modeling and simulation, military training and technology, and federal environmental regulations.*

# ON THE MOVE

## THURGOOD PROMOTED TO MAJOR GENERAL

The **Hon. Heidi Shyu**, assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), left, pins the rank of major general on newly promoted **MG L. Neil Thurgood**, Program Executive Officer for Missiles and Space (PEO MS), with the help of the general's wife, **Shauna Thurgood**, during a Nov. 20, 2015, ceremony at Redstone Arsenal, AL. Shyu then presented Thurgood with his promotion certificate. Thurgood later unfurled his two-star flag with the help of **SFC Lawrence Gardiner**, noncommissioned officer-in-charge for PEO MS, and **CPT Brad Coule**, assistant product manager in the Close Combat Weapon Systems Project Office. (Photos by Christian Geisel, PEO MS)

## SLOANE MOVES TO ASA(ALT)

**COL Michael E. Sloane**, outgoing Project Manager for Soldier Sensors and Lasers (PM SSL) at PEO Soldier, receives the Legion of Merit from **BG Brian P. Cummings**, program executive officer. Sloane was recently appointed chief of staff and senior military assistant to the **Hon. Heidi Shyu**, ASA(ALT) and Army acquisition executive; **Gabriel Camarillo**, principal deputy ASA(ALT); and **LTG Michael E. Williamson**, principal military deputy to the ASA(ALT).

In his new role, Sloane is responsible for leading and directing staff operations of the ASA(ALT) principal staff of general officers and Senior Executive Service (SES) members. He will also support a field of operating agencies comprising more than 700 military and civilian personnel, and will synchronize efforts with HQDA principals, the Office of the Joint Chiefs of Staff, the Office of the Secretary of Defense, Congress, media and industry.

Sloane had served as PM SSL since July 2012. His portfolio consisted of one Acquisition Category (ACAT) I program, five ACAT II programs and 14 ACAT III programs. He replaces **COL Robert A. Rasch Jr.** as ASA(ALT) chief of staff; Rasch was assigned to be the deputy to **MG James M. Richardson**, commanding general of U.S. Army Aviation and Missile Life Cycle Management Command at Redstone Arsenal. (Photo courtesy of PEO Soldier)

## COLSON NEW SMDC TECHNICAL CENTER DIRECTOR

**William A. "Bill" Colson** was sworn in as the director of the U.S. Army Space and Missile Defense Command (SMDC) Technical Center in a Nov. 19, 2015, ceremony at Redstone Arsenal, led by **LTG David L. Mann**, commanding general of SMDC and Army Forces Strategic Command.

Colson is responsible for researching, developing, testing and integrating capabilities for materiel solutions in tactical space, high altitude, missile defense, cyber, directed energy and related technologies. He is also responsible for managing the Ronald Reagan Ballistic Missile Defense Test Site in the Marshall Islands.

Colson previously headed the Systems Simulation, Software and Integration Directorate at the U.S. Army Aviation and Missile Research, Development and Engineering Center (AMRDEC), where he was responsible for directing research, development, acquisition and sustainment activities for the Army's advanced aviation and missile systems. He recently completed a temporary leadership assignment with the U.S. Army Research, Development and Engineering Command headquarters at Aberdeen Proving Ground (APG), MD.

Colson completed the Senior Service College Fellowship in 2008 and was appointed to the SES in 2013.

## PM SOLDIER WEAPONS CHANGES LEADERS

**COL Scott Armstrong**, right, outgoing PM for Soldier Weapons, hands the flag to **BG Brian P. Cummings**, left, PEO Soldier, to present to incoming PM **COL Brian C. Stehle**, center, as Deputy PM **Fred Coppola** looks on at an Aug. 3, 2015, change-of-charter ceremony at Picatinny Arsenal, NJ. Part of PEO Soldier, the PM Soldier Weapons organization is responsible for small arms and crew-served weapons used by Soldiers, including the M9 pistol and the .50-caliber M2.

Armstrong retired from the Army after a career of more than 26 years that culminated in his tenure as PM Soldier Weapons, which included work on the XM25 Counter Defilade Target Engagement System, the carbine competition and a variety of other weapon programs.

Stehle is a career Army aviator who most recently served as Product Manager for the Apache Block 3/Apache Development and Modernization under the PEO for Aviation at Redstone Arsenal. (Photo courtesy of PM Soldier Weapons)


## BARKER TAKES CHARGE AT PM SOLDIER WARRIOR

**COL Ed Barker** took over as PEO Soldier's PM for Soldier Warrior (PM SWAR) at a Nov. 10, 2015, change-of-charter ceremony at Fort Belvoir, VA. Barker replaces **COL Gordon T. Wallace** at the organization, which is responsible for managing the Air Warrior, Soldier Power and Nett Warrior systems. Barker previously served as executive officer for the **Hon. Heidi Shyu**, ASA(ALT), who also attended the ceremony.

Barker recently graduated from the National Defense University's Eisenhower School, where he earned an M.S. in national resource strategy. He also holds an M.S. in management from the Florida Institute of Technology.

## CHANGE OF CHARTER AT PM SPIE

**COL Dean M. Hoffman IV**, left, PM for Soldier Protection and Individual Equipment (SPIE); **BG Brian P. Cummings**, PEO Soldier; and **COL Robert Mortlock**, outgoing PM SPIE, stand at attention during the PM SPIE change-of-charter ceremony June 26, 2015, at Fort Belvoir. Hoffman assumed leadership of PM SPIE from Mortlock, who retired from the Army and is now a lecturer at the Naval Postgraduate School in Monterey, CA.

Hoffman comes to PM SPIE after serving in several positions with the PEO for Intelligence, Electronic Warfare and Sensors (IEW&S), including Program Manager for Communication Intelligence and Sensor Systems (now part of the U.S. Special Operations Command) and Product Manager Medium Altitude Reconnaissance and Surveillance Systems.

In his three years as PM SPIE, Mortlock led the development and fielding of several high-profile items, including the Army Physical Fitness Uniform, selection of the Operational Camouflage Pattern for the Army Combat Uniform and initiation of the Soldier Protection System. (Photo by Doug Graham)

## WILTSIE DEPARTS EIS; WATSON NAMED ACTING PEO

**Douglas K. Wiltsie** relinquished the charter of the PEO for Enterprise Information Systems (EIS) to Deputy PEO **Terry Watson** on Nov. 23, 2015, in a ceremony at Fort Belvoir hosted by the **Hon. Heidi Shyu**, ASA(ALT). Wiltsie is now serving as executive director of System of Systems Engineering and Integration (SoSE&I).

"Doug, you and your team have done an outstanding job of strengthening the link and solidifying the trust between our Soldiers and the information they rely on for mission success and a safe return home," said Ms. Shyu in her remarks, "Doug's leadership has been incredible."

Wiltsie assumed the charter of PEO EIS in October 2011 and was responsible for the development, acquisition, fielding and sustainment of the Army's enterprise information systems, overseeing an annual budget of nearly $2 billion. During his four-year tenure, PEO EIS helped transform the Army enterprise through implementation of innovative acquisition and material readiness solutions that enable information dominance. These efforts include delivering critical infrastructure and enterprise information capabilities, modernizing Army network and strategic communication systems, developing complex business and integrated personnel management systems, and deploying global logistics systems and enterprise services.

"I will miss working with you most of all—EIS has a dedicated, expert team unrivaled by any other PEO," Wiltsie said in announcing his departure. "Thanks for all you do, and keep up the outstanding work—it's because of you that we are able to connect the global Army."

Watson, below, is serving as acting PEO EIS until a replacement for Wiltsie is named. She also served as acting PEO EIS from May to October 2011. (Photos by Sam Soleimanifar, PEO EIS)


## LEADERSHIP CHANGES AT CECOM

**Larry M. Muzzelo** was formally appointed as deputy to the U.S. Army Communications-Electronics Command (CECOM) commanding general at a Nov. 16, 2015, ceremony at CECOM's APG headquarters.

Muzzelo replaces **Gary Martin**, who was assigned as the PEO for Command, Control and Communications – Tactical (PEO C3T) in June 2015.

Before his assignment, Muzzelo had served as the director of CECOM's Software Engineering Center (SEC), also at APG, since September 2013. Selected for the SES in January 2014, Muzzelo oversaw SEC efforts to ensure software readiness of the Army's logistics and command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) systems. He led approximately 4,000 military, civilian and industry employees at SEC, with an annual budget in excess of $600 million.

**Maria D. Esparraguera**, who had served as acting deputy to the CECOM commanding general, was selected to be director of civilian personnel, labor and employment law in the HQDA Office of the Judge Advocate General.

Esparraguera's departure from CECOM marks the end of a long association dating to 1984. A graduate of Duquesne University School of Law, Esparraguera was responsible for all legal matters pertaining to C4ISR and research and development acquisition and litigation strategies. Her other areas of expertise include intellectual property, ethics, military law and Freedom of Information Act issues. She supervised more than 70 attorneys across four states while leading the CECOM Legal Office, and served as chief counsel for the U.S. Army Materiel Command before being named acting deputy to the CECOM commanding general.

## HUTCHISON MOVES TO ROCK ISLAND

**Michael R. Hutchison** has moved to U.S. Army Sustainment Command, Rock Island Arsenal, IL, where he is the deputy to the commanding general.

Hutchison previously served as the deputy to the commanding general at the U.S. Army Contracting Command (ACC) – Redstone Arsenal. He served three years at ACC, directing a professional workforce of more than 6,000 civilian and military personnel at more than 100 geographic locations in completing more than 535,000 actions valued in excess of $165 billion. He led ACC in implementating the Single Head of Contracting Agency concept and the transition of ACC – Orlando from the PEO for Simulation, Training & Instrumentation (STRI), among numerous other actions.

## NEW LEADERS AT CERDEC DIRECTORATES

**Dr. Paul Zablocky**, far left, and **John Willison**, both members of the SES, have assumed new executive responsibilities within the U.S. Army Communications-Electronics Research, Development and Engineering Center (CERDEC).

Formerly head of CERDEC's Command, Power and Integration Directorate (CP&ID), Willison now heads CERDEC's Space and Terrestrial Communications Directorate (S&TCD). He was appointed to the SES in August 2011.

Zablocky, formerly director of S&TCD, now heads CERDEC's Intelligence and Information Warfare Directorate. He was appointed to the SES in June 2013.

Replacing Willison as director of CP&ID is **Gary Blohm**, left, who rejoined CERDEC in July 2015. He previously served as director of the Army Architecture Integration Center for the HQDA Chief Information Office/G-6 and CERDEC S&TCD director. He was appointed to the SES in September 2003.

## NEW DEPUTY PEO FOR STRI

The PEO for Simulation, Training & Instrumentation (STRI) welcomed **Chérie Smith** as the deputy program executive officer (DPEO). She assumed the role in October 2015, joining the PEO STRI team from her position as the acting executive director for ASA(ALT). She previously served as the assistant deputy for acquisition and systems management at ASA(ALT).

Smith is no stranger to PEO STRI, having served a four-month assignment as the acting DPEO early in 2015. She brings to the job more than 30 years of government experience in all levels of technology management and development. She began her career in the U.S. Army Reserve and served from 1979 to 1985 on active duty, developing software applications at the Walter Reed Army Medical Center and U.S. Army Health Care Systems Support Activity.

She served as the program manager for the General Fund Enterprise Business Systems (GFEBS) from 2003 to 2008, establishing the program office and leading GFEBS from initial concept through system development and demonstration. Smith also served as director of Forward Operations – Kuwait, where she coordinated the fielding of more than 200 critical programs and led the effort to assess the complex fielding of rolling stock programs coming from Iraq and redeploying to Afghanistan.

## CABANISS LEAVES MICC FOR VA

**George Cabaniss**, an SES appointee serving as the deputy to the commanding general of the U.S. Army Mission and Installation Contracting Command (MICC), departed in December 2015 to become the deputy chief procurement officer with the Procurement and Logistics Office in the Veterans Health Administration, U.S. Department of Veterans Affairs (VA).

Cabaniss had served as the deputy since December 2011. Before joining the MICC headquarters staff, Cabaniss spent more than three years as chief of the Contracting Office at ACC-APG. He was appointed to the SES in December 2011.

## BRYCE REPLACES SPENCER AT JPEO-CBD

**Douglas W. Bryce**, the new Joint Program Executive Officer for Chemical and Biological Defense (JPEO-CBD), left, accepts the organization's colors from the **Hon. Heidi Shyu**, ASA(ALT), as **MSG Aki Paylor**, JPEO-CBD senior enlisted adviser, and outgoing JPEO-CBD **Carmen J. Spencer** look on during an Oct. 22, 2015, change-of-charter ceremony at APG.

The ceremony marked the end of Spencer's 45-year government career. In attendance were **LTG Thomas W. Spoehr**, director of the Army Office of Business Transformation in the Office of the Under Secretary of the Army; **Dean G. Popps**, former ASA(ALT) and Army acquisition executive; **Douglas Bruder**, director of research and development for the Defense Threat Reduction Agency (DTRA); and ASA(ALT) Principal Deputy **Gabriel Camarillo.** Shyu presented Spencer's wife, **Patricia Spencer**, with the Army Acquisition Letter of Appreciation, and gave the couple a flag that had flown on the MV Cape Ray during a 2015 chemical weapons disposal mission. (For more on the Cape Ray's mission, see "Clearing the Air" in the April – June 2015 issue of Army AL&T.)

Spencer, who had held the position of JPEO-CPD since November 2012, oversaw the organization's involvement in the destruction of Syrian chemical weapons of mass destruction and the eradication of the Ebola virus in West Africa. He served as the deputy assistant secretary of the Army for the elimination of chemical weapons before his selection as JPEO-CBD, and earlier had served as director of DTRA's Chemical and Biological Defense Directorate. His 28-year active-duty Army career included posts in the Office of the Secretary of Defense and HQDA, and command of the U.S. Army Chemical Demilitarization Activity on Johnston Atoll and the Pueblo Chemical Weapons Depot, CO.

Bryce, a member of the SES since February 2010, had served as deputy JPEO-CBD since February 2005. A retired Marine Corps chief warrant officer, he served previously as product manager for nuclear, biological and chemical defense equipment, individual Marine combat equipment and individual protective equipment at Marine Corps Base Quantico, VA. (Photo by Steven Lusher, JPEO-CBD)

## FAHEY RETIRES AFTER 34 YEARS

**Kevin M. Fahey**'s four-decade federal career ended Dec. 1, 2015, with his retirement from the role of executive director for the System of Systems Engineering and Integration (SoSE&I) Directorate in the Office of the ASA(ALT). (See his commentary, "Exit Strategy," on Page 142.)

The **Hon. Heidi Shyu** recognized Fahey during a Nov. 17, 2015, ceremony at Joint Base Myer – Henderson Hall, VA. "Kevin's leadership has made a significant difference in the lives of our Soldiers," Shyu said. "The number of lives saved will never be known, but he has always taken the tough jobs and, with his team, made them look easy."

As executive director of SoSE&I, Fahey oversaw an ASA(ALT) headquarters organization charged with ensuring cross-portfolio integration on critical Army priorities, including the Network Integration Evaluations and Army Warfighting Assessments, capability set fielding, cyber acquisition, the Common Operating Environment and Positioning, Navigation and Timing.

"We have an incredible ASA(ALT) team, and I was proud to be a part of it," Fahey said. "Leading SoSE&I was a great final assignment, because I got to work side by side with the PEO community to do a better job at synchronizing both the planning and execution of how we deliver critical products to our Soldiers, and to establish rapid acquisition approaches so we can be more responsive to changing threats."

Fahey had served as SoSE&I executive director since June 2014, following previous assignments as the PEO for Combat Support and Combat Service Support and for Ground Combat Systems, and as deputy PEO for Ammunition. Selected for the SES in February 2000, he was instrumental in managing the Stryker and Mine Resistant Ambush Protected vehicle programs in support of overseas combat operations.

"There is no better job than to serve those who serve our country and who are willing to make the ultimate sacrifice," Fahey said. "As many programs as I have worked, it always goes back to the people. What I will miss is the people I have met, grown to know, admire and learned from along the way."

Fahey is succeeded at SoSE&I by **Douglas K. Wiltsie**, formerly PEO for Enterprise Information Systems. (Photos by Brian Landon, ASA(ALT))

## GENERAL OFFICER ANNOUNCEMENTS

*The Chief of Staff, Army announced the following officer assignments:*

**BG William E. Cole**, deputy commanding general (CG), U.S. Army Research, Development and Engineering Command (RDECOM) and CG, U.S. Army Natick Soldier Systems Center, Natick, MA, to deputy PEO for Missiles and Space, Redstone Arsenal, AL.

**BG Thomas H. Todd III** to deputy CG, RDECOM and commander, U.S. Army Natick Soldier Systems Center. Todd previously served as Project Manager for Utility Helicopters at PEO Aviation, Redstone Arsenal.

*The following general officer was placed on the retired list effective Dec. 1, 2015:*

**BG Kristin K. French**, culminating more than 29 years of service as CG, U.S. Army Joint Munitions and Lethality Life Cycle Management Command and Joint Munitions Command, Rock Island Arsenal, IL.

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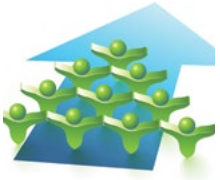

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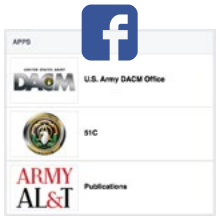


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# Silence is Golden (and Hybrid)

**NO MORE ROAR**

Concept drawing shows the SilentHawk hybrid motorcycle, developed in response to DARPA's requirement for a lightweight, rugged, single-track vehicle that can operate in near-silence for extended periods while traveling over hostile terrain. (Photo courtesy of Logos Technologies)

For nearly a century, the military motorcycle has roared through American warfare, from troops riding with GEN John J. "Black Jack" Pershing chasing Francisco "Pancho" Villa across the southwestern United States in 1916, to evacuating the wounded from the battlefield during World War I, to delivering vital messages to forward units during heated battles in World War II. Used again in Vietnam and in Operation Desert Storm, with riders scouting hostile territories and leading convoys to American special forces units crisscrossing the treacherous terrain of Afghanistan, the military motorcycle, with its courageous and skilled riders, has proven irreplaceable on the battlefield.

While the utility of military motorcycles may reverberate through the decades, when it comes to stealth and eluding enemy reconnaissance, the roar of such bikes may be history.

That's potentially thanks to SilentHawk, the hybrid-electric motorcycle prototype under development by Logos Technologies LLC in partnership with Alta Motors, now in phase II of a Small Business Innovation Research award from the Defense Advanced Research Projects Agency (DARPA).

The requirement is for a lightweight, rugged, single-track vehicle that can operate in near-silence (quieter than 55 decibels in "quiet" mode, or roughly the volume level of a conversation) for extended periods while transporting small numbers of troops over hostile terrain. This initiative will mark the first time that a two-wheel-drive, multifuel hybrid capability has been integrated into a full-size off-road motorcycle.

## BUILDING ON SILENCE

SilentHawk promises to fill DARPA's demands with the combination of Logos' drone multifuel hybrid-electric power system and Alta's off-road RedShift MX electric motocross frame as a basis for the prototype. The preproduction RedShift MX all-electric off-road racing bike weighs 260 pounds, produces 40 horsepower and runs on a 5.2-kilowatt-hour battery. Its new hybrid system incorporates a multifuel generator comprising a Wankel-type rotary engine and an electric motor.

Among other qualities, the Wankel rotary engine is noted for its relative silence. Indeed, an article on Page 169 of the November 1969 edition of Army AL&T's predecessor publication, Army Research and Development, carried an article about the silent YO-3A

observation plane, an outgrowth of research on the "silent-flying Q-Star" aircraft. Independently developed by the Lockheed Missiles and Space Co., it "became the first aircraft in the U.S. to fly using a Wankel-type rotary combustion engine developed by Curtiss Wright Corp."

When combined with an electric motor, the Wankel engine becomes a generator that can run on gasoline, diesel or JP-8 (jet fuel), or even a combination of the three. The quiet SilentHawk uses an electric motor to power the rear wheel and a small, front-hub-mounted electric motor to drive the front wheel, producing an all-wheel drive capability. The hybrid components can be removed quickly to convert the bike to an all-electric configuration when the hybrid system isn't required. Additionally, the hybrid system can be used as a power generator for equipment in the field, eliminating the need to carry separate generators or batteries.

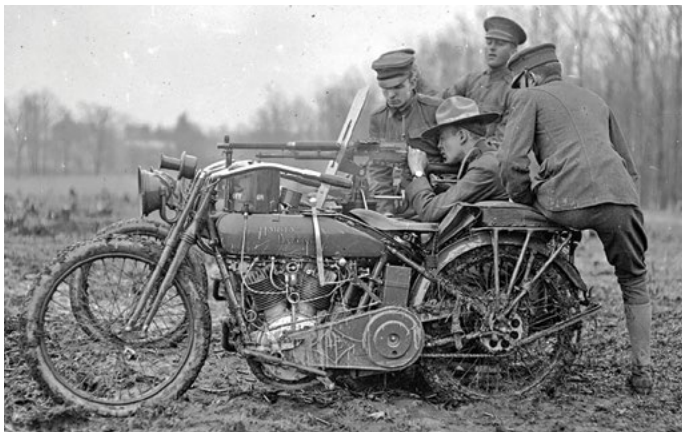
**STRONG SUPPORT**

Currently in the prototyping phase, the SilentHawk would combine a hybrid-electric power system with Alta Motors' RedShift MX motocross frame. The 40-horsepower off-road racing bike weighs 260 pounds and can run on a 5.2-kilowatt-hour battery. The SilentHawk was developed in part by DARPA, which foresees commercial as well as military applications for the vehicle. (Image courtesy of Alta Motors)

The goal for range, in hybrid mode under nominal operating conditions, is 170 miles, including 50 miles in silent mode (no generator running). The bike would maintain speeds above 50 mph for long distances, with a maximum speed of 80 mph.

## FUTURE SCENARIO

Logos engineers envision a small special operations team being dropped off with their SilentHawks by a small helicopter, then closing in on the enemy in the bike's silent mode. After engaging the enemy, the team would rendezvous stealthily at a second landing zone. Also, the bikes could be used to evade ambushes by traveling over terrain that would be impassable in a four-wheel vehicle.



**ADVANCING THROUGH HISTORY**

The American military ordered more than 20,000 Harley-Davidson motorcycles during World War I and has employed motorcycles in battlefields across the world for nearly 100 years. Thanks to technology advances from a DARPA-led initiative, troops could soon be using a full-size off-road vehicle that incorporates two-wheel-drive and a multifuel hybrid capability. (Photo courtesy of BikeBandit.com)

"The goal is to provide small teams of warfighters with the ability to traverse difficult terrain without being detected," said Dale Turner, Logos program manager. "By combining the terrain capabilities of a two-wheel-drive dirt bike with the low acoustics of a hybrid drivetrain, you get covert mobility and portable charging capabilities without the range and power limitations inherent with battery-only systems."

Once the SilentHawk prototyping phase is complete in fall 2016, the next phase could see the military replace motorcycles in service, such as the Kawasaki M1030 M1. DARPA anticipates that special operations forces will buy the SilentHawk, and that there could also be a substantial commercial market.

All said, it's been a tremendous, duty-filled century for the military motorcycle and its courageous riders. In the future, SilentHawk promises to bring the warfighter an even more elusive advantage on the battlefield, where riders will patrol and protect in silence and then safely return home.

*For more information about the SilentHawk, go to* ***https://www.logostech.net/products-services/slienthawk/****. For a historical tour of Army AL&T for the last 55 years, go to the Army AL&T archives at* ***http://asc.army.mil/web/magazine/alt-magazine-archive/.***

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*Assistant Secretary of the Army (Acquisition, Logistics & Technology) and Army Acquisition Executive*

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