



2018

*Major General Harold J. "Harry" Greene*  
**Awards *for* Acquisition Writing**

# AN ACQUISITION LEGACY

*“There is a tremendous transformation going on. ... You can serve in uniform, as a government civilian or contractor developing the tactics, techniques, procedures and equipment that will allow our Soldiers, Sailors, Airmen, Marines and Coast Guardsmen to succeed on the battlefield and defend this wonderful country.”*

*—Maj. Gen. Harold J. Greene*

*(Feb. 11, 1959 – Aug. 5, 2014)*

*by Lt. Gen. Paul A. Ostrowski*

**W**ith this special supplement to Army AL&T magazine, we honor an inspirational leader who always tackled the most complex jobs, who saw the bigger picture, and who had a real sense of what was important. Maj. Gen. Harold J. “Harry” Greene is remembered as an American hero, a trusted professional and a forward thinker whose contributions to our warfighters, the Army and our nation will be felt for many years to come. His contributions saved lives.

We also showcase the winning authors and honorable mentions in the 2018 Major General Harold J. “Harry” Greene Awards for Acquisition Writing. Their selections in the categories of acquisition reform, future operations, innovation and lessons learned were determined by our distinguished panel of judges. They reflect Harry’s commitment to empowering the workforce to communicate, grow and maximize its true potential.

Harry loved the acquisition profession. He cared deeply about the warfighters who depend on us to procure the equipment that gives them the decisive advantage. He also cared about the taxpayers who provide the resources.

He constantly sought out ways to improve the acquisition process in order to field equipment better, faster and cheaper.

While we honor Harry’s legacy, in part, through this annual writing competition, we still grieve his loss. Maj. Gen. Greene made the ultimate sacrifice in service to his country on Aug. 5, 2014, while on assignment as the deputy commanding general of the Combined Security Transition Command – Afghanistan. Our great comfort is in knowing that the hundreds of military and civilian personnel he mentored are moving up the ranks. As they ascend the ladder of leadership, they carry on his values and ideals.

In closing, I want to extend my congratulations to the authors whose winning works are included in this special supplement, as well as to the judges who carefully read and ranked each submission. I also want to extend my best wishes to all who participated in the Fifth Annual Major General Harold J. “Harry” Greene Awards for Acquisition Writing and to their families, friends and colleagues who supported them in their important work.



2018

*Major General Harold J. “Harry” Greene*  
**Awards for Acquisition Writing**

The winners and honorable mentions are:

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***Category: Acquisition Reform***

***Winner: Middle Tier Acquisition Using Overlapping, Iterative and Incremental Development: A Faster Way to Combat Opioid Exposure***

**Authors:** Col. Matthew G. Clark, Ph.D., Project Management Professional (PMP), is the joint product manager for Chemical Defense Pharmaceuticals within the Joint Project Office for Medical Countermeasure Systems (MCS) at Fort Detrick, Maryland, part of the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense. Clark is responsible for managing centralized research, development, acquisition and integration of FDA-approved medical countermeasures against chemical, radiological and nuclear threats. The products he and his team develop are used by joint, interagency and multinational organizations. Clark has a Ph.D. in behavioral neuroscience from Rutgers University and a B.A. in psychology from Coe College. He has extensive rapid and deliberate capability development experience in DOD labs, Iraq, G-3/5/7 of the Army Staff and the U.S. Army Medical Research and Materiel Command, as well as service at the United States Military Academy at West Point and the U.S. House of Representatives. He has published on leader development and a host of military-relevant topics, and he is also involved in nonprofit organizations serving the military and veteran community.

**Hannah Feldman** supports the MCS communications team as a public affairs specialist as an employee of Patricio Enterprises Inc. She holds a B.A. and an M.A. in international affairs from American University and specializes in strategic communications, outreach and stakeholder engagement.

**Abstract:** The DOD acquisition process is seen as lengthy, arduous and difficult to navigate for highly technical, tightly engineered or heavily regulated products. In the face of an imminent threat, we don't have the luxury of spending more than a decade working through the standard “waterfall” process of sequentially developing, testing and fielding a capability without delivering something useful. This is particularly an issue for medical countermeasures that affect warfighter survival. A new method is needed to rapidly develop complex capabilities while quickly delivering something useful. New authorities like middle tier acquisition coupled with flexible thinking, and our new “Overlapping Iterative and Incremental Development” accelerate product development of tightly engineered products, medical or otherwise. Especially when combined with the “LLC” of acquisition streamlining, our approach provides DOD with proven ways to deliver capability in the face of complex threats, including those from chemical warfare agents.

***Honorable Mention: The Innovation of Going Fast!***

**Author:** David M. Riel. After a 20-year U.S. Air Force career and several years working in the defense industry, Riel is happy to be part of the Defense Acquisition University team providing mission assistance to program offices and teaching the next generation of DOD acquisition professionals the ins and outs of the defense acquisition business.

**Abstract:** There is general agreement across Congress and DOD leadership that defense acquisitions need to go faster. But how? This article addresses some of the challenges in going faster, along with proposing innovative ways to incentivize our defense industry partners and create schedule management reserve by adjusting current

DOD business practices toward increased flexibility and schedule acceleration.

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**Category: Future Operations**

**Winner: Organizing for the Future**

**Author: Lt. Col. Kyle McFarland** is the operations officer (S-3) of the 418th Contracting Support Brigade. His previous assignment was as product manager for Large Caliber Ammunition under the Program Executive Office (PEO) for Ammunition (now the Joint Program Executive Office for Armaments and Ammunition). In that role, he was responsible for development, acquisition, fielding and sustainment of the Army's direct fire 105 mm and 120 mm ammunition portfolio.

**Abstract:** Establishing the U.S. Army Futures Command (AFC) is the most significant institutional reorganization of the Army in decades. To meet the modernization vision presented by the secretary and the chief of staff of the Army for AFC, the program executive office (PEO) community must evolve to achieve its mission of developing, acquiring, fielding and sustaining the world's best capabilities for our Soldiers. Specifically, PEOs must organize to support AFC decision-making through application of technical capabilities across the various aspects of weapon system development. The field artillery's relationship with supported maneuver forces provides a useful model of how supporting units can integrate and synchronize technical assets to support complex operations; the PEO communities should replicate this organizational model in support of Army modernization.

**Honorable Mention: Information Overmatch: How Information Dominance Will Win Our Nation's Wars**

**Author: Matthew A. Horning** is a systems engineer and the assistant chief of staff, G-5, plans, assigned to the U.S. Army Futures Command's Next Generation Combat Vehicles Cross-Functional Team. Additionally, Horning is a lieutenant colonel in the U.S. Army Reserve with cyber operations, aviation and Acquisitions Corps qualifications. Horning has a master's degree in business administration from University of Phoenix and a bachelor's degree in aerospace engineering from the University of Michigan. He maintains Certified Ethical Hacker, Certified Information Systems Security Professional and

Certified Systems Engineer Professional credentials.

**Abstract:** Military commanders have focused on the idea of combat overmatch for centuries. Military technology development has been driven throughout history by trying to develop capabilities that are more lethal to the enemy and more survivable from enemy attack. However, the world has changed and lethality no longer reigns king in winning a nation's wars. Information now is most important, and while lethality and survivability are still factors in a battle, the globally connected nature of our society now allows the victor to be the one who holds the best information. To remain a strong military, the United States must divorce itself from fixation on combat overmatch and begin to embrace information overmatch.

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**Category: Innovation**

**Winner: Using Warfighter Feedback to Improve Acquisition: There's an App for That**

**Author: Michael J. Ravnitzky** works in the Contracting Division at the Naval Sea Systems Command in Washington. He holds a J.D. (with honors) from Mitchell Hamline School of Law and a B.A. in physics from Cornell University.

**Abstract:** As procurement of consumables and field items continues to shift from military specifications to off-the-shelf commercial products, the acquisition community needs timely, candid feedback on how those products perform in field service from the warfighters who use them. A smartphone application using a five-star rating system and eliciting narrative comments, already familiar to warfighters, would provide real-time insights to help buy better and smarter, avoid purchase of faulty or unsatisfactory items, and make better use of taxpayer dollars.

**Honorable Mention: Designing Systems to the Skillsets We Already Have**

**Author: Maj. Mark Scott** is assigned to the Small Satellite Integration and Infrastructure Division within DOD. He has served as an assistant product manager at the Missile Defense Agency and at the Program Executive Office for Missiles and Space. He holds an M.A. in acquisition and procurement management from Webster



University and a B.A. in marketing from Mississippi State University.

**Abstract:** As we develop and design major weapon systems, we need to understand how future Soldiers will operate those systems. We need look no further than our own homes to analyze the skills our kids are developing. They can master anything with a touchscreen, geo-locate from their smartphone, and network every technical device in their home. Each generation, from Baby Boomers to Generation Z, acquires unique and distinct skillsets that redefine requirements in designing an intuitive system.

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### **Category: Lessons Learned**

**Winner: Lessons Learned: Collaborative Process Reduces Justification and Approval Processing Time by 44 Percent**

**Authors:** **Rachel Capaldi** serves as the alternate command advocate for competition in the U.S. Army Tank-Automotive and Armaments Command Life Cycle Management Command's Competition Management Office. She is responsible for ensuring the command's acquisition strategies remain in compliance with laws and regulations. Capaldi has 11 years of government acquisition experience in the areas of combat support contracting, tactical vehicle contracting, force projection, sustainment contracting, pricing, policy and procedures, and competition. She has an MBA from Walsh College.

**Joe O'Connell** is a procurement analyst at U.S. Army Contracting Command (ACC) – Warren, Michigan, where he serves as an action officer reviewing, editing and coordinating document packages that require approval from the Department of the Army or Office of the Secretary of Defense. He has certifications in contracting; life cycle logistics; production, quality and manufacturing; and program management. O'Connell holds a J.D. with a concentration in business transactions and is a member of the State Bar of Michigan.

**Abstract:** The typical document approval process involves individually routing the document to each reviewing official, which often results in receiving feedback, making updates and re-routing the document—only for the document to land in the next reviewer's queue, where the process repeats. The inefficiencies of this process became apparent, and the inherent delays unacceptable, when ACC – Warren looked to reduce the processing time for

justification and approval (J&A) documents. The solution was for ACC – Warren and its acquisition partners to implement a collaborative process where the linear individual reviews are replaced with multiple real-time reviews and white board meetings are held where all edits, comments and suggestions are hashed out in a matter of hours. This process change resulted in a 44 percent reduction in J&A processing time. This is not merely an administrative reduction. Quicker J&A processing leads to quicker contract awards and ultimately shortens the time it takes for the Soldier to receive required supplies or services.

**Honorable Mention: The "LLC" of Acquisition Streamlining: Lessons for Accelerating Product Development**

**Authors:** **Col. Matthew G. Clark, Ph.D., PMP**, is the joint product manager for Chemical Defense Pharmaceuticals within the Joint Project Office for Medical Countermeasure Systems at Fort Detrick, Maryland, part of the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND). Clark is responsible for managing centralized research, development, acquisition and integration of FDA-approved medical countermeasures against chemical, radiological and nuclear threats. The products he and his team develop are used by joint, interagency and multinational organizations. Clark has a Ph.D. in behavioral neuroscience from Rutgers University and a B.A. in psychology from Coe College. He has extensive rapid and deliberate capability development experience in DOD labs, Iraq, G-3/5/7 of the Army Staff and the U.S. Army Medical Research and Materiel Command, as well as service at the United States Military Academy at West Point and the U.S. House of Representatives. He also has published on leader development and a host of military relevant topics and is involved in nonprofit organizations serving the military and veteran community.

**Dr. Renae Malek** is currently the acting deputy joint product manager of Chemical Defense Pharmaceuticals (CDP), a subordinate office of the Joint Project Management Office for Medical Countermeasure Systems within JPEO-CBRND. She guides the daily operational activities for CDP, managing research, development and acquisition to achieve whole-of-government and joint integration of FDA-approved medical countermeasures against chemical, radiological and nuclear threats to rapidly enhance readiness and increase capabilities. She holds a Ph.D. in biomedical pharmacology from the

State University of New York (SUNY) at Buffalo and a B.S. in microbiology from SUNY Plattsburgh. She has a certificate in Regulatory Compliance from Hood College and is Project Management Professional (PMP) certified. She is Level III certified in science and technology management and Level II certified in program management.

**Maj. Andrea Mountney** is the assistant joint product manager for Fielded Products and the Alternative Autoinjector Support program within the Joint Project Management Office for Medical Countermeasure Systems at JPEO-CBRND. She is responsible for life cycle management of fielded countermeasures and project management of drug-device combination products used across the U.S. government. She holds a Ph.D. in pharmacology from the Johns Hopkins University School of Medicine and a B.S. in biochemistry and molecular biology and Spanish from Ursinus College. Mountney holds her PMP and is Level III certified in program management and science and technology management.

**Abstract:** On the technology-rich battlefield of today, operational flexibility in combat depends on the ability to anticipate, react and respond to the enemy through technology. The enemy adapts with increasing speed. Consequently, the speed of innovation and development is critical for military superiority. This is a challenge in the military, which is generally perceived as a "coercive bureaucracy" where "trust but verify" (i.e., trust is limited or "oversight") thrives. Thus, the objective is to create an "enabling bureaucracy" where high-quality work can be delivered faster. We learned that there are three core elements for creating trust and streamlining and accelerating acquisition: listening through engagement (i.e., active listening as we tackle adaptive challenges); leveraging opportunity; and collaborating for speed and success. This "LLC" simplifies the "business" of effective acquisition streamlining that accelerates product delivery.

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## Major General Harold J. "Harry" Greene Awards for Acquisition Writing Distinguished Judges

**Vincent E. Boles**, Maj. Gen. USA (Ret.), Defense Acquisition University (DAU) instructor

**Charles A. Cartwright**, Maj. Gen. USA (Ret.), DAU faculty member and former program manager, Future Combat Systems

**Professor John T. Dillard**, senior lecturer, Graduate School of Engineering and Applied Sciences, Naval Postgraduate School

**Professor Raymond D. Jones**, lecturer and academic associate, Defense Acquisition and Program Management Curriculum, Naval Postgraduate School

**Kurt A. McNeely**, Col. USA (Ret.), chief, Warfighter Central, U.S. Army Combat Capabilities Development Command

**Roger A. Nadeau**, Maj. Gen. USA (Ret.), senior vice president, American Business Development Group and

former commanding general, U.S. Army Test and Evaluation Command

**Kris Osborn**, managing editor, Warrior Maven

**Dana J.H. Pittard**, Maj. Gen. USA (Ret.), vice president, Defense Programs, Allison Transmission

**Ken Rodgers**, Col. USA (Ret.), director, Strategic Defense Systems and C4I, Cypress International

**Rickey E. Smith**, former deputy chief of staff, G-9, U.S. Army Training and Doctrine Command

**Richard G. Trefry**, Lt. Gen. USA (Ret.), Association of the United States Army senior fellow and former Army inspector general

**Joseph L. Yakovac**, Lt. Gen. USA (Ret.), senior counselor, The Cohen Group, and former ASA(ALT) military deputy and director, Army Acquisition Corps

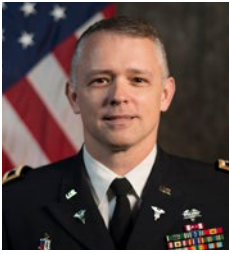
## Category: Acquisition Reform

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### WINNER

## Middle Tier Acquisition Using Overlapping, Iterative, and Incremental Development: A Faster Way to Combat Opioid Exposure

By the following authors:



Col. Matthew G. Clark



Hannah Feldman

*Disclaimer: The views expressed in this article reflect the views of the authors and do not purport to reflect the official views of the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense, the U.S. Army, the Department of Defense or the U.S. government.*

The Department of Defense (DOD) acquisition process is lengthy and arduous, especially for highly technical products, including medical countermeasures (MCMs) like drugs, devices, vaccines, and diagnostic equipment. In the medical space, add to this process a test and evaluation organization like the U.S. Food and Drug Administration which must approve products prior to fielding. Consequently, it can take upwards of 15-20 years and more than \$2.6 billion to develop and field a new drug or vaccine.

In the face of an imminent threat, we don't have the luxury of spending more than a decade sequentially testing, developing, and fielding a medical countermeasure. Meeting the needs of rapid acquisition requires new approaches for product development. At least for medical products and systems requiring exceptionally high reliability, a new authority like Middle Tier Acquisition, flexible thinking, and Overlapping, Iterative, and Incremental Development provide ways to accelerate product development.

### Opioids and the Need for Acquisition Speed

Today, one such threat requiring rapid development comes in the form of opioids, and a solution is needed now. Declared a public health emergency in 2017, our Nation is in the midst of an unprecedented epidemic with prevention, treatment for addiction, and overdose reversal drugs critical for fighting back against this threat. The crisis also presents a threat to the military. Pharmaceutical-Based Agents, or PBAs, are compounds derived from pharmaceuticals with the intent to incapacitate or kill. Some PBAs, such as fentanyl and its ultra-potent derivatives, are readily available and lethal at incredibly small doses; landing them on the 2017 Chemical Terrorism Risk Assessment list. There is a critical need to deliver a medical countermeasure that can reverse the effects of accidental or intentional opioid exposure for individuals like first responders and military personnel who support civilian law enforcement.

Opioids do not discriminate. U.S. troops and first responders are equally vulnerable to PBA exposure. At the Joint Project Management Office for Medical Countermeasure Systems (MCS)—under the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear (CBRN) Defense—we are exploring new ways to accelerate the acquisition process to get MCMs into the hands of Joint, Interagency, Inter-governmental, and Multinational, or JIIM, users faster. MCS is a component of the DOD's Chemical Biological Defense Program and is charged with developing vaccines, diagnostics, devices, and therapeutic drugs that protect, quickly diagnose, and treat troops exposed to CBRN threats.

Even though there are opioid MCMs available for commercial use, due to various factors, they do not meet the operational requirements for Service Members to complete their mission in a chemical warfare setting. These MCMs require further development both in terms of dose and the method for administration in an austere or mass casualty environment.

MCS is leveraging the FDA-approved drug naloxone, which treats the effects of opioid poisoning. While naloxone is considered the "gold standard" for treating an opioid overdose, the drug is only approved for use in low doses and concentrations; for the military and first responders, a much higher dose and new formulation is required for treatment that supports readiness and mission success. MCS is leveraging the drug's exist-

ing FDA approval to seek new approvals to increase the dose and concentration, and place it into an autoinjector device that allows rapid treatment on the battlefield or in other scenarios requiring rapid countermeasure administration.

### Middle Tier Acquisition

To quickly meet DOD needs, the Chemical Defense Pharmaceuticals product office at MCS is also leveraging partnerships, rapid prototyping, and Middle Tier Acquisition to quickly develop and field the naloxone autoinjector for JIIM users. Middle Tier Acquisition was authorized in the FY2016 National Defense Authorization Act, and is an attempt to get capabilities into the field in less than five years from requirements approval. This approach streamlines bureaucratic elements such as the requirements process, testing, deployment, and adaptation of prototypes using proven technology. As discussed below, a new capability can be developed faster using overlapping iterations and increments, and through adapting, combining, and updating existing solutions. Under this new authority, designated programs are not subject to the traditional acquisition waterfall framework outlined in the DOD Directive 5000.01 (See Figure 1). Essentially, both the DOD 5000 series and this new authority provide product managers all the flexibility they need to streamline acquisition and deliver capabilities fast.

For example, there are currently no suitable commercially available naloxone autoinjectors that meet military requirements. Utilizing the rapid prototyping approach of Middle Tier will allow the 10 mg naloxone autoinjector to complete prototype development well within five years, significantly decreasing the time for the drug-device product to receive FDA approval and be

fielded to U.S. troops. This approach builds on existing or innovative technologies to develop prototypes of new capabilities that meet emerging military needs.

### Streamlining through Overlapping, Iterative, and Incremental Development

One of the main challenges, however, is to adapt acquisition planning and activities created by teammates who were trained to use traditional acquisition thinking. Simply, the waterfall approach of the Defense Acquisition System—while great for teaching the elements of product development—is insufficient for streamlining a more rapid acquisition. There is a need to explore and teach acquisition professionals new methods for rapid product development. Interestingly, the DOD 5000 series provides such flexibility, but, historically, acquisition professionals were expected to adhere closely to, and never deviate from, the prescribed process.

In the software space, “Agile” development encourages delivery of low fidelity capabilities as a step-wise process moving toward an objective capability; however, in tightly engineered systems with exceptionally high reliability requirements, that approach will not work. Medical test and evaluation requirements and approval timelines do not allow for short sprints, especially in a way that produces interim capabilities that at least partially meet the needs of JIIM users. However, at MCS, we are finding that teaching teams to use an Overlapping, Iterative, and Incremental Development model (See options in Figure 2) is better at providing an interim and initial medical capability sooner, and has the potential to move the system quickly towards its objective capability. This approach requires an open mind and a willingness to think flexibly about how to build a process that meets requirements.

FIGURE 1 Traditional DOD 5000 Series Acquisition Waterfall Approach

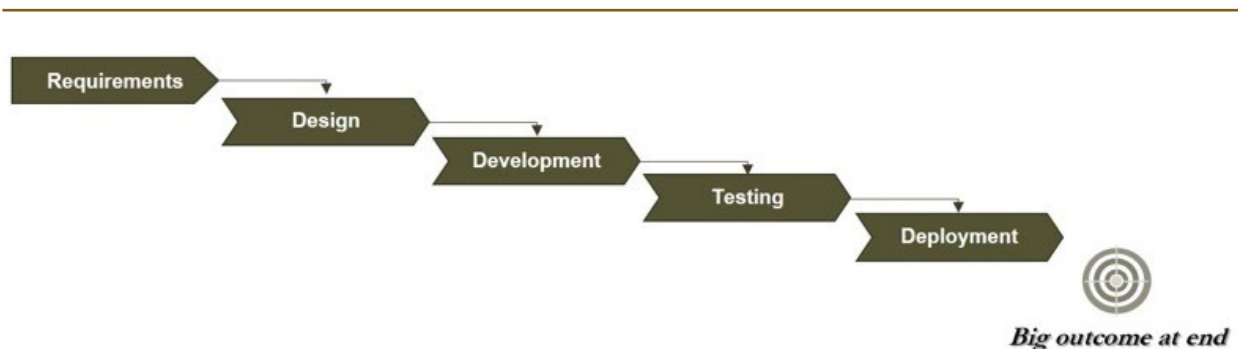
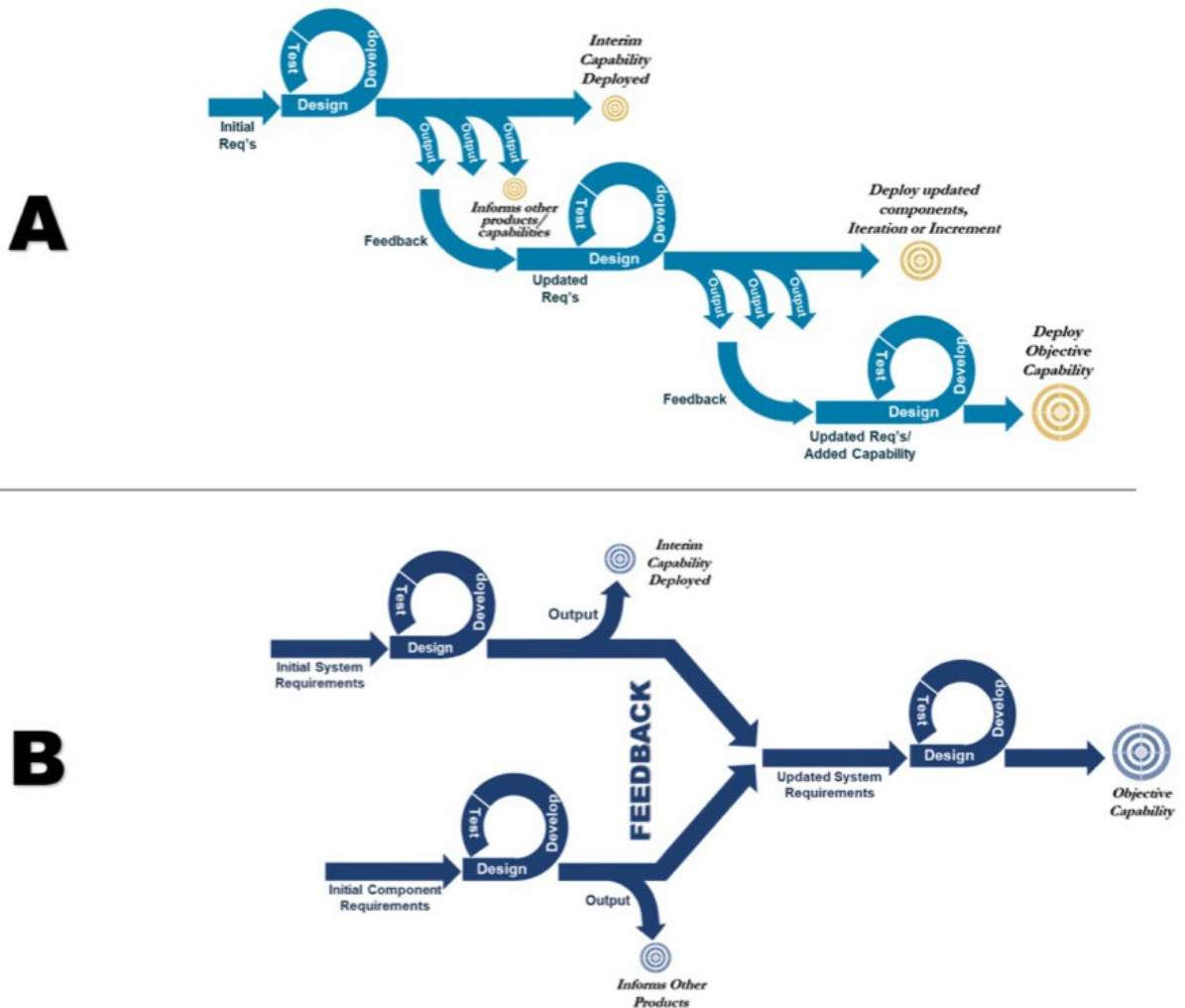




FIGURE 2

Overlapping Iterative and Incremental Development Approach, Options A & B



Therefore, this approach involves simplifying product development down to the most basic components, preferably with a focus on components that can either be delivered as interim capabilities or those involving the most challenging or complex development. Once the deliverable and complex components or iterations are understood, the product team can further determine how the product can be simplified to ensure rapid acquisition. This activity may also reveal trade space to streamline opportunities for interim fielding.

Overlapping activities accelerate development by allowing work to be done on multiple elements simultaneously. Combining this with an iterative and incremental approach provides the risk mitigation and accelerated delivery of medical product development. This, too, is

important, because risk management, while it can divert the attention of product managers, can also provide information that can inform decisions for acceleration or termination of unsuccessful efforts sooner. Research on this topic reveals that those who make decisions earlier are better able to convert investment into a stronger return.

### Important Considerations

Arraying activities over time is a key activity for success when using overlapping iterations and increments. Streamlining cannot occur without attention to this part of the process. Yet, this does not mean teams will do less before they act. Indeed, teams have to invest more in information gathering before acting. Arraying activities appropriately requires as much information as is reason-

ably possible through requests for information and other interactions with potential performers (e.g., through an Other Transaction Authority consortium, if one is available). This process allows products that are high risk to inform knowledge points, guide engineering decisions affecting components, and link related developments.

Lastly, an Overlapping, Iterative, and Incremental approach also means the program office will likely spend a large amount of time on stakeholder engagement to address questions and concerns from the acquisition community about using this approach. However, if the team continually listens to and engages the community, and relies on constructive criticism, any potential communication challenges can be easily overcome.

### **Attacking the Opioid Medical Countermeasures**

To develop a MCM against opioids, the MCS team used available information from subject matter experts to make early decisions that were risk-informed. Stakeholders used a broad-based teaming approach and created teams that could both collaborate and challenge the assumptions of the product management team. Then, we continually communicated our plans to potential stakeholders (including international partners) and further exploited unexpected opportunities. Eventually, we were able to develop clarity around what was achievable using Middle Tier Acquisition. Using this approach, we expect to deliver a capability against this important threat much faster than the traditional 12-15 year average for standard drug development.

“With the opioid crisis in the U.S., and the recent nerve agent attacks across the world, we need to make sure our troops are protected from opioid exposure,” said Col. David P. Hammer, Joint Project Manager for MCS. “This acquisition approach allows us to provide a critical medical countermeasure to the Warfighter quicker than we could otherwise.”

With this authority and approach, the 10 mg naloxone autoinjector should receive FDA approval in FY2022, and be rapidly fielded in FY2023, significantly lowering the cost and decreasing the schedule to provide this critical capability to JIIM users. We believe that by using new and existing authorities, along with streamlining through Overlapping, Iterative, and Incremental Development, we can change the way we think, teach, streamline, and accelerate Defense acquisition.

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***Col. Matthew G. Clark, PhD, PMP, is the Joint Product Manager for Chemical Defense Pharmaceuticals within Medical Countermeasure Systems at Fort Detrick, MD. The organization is in the Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense. COL Clark is responsible for managing centralized research, development, acquisition, and integration of FDA-approved medical countermeasures against chemical, radiological, and nuclear threats. The products they develop are used by Joint, Interagency, and Multinational organizations. COL Clark has a Ph.D. in Behavioral Neuroscience from Rutgers University and a B.A. in Psychology from Coe College. He has extensive rapid and deliberate capability development experience in DOD Labs, Iraq, G-3/5/7 of the Army Staff, and USAMRMC and service at the U.S. Military Academy and the U.S. House of Representatives. He also has published on leader development and a host of military relevant topics, while also serving in nonprofit organizations serving the military and veteran community.***

***Hannah Feldman currently supports the MCS Communications team as a Public Affairs Specialist as an employee of Patricio Enterprises, Inc. She holds a B.A. and M.A. in International Affairs from American University in Washington, DC. Hannah specializes in strategic communications, outreach, and stakeholder engagement.***

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## **HONORABLE MENTION**

### **The Innovation of Going Fast!**

*By David M. Riel*



We need to go faster! SECDEF Mattis wrote in the Summary of the 2018 National Defense Strategy, “Inter-state strategic competition, not terrorism, is now the primary concern in U.S. national strategy,” specifically naming China, Russia, North Korea and Iran. USD (A&S) Lord advised the Senate Armed Services Committee in December 2017 that the “current pace at which we develop advanced capability is being eclipsed by those nations that pose the greatest threat to our security, seriously eroding our measure of overmatch.” Yes, we need to go faster. But “how”?

One could argue acquisition innovation is needed as much as technical innovation to go fast. Congress has provided the defense acquisition workforce a gift in the 2016 National Defense Authorization Act (NDAA). Middle Tier of Acquisition for Rapid Prototyping and Rapid Fielding (Section 804 of NDAA 2016) provides a pathway to rapidly prototype innovative technologies or field proven technologies “to be completed in two to five years.” The law states that these programs “shall not be subject” to Joint Capabilities Integration and Development System (JCIDS) or DODI 5000.01.

In other words, two of the three major enabling acquisition systems, with the third being the financial Planning, Programming, Budgeting and Execution (PPBE) system, are set aside by this legislature. However, likely do to the turbulence caused by the Administration turnover, guidance from OSD and the military services was delayed until this spring. Recently, I was given the task to explore this law, along with its FY2017/FY2018 modifications, and to share this opportunity with a variety of DOD audiences. While each workshop generates energy and enthusiasm, the overriding question remains “how.” The devil is in the details. What exactly does “streamlined” budgeting mean? How does one pursue “creative” contracting? How do we incentivize our industry partners to go faster and provide best value in trading-off performance for time and money? This article explores some ideas to get this dialogue going.

### “Requirements Written in Pencil”

In a recent interview, Service Acquisition Executives Dr. Bruce Jette (USA) and Dr. Will Roper (USAF) iterated the need for requirements to be “written in pencil,” so that as lessons are learned in prototyping, requirements can be adapted to meet technological, fiscal and schedule realities. Dr. Roper clarifies this as a “three-legged race with your requirements owner.”

Yet, there’s a third partner in this challenge, the defense contractor who is designing the prototype. This creates more of an awkward four-legged race – user, acquirer and developer. The question becomes “how do we incentivize the developer to propose changes to the current requirements?” This will take some creative contracting.

### Incentivizing Flexibility via Contract Type

Contracts for rapid fielding efforts can use straight schedule incentives on fixed price contracts to motivate contractors to produce proven technology faster.

However, generating the flexibility to rewrite flexible requirements once under contract requires more creative solutions. Perhaps it’s time to bring back a contract type that has in recent years been declared “persona non grata”—cost-plus award fee (CPAF), but with a significant twist.

While serving as an USAF PM, our development contract was CPAF with a 3% base fee (i.e., fixed profit margin) and 9% award fee. The award fee board typically scored between 93 and 86 points (low end of “excellent” to high end of “good”). This equated to a profit margin between 11.37% and 10.74%. Incentivizing the contractor to conduct requirement tradeoffs and explore opportunities will require greater business incentives.

We should provide contractors greater stability by increasing base fee. Although each situation will dictate its own strategy, consider this – award a CPAF contract with a 5% base fee and a 9% award fee. Then, allow the contractor to be awarded up to 150% award fee for “above and beyond” technical capabilities, cost control, and/or schedule acceleration. These opportunities for higher profit margins are offset by an equal likelihood of receiving 50% or less award fee if the contractor does not deliver on promises, e.g., doesn’t adapt to changing requirements, or meet schedule, or life cycle cost considerations. This expands profit margin potential from 9.5% (potentially less) up to 18.5% based on performance and their collaboration with the acquirer and user in optimizing balance between performance, schedule and cost. What? Nearly 20% profit on a cost reimbursable contract? Absolutely, if our industry partner finds a way to significantly increase performance at the same cost and schedule, or finds a way to significantly accelerate schedule while maintaining performance, then that profit has been earned. In the end, time is money!

### Creating Schedule Management Reserve

“Time is money.” While the theoretical value of Ben Franklin’s famous maxim has followed me since my youth, its veracity traces back to 2007 when I was a senior manager focused on continuous process improvement for one of our industry partners. One project in particular was consistently delivering 6-12 months late on a Firm-Fixed Price contract, making neither our customer nor corporate happy. Our return on sales (ROS) hovered around 2%. Change was needed! Leadership decided to focus energies on managing each aircraft’s schedule, using a combination of lean manufacturing and cultural change.

The results were impressive. We began to deliver aircraft up to 7 months early. Driving home Ol' Ben's adage, our profits rose to 13%. While there were several contributing initiatives, the reality was that as soon as that aircraft flew away, no one else could charge to it. Although getting war-winning capability back to our warfighters was the primary motivator, money was saved, as well.

The recent push to accelerate took me back to a conversation I had with a Program Executive Officer (PEO) a few years ago. Historical data indicated that one of his program's Engineering, Manufacturing and Development (EMD) phase should take 72 months; however, warfighter needs were driving the USAF to offer financial incentives for a 66-month EMD phase. This is where I learned that our Earned Value Management System (EVMS) provides a disincentive to both government and contractor teams from aggressively tackling schedule.

If a program builds its Performance Measurement Baseline (PMB) to an accelerated schedule, deviations to that aggressive schedule paint an unflattering picture in their reporting, despite still being well within the established contractual Period of Performance (PoP). Even tracking to a 69-month delivery will show significant negative variance to a 66-month PMB, reflecting poorly on government and contractor PMs. A current EVMS limitation is that while the system allows contractors to set aside cost management reserve (MRC) to account for uncertainties, the same does not hold true for schedule. To avoid negative perceptions and reporting, the contractor would need to establish two separate schedules—one submitted in the monthly Integrated Program Manage-

ment Report and the other being worked by their team to reap the incentives, creating additional overhead and potential misunderstandings.

If we seriously want to encourage our teams to aggressively pursue schedule acceleration, perhaps it's time to change EVMS to include a schedule management reserve (MRS). Let's take a look at an example of a development program with a contractual PoP of 60 months, with a willingness to pay incentives for up to a six-month early delivery.

Figure 1 denotes a typical, generic EVMS spend curve. But what if we allowed the contractor PM to set aside MRS as well? EVMS can then be adapted to provide visibility to an incentivized schedule acceleration plan.

In the Figure 2, the contractor, having been financially incentivized to deliver 6 months early (54 months), has created a MRS of 9 months, while the contract's PoP remains 60 months. EVMS now accounts for their aggressive scheduling, providing the contractor MRS for if and/or when required.

Remember that time is money and assuming that contract costs were negotiated on the entire PoP of 60 months, 9 months of "standing army" plus associated overhead costs need to be set aside in reserve to cover increases in schedule beyond the planned 51 months. In other words, every day over the 51-month aggressively-planned delivery date results in costs for "level-of-effort" personnel, e.g., the contractor PM, staff, etc., previously negotiated, as well as additional overhead expenses. These individu-

FIGURE 1 Typical, Generic EVMS Spend Curve

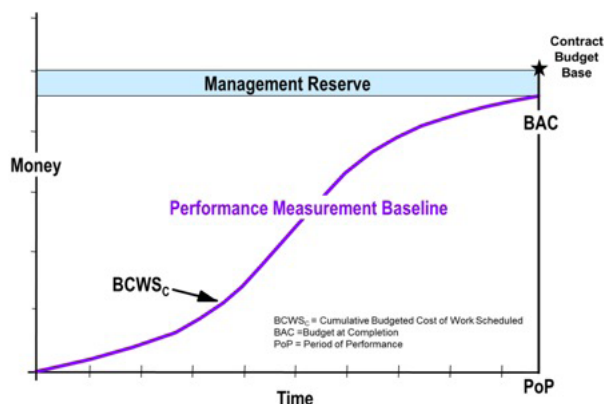
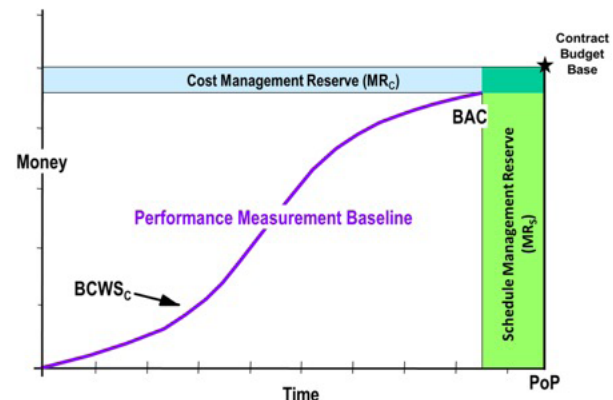
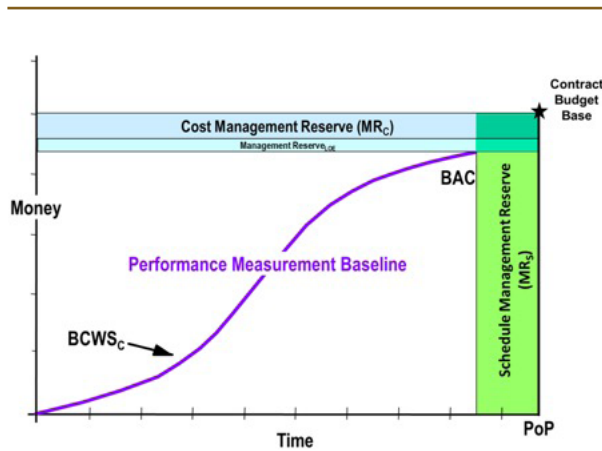


FIGURE 2 Adapted EVMS with Schedule Management Reserve (MRS)





**FIGURE 3** Adapted EVMS with Schedule Management Reserve (MRS) and Level of Effort Cost Management Reserve (MRLOE)



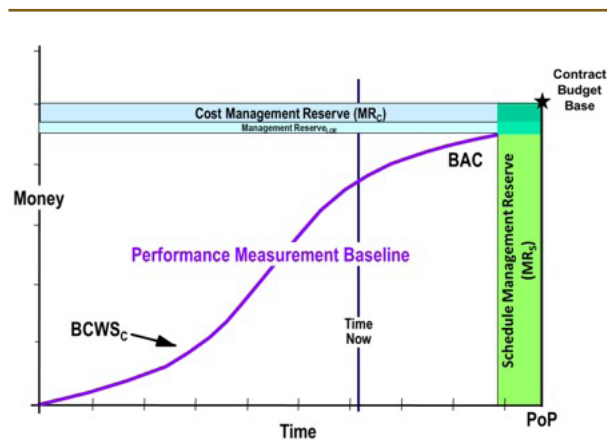
als, whose costs have been discretely bid and negotiated, should be accounted for as a separate cost management reserve for Level of Effort (MRLOE). Figure 3 depicts this relationship.

As the project progresses, MRS will inevitably be applied to account for uncertainties and aggressive scheduling. Figure 4 shows Month 37, depicting 2 months of MRS used, and MRLOE used to cover those “standing army” expenses. Other uncertainties have eaten into MRC.

Adapted EVMS holds promise for encouraging contractors to pursue more aggressive scheduling and provides a single, transparent opportunity to manage that behavior. Nevertheless, adopting this new EVMS comes with some potential pitfalls. First, trust must be established that control account managers will not be persecuted for missing new aggressive schedules. The resultant mistrust will lead back to traditional scheduling, where schedules are built conservatively using individual task uncertainty. Unfortunately, Parkinson’s Law and Student Syndrome then resume their prominent roles, negating war-winning capabilities being delivered faster.

Secondly, we can’t misinterpret schedule performance index (SPI). A sub-1.0 SPI may not be indicating being “behind-schedule,” only that we are behind to the aggressive schedule. Conversely, if the contractor has used 90% of their MRS and has only completed 50% of the work, while still indicating SPI of 1.0 since the contractor revives the PMB with MRS, we need to understand

**FIGURE 4** Adapted EVMS Progressed to Month 37



that the program delivering on-time is unlikely. MRS use must be bounded by their respective individual task buffers, and not to cover delays beyond those attributable to the schedule’s aggressive stance.

Thirdly, we need to fully understand how MRS is being used, similar to their current need to understand MRC use. Just as the contractor has the contractual responsibility to report MRC with their EVMS monthly reporting via Format 5, so too would they be required to report any MRS, and MRLOE. The government team can use that information to accurately assess the program’s schedule and cost health.

### Conclusion

The business practices of the past remain valid in protecting competition and taxpayer dollars. However, if we truly believe that maintaining our overmatch ability requires us to go faster, it’s time to do acquisition differently. I’ve presented just a couple of ideas that shift the focus towards flexibility and schedule acceleration. It’s time to allow the gifted teams of acquirers and developers to use their skills and creativity to create timely war-winning capabilities for our users. It is time to go fast!

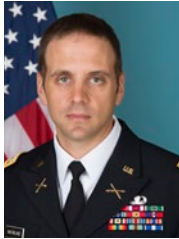
*David M. Riel is Professor of Acquisition Management, Defense Acquisition University – Midwest region. After a 20-year USAF career and several years working in the defense industry, Dave is happy to be part of the Defense Acquisition University team providing mission assistance to program offices and teaching the next generation of DOD acquisition professionals the ins and outs of the defense acquisition business.*

## Category: Future Operations

### WINNER

## Organizing for the Future

By Lt. Col. Kyle A. McFarland



In a May 2018 interview with BreakingDefense.com, Secretary of the Army Mark Esper highlighted the need for the institutional Army to adopt matrix organization practices used frequently in the operational Army and in corporate America in order to adapt to a state

of change he referred to as “permanent evolution.” Due to statute tracing to the Goldwater-Nichols Department of Defense Reorganization Act of 1986, Program Executive Offices (PEOs) and subordinate organizations will not become organic to Army Futures Command (AFC). The PEOs, under the authority of the Assistant Secretary of the Army for Acquisition, Logistics, and Technology (ASA(ALT)) as the Army Acquisition Executive (AAE), have long had the mission to support Army modernization through materiel development and acquisition. However, the PEOs are not currently organized to support the rapid capability delivery that the Secretary and Chief of Staff envision. AFC’s success will depend heavily on successful integration of myriad specialties required to move a concept to a fielded capability. The Army’s Field Artillery (FA) branch provides a useful model of non-organic units integrating and synchronizing capabilities in support of a maneuver commander’s mission. The FA-to-Maneuver support relationship presents a functioning supporting-supported relationship with complementary, albeit separate, chains of command at subordinate levels. The model shows how the PEO community, as weapon system development experts, could serve as central coordinators for integrating various functions into CFT efforts similar to the FA’s doctrinal role as the coordinator of multiple specialized functions into maneuver operations. In order to best support Army modernization, the Army acquisition community should organize to replicate the FA support model within the PEO-to-AFC relationship.

In both the FA and PEO cases, the supporting organizations have functions that are more science than art. For the FA (or Fires Warfighting Function), delivering effects

at a point in space and time from known weapon systems are problems with deterministic solution sets. While there may be multiple right answers to achieve desired effects, all the answers can be defined given appropriate battlefield situational awareness and knowledge of available weapon system capabilities. Similarly, PEOs can develop multiple courses of action to meet Warfighter requirements developed by CFTs. However that solution set will be constrained by the state of relevant technology, and the statutory and policy architecture including the Weapons System Acquisition Reform Act, the Federal Acquisition Regulation, DOD 5000 series, and the Planning, Programming, Budgeting, and Execution system (PPBES). In contrast, the supported maneuver and CFT organizations tend more towards art than science for successful operations. Per Clausewitz’s ‘coup d’oeil’ concept, determining how a current unit will fight and win in the case of a maneuver commander, or how a future formation will fight and win in the case of a CFT director requires an innate understanding of the problem that is not readily condensed into a checklist. In both cases, effective support to the maneuver units and CFTs requires skilled professionals who are both expert in the science of their supporting career field, and fluent in the operational art of their supported organization.

Per ADP 3-09, fire support coordination is the planning and executing of fires so that targets are adequately covered by a suitable weapon or group of weapons. FA personnel attached to supported units provide the nucleus for effective fires planning and coordination for maneuver commanders including application of joint air support, electronic warfare, and naval gun fire. The fire support cells at various echelons, manned with technical experts, aid the supported commander by integrating and synchronizing the aforementioned capabilities across time and space. Maintaining the habitual relationship of FA Soldiers, skilled in both the ‘art’ of maneuver and the ‘science’ of the fires warfighting functions, with their supported units builds trust between the two elements. Fire support professionals deploy and fight with the same supported unit in training and in war. The common experiences developed through repeated training events and operational missions grows trust. This relationship leads to the shared understanding necessary for the synergistic effect of unified land operations. The permanent relationship of the fire support cell also facilitates a ready plug in for other assets that are not permanently attached, where the fire support technical experts help blend the science of control of these assets with the maneuver command-

er's art of command in order to enable their dynamic integration into combined arms operations.

ASA(ALT)'s mission is to provide our Soldiers a decisive advantage in any mission by maintaining quality acquisition professionals to develop, acquire, field, and sustain the world's best equipment through efficient leveraging of technologies and capabilities to meet current and future Army needs. The tasks of 'develop, acquire, field, and sustain' highlight that ASA(ALT) and its subordinate PEOs are already the primary integrators of various functions required to deliver capability to Soldiers. Like the fire support Soldiers integrate elements such as air power and electronic warfare, PEOs routinely apply their technical expertise blended with matrix engineers, contracting professionals, and logisticians from other organizations to meet user defined requirements. But while the PEO community has the knowledge and skills to support AFC in the same way that the FA supports maneuver, the PEOs are not organized to replicate that manner of support to AFC. To fully support the Army's modernization goals, the PEO community must evolve and resource acquisition support professionals permanently across AFC and the CFTs.

AFC needs skilled acquisition support officers co-located, sharing experience, gaining understanding, and building trust between the PEO community and its customers. In addition to building trust, immersing acquisition support officers across the AFC organization will facilitate fluctuating matrix support from specialty areas that acquisition officers have relevant experience with, such as testing, contracting, and life cycle commands. This expertise can fill a capability gap within AFC as CFT directors and requirements personnel tend to come from operational commands where they have little to no exposure to the institutional organizations that support weapon system development and acquisition. Rather than expecting these leaders to rapidly learn the nuances and 'science' of the institutional Army, why not leverage experienced acquisition professionals to integrate those assets in support of AFC efforts?

The habitual attachment of acquisition support personnel to CFTs should not be construed as intending acquisition professionals to 'go native.' Rather the relationship matches Secretary Esper's explanation to BreakingDefense.com where those attached will have two bosses. PEOs can maintain responsibility for the training, evaluation, and supervision of acquisition personnel attached to CFTs

while they support the 'operational' mission of the CFT director. In this regard, the FA provides a relevant example of how this relationship can work, and what happens when the organization is not appropriately structured.

After a brief absence from the force structure, the Army resurrected the Division Artillery (DIVARTY) headquarters at echelons above brigade in 2014. These headquarters had existed through the mid-2000s, but were eliminated with modular BCTs. Simultaneously, the Army asked FA units to perform other missions. During this period, FA related skills atrophied across the Army, and fire support professional and leader development degraded. Without a skill specific higher headquarters to oversee the training of subordinate organizations on the 'science' of their profession and its blending with the operational 'art' of maneuver, the fires warfighting function lost the ability to effectively integrate and synchronize fires in support of unified land operations. The Army brought back the DIVARTY organization not only to provide planning, synchronization, and coordination of FA capabilities, but to also strengthen the technical or 'scientific' competence of FA units.

As the cautionary tale above illustrates, even if statute did not prevent making program management offices organic to CFTs, maintenance of a separate acquisition headquarters to ensure the training and development of acquisition professionals is prudent. Rather than competing with AFC for influence, the acquisition headquarters will participate in AFC decision making by ensuring proper application of the 'sciences' of weapon system development. PEOs already oversee the professional training and certification of their assigned personnel compliant with Defense Acquisition Workforce Improvement Act (DAWIA) requirements. However, they do not have organizational structure corollary to the DIVARTY provisioning of fire support cells embedded in the maneuver formations.

ASA(ALT) and the PEOs should resource the force structure and organizational design to meet AFC requirements by replicating the cross-function synergy of the FA-to-maneuver support relationship. PEO oversight of acquisition support cells within CFTs will ensure effective integration and synchronization of all materiel solution development resources including Science and Technology (S&T), sustainment, contracting, and programming/budget development. Much like FA Soldiers provide the nucleus for fires planning and

integration of other capabilities, PEO supervised acquisition officers should be the core for integrating the myriad specialties critical to materiel development planning in support of CFT requirements.

Fire support officers in maneuver units must be able to translate a maneuver commander's intent for fires into specific tasks able to be allocated across available assets including joint, air, missile defense, and electronic warfare capabilities. Similarly, an acquisition support officer within a CFT must be capable of translating CFT operational requirements in such a way to develop S&T objectives, program budgets and schedules, test & evaluation plans, etc. As a fire support officer rapidly adjusts allocation of assets based on changing battlefield conditions, the acquisition support officer will have to continuously evolve the support plan as situations evolve. Therefore, the Acquisition Corps must be selective in filling CFT support assignments. MAPL positions are better suited to these roles than civilian acquisition professionals given that all acquisition corps military officers spend their initial assignments within the operational Army. Ideally, the Acquisition Corps would assign officers to CFT positions aligned with their base branch (e.g., a maneuver officer to the NGCV CFT) in order to increase understanding. The officer must also have built sufficient technical expertise in acquisition prior to assignment with a CFT. First term acquisition officers would be a poor fit for this type of assignment, as they would be unlikely to gain the trust of the supported CFT through early demonstration of competence. The ideal candidate for the senior acquisition support officer to a CFT director would be a post-CSL lieutenant colonel who would report both to the CFT director and to the related PEO much like an FA battalion commander supports his assigned BCT commander. Further, the acquisition support officer needs to be empowered from both the PEO and CFT director to request resources from and synchronize efforts of other supporting organizations including RDECOM, the Life Cycle Management Commands, and Army Contracting Command.

While military acquisition officers are best suited for the permanent roles within the CFTs, there will also be developmental opportunities for our civilian acquisition professionals. DA civilians within the Army Acquisition Corps are the backbone of program management technical expertise. Military acquisition support officers will require additional support as concepts transition to programs of record. Temporary matrix of civilians from

PEOs to CFTs to execute these milestones will reduce the risk of a program transition, while also providing the civilians a closer relationship with their supported organizations. The knowledge gained from that relationship will not only benefit the participating individuals, but the Acquisition Corps as a whole, as those civilians will be able to share their understanding of the customer with their home organizations.

Establishing Army Futures Command is the most significant institutional re-organization of the Army in decades. For acquisition professionals that aim to develop and deliver unmatched capabilities to Soldiers, PEOs should welcome this change as an opportunity to advance their core mission of delivering better capabilities faster. Optimism is not sufficient to achieve the vision of Futures Command. ASA(ALT) and the PEOs must organize to provide the support necessary for the success of the AFC concept. They would do well to emulate the Field Artillery construct to that end.

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*Lt. Col. Kyle McFarland is the S-3 of the 418th Contracting Support Brigade. His prior assignment was as Product Manager for Large Caliber Ammunition under PEO Ammunition (now the Joint PEO for Armaments and Ammunition). In that role, he was responsible for development, acquisition, fielding, and sustainment of the Army's direct fire 105 mm and 120 mm ammunition portfolio.*

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## HONORABLE MENTION

### Information Overmatch: How Information Dominance Will Win Our Nation's Wars



*By Matthew A. Horning*

*"The mind of the enemy and the will of his leaders is a target of far more importance than the bodies of his troops."*

*— Mao Zedong,  
On Guerilla Warfare (1937)*

#### Introduction

Since its inception, DOD's Acquisition workforce has been focused on the idea of combat overmatch, particularly in its combat systems. Combat overmatch, simply



put, is the concept where my (insert lethality system here) can willfully and without prejudice or luck defeat your (insert your protective system here). Combat overmatch has been the goal in military forces since the first armed forces organized and entered in combat. In prehistory, combat overmatch is achieved by overwhelming numbers. Technology plays a role, such as bronze weaponry, but by and large, the force who overwhelms the other with more forces is victorious. As prehistory turns to ancient history other factors start coming into play. Standoff distance becomes a factor and technologies are integrated into warfare to increase standoff distance: archery, polearms, and early ballistic devices such as catapults and trebuchets. Standoff distance is the notion that if I can reach you but you can't reach me I have the advantage. Standoff is the reason a boxer's reach is a measured quantity.

As technology advances through the Middle Ages to the modern area, lethality ranges improved first with advances in archery, then gunpowder, followed by rocketry. Each step in that process was a step to increase standoff range and therefore achieve combat overmatch against a peer force. Theoretically, if your standoff distance was the best within the world, you would be nearly unstoppable and the size of an opposing force required to defeat you would grow exponentially. Standoff distance, i.e., weapon lethality range, has dominated warfare technology development for well over 2,000 years because it directly tied to a combat overmatch achieved by those that had it.

However, standoff distance is slowly losing its influence as the driving force behind warfare technology development. Additionally, combat overmatch, at least the tactical sense of combat overmatch, will follow suit and not necessarily be required to win our nation's future wars. The advent of the Internet and the global interconnection of data has generated a path to oust combat overmatch as 'the' game changer. Instead, information dominance will be the characteristic that will win future wars. The organization that has the most relevant, timely, and actionable information will be victorious in battle, even against a combat overmatch force. Instead of seeking combat overmatch in our future investment strategies, we should be seeking a strategy that gives us Information Overmatch.

### **What is Information Overmatch?**

Information Overmatch is the deliberate collection,

analysis, synthesis, and application of data relevant to an operational context, in a manner that is overwhelming to an adversary, to achieve desired strategic, operational, and tactical level effects upon the environment. It is not just knowing more or analyzing more data than an adversary. In fact, we should strike the word "more" from our lexicon when talking about Information Overmatch, because "more" is not necessarily helpful. Certainly, large amounts of data sets are useful, but more data sets does not necessarily equate to an Information Overmatch if it is not actionable. They might lead instead to information overload causing the entire system to slow or freeze, mired in piles of non-relevant data.

Instead, Information Overmatch is about increasing the effectiveness of what data we collect and more importantly, how we use it. Speed is key here. If data is distilled into actionable information and then provided to an actor to action it faster than the adversary, an overmatch is achieved. With the right sets of data inputs and in a suitable operational context, Information Overmatch trumps Combat Overmatch for supremacy to achieve national objectives.

### **Our focus on combat overmatch**

Since World War II the U.S. has had a preoccupation with achieving overmatch, but perhaps rightfully so. 90% of the U.S. military combat deaths since World War II have come from the infantry squad, which only accounts for 4% of the total uniformed force.[1] This is not necessarily a surprising number since the purpose of the infantry squad is to be on the edge of battle with the enemy. What is interesting though is that the U.S. puts so much interest in optimizing 4% of its total force, in this case, looking for combat overmatch.

In a memo dated 8 February 2018, Secretary of Defense James Mattis established the Close Combat Lethality Task Force (CCLTF), whose purpose was to "serve as the DOD point of coordination and catalyst for close combat initiative across the full range of efforts necessary to achieve close combat overmatch." [2] On 16 March 2018, he clarified the original memo, stating the CCLTF "will develop, evaluate, recommend, and implement improvements to U.S. squad-level infantry combat formations in order to ensure close combat overmatch against pacing threats." [3]

Our interest in combat overmatch, particularly in close combat overmatch comes from our ability to under-

stand its first, second, and third order effects very easily. With nearly 10,000 years of practiced warfare at the close combat range we as a human race make very easy, and sometimes obvious, connections between the ability to dominate at the efforts necessary to achieve close combat overmatch.”[2] On 16 March 2018, he clarified the original memo, stating the CCLTF “will develop, evaluate, recommend, and implement improvements to U.S. squad-level infantry combat formations in order to ensure close combat overmatch against pacing threats.”[3]

Our interest in combat overmatch, particularly in close combat overmatch comes from our ability to understand its first, second, and third order effects very easily. With nearly 10,000 years of practiced warfare at the close combat range we as a human race make very easy, and sometimes obvious, connections between the ability to dominate at the squad level to an understanding of tactical outcomes, collateral damage, and enemy or civilian response action. With such a direct link between an infantry squad and traditional warfare objectives it is easy to point to combat overmatch as the Holy Grail to perpetual winning of wars. That line of thinking is not wrong, especially considering our current situation and technology but what if there is a different way at a future point in time?

### **The fall of combat overmatch**

The enemies of the U.S. are intelligent. All of our enemies, including non-state actors, watch how we operate, know how we fight, and look for ways to exploit our tactics. The U.S. prides itself on transparency and openness to its people and our policies and culture support the willingness to disseminate information about our military, from upcoming development programs, to government spending, to capabilities and upcoming deployments. Also, the military has a desire to erode the civil-military divide where public perception of what the military is and does is a far cry from what it really is and does, which ultimately translates to public support (or opposition) to the military’s goals.

As part of our desire to be transparent, the U.S. has made its strengths well known, but they also have not been bashful about its weaknesses. In 2014, then Chief of Staff of the Army General Raymond Odierno made it quite clear that the Army was not prepared to fight in a megacity environment. Technology aside, General Odierno identified three gaps that currently exist within the Army in a megacity scenario:

1. Insufficient doctrine to deal with the scope of a megacity.
2. No emphasis of cities as a unit of analysis for intelligence, academic or operational study.
3. A lack of strategic analysis products including DOD/ Joint planning scenarios to consider contingencies and test capabilities.[4]

The mere acknowledgement that the U.S. is unprepared to fight and win within a megacity operational context means the adversary will incorporate megacity operations into their defensive or offensive plans. The U.S.’s next major conflict will include a megacity component and assuming razing the city is not an option, combat overmatch is not a major factor for success. This has been shown in recent history multiple times. In both Iraq and Afghanistan, as well as the fight against ISIS, the U.S. has a very difficult time achieving operational or strategic successes even though they possess significant overmatch in all combat domains.

In a megacity context, combat overmatch is rendered ineffective, in short, because the standoff distance between threats is too short, there are too many civilians within the given area, the amount of dead space is insurmountable, and it is difficult to tell friend vs. foe vs. neutral. Coupled with any of those problems is the additional issue of the time-space to make decisions and react is significantly reduced due to a regularly changing and evolving battlefield.

### **Enter information overmatch**

While a megacity has a significant number of combat risks that impact the U.S.’s desire to operate within it, what it does have a lot of is data. Unfathomable amounts of data are generated by a megacity every day, from data about the power grid and utilities, to traffic and security cameras, to civilians and their smart phones. Data is intrinsically everywhere in a megacity. The force that can transform more data into actionable information and then act upon it faster will be the victor. In other words, achieve Information Overmatch and combat overmatch becomes irrelevant.

There are three lines of effort required to achieve Information Overmatch. The first is to control the narrative to the public. There is an internal and external component to controlling the narrative. The internal piece, control the narrative within the AOR focuses on winning the

hearts and minds of the local population. Particularly in a megacity context, the most dangerous course of action is one where the civilian populace turns upon the U.S. forces or one where the U.S. forces are viewed as invaders in a foreign land. Controlling the internal narrative is vital to keep the civilian population at least neutral or, ideally, cooperative with the U.S. forces.

If every civilian can be convinced to be the eyes and ears of the U.S. forces, in the same sense as the “See something, say something” campaign for Homeland Defense, the U.S. would gain millions of sensors on the battlefield at relatively less effort. In addition to the internal narrative, the external narrative needs to be shaped and managed so that it is symbiotic with the internal narrative and reinforces the U.S.’s intentions abroad.

A strong Information Operation is required to achieve this first goal, coupled with offensive and defensive cyber operations to ensure the proper messages are received and contradictory messages from an aggressor are suppressed. Control, either direct or through networked means, of the region’s key infrastructure is key as well, particularly areas that impact everyday life of the population such as utilities, communication, transportation, and financial. If unable to control and protect those areas, the ability of an adversary to turn off a resource, power for example, and blame the U.S.’s occupation becomes too great. Alternatively however, the U.S. could apply the same tactics in the reverse for its own attempt to control the narrative. In the end, the goal of this first line of effort is to win the will of the local population and degrade the will of the aggressors.

The second line of effort is information fusion. Information fusion is the integration of all relevant data sources into a unified source of truth that masters and disseminates information as required by the users. That definition is a very abstract concept so information fusion is perhaps better explained through a series of concrete examples. It is important to note, however, that these examples are merely viewpoints of a larger and more abstract concept of information fusion. The implementation of information fusion for any specific environment must be evaluated and optimized to meet the goals and constraints of that environment.

Consider the case where U.S. forces are conducting major combat operations in a megacity. The megacity has its own infrastructure and data systems. It has a util-

ity system that is managed via a system of networked monitors. It has a transportation network which has street cameras, magnetic traffic sensors, and traffic light information. It has a commercial economy that has an internet presence as well as a physical, brick-and-mortar location within the city. Each of these systems, and thousands more, produce digital data, some of which may be relevant to the combat operation. Finding a way to fuse the data together to become actionable information is indeed a challenge, but if that challenge is successfully accomplished, the reliance upon lethality or survivability as the path to mission success becomes less important.

Instead of developing new technologies aimed to defeat an enemy with brute force, the U.S. should instead be looking toward defeating an enemy with superior knowledge on the strategic/operational/tactical levels. Additionally the U.S. should look for creative ways to utilize the infrastructure already in place in novel ways. As one example of this, nearly every adult in a megacity carries a cellphone. That’s millions of sensors with a microphone, camera, and data stream placed everywhere in the city. How can U.S. Forces take advantage of that infrastructure? Of course, cyber forces or the intelligence community can certainly stealthily tap into those devices, but that is not the only way. What if the U.S. developed an app for mobile phones that allowed the civilian population to enter credible intelligence reports—literally an open source reporting mechanism that went right to the battle center headquarters for review? Certainly there would be some negative impacts that would have to be figured out, but the possibility of turning each civilian into a sensor could be much more important to success instead of bringing the biggest gun to the fight.

The final line of effort is needed to make sense of all of the incoming data streams that information fusion brings, artificial intelligence and big data processing. Taking all of the incoming data streams and then processing the data into information—rejecting irrelevant data, certifying data quality, then synthesizing data to information—is necessary to make actionable decisions based upon the data streams available. This third line of effort is a supporting effort to the other two and does not necessarily need to exist to be successful, but greatly improves the efficiency by which any collected data becomes used.

Raw data sizes for a megacity scenario could easily be in the terabyte to petabyte range each day so a significant

amount of computing power would be required to fuse, process, and distribute a megacity-wide data collection effort. Moving that amount of data over global distances networks would be infeasible using current technology and the computing speed would far outpace the transmission speed of that to and from the computing center. Therefore the U.S. military should invest into high capability mobile computing center and extremely fast transmission mechanisms over relatively short distances (as opposed to global). A portable, survivable data center for high speed computing that could be set up in a matter of weeks instead of months could be prepositioned as part of the Prepositioned Stocks program and installed into a theater of operations immediately upon need. As a survivability measure, multiple mirrored data centers should be deployed to a theater with significant enough geographic separation so they do not become a single weak link in the information fusion and distribution chain.

If each of these three lines are implemented properly, it opens up significant trade space for new and novel technologies that could be applied to the ground forces. Augmented Reality (AR) could be implemented at the troop level giving warfighters a level of situational awareness beyond anything possible in a non-networked world. Instead of a Marine company conducting a cordon and search of a 20-floor apartment building to find one or two enemy within the building, an augmented reality overlay could beacon the enemy's location in real time to the exact floor, apartment, and room requiring a much smaller force to complete the capture, leaving the remainder of the Marine company free to conduct other operations.

In a more futuristic scenario, if a megacity had a self-driving vehicle infrastructure that the U.S. had access into, multiple tactical effects could be generated without a shot fired. U.S. forces could clandestinely enter and exit the city using repurposed local vehicles, persons of interest could be monitored remotely and even detoured into capture. U.S. vehicles could have undeterred freedom of movement throughout foreign cities with extreme traffic jams by routing civilian traffic off military routes. The tactical benefits of information overmatch are only bounded by creatively and ultimately, access into those systems.

It is important to note, however, that the realization of the power of information is not just limited to the U.S. Foreign actors, including those hostile to the U.S., realize the power of information and are advancing their own technologies in order to generate their own Infor-

mation Overmatch. The needed U.S. investment toward the principles of Information Overmatch is as much about gaining the strategic hand over the enemy as it is preventing the enemy from doing so themselves.

### Conclusion

Necessity is the mother of all innovation and the megacity environment coupled with the advances in networked technology requires everyone to check their current understanding of traditional war doctrine at the door. The digital age, where everyone is a text or instant message away from everyone else in cyberspace, has led to a new and novel way to not only communicate, but to perceive the world. Information Overmatch, which is enabled by the digital backbone of the integrated network is a new way to look at challenging the existing military paradigm. The opportunities to own and control information are readily available. The spoils will go to the persons daring enough to collect it all first.

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### End Notes:

- (1) Roper, Daniel S, COL (Ret), U.S. Army. "Regaining Tactical Overmatch: The Close Combat Lethality Task Force." The Institute of Land Warfare, April 2018.
- (2) Establishment of the Secretary of Defense Close Combat Lethality Task Force, 8 February 2018. Memo.
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**Matthew A. Horning** is a Systems Engineer and the Assistant Chief of Staff, G5, Plans, assigned to U.S. Army Futures Command, Next Generation Combat Vehicle Cross Functional Team. Additionally, Mr. Horning is a Lieutenant Colonel in the U.S. Army Reserve with Cyber Operations, Aviation, and Acquisitions Corps qualifications. Mr. Horning has a Master's degree from University of Phoenix in Business Administration and a Bachelor's degree in Aerospace Engineering from University of Michigan. He maintains Certified Ethical Hacker (C|EH), Certified Information Systems Security Professional (CISSP), and Certified Systems Engineer Professional (CSEP) credentials.



## Category: Innovation

### WINNER

## Using Warfighter Feedback to Improve Acquisition: There's an App for That



*By Michael J. Ravnitzky*

Imagine how useful it would be if procurement and acquisition specialists had real-time insights on how military consumables were performing in the field. Are Soldiers reporting that the new 5.56 ammo jams more frequently than the older stuff? Does the latest batch of Army boots disintegrate when they get wet? Does a specific brand of batteries get depleted too quickly in field use? Is the latest MRE an awesome improvement that every Soldier loves?

Under our existing procurement model, getting answers to such questions in real time is largely impossible. But it doesn't have to be this way. There are two mechanisms that can easily make this task possible, and everyone is familiar with both of them: the five-star product or service rating system and an app.

Rapid feedback from warfighters would dramatically improve the acquisition model for consumable items such as boots, batteries, and clothing, and for services. It's urgent to have these insights, especially now, as acquisition continues to shift from military specifications to off-the-shelf, commercial products. The payoff would be huge: potentially avoiding procurement of faulty or unsatisfactory items, improving effectiveness and even saving lives with better products for our warfighters, which making better use of taxpayer dollars.

### Information Army Buyers Need

Today, a growing percentage of the items that Soldiers, Sailors, Airmen, Marines and Coastguardsmen consume are commercially sourced. This trend will continue because of obvious cost advantages and the ability to rapidly and efficiently supply field needs. Unfortunately, the quality of commercial products can vary widely in civilian life, even more so when used in military field conditions. Civilians often turn to Amazon customer ratings for guidance, but there is no direct equivalent in military acquisitions.

Currently, acquisition focuses on performance at the time of delivery rather than performance in field service. In fact, it largely ignores the satisfaction of the end user. The questions government buyers ought to be equipped to answer are: How well does the item hold up in use or in storage? How well does it work with other equipment? Does it break easily? How well does it run compared to equivalent products? Does it hamper or delay operations? Fundamentally, does the end user swear by it, or swear at it. These are all important factors to the Soldiers who use the items on a regular basis. However, user feedback data that answers these questions are typically unavailable to the buyer.

Determining “contractor responsibility” (the means and ability to complete the contract in question) is a significant aspect of the acquisitions process. Nevertheless, in the process of buying commercial products for Soldiers, one important factor is missing: the utility of a product in actual service. How the products actually work for the warfighter should be an aspect of contractor responsibility determination. But current reviews or best-value criteria often do not look beyond the company's own quality checks.

### An App to Fill the Gap

There could be an app for that. An app—accessible on any mobile device—would allow users of military consumables to provide feedback, to rapidly identify for acquisition staff (and engineers) when products are working well, or experiencing problems. The data could be used by buyers to identify and address emerging concerns, something that is impossible to do today.

The widely used five-star rating system used by online commerce as well as brick-and-mortar businesses provides purchasers with valuable and easily understood information to assess perceived product quality and confidence in sellers. Such ratings are useful even when the data is unreliable, inaccurate, or biased. In our personal purchase decisions, even “noisy” data proves useful when considered in aggregate.

For consumers, the star rating system turns widely individual subjective numerical feedback into collective objective comparisons. Narrative comments describe what works well or poorly about the product. Reading a narrative description provides one way that we can judge the reliability of an online review.

A star rating system can do more than indicate product quality. It can show the degree to which users like or dislike the product. It can answer questions such as: Are problems being corrected? Is user satisfaction addressed? Is the vendor responsive to customer concerns?

The warfighters' generation is familiar with online ratings and with apps. For Soldiers, especially those serving overseas, online purchases are a necessity—an indispensable lifeline to home. These Soldiers are already familiar with the process of giving star ratings and narrative comments for a wide variety of purchased products, and how to share their views and concerns about a product or service. The app would also be a way to tap into the powerful informal Soldier information network ("the grapevine") for issues that might otherwise go unreported.

It is the Soldiers, supply sergeants, and supply officers who are in the best position to spot problems with regularly purchased products. Reporting ratings can be done in most operating environments because computers are used nearly everywhere and mobile phones are accessible in many locations. An app of this type could include the ability to hold onto a rating report offline until the user reaches a place where the phone could connect and deliver the data securely, for operational security or connectivity reasons.

### Design Considerations

The primary focus of a warfighter feedback app is simplicity and usability. It should be easy to search and find the product type or brand. Beyond the basic star ratings, the app should also allow the user to type in descriptive text or enter that text via the audio-to-text features standard on most mobile devices. The use of narrative text entry data fields is essential in providing necessary flexibility for feedback. The use of check boxes for a series of particular problem types, as well as an "other" category, provides an additional way to save time.

The acquisition rating app could show optional boxes to provide relevant data input such as part number, serial number, lot number or manufacturer or vendor name. But it would be counterproductive to require that these boxes be filled in, because Soldiers may not have ready access to all of this data and rigid restrictions could discourage participation. The app potentially could allow for photos of the item to be uploaded with the rating, also saving the need to type equipment detail.

In fact, many items purchased by DOD already incorporate Item Unique Identification Marking (IUID), allowing a smartphone to capture the QR Code as an easy way to link the comments to the product in question. This would use a rich data resource that already exists. The warfighter would aim their phone or device, the software would determine if there is a readable QR code; if so, it captures the code, and if not, it accepts a photo of the item, QR code, or other available identifying information such as barcode, or label. The user would then tap the star rating and could add comments, perhaps even voice-to-text comments.

Such simple reporting would provide early recognition of an issue, to allow Soldiers to trigger an alert if a problem is occurring with a product, or offer a kudo. A data dashboard could capture and display situations involving low ratings that might merit quicker attention from an assigned response team, or from the responsible acquisition professional. However, the system would not be intended to provide comprehensive data or guarantee an immediate acquisition response.

Anonymity permits candid, objective feedback. At the same time, it would be helpful to allow commenters the option of providing their contact information for later follow-up.

### Using the Data

After designing the user experience and establishing a path for the data to be collected and assessed, it could be used in two ways. First, feedback data from warfighters could be made available to contracting professionals through a gateway that would allow easy access to data associated with the product being purchased. This would allow members of the acquisition workforce to know of ongoing concerns before they place new orders for a particular product. This could help avoid follow-on purchases of consumable items when end-users are strongly dissatisfied with their quality.

Second, a review of the data could identify red flags for subject matter experts or engineers – particular instances of poor design or substandard manufacturing resulting in Soldier concerns. This would allow DOD to identify such problems earlier and to address them faster and more systematically.

### The Value of a Warfighter Feedback Channel

In the civilian sector, there is an effective feedback

mechanism: customers vote with their pocketbook. But in the military, the end user is not the purchasing decision-maker, and so a key element—Soldier feedback—is missing. This data would enable the key decision maker, military acquisitions, to make better, more informed purchasing decisions to support warfighters.

Data collected from a warfighter feedback app would identify problems with items purchased for the military earlier and would minimize the delay or loss of problem reports. It would speed the recognition of product quality issues among procurement professionals, and it would reduce the chance of reordering deficient products. It also would provide an easier, data-driven way to ensure contractor responsibility for supplied products, ideally leading to faster corrective action.

Customer feedback is paramount to acquisition performance. It is essential that Soldiers know that their thoughts and concerns about critical equipment and supplies are reaching the proper ears, and that those ears are the acquisition experts who are responsible for putting those products in their hands. It could also improve job satisfaction and morale by providing Soldiers a way to transmit field concerns about Army-purchased products, with the reasonable expectation that the issues will be addressed. In addition, acquisition professionals would find it satisfying and rewarding to know that they have better capability to respond to the warfighters they support.

### **An App to Improve Acquisition**

Current smartphone app technology with an easy-to-use star-rating process can provide a powerful and timely opportunity for acquisition professionals to collect key data from warfighters about the quality, effectiveness and utility of frequently purchased military items, particularly for consumables, and perhaps for services. This mechanism would provide valuable input to people who make purchase decisions and who strive to provide the best products at the best price to best serve our armed forces.

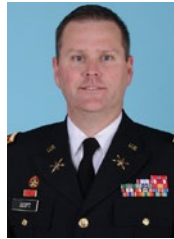
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*Michael J. Ravnitzky works in the Contracting Division at the Naval Sea Systems Command in Washington, D.C. He holds a B.A. in Physics from Cornell University and a J.D. (with honors) from Mitchell Hamline School of Law.*

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### **HONORABLE MENTION**

## **Designing Systems to the Skillsets We Already Have**



*By Maj. Mark Scott*

My wife and I constantly debate on the amount of “tablet time” our twin four-year-old boys should have. We watch in amazement as they quickly swipe across the screens, mastering games that involve complex problem solving and hand eye coordination. How do we harness this talent? I ask myself if I could ever have been that good at computer games at four years old. I remember back to when I was seven and the Super Mario Brothers craze swept across every household. I would play for hours, only taking breaks for food and sleep. Did anybody ever embrace the skills I learned in boyhood?

Now at thirty-seven years old and labeled Generation X (born 1965-1980), I’ve seen our acquisition community introduce video game applications into our weapon systems and training. Somebody took notice! The Nintendo generation now holds many of the program manager positions and flock toward any new idea that may spark the happiness of youth. Combat situations can be emulated into a first-person role-playing game, drilling the Soldier’s actions over and over again without having to execute expensive field problems. The graphics in simulators for any platform with a steering wheel or joystick rival the latest console produced in the gaming world. Advancing our manned systems to unmanned systems requires even more skill from the “Gamer” generation to maneuver combat systems across the battlefield with imaging from mounted cameras combined with a vast selection of lethal payloads. Our skills have been embraced!

Enter the Millennials (born 1981-1997). This generation lives online, adds Bluetooth to every tech gadget, and is described as always needing to be entertained. During their youth, flip phones became smartphones with applications ranging from text messaging to geo-locating Pokémon. Virtual face-to-face meetings could be held in seconds through video conferencing and people connected on high tech gaming computers to

form squads patrolling the realistic streets of Fallujah and execute small unit tactics. Toy drones designed for backyard millennial fun transformed into high-speed drone racing with cash prizes on ESPN. These examples represent only a few skills that were developed by this generation. Did program managers take advantage of the proficiencies demonstrated by Millennials?

If you went to the recent Association of United States Army (AUSA) Annual Meeting in October of 2018 in Washington, D.C., it was hard not to notice the abundance of unmanned systems and miniature drone technologies. You still had your tanks, missile systems, and helicopters, but the supporting systems were filled with the latest technology geared toward the Millennial Soldier. Monitors had touch screens or break screen technologies as well as voice activated controls. Wires were gone from most systems and the word "intuitive" was embraced as the buzzword for any system that looked like it needed extensive Soldier training.

The obstacle course set up in the corner of the convention center still tested the endurance and strength of any challenger who wanted to show their physical prowess, but I wonder if future events would ever host a drone-racing event or an unmanned vehicle competition. Will we ever see an Infantry Soldier be praised more for their skills to fly a handheld drone into enemy territory and deliver munitions over hitting a target with a M4 from 300 yards? Drone Combat Badge! What about a tank company, maneuvering their systems via "Xbox" controllers into combat and destroying an enemy's position? The technology is there, but will Commanders demand it from the Acquisition Community to enable units to master skills honed in childhood? For the Millennials, this may seem like an easier task than scoring 300 on the APFT.

We now have Soldiers in our ranks labeled Generation Z (born after 1998). Have we examined the skills that they come with before they enter basic training? Will the display screens on their unmanned vehicles they train on during AIT be able to be controlled by swiping across a screen? If so, my four-year-old twins may be able to operate the system! Requirements for a new system may incorporate the buzzword "intuitive", but that means something different for each generation. How can we find the skillsets for Generation Z? Do we ask them what they are good at? Do we bring in interns to our program offices and let them have a heavy influence in

design? Maybe we can give the entire "intuitive" problem set to academia to meet a requirement when designing a system.

Technological skills are developed early and can be vastly different over generations. Baby Boomers (born 1945-1964) can tear down a car engine and build it back up where almost nobody in Generation Z possesses that skill. These skills are identifiable and can be utilized to our advantage as systems are designed. Hopefully this paper can spark new thought as programs develop requirements to look at the next generation for innovative ideas.

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*Maj. Mark Scott is assigned to the Small Satellite Integration and Infrastructure Division within the Department of Defense. He has served as an assistant product manager at the Missile Defense Agency and PEO Missiles and Space. He holds a B.A. in marketing from Mississippi State University and an M.A. in acquisition and procurement management from Webster University.*



## Category: Lessons Learned

### WINNER

## Lessons Learned: Collaborative Process Reduces Justification and Approval Processing Time by 44 Percent

By the following authors:



Joseph M. O'Connell



Rachel A. Capaldi

### Background

Army Contracting Command – Warren (ACC-WRN) realized it had a problem ... a Justification and Approval (J&A) processing problem. This became apparent when ACC-WRN submitted a high priority, urgent J&A to the Department of Army (DA) for Senior Procurement Executive (SPE) approval. However, the length of time for the J&A to be prepared and processed raised questions about how truly urgent the requirement was. The issues in that particular J&A were resolved but it was clear that process improvements were necessary. While the J&A is ultimately a contracting document, several stakeholders contribute to the document preparation and are involved in the approval process. The requirements office, contracting office, legal, and competition management office are all involved with each J&A. Additionally, numerous individuals from each office play a role in drafting or reviewing the document. Each of these stakeholders could potentially cause a preventable delay in the document approval. So the focus turned to how each of these stakeholders could collectively reduce the overall time for document creation and approval.

### What is a J&A?

It may seem strange to hear this with all of the publicized, high dollar value sole source actions, but competition is the law of the land in Government contracting.[1] So how are these non-competitive actions awarded? By utilizing an exception to the law.[2] For DOD, these exceptions are codified at 10 U.S.C 2304(c) and implemented in

Federal Acquisition Regulations (FAR) Subpart 6.3 and corresponding DOD/agency regulations. The FAR lists seven exceptions to competition, with the one responsible source exception being most frequently used at ACC-WRN. The J&A is the document used to justify that the circumstances require other than full and open competition and to approve the justification at the required level. At the highest dollar threshold, the Senior Procurement Executive is the approval authority.[3]

### Quick Wins

One of the first steps in reducing J&A processing time was creation of an informal Integrated Product Team (IPT) initiated by members of Program Executive Office Combat Support and Combat Service Support (PEO CS&CSS). The goal of this IPT was to achieve the quick wins—those process improvements that could be made at lower levels and could be implemented quickly. One of the first quick wins was to communicate to all stakeholders that the typical J&A processing time was unacceptably high. This wasn't a complete surprise; most that were involved in the process knew anecdotally—and often complained about—how long the entire process took from start to finish. Once the scope of the problem was identified and communicated, the remaining quick wins involved updating local organizational guidance. Even in the early stages of the improvement process, it was apparent that much of the processing time was due to the back and forth of submitting the J&A for review and making revisions, repeat, repeat, repeat. So the local guidance encouraged early collaboration for large dollar J&As, since those would receive the most scrutiny and layers of review.

### Full Scale Effort

The Tank-automotive and Armaments Command (TACOM) Commanding General at the time, MG LeMasters, was aware of the issue with the SPE-level J&A described in the opening paragraph. MG LeMasters required an in-depth analysis of the problem and expected solutions. Therefore, senior leaders from ACC-WRN, PEO CS&CSS, PEO Ground Combat Systems (GCS), TACOM Competition Management Office (CMO), and the Army Materiel Command Legal Center – Warren (AMCLC-W) chartered a formal IPT to study this further. Instrumental to the formal IPT was the involvement of the TACOM Continuous Process Improvement (CPI) office, which provided resources and guidance to document findings and recommendations. While not an official Black Belt project, the IPT

was structured as so. Team members gathered historical processing time data by reviewing the Paperless Contract File (PCF) system to extract key milestone dates from a sample of previously approved J&As. The average days between the milestone dates provided the historical baseline from which to improve upon.

The IPT team members analyzed this data and confirmed the many days wasted by routing and re-routing the J&A each time a reviewer revised the document. To eliminate this back and forth, the IPT proposed a White Board process, where all local reviewers and approvers would meet to discuss any recommended changes or updates to the J&A. The White Board process would be accomplished through two meetings, Phase 1 and Phase 2. Phase 1 would be the discussion regarding the path forward in general. Topics include whether this is a new requirement or if a previous J&A was issued, the specific exception to full and open competition in FAR 6.302 that will be utilized, and the rationale for restricting competition. At the conclusion of Phase 1, the initial draft J&A will be prepared.[4]

The draft J&A is sent to all reviewers/approvers and other stakeholders for each individual acquisition. This is the opportunity for everyone involved to provide edits, comments, and address any potential issues. Once all stakeholders have reviewed the draft J&A, the drafter compiles the revisions and Phase 2 is scheduled. During Phase 2, all edits, comments, and issues are discussed. Therefore, by the end of Phase 2 or shortly after, the vetted J&A is ready for final review/approval. Reviewers that are unable to make the White Board meetings either designate a representative or waive review.

The IPT determined that this White Board process would be used for all PARC-level and SPE-level J&As. All reviewers except the ACC-WRN Directors and PARC would be part of the White Board meetings. Due to the frequency of White Boards and scheduling conflicts, the ACC-WRN Directors and PARC review the final J&A outside the White Board process. This new process was briefed to the TACOM Deputy to the Commanding General and was well received and given immediate approval. Several J&As were selected to use the White Board process as part of a pilot in order to streamline the changes and allow for training to be provided to the workforce. This improved process has now been fully implemented by ACC-WRN and stakeholders.

### Lessons Learned

1. Whenever feasible, get everyone in the same room. Technology provides numerous ways to communicate but there are benefits to face to face communication that cannot be replicated by other means. The more personal interaction improves credibility among team members. Non-verbal communication can be displayed and read. And yes, it sounds like a simple concept. However, part of the challenge is gathering key individuals that have the detailed process knowledge, but also have the strategic vision to develop feasible solutions. If individuals with both of those traits aren't available, then team members from across that spectrum should be involved. A top level analysis of a problem when the detailed process is not understood probably won't develop feasible solutions. Likewise, a detailed process analysis may not result in the big picture ideas needed in order to improve upon the current process.
2. Buy-in from all levels is vital, especially when using cross-organizational teams. A senior leader promoting a project automatically provides leverage and motivates the team to show results. There are two pitfalls if the team cannot point to an executive or officer as championing the project. The first is that representatives from different organizations, or sometimes even within an organization, have competing interests. The big picture can get overlooked and meetings can turn into blame game sessions. The second is accountability. Being accountable to a senior leader expecting results prevents the effort from stagnating among numerous proposed changes that are never fully implemented. Buy-in from the functional level is equally important so that changes are effectively implemented. Process changes are easy to sell if they benefit everyone. Much more communication down to the functional level is required if changes benefit the organization as a whole but require additional resources or challenges to implement.
3. It was tempting to title this section Lessons Learned (to be continued). It's easy at the end of a comprehensive IPT or Black Belt project to implement and finalize the course of action and be done, but the continuous process improvement method is, well ... continuous. And improvements continue to be made to further refine the White Board process. A major, relatively new improvement is

that there is now one draft document, stored on the ACC-WRN SharePoint portal. The White Board team members for each J&A are given read/write permission to edit the document using track changes and by adding comments in real time. Then the changes are accepted or rejected during the Phase 2 meeting. This eliminates the need to consolidate multiple draft versions into one final version. Creating a SharePoint page did require collaboration with the local SharePoint managers, but is an example of utilizing resources in a new way to improve efficiencies.

4. Don't forget to train the workforce on new processes, especially with a large-scale process change such as the J&A White Boards. This process changed the way that several organizations and hundreds of people conducted business. Numerous training classes were given so that the workforce understood the new process, as well as the expectations derived from the use of the new process.

### Conclusion

It's hard to argue the success of the White Board program in reducing J&A processing time. Previously, the average time from J&A creation to receiving all ACC-WRN reviews and approvals was 180 days.[5] The average time now for the same result is 101 days. That's a 44% reduction. This framework can be applied to any process or document that has multiple layers of review, especially those that require input from different organizations. Even if a full Black Belt project isn't utilized, a collaborative effort from all stakeholders can achieve similar results. Identify the problem, gather the group/achieve buy-in, address any quick wins, tackle the longer term solutions, and continue improving.

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### End Notes:

- (1) See the Competition in Contracting Act (CICA), 41 U.S.C. 3301.
- (2) Though not applicable to this discussion, there are also exemptions to CICA, see FAR 6.001.
- (3) See FAR 6.304(a)(4).
- (4) The J&A is initially prepared by either the Requirements Office or the Contracting Office, depending on the program.
- (5) The total days in these calculations are from require-

ment initialization to PARC review or approval, since those days could be controlled locally. Therefore, for this analysis, days required for SPE-level J&As beyond PARC review are not included in the calculations.

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*Ms. Capaldi and Mr. O'Connell each have over 10 years of government contracting experience, having started their Army civilian careers on the same day. Ms. Capaldi is the Alternate Command Advocate for Competition at the Army Tank-automotive and Armaments Command in Warren, MI. Mr. O'Connell is a Procurement Analyst at Army Contracting Command – Warren and is an attorney.*

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### HONORABLE MENTION

## The "LLC" of Acquisition Streamlining: Lessons for Accelerating Product Development

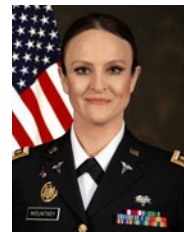
*By the following authors:*



**Col. Matthew  
G. Clark**



**Dr. Renae  
Malek**



**Maj. Andrea  
Mountney**

*Disclaimer: The views expressed in this article reflect the views of the authors and do not purport to reflect the official views of the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND), United States Army, Department of Defense, or the U.S. Government.*

The speed of innovation and development is a constant issue for the U.S. Department of Defense. Rapid acquisition is challenging when it's unclear how to quickly achieve quality capabilities while streamlining programs. This is particularly difficult in the military, which organizational experts call a "coercive bureaucracy" that thrives on "oversight" (i.e., limited trust). This essay presents

lessons learned over the last two years that illustrate ways to create an “enabling bureaucracy” that facilitates speed.

These methods resulted in greater readiness through two FDA-approved medical countermeasures, or MCMs, expanded use of an existing product, and a recently approved Middle Tier Acquisition effort for an opioid MCM. The newly approved MCMs of a new atropine autoinjector and the anticonvulsant midazolam are the first in 15 years for medical chemical defense, and the latter has even broader use affecting readiness. We learned that there are three core elements for streamlining: Listening through engagement, Leveraging opportunity, and Collaborating for speed and success. This “LLC” simplifies the “business” of effective acquisition streamlining.

### **Listening through Engagement**

“Listening through engagement” created opportunity for streamlined product development. More involved than “active listening,” this involved dialogue (i.e., shared speaking and listening) between stakeholders, equities, organizations, and different nations. This was complex because each had different disciplines, cultures, subcultures, motives, and perception. Like in the military, we joke about the differences between and among the Services. Compound that with the numerous and often competing cultures of industry and different agencies. We engaged each openly and honestly, which also created challenges, but through challenge, transformational opportunities were created.

In short, Listening through engagement created opportunities for constructive change through an active process that created shared progress. We managed the contrast of creating spaces where teams could verbalize new ideas and take prudent risk, while also supporting an environment that pushed teams to find better business practices. This allowed the DOD 5000-series to move from being an immutable engineered template to the flexible guidance that it truly is.

Essentially, we witnessed that the engagement that created acceleration could only be achieved through trust. This meant that all engagements needed to demonstrate the qualities of character, competence, commitment, and reliability. We fought to avoid cynicism and auto-cracy, shared information openly, and even failed at times; those behaving contrary damaged our ability to progress quickly.

Obvious questions were “how should we engage” or “what could we do to create opportunities to engage?” Tools for effective engagement are standard practice. It started with a team vision, and creating a realistic plan to start dialogue—the details of the approach changed for different products but the vision did not. Once we had a vision and plan, only a strawman at times, it was broadly presented to stakeholders. Many pushed back, and that is where our team learned to listen closely rather than get upset.

Requests for information, tech watch, market surveys, and conferences all provided venues to engage industry and academia. Further, we used an Other Transaction Authority, or OTA, consortium as a target-rich environment. The key was that teams built the relationships that allowed for effective engagement and critical reviews of what was achievable. Interestingly, stakeholders sought challenges, particularly small businesses and academia—they loved hearing that something was impossible. These engagements provided the opportunity to learn about the reasonable art of the possible.

Additionally, beyond industry, our teams sought out rather than ran from detractors and engaged them in dialogue. In the Joint and Interagency medical space, that was usually requirements generators and the test and evaluation “authority” of the FDA, both of whom we engaged heavily. For each, our team frankly shared the biggest issues and goals while listening carefully for the elements that drive their “business.” This informed us about the energy that turned the flywheel of progress, which through this process, turned in our favor.

Lastly, we listened internally too. There was more than one group already supporting us who informed or resolved many of the issues we faced with streamlining; we only had to listen. Our people needed to be challenged, supported, and trusted to fully realize their potential; this one activity allowed us to make significant progress.

### **Leveraging Opportunity**

Once teams developed momentum, how did they leverage additional opportunity? In our case, this involves drug and device development to FDA-approval and fielding.

We “Leveraged” both large and small pharmaceutical companies, start-ups, academics, and incubators for



innovative ways to accelerate development. We sought solutions that have applicability outside of the military as an incentive because DOD requirements are dwarfed by the global civilian marketplace. The strategic use of Small Business Innovation Research programs and Cooperative Research and Development Agreements allowed us to mitigate risk and maximize test and evaluation of novel and existing technologies to deliver capabilities faster. Research and development collaborations with small businesses were generally more flexible than traditional defense contractors.

Developing MCMs is generally a 10-20 year process. There must be an understanding of technical, scientific, regulatory and customer requirements throughout the process. We communicated these elements through use of the Medical CBRN Defense Consortium, an OTA consortium where we leveraged broad Statements of Objectives and flexible contracting mechanisms for maximum industry participation.

Often the Fool's Choice played out, where one is presented a dilemma, only a few options are seriously considered. The choice then becomes one or the other. However, more perspectives with diverse input created numerous viable alternatives, the choice then was not between two less desirable options, but was expanded to include solutions that leveraged unique partnerships between industry and government. Opening the aperture to see the complete picture and identify novel and innovative avenues became a means to find efficiencies to accelerate development not previously considered.

For us, the ultimate goal is decreased timelines and costs for the delivery of FDA-approved MCMs. This problem required new thoughts and processes between distinct organizations, each with its own reporting chain and funding. INFORMED (INteragency FORum for MEDical countermeasure Developers) is an interagency working group that engages the chemical MCM community in technical and scientific discussions, broaching topics that intersect both civilians and the military. The group helped us identify approaches for moving products through development pipelines. Participants include: the Medical Countermeasure Systems of JPEO-CBRND; Defense Threat Reduction Agency; U.S. Army Medical Research Institute of Chemical Defense; Edgewood Chemical Biological Center; National Institutes of Health (including CounterACT), Biomedical Advanced Research Development Authority, and the FDA. By lever-

aging interagency expertise we are successfully driving faster development through common understanding and consensus. This required pooling intellectual resources and promoting open, ongoing dialogue among U.S. labs, product sponsors, industry and academia experts, and regulatory scientists from the FDA.

We also leveraged international partners through data exchange agreements. Existing agreements allowed us to answer questions, avoid or reduce investment, and even conduct operational exercises through partners who dealt with similar challenges. Often the U.S. is seen as the only country investing, but we learned that this was a false assumption; we merely asked our international partners. This leverage is built upon quality relationships and it helped us avoid significant costs, eliminate research at various points, and develop concepts of use for urgent products where the requirements system was not agile enough to respond with a full concept of operations. At its crux, Leveraging opportunity was about finding shared purpose.

### **Collaborate to Speed and Succeed**

As the final element of "LLC," Collaboration in acquisition involved two or more groups working together towards a shared goal—delivering capability. Not to be confused with coordination, collaboration capitalized on strengths from across enterprises resulting in a synergistic and self-perpetuating output that was greater than the sum of individual components. While collaboration is a buzzword easily thrown into white papers and splattered across high-level briefings, its practical implementation was more challenging to realize.

Effective collaboration was more than roles and responsibilities outlined in a well-crafted memorandum or rigidly chartered meeting between organizations. Rather, our collaborations were flexible, dynamic, and organic where decision-making was decentralized to the lowest level possible. Institutional fiefdoms were dismantled; personal agendas were not tolerated; and obstructionist personalities were avoided or removed from the development process. This empowered the "sausage makers" to boldly, unapologetically, and most importantly rapidly react and adjust strategies and resources effectively. We found that the most productive collaborative teams were multidisciplinary cross-functional bodies that straddled government, industry, and users to bring the perspectives representative of all stakeholders—always working towards a shared goal.

Our high-functioning collaborative teams embraced the following characteristics: clear communication, diversity (including various perspectives), compromise, tolerance/trust, team-player mentality, reliability, and responsiveness. Conversations began with "how can we help?" or "what do you need from us?" and conflict resolutions revolved around principled negotiation to allow parties to reach agreement without jeopardizing relationships. Words like "me" and "mine" were replaced with "us" and "our," and resources were proactively offered rather than reactively extracted.

Our two recent 2018 FDA-approved MCMs illustrate a "whole of government approach" in which the regulator and the regulated, including diverse users, found common ground through shared understanding and collaborative teams. Importantly, the DOD, Centers for Disease Control, BARDA, and FDA employed an innovative, collaborative and highly interactive approach that utilized working groups, emergency use authorizations and declarations, novel strategies, volunteer subject-matter experts from academia, and leveraged emerging legislative authorities (Public Law 115-92) to accelerate medical product development and provide capability at lightning speed. In the end, we delivered products to users significantly faster via an interim fielding capability at an accelerated timeline with reduced program costs.

### **Conclusion**

For contrast, the LLC approach presented here intentionally offsets "coercive bureaucratic" behaviors that seemingly prevent rapid acquisition. Specifically, Listening through engagement countered uninformed, top-down, directives that were disconnected from how program management occurs at the tactical and operational level. Effectively Leveraging opportunities, relationships with other governmental agencies, available test and evaluation, and voluntary subject-matter experts, reduced costs by decreasing requirements to buy-down risk and it eliminated the need to fund all developmental activities. Lastly, listening through engagement and leveraging opportunity created the conditions for effective collaboration. Collaboration was the ultimate force multiplier in our limited resource environment. While competition has a place in some interactions, opportunities for collaboration between governments, agencies, and industry provided capability development synergy and speed.

In conclusion, we learned that the business of streamlining acquisition involves this "LLC." Depending on the organization, community, or commodity, effective employment may require changes in thinking or culture. We learned that beginning locally and modelling what was required helped create an "enabling bureaucracy" in many ways. Listening through Engagement, Leveraging Opportunity, and Collaborating for Speed and Success seemingly was not easy for a competitive organization with a comparable mission. However, when adopted by participants and supported by leadership, these elements have generated the collaboration needed to benefit all and ultimately deliver capability faster. Our team's performance over the last two years is a testament to these lessons.

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**Col. Matthew G. Clark**, PhD, PMP, is the Joint Product Manager for Chemical Defense Pharmaceuticals within Medical Countermeasure Systems at Fort Detrick, MD. The organization is in the Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense. COL Clark is responsible for managing centralized research, development, acquisition, and integration of FDA-approved medical countermeasures against chemical, radiological, and nuclear threats. The products they develop are used by Joint, Interagency, and Multinational organizations. COL Clark has a Ph.D. in Behavioral Neuroscience from Rutgers University and a B.A. in Psychology from Coe College. He has extensive rapid and deliberate capability development experience in DOD Labs, Iraq, G-3/5/7 of the Army Staff, and USAMRMC and service at the U.S. Military Academy and the U.S. House of Representatives. He also has published on leader development and a host of military relevant topics, while also serving in nonprofit organizations serving the military and veteran community.

**Dr. Renae Malek** is currently the Acting Deputy Joint Product Manager of Chemical Defense Pharmaceuticals (CDP), a subordinate office to the Medical Countermeasure Systems Joint Project Management Office (MCS-JPMO) of the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense. She guides the daily operational activities for CDP, managing research, development and acquisition to achieve whole of government and joint integration of FDA-approved medical countermeasures against chemical, radiological, and nuclear threats to rapidly enhance readiness and increase capabilities. She holds a Ph.D. in Biomedical Pharmacology from SUNY Buffalo and a B.S. in Microbiology from SUNY Plattsburgh. She

*has a Certificate in Regulatory Compliance from Hood College and is Project Management Professional certified, Defense Acquisition University Level III certified in Science & Technology Management and DAU Level II certified in Program Management.*

***Maj. Andrea Mountney** is the Assistant Joint Product Manager for Fielded Products and the Alternative Autoinjector support program within the Medical Countermeasure Systems Joint Project Management Office (MCS-JPMO) of the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense. She is responsible for lifecycle management of fielded countermeasures and project management of drug-device combination products used across the U.S. government. She holds a Ph.D. in Pharmacology from The Johns Hopkins School of Medicine and a B.S. in Biochemistry/Molecular Biology and Spanish from Ursinus College. MAJ Mountney holds her PMP and is Level III certified in Program Management and Science and Technology Management.*

