

ARMOR & MOBILITY

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**SOFC
ISSUE**

FUTURE FIGHT MODERNIZATION

LEADERSHIP PERSPECTIVE



GEN John M. Murray
Commanding Officer
U.S. Army Futures
Command



Vice Adm. David M. Kriete
Deputy Commander
U.S. Strategic
Command



Mr. James Smith
Acquisition Executive
U.S. Special Operations Command

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INSIGHTS

As the specter of unseen but ever-present threats to the security of globally-driven U.S. and partner interests grows, the expertise that only America's Special Operations Forces (SOF) bring to bear is truly paramount. With capabilities acquisition targeting operator effectiveness from lethality to mobility, the latest in personal gear to personnel carriers is fueled by the same mission: insert, execute, and disengage, all while maintaining precise target awareness. No easy feat when environmental challenges are just the beginning.

The May/June issue of *Armor & Mobility* (A&M) provides a balanced cross section of key elements comprising current objectives of U.S. Special Operations Command (USSOCOM). At the fore of what gives USSOCOM its reach are the acquisition processes that result in capabilities procurement. In an exclusive interview, SOCOM's Acquisition Executive Mr. James Smith speaks to a number of SOF-critical foci that represent the command's strategic approach to building a more lethal force including streamlining rapid, iterative approaches to innovation, as well as protecting the innovation base by providing industry with predictability. As a primary partner in SOCOM efforts to innovate, recently stood up U.S. Army Futures Command (AFC), led by four-star General John Murray, is poised to lead the Joint DoD into a Multi-Domain battlespace of the future, one dominated by the need for seamless force transition across a dynamic global front. In speaking to DoD's global mission set, A&M also had a chance to speak with Vice Adm. David Kriete, Commander, U.S. Strategic Command (USSTRATCOM), about STRATCOM's efforts to better secure critical American and partner nation assets from nuclear, space, cyber, and conventional threats.

Reflected in AFC's oversight of the Army's future mission, the new Ground Vehicle Systems Center (GVSC), under the Combat Capabilities Development Command (CCDC), Warren, MI, is leading efforts to bring semi-autonomous capability to ground vehicle resupply convoys to live mission operations. The introduction of greater autonomy within the Army's Tactical Wheeled Vehicle (TWV) fleet is poised to remove more human operators from repetitive, potentially dangerous convoys ops, freeing them for other critical duties. From a Soldier training vantage, Army Special Operations Forces (ARSOF) readiness is getting a revamp in the form of re-designed and re-aligned classroom and live-fire exercises at the U.S. Army JFK Special Warfare Center and School (USAJFKSWCS), Ft. Bragg, NC. The new training perspective is expected to be more comprehensive in addressing both physical and psychological operator skillsets.

Rounding out this issue of A&M, we hear from the program managers of SOCOM's Family of Special Operations Vehicles (FOSOV), Lt. Col. Raymond Feltham, and Tactical Assault Light Operator Suit (TALOS), COL Alex MacCalman, as these efforts advance vehicular and personal protection, mobility, and lethality.

Your comments and suggestions are welcome. Thanks for the continued readership!

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COLLABORATING AT THE SPEED OF RELEVANCE

The Army's ability to operate seamlessly and swiftly across multiple domains is critical. Winning on future battlefields will demand embracing and owning battlefield complexity at speeds inconceivable even a few zeptoseconds ago.

By Dr. Shawn M. Walsh, Combat Capabilities Development Command-Army Research Laboratory



Maj. Ryan Collins (right), the 1st Special Forces Group (Airborne) signal officer, and Staff Sgt. Robert Carter, a satellite communications operator, troubleshoot a satellite antenna during a training exercise. Collins was awarded the Army Special Operations Forces Communicator of the Year award for significant contributions towards the special operations force mission of providing command, control, communications, computers, and intelligence (C4I) support in both garrison and tactical environments. (Photo by Spc. Austin Pope)

On May 2, 2011, the Navy SEALs raided Osama bin Laden's compound in Abbottabad, Pakistan as part of a highly planned and coordinated mission known as Operation Neptune Spear. As they entered the compound, the Navy SEALs were being protected and enabled by "Big Army" technology at every step of their critical and historic mission. One example? The Future Assault Shell Technology (FAST) helmet, manufactured by OpsCore and fielded by the Special Operations Forces (SOF). This includes the FAST Maritime helmet, specifically fielded to the Navy SEALs. CCDC's Army Research Laboratory and Soldier Center, in collaboration with PEO Soldier, industry, and the Army ManTech office, had developed the foundational material and manufacturing science that would disruptively enhance ballistic mass efficiency to

make the FAST helmet possible. Shedding weight without compromising required ballistic protection allowed the Navy SEALs to co-locate other technologies and "optional extras" on the FAST Maritime helmet, collectively providing a potent suite of integrated tactical capability.

This simple example offers at least three enduring insights as the Army Futures Command (AFC) and SOF prepare warfighters for the complexities of the future battlefield. The first is the strategic value of collaboration between AFC and the diverse SOF community.

"We have seen the Special Operations community excel across the broad spectrum of operations in the most demanding, complex and uncertain environments imaginable. We want to model that spirit in the way we conceive, develop and transition cutting edge technology to the

warfighter,” said GEN John Murray, Army Futures Command Commanding General.

As AFC develops new warfighting concepts and advances in science and technology, SOF offers new paths to access expertise and feedback in highly relevant warfighting gaps. The U.S. Army Special Operations Command and other SOF organizations have historically been willing to assume the risk to adopt, integrate, and field nascent technologies to rapidly close these time-sensitive gaps. Early adoption breeds familiarity and acceptance in the wider SOF community, and often warms up the defense industrial base to allow the time needed to adapt, scale, and acquire the advances to the larger Army.

Second, another key insight is that the Army will need to rely on new and innovative partnerships with entities and talent beyond the walls of AFC and SOF organizations alone.

“The USSOCOM Ideation Challenge that took place in Austin in April is an example of the Special Operations community seeking out technology ideas,” Murray said. “They have a solidified reputation for seeking out high risk, high reward possibilities. Without that commitment to trying something new and failing forward fast, we will not be able to keep game-changing technology in the hands of Soldiers.”

Indeed, USASOC, the Army Component of U.S. Special Operations Forces Command (USSOCOM), clearly states that its science and technology (S&T) mission “is to ensure that Army Special Operations Forces (ARSOF) maintain a decisive technological advantage on the battlefield by maximizing the use of external S&T resources to fill ARSOF S&T Gaps.” Similarly, CCDC’s Army Research Laboratory was recently recognized by the Defense Science Board for its pioneering efforts to create a network of S&T hubs across the U.S., and provide “open campus” exchanges between Army, university, and industry researchers and partners.

The third key insight is that effective warfighting outcomes will rely on rapid and adaptive integration of multiple technologies and capabilities.

“Army Futures Command is focused on one simple thing – making sure our Soldiers, and our future Soldiers, have the equipment they need, the tactics they need and the operational schemes they need to win on future battlefields,” Murray said.

Future warfighter solutions are likely to be inherently more complex, relying on interoperable technologies and tactics. The Navy SEALs were not merely protected by new ballistic resistant materials in their FAST helmet. The ergonomic integration of communications, sensors, and other situational awareness capability - enabled by the lighter helmet – provided asymmetric increase in overall warfighter survivability and operational effectiveness. Similarly, this intersection of multiple technologies and capabilities approach has become the inspiration for USASOC’s partnership with ARCYBER and ARSTRAT to refine the emerging SOF, cyber, and space operational nexus within the modern battlefield.

The Age of Speed and Complexity

Through its substantial and sustained investments in foundational science and technology – both on the part of the government and the private sector – the U.S. has enjoyed an array of overmatch in areas such as night vision, stealth, satellites, ballistic-resistant materials, and precision munitions to name a few. Our warfighters have been trained to maximize these benefits by using equally innovative



approaches to tactics, techniques, and procedures to deploy the technologies. But what happens when the U.S. no longer “owns the night” with night vision systems alone? Or U.S. stealth and satellite technology are matched -or worse- disrupted and overtaken by ever-more aggressive and capable adversaries?

Scientific discovery is classically rooted in curiosity. However, global forces from the private sector and the strategic forces from multinational governments and militaries fuel the rapid diffusion and transformation of such discoveries into competitive technological advantages. In many instances, these forces will “level the playing field” over time, even in the most advanced and sophisticated areas of science and technology. Thanks to ever-increasing modes of global connectivity, talent and ideas are migrating and being shared faster than ever. This only hastens the diffusion of technology and intensifies the complexity of subsequent interactions and outcomes from such advances. The emergence of artificial intelligence will introduce yet another dimension to such complexity. The underlying question here is not so much the erosion of an overmatch advantage from a singular technology such as satellites, stealth, and night vision. Rather, the entire spectrum of future overmatch itself is in question. How does the U.S. ensure overmatch by embracing the complex interactions of multiple technologies converging across multiple domains and dimensions?

The recognition of this complexity is clearly evident in all of the most significant influences that shape future U.S. military strategy. For example, the 2018 National Defense Strategy (NDS) states that “success no longer goes to the country that develops a new fighting technology first, but rather to the one that better integrates it and adapts its way of fighting.” This NDS statement is crucial because it recognizes that simply developing new technologies – including singular technology “breakthroughs” - may be necessary but insufficient to achieve the multiple effects and outcomes needed to assure U.S. overmatch in the future.

The NDS plays a critical role in shaping the Army Modernization Strategy, and drives the development of concepts like Multi-Domain Operations 1.5 (MDO 1.5). The Army recognizes emerging trends such as complex interactions across human, physical, and cyber domains are shaping future competition and conflict. These trends include: adversaries contesting in all domains; smaller armies on increasingly lethal and hyperactive battlefields; nation-states facing difficulty in imposing their will in complex political/cultural/technological/strategic environments; and near-peer states competing below armed conflict, which makes deterrence more challenging. MDO 1.5 provides a conceptual framework to approach these interrelated trends in a comprehensive and holistic way that will illuminate both threats and opportunities in this emerging complexity. Similarly, DARPA is also recognizing and acting on the need for embracing multi-domain complexity with its “mosaic warfare” concept. DARPA’s mission is to make “pivotal investments in breakthrough technologies for national security.” Consistent with the NDS and Army MDO 1.5, DARPA’s mosaic warfare concept “seeks to turn complexity into a powerful new asymmetric weapon via rapidly composable networks of low-cost sensors, multi-domain command and control nodes, and cooperative manned and unmanned systems.” To realize its mosaic warfare concept, DARPA is stimulating the development of transformational approaches that favor adaptability and dynamic interoperability of heterogeneous systems to achieve resilience and overall mission effectiveness.

Figure 1

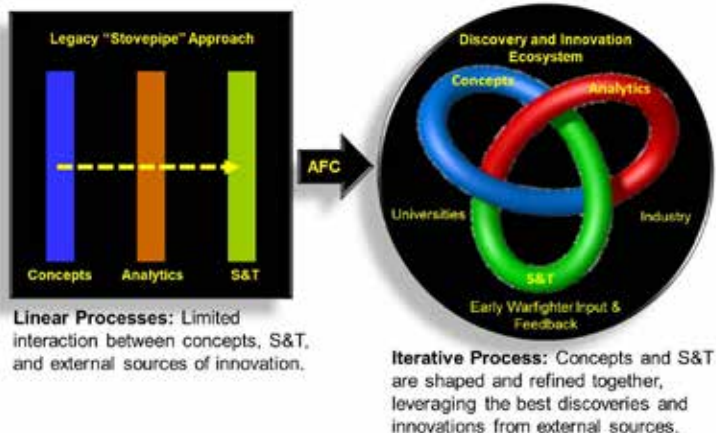


Figure 2



Owning Complexity - The Path to Future Overmatch

It is easy and increasingly commonplace to state that the future battlefield will be far more complex. It is equally easy to state that the Army needs to prepare for the operational complexities MDO 1.5 portends. Far less easy is admitting that our "business as usual" Army model for developing, acquiring, and fielding new warfighter solutions may not be sufficient to realize the full potential of concepts as ambitious and expansive as MDO 1.5. Yet it happened. In establishing AFC, senior Army leadership recognized it needed to bring new and focused leadership to conceiving, developing, and delivering the future force.

The complexities of the new warfighting solutions needed to enable MDO 1.5 would likely make elements of the "old" Army materiel development cycle uncomfortable. In the past the Army got exceptionally good – and comfortable – with developing and delivering items like body armor, tanks, rotorcraft, and cannons. The complete Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities and Policy (or "DOTMLPF-P") solutions for these and other legacy solutions were well-known, well-accepted, and well-practiced. The U.S. defense industrial base also got comfortable and effective with the production of the materiel the Army required. Collectively, however, it can be argued that the Army's legacy approach to DOTMLPF-P processes was not consistently able to respond to truly complex concepts.

The Future Combat Systems (FCS) program is often cited as such an example of the Army's inability to execute a groundbreaking

and transformational paradigm shift. While it is true that major changes and challenging time horizons made it difficult for the program to achieve key goals, more than 16 years ago the FCS program predicted the influence of new complexities that are proving to be relevant as the future comes into focus. Akin to MDO 1.5 and DARPA's mosaic warfare concept, FCS recognized the emergence of a highly active, multi-domain battlefield where manned/unmanned teaming and adaptive, highly networked "systems of systems" would play critical roles. FCS highlights the importance of technology forecasting and prediction in warfighting concept development, but also the need to realistically synchronize new concepts and S&T.

AFC and the Special Operations Forces: Teaming on the Future

The creation of AFC is not simply a re-organization and re-branding of the Army's entrenched processes for transforming concepts, requirements, and S&T into new warfighting capabilities. AFC was created to fundamentally redesign processes and organizational elements to adopt best practices, and tear down stovepipes and barriers that throttled the Army's ability to keep pace with the realities of a changing world. A new relationship is forming between AFC's Futures & Concepts Command and the Combat Capability Development Command.

"Scientific discovery efforts at the Army's Corporate Research Laboratory more seamlessly integrate into developing warfighter concepts within Army Futures Command to support a hyperactive and lethal future warfare scenario," said Dr. Philip Perconti, Director, Army Research Laboratory. "Multi Domain Operations will require this high level of synchronization to integrate competitive overmatch technologies within the complexities of multiple domains in warfare."

Figure 1 highlights this shift to a more dynamic and externally connected discovery and innovation "ecosystem" to inform the development of future concepts. There are elements of AFC, however, that remain wholly intact from the Army's past. Key among these are the Army's long and successful history of teaming to accomplish a difficult mission, and its legacy of being an early adopter of high risk/high payoff concepts, discoveries, and technologies.

A gap will naturally exist between the Army's need for near-term solutions and its need for long term investments to ensure its future force is ready for unprecedented battlefield complexities. It is precisely in this gap that teaming like that of AFC and the wider SOF community can thrive in co-creating a future that assures multi-domain overmatch. Commercial off-the-shelf technologies (COTS) will continue to play a role in the future, but leap-ahead advances will demand persistent investment over time. For example, as illustrated in Figure 2, developing new materials to enable future communications in contested environments relies on sustained investment in foundational research. MetaFemite materials research led by CCDC ARL has yielded new antenna capability that could enable complex operations like manned/unmanned teaming in a low visible signature environment. Key to this success is forming relationships with industry partners to transition these advances into



new Army capabilities. The National Defense Strategy, MDO 1.5, and DARPA's mosaic warfare concept all emphasize the importance of developing new and rapidly adaptive ways to integrate technologies into a resilient set of warfighting effects and capabilities.

The SOF community has developed the ability to rapidly close many operational gaps with a mix of commercial off the shelf technologies and strategic investments in emerging S&T. With innovative public-private partnerships like SOFWERX, SOF organizations have linked operator needs to emerging S&T in highly relevant warfighter scenarios and mission operating environments. In a complementary approach, AFC has redesigned its concepts, requirements, and S&T processes to be continuously integrated much earlier, creating minimum viable products that can be proof-tested by wargaming, experimentation, and warfighter evaluations.

Equally important, SOF forward presence helps enable deep physical and informational understanding and influence in the operational environment; helps disrupt and delay adversary preparations; and supports the convergence of Joint Multi-Domain capabilities in the location and precision targeting of high-value systems in the Operational and Strategic Deep Fires Area. Collectively, AFC and the SOF community can determine if a new concept or technology not only survives first contact with an adversary, but also first contact with Army Soldiers and SOF Operators. After all, it is our warfighters who will need to understand, accept, and effectively deploy far more complex and interoperable technology in future contests and conflicts.

The Intersection of Tradition and Future Complexity

In its mission to lead the Army's modernization enterprise, AFC will rely on working with partners like USASOC and the broader SOF community to balance technology advances with effective tactics, techniques, and procedures to deploy them. Time is of the essence, and the future is quickly unfolding across new intersections of land, sea, air, space, and cyber domains. Many experts have already suggested that a "wait and see" approach to determine which technologies payoff in the future is potentially riskier than adopting them too early. Analytically driven interaction between concepts and S&T will allow prudent prioritization of future Army investments. This partnership between AFC and SOF further refines CF-SOF interdependencies in the conflict continuum in order to inform our collective efforts to relentlessly pursue a competitive advantage over our Nation's adversaries.

Owning complexity in multiple domains will not be easy. Artificial intelligence, robotics, and the ability to engineer materials on vanishingly small length scales are just a few game-changing technologies that will reshape the dimensions and dynamic interaction of future warfighting solutions.

Unifying the Army's ability to forge the future across the modernization enterprise will make winning with complexity possible.

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ACCELERATING SOF ACQUISITION THROUGH INDUSTRY PARTNERING

James H. Smith is the Acquisition Executive, U.S. Special Operations Command, MacDill Air Force Base, Florida. He is responsible for all special operations forces acquisition, technology and logistics.

Mr. Smith graduated from the U.S. Military Academy in 1986 and was commissioned as a second lieutenant in the infantry. He served initially with the Third Infantry Division in Kitzingen, Germany, as Bradley Platoon Leader, Heavy Mortar Platoon Leader and Company Executive Officer. He then served as the Second Brigade's Assistant Operations Officer and Rifle Company Commander in Fifth Battalion, 21st Infantry Regiment of the Seventh Infantry Division (Light). Following receipt of a Master of Science degree in 1995, he served as Associate Professor in the Department of Civil and Mechanical Engineering and as Battalion Executive Officer of First Battalion, First Infantry Regiment at the U.S. Military Academy.

His acquisition assignments include Chief, Firepower Division, Combat Developments Directorate, U.S. Army Infantry Center; Assistant Product Manager, Soldier Power; Deputy Technology Product Manager, Objective Force Warrior; Chief, Interoperability, Headquarters Department of the Army G8; Product Manager, Soldier Sensors and Lasers, Program Executive Office Soldier; and Program Executive 44 Officer, Special Operations Forces Warrior Systems, followed by Military Deputy to the U.S. Special Operations Command Acquisition Executive. Prior to his current assignment, he was the Deputy Director for Acquisition, Headquarters USSOCOM.

Mr. Smith is a graduate of the Infantry Officer Basic and Advanced Courses, the U.S. Army Command Staff College, the U.S. Army War College and the Executive Program Manager's Course. He is registered as a Professional Engineer in Virginia.

Mr. Smith retired from active duty in 2013. Immediately upon his military retirement, he was appointed to the Senior Executive Service and selected to serve as the Deputy Director for Acquisition, Special Operations Research, Development and Acquisition Center, USSOCOM, MacDill AFB.



Mr. James Smith

Acquisition Executive
U.S. Special Operations Command
(USSOCOM)

Also, we continue to streamline processes so that new entrants and small-scale vendors can provide cutting-edge technologies. Ultimately, this is why we invest so much time and energy into SOFIC. It is our premier event to communicate our operators' requirements to our industry partners, to reinforce existing relationships and build new ones. Our goal for this SOFIC is for industry to see the deliberate steps we are taking within SOF acquisition to be more agile and rapid. In concert, we need our industry partners to streamline their internal business processes so together we can address the challenges of near-peer competition. To us, a unique aspect of the SOFIC week is that it is more than a series of presentations by government to industry. We want to leverage the immense talent and diversity of thought that attends and encourage multi-nodal conversations. Not only are we communicating our requirements, but industry is sharing their capabilities with us and, ideally, industry is also discovering new opportunities with each other.

A&M: USSOCOM's FY20 budget request shows an increase in Congressional funding for USSOCOM's Research and Development program, what are USSOCOM's R&D priorities within the Science and Technology directorate? How can industry contribute to these priorities?

A&M: This year's SOFIC theme is "Accelerating SOF Innovation." What was the inspiration behind this theme, and what are you hoping that industry will take away from this year's conference?

Mr. Smith: We unabashedly took this theme from the 2018 National Defense Strategy (NDS). The NDS defines our strategic approach to reform the department and build a more lethal force. At the intersection of these two is the direction to accelerate the cycle of innovation. The NDS demands innovation not only internally to streamline rapid, iterative approaches, but also to harness and protect the national security innovation base by providing industry with predictability.

Mr. Smith: USSOCOM has identified six technology focus areas in line with the NDS direction: next generation Intelligence, Surveillance and Reconnaissance (ISR); next generation mobility; precision strike systems and next generation effects; hyper enabling the operator; data and networks and bio-technologies.

1. For next generation ISR we are looking to find alternatives to our current reliance on airborne ISR for finding and locating targets of interest. There are numerous opportunities for industry to partner: from space-based sensors; to “finding and locating” a target at their digital address in the cyber domain; to small, swarming, survivable sensors.
2. For next generation mobility, industry can provide better survivability for our platforms to allow for operations in denied or contested environments by reducing our signature and avoiding detection by threat systems.
3. For precision fires and effects, our operators require munitions that can be launched by the individual or small team, loiter until a target presents itself, hit that target precisely with no collateral damage to nearby personnel or infrastructure and to have the ability to be pulled off target and safely terminated if the situation in the target area changes.
4. For hyper-enabling the operator, we are pursuing technologies that will provide our operators at the edge – those with limited bandwidth and computing power – with a cognitive advantage by applying man-machine teaming technologies.
5. For data and networks, we need mobile and expeditionary hardware, software and infrastructure to improve operational cohesion in denied or degraded electromagnetic spectrum environments.
6. Finally, for bio-technologies, we want to improve the SOF operator’s mission effectiveness, resilience, physical and cognitive performance, reduce susceptibility to injury, and assist with faster return to duty by rapidly delivering medical technologies and procedures to the field in order to improve, preserve, and restore SOF operators.



U.S. Army Special Operations Command conducts a capabilities exercise for local civilian leaders and active duty family members at Fort Bragg, NC. The exercise enhanced USASOC's readiness and provided an opportunity for educating the public about SOf. (Photo by U.S. Marine Corps Gunnery Sgt. Ryan S. Scranton)

A&M: There's always the misperception that USSOCOM has “special” acquisition authorities that the military services don't because it is a combatant command. How do you go about addressing these misperceptions?

Mr. Smith: USSOCOM has no special acquisition authorities other than the unique authority of the Combatant Commander to acquire special operations-peculiar equipment and services. In fact, USSOCOM has fewer authorities than the military services because Congress or the Secretary of Defense (SECDEF) provides authorities directly to the Secretary of Defense and the military departments. We'll often have to pursue those authorities as a separate action.

It's important that our industry partners understand the USSOCOM acquisition environment. At times, they may assume we can ignore what is written in the Federal Acquisition Regulation (FAR), or Financial Management Regulation, or the Acquisition Management System. We can't. Conversely, I've noticed that some partners assume we have budget





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A SOF Soldier executes field maneuvers in an austere setting as part of a U.S. Army Special Operations Command capabilities exercise for local civilian leaders and active duty family members at Fort Bragg, NC. (Photo by U.S. Marine Corps Gunnery Sgt. Ryan S. Scranton)



SOF Soldiers execute field maneuvers in an urban setting as part of a U.S. Army Special Operations Command capabilities exercise for local civilian leaders and active duty family members at Fort Bragg, NC. (Photo by U.S. Marine Corps Gunnery Sgt. Ryan S. Scranton)

flexibility on par with the military services. We don't. With only 2% of the DoD budget, the opportunities to realign or reprogram funds are actually far more limited than our Service counterparts. Therefore, together we need to execute transparent, predictable and fiscally prudent programs.

A&M: At SOCOM you've had acquisition successes with congressionally approved authorities. Can you shed any light on how SOCOM has used some of these authorities to accelerate SOF innovation?

Mr. Smith: Congress and SECDEF have sent a clear message that they expect us to be more agile and they've backed that message up with legislation and policies to enable us to go faster. Other Transaction Agreements (OTAs) are a great example that have been around for years and seen a great deal more use lately. We're engaging in significantly more OTA's than we have in the past and, in many cases, we're using the OTA expertise that exists in the Services to raise our own expertise.

I am very enthused by the potential of Middle Tier Acquisitions (MTAs). To me, this is the perfect authority for many, if not most, USSOCOM acquisition efforts. Essentially, MTA's allow us to move much faster when we rapidly prototype a technology that we can introduce to the field within a certain time period or when we can rapidly field the entire production run within a certain time period. What really matters is how you string these authorities together into a rapid acquisition strategy. A great example is the Disrupter Event we're hosting at SOFIC. We leveraged another authority, our Partnership Intermediary Agreement (PIA), as a platform to ask industry to submit white papers in three technology areas: The hyper-enabled operator, data and networks and next generation ISR. Our government team reviewed those proposals and invited several to provide oral briefs at SOFIC. From there, we intend to award contracts, FAR-based or non FAR-based, with some of the authorities mentioned earlier.

A&M: How do you see the Hyper-Enabled Operator concept accelerating innovation within the USSOCOM enterprise? How do you see it driving industry innovation?

Mr. Smith: Hyper enabling the operator for us is specific to applying technology to the dismounted special operations professional operating at the edge in a contested or denied environment. These technologies

will enhance the operator's cognition by increasing situational awareness, reducing cognitive load, and accelerating decision making. This line of effort takes many of the most impactful technologies being discussed throughout industry today, such as artificial intelligence, machine learning, human-machine teaming, cloud computing and edge computing, and applies them to our most disadvantaged user. The enabling technologies include data assets, adaptive and flexible sensors, scalable tactical communications and embedded algorithms. It's a great challenge and, we believe, an important challenge.

Our operators are the most lethal warriors on the planet but as we prepare for competition against near peers, we need to enable our operators to be just as effective in the information space. The combatant with superior understanding of his or her environment will dominate future competition short of conflict. We are optimistic that our hyper-enabled operator efforts will attract the attention of a large variety of industry partners, traditional and non-traditional, but also those that see the potential for opportunities to transition the technologies we're interested in to the commercial space.

A&M: What advice do you have for someone who is new to SOFIC and new to doing business with USSOCOM?

Mr. Smith: There are many opportunities for new attendees to get involved. What's most exciting to me are the connections made during SOFIC are connections which are forged on the foundational common interest of supporting SOF and accelerating SOF innovation.

I believe you shouldn't attend SOFIC expecting to sit in an auditorium and passively listen to keynote speakers and panels: SOFIC is a two-way conversation. There are multiple direct engagement opportunities throughout the week with our Program Executive Officers, our Director for Science and Technology and our Director for Logistics, to name a few. I have an amazing team of military and acquisition professionals and I want you to get to know them.

There are a lot of people, attendees and SOCOM personnel alike, who want to have two-way conversations. I advise my team, "you can't let SOFIC happen to you, you have to have a plan to get the most out of the week." Make it a goal to network, but also take some time to enjoy what the Tampa Bay area has to offer. Tampa is a great city and USSOCOM is grateful SOFIC is held downtown at such a great venue.

LEADING THE SEMI-AUTONOMOUS WAY

The U.S. Army Ground Vehicle Systems Center (GVSC) is working to upgrade Tactical Wheeled Vehicle (TWV) Leader Follower (L/F) technology poised to supplement manned convoys with unmanned capability, removing personnel from harm's way while enabling mission completion.

By Bernie Theisen, Ground Vehicle Robotics, GVSC



Three Palletized Loading Trucks (PLS) equipped with the U.S. Army's Automated Ground Resupply technology form a "leader-follower" convoy with multiple autonomously-driven trucks following a traditionally-manned truck during a demonstration at Fort Leonard Wood, MO. The Leader Follower capability both reduces the need for Soldiers to be in the truck's cabs while enabling a force structure that would allow those Soldiers to perform convoy security tasks in more secure and more heavily-armored escort vehicles. [U.S. Army Photo/Released]

The U.S. Army has a long history of sustainment that supports the warfighter, as moving supplies to Soldiers in the fight is of critical importance. The Army has replaced pack mules with motorized vehicles and could, in the not-so-distant future, replace the current trucks with robotic platforms. The Army has no plans to replace Soldiers with robots, but to supplement their missions with increased capability. Here at the Combat Capabilities Development Command (CCDC) Ground Vehicle Systems Center (GVSC), Warren, MI, we have been supporting the Warfighter and providing them with unmanned ground systems since the 1950s. Most of those systems were primarily focused on the combat mission. In the 1990s, when advanced driver assist systems (ADAS) started appearing in the commercial automotive market followed by the trucking industry, GVSC started to adapt those lower cost automotive sensors to the tactical wheeled vehicle (TWV) fleet. The first focus was to increase safety for the vehicle occupants and then to remove



Bernard Theisen
Ground Vehicle Robotics

the Soldiers from the systems themselves. This mission became increasingly important after 9/11 when convoys started to come under attack from improvised explosive devices (IEDs). The Army started putting Soldiers in Mine Resistant Ambush Protected (MRAP) vehicles to provide protection, which included such innovations as the double-V hulls that were developed here at GVSC. Robotic vehicles enable the Soldiers to remain in the up-armored platforms while escorting the convoys instead of in the less protected vehicles, creating a safer environment for the Soldier.

Upgrading Not Replacing

Currently, the Army is not purchasing new robotic systems to perform the convoy sustainment mission, but looking to upgrade its current TWV fleet with a kit-based approach to equipping the vehicles. First comes the installation of a by-wire kit, which enables

electronic control of the base platform and provides active safety systems commonly found in many passenger cars today. Then, an autonomy kit gives the vehicle robotic or unmanned capability. The third and final piece to the system is the Warfighter Machine Interface (WMI) kit, which is added to monitor or control the optionally-manned platforms. The by-wire kit has two modes: Driver Warning (DW) Mode and Driver Assist (DA) Mode. In Driver Warning Mode, audible and visual warnings are sent to the driver with the intent to increase reaction times to avoid potentially dangerous road conditions and possible hazards such as pedestrians and other vehicles. In Driver Assist Mode, braking and steering actuation is provided to assist the driver; the braking and steering actuation provides improved reaction time in avoiding dangerous road conditions and hazards that a driver may encounter. The autonomy kit has three modes. Teleoperation (TO) Mode provides the capability for personnel to remotely and wirelessly control the actuation of another optionally manned vehicle. Teleoperation mode provides sensing to a remote station, allowing the operator to control the remote vehicle without a line of sight. Waypoint (WP) Mode provides the capability for an optionally-manned vehicle to follow a path of pre-defined GPS waypoints. Leader Follower (L/F) Mode provides the capability for an optionally-manned vehicle to lead other autonomous follower vehicles, and/or to become an autonomous follower behind another optionally-manned vehicle. These modes could be used heterogeneously, that is to say, the lead vehicle could be driven in any of the modes. The WMI kit allows for direct control of the vehicle that it is in or another vehicle via communications link. The link

could be a short-range radio link or a long-range satellite. Using the long-range satellites, as part of GVSC's TORVICE (Trusted Operation of a Robotic Vehicle in a Contested Environment) project, robots are routinely driven in Australia from the Detroit Arsenal in Warren, MI.

Maintaining "Person in the Loop"

GVSC does not consider its systems to be autonomous, but refers to them as semi-autonomous. GVSC took the approach to eliminate the hardest problems robots have, perceiving the world and navigating through it simply by having humans do this. Even humans still do not perform these tasks with 100% accuracy. Most drivers can attest to this if they have ever been stuck off road or have had a fender bender. The lead vehicle is always controlled directly using Drive Warning or Driver Assist, indirectly with tele-operation, or semi-autonomously with Waypoint Navigation. With Leader Follower, the human operator has already done the hard work of proving the path, allowing for the follower to have a simpler solution to calculate. The followers are given some autonomy if obstacles get in the way, if small adjustments are needed to correct the path, or if the environment has changed, but the followers still have defined rules they must follow. The technology has been previously tested with up to nine followers, but theoretically could have a much higher number of follower vehicles.

GVSC's robotic challenges are the same challenges the industry faces: edge cases, events the robots were not programmed to handle.



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Robots are very good at doing tasks, but as soon as you ask a robot to do a task it was not programmed to do, it will most likely fail. Where humans are very capable of adapting to change and normally have enough experience to deal with that change, robots are not. Commercial industry has the luxury of working in more defined environments, structured road networks (road markings, a priori data, etc.), network connectivity (5G, GPS, etc.), traffic laws, etc. For Army applications, none of the rules can be assumed. A road in place yesterday could have just been cut in, or a road that was there yesterday is now destroyed; enemies actively jam the network, or capture and send felonious data in its place; rules of engagement always change; etc. These military specific problems make this space increasingly harder to solve.

On Schedule Arrival

The first issue of this technology to Soldiers will happen as soon as the first thirty systems are handed off to the 41st Transportation Company at Fort Polk, Louisiana, in September 2019 and the next thirty systems will be issued to the 15th Transportation Company at Fort Sill, Oklahoma, in January 2020. For these trucks, Soldiers will have access to four modes (DW, DA, TO, and L/F) and Leader Follower will be limited to one lead vehicle followed by up to three unmanned followers. These four-vehicle marching units will be inserted into large convoys with security vehicles and recovery assets. The Soldiers will be using the optionally-manned vehicles to perform



U.S. Army Palletized Loading System (PLS) trucks equipped with automated driving technology show off autonomous leader-follower, or platooning, capability, during a dedication of the trucks to 16 fallen Soldiers at a ceremony at Fort Bliss, NM in April, 2019. Near the end of 2019, 60 of these trucks are scheduled to be delivered to Army transportation companies at Fort Sill, Oklahoma, and Fort Polk, Louisiana, for Soldier use. [U.S. Army Photo by Jerome Aliotta/Released]

normal missions allowing two Soldiers to operate four vehicles instead of the currently required eight Soldiers to perform these normal operations. GVSC aims to demonstrate that the technology will increase through-put of cargo while increasing Soldier safety.

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EMPLOYING STRATEGIC DETERRENCE TO PROMOTE CONFLICT RESOLUTION

Vice Admiral Dave Kriete is a native of Brooklyn, New York. He is a 1984 graduate of the United States Naval Academy where he majored in general engineering. He holds a master's in engineering management from Old Dominion University.

His flag assignments include command of Submarine Group 9 in Silverdale, Washington; deputy director of Plans and Policy, U.S. Strategic Command (USSTRATCOM), Offutt Air Force Base, Nebraska; and deputy director, force employment at U.S. Fleet Forces Command (USFF). Most recently, he served as director, Strategic Capabilities Policy, National Security Council where he was responsible for presidential policy on nuclear weapons related issues.

His operational assignments include command of USS Rhode Island (SSBN 740). He also served aboard USS Kentucky (SSBN 737), USS Flying Fish (SSN 673) and USS Finback (SSN 670).

His shore and staff assignments include chief of staff, Submarine Force Atlantic; Navy Staff, Undersea Warfare Division; of Submarine Force Atlantic Tactical Readiness Team and Prospective Commanding Officer Instructor; staff officer, Joint Staff Nuclear Operations Division; Atlantic Fleet Nuclear Propulsion Examining Board member; and assistant force special operations officer, Submarine Force Atlantic Special Operations Division.

Vice Adm. Kriete played an integral role in the two most recent Nuclear Posture Reviews. He assumed the duties and responsibilities as deputy commander, United States Strategic Command in June 2018.



Vice Admiral David M. Kriete

Deputy Commander
U.S. Strategic Command
(USSTRATCOM)

Armor & Mobility had the opportunity to speak with Vice Admiral David Kriete regarding U.S. Strategic Command's efforts to maximize capabilities in nuclear, space, cyber, and conventional force readiness to protect U.S. and allied interests across a global battlespace.

A&M: With the reality of today's multi-domain attack threats to U.S. national security from conventional, nuclear, space, and cyber, what is STRATCOM's vision of deterrence through advanced capabilities integration?

Vice Adm. Kriete: To effectively deter and if necessary respond, in this multi-polar, all domain world, we must out-think, out-maneuver, out-partner, and out-innovate our adversaries. Deterrence in the 21st century requires the integration of all our capabilities across all domains.

In order to get after advanced capabilities, the commander, Gen. John Hyten, USSTRATCOM commander, issued a challenge to the command: go fast; break down the bureaucracy; take smart, informed risks; but do this within the left and right limits, which were established in the commander's intent. We have to move fast—it's critical if we're to stay ahead of our adversaries.

A&M: As U.S. strategic interests in building and maintaining global security particularly where nations adversarial to American ideals are concerned, can you speak to some ways STRATCOM is creating a sustainable balance?

Vice Adm. Kriete: The difference in today's global security environment – as opposed to the Cold War – is we have multiple potential adversaries, and everything we do can have global impacts. Strategic goes beyond nuclear. Strategic means we must look at all the capabilities we have – nuclear, space, cyber and conventional – and the strategic effects they have. All of these pieces come together as we work with our allies to create an environment where peace can take hold in the world.

We pursue this global security based on the commander's three priorities for USSTRATCOM: number one, above all else, we will provide a strategic deterrent for ourselves and for our allies; number two, if deterrence fails, we'll employ strategic forces to provide a decisive response; and number three, we'll do it with a combat-ready force of trained and resilient warriors equipped to do the job.

A&M: From a nuclear strike capabilities advantage, what today are some of STRATCOM's priorities for deterring a global arms race while maintaining U.S. nuclear strike readiness?

Vice Adm. Kriete: A world with fewer nuclear weapons is a better world, but we must be able to defend ourselves, our allies and our partners. One of the goals we have as a country is to eliminate the proliferation of nuclear weapons, not just in our adversaries, but around the world.

Strategic deterrence is our most active mission, we will continue to provide credible deterrence while complying with our obligations in accordance with the New START Treaty. Deterrence, however, is not simply about nuclear weapons. USSTRATCOM's ability to provide credible deterrence is a direct result of our integrated capabilities and the men and women in the command doing this mission every day, a mission they are proud to do.

In the end, nuclear war cannot be won and therefore must never be fought. To prevent war, we must be ready for war. Success means we've lived up to our motto, coined over 60 years ago in Strategic Air Command: Peace is our Profession...

A&M: In terms of current and evolving cyber threats to U.S. defense intelligence and data collection management, how is STRATCOM prioritizing to sustain open data flow while increasing security?

Vice Adm. Kriete: Effective command and control that supports global integration is a necessary and critical element of strategic deterrence. During the Cold War, we were focused on one adversary. In today's environment we are facing multiple adversaries in multiple domains. Recently, the commander of USSTRATCOM was assigned the enterprise lead for the Nuclear Command, Control and Communications (NC3) mission. This is an effort to integrate command, control and communication systems across the nuclear enterprise and break down stovepipes.

It's critical to sustain the certainty that critical messages will always get through from our senior leaders to our forces. We're working on the best way to do this in the future and I am looking forward to having the means to do that.

General Hyten has visited industry, the federally funded research and development corporations and asked them to come in with ideas to get after this very topic and they've delivered. We're now evaluating those ideas and developing a broad based set of mission needs that we will explore and in turn work with industry to figure out how to do that.

A&M: With force modernization critical to protecting U.S. land, sea, and air domains, what are some STRATCOM efforts to maximize national defense while newer capabilities evolve?

Vice Adm. Kriete: To be successful at everything we do, we must recapture our ability to go fast, faster than all our potential adversaries, and that's the biggest concern these days. That means we must return the dynamic that made us the strongest, most technologically advanced military in the world.

We must keep in mind strategic competitors are investing significant resources to develop offensive and defensive capabilities with the purpose of countering our entire deterrence strategy. To maintain peace through deterrence, the United States must continue to invest in technological innovation and development of survivable, long-range strike systems able to hold a variety of targets that threaten us at risk.



Vice Adm. Dave Kriete learns about cube satellites during his visit to the Naval Post Graduate School in Monterey, California. (USSTRATCOM)

The FY 2020 Research, Development, Test and Evaluation (RDT&E) budget invests heavily in game-changing technologies, increases funds for modernization of our nuclear triad, continues the development of future space assets and re-profiles funding to advance the most promising capabilities. Funding continues the development and operational fielding of hypersonics, unmanned autonomous vehicles, artificial intelligence and machine learning systems, and algorithmic warfare. Additionally, the FY 2020 budget continues the development of Next-Generation Overhead Persistent Infrared (OPIR) sensor, and funds GPS-III follow-on satellite, furthering our efforts to move to a defensible space posture.

We are looking forward to an on-time budget this upcoming fiscal year so we can sustain the momentum invigorating this department and our best-in-the-world people, and our best-in-the-world commercial sector to go faster and innovate, to bring more timely and affordable solutions to our most pressing deterrence challenges.

A&M: As the challenge of maintaining a priority in information assurance amidst veritable mountains of collected data, how is STRATCOM working to facilitate greater efficiency?

Vice Adm. Kriete: Commercial innovation has already adapted to exploit faster and faster technology discovery and information assurance in commercial competition; similarly we must adapt to leverage these accelerating opportunities as a key feature of strategic deterrence.

The challenge that Gen. Hyten has issued in the command is to break down the bureaucracy, take smart risks, informed risks, and perform this within the left and right limits set forth in the commander's vision and intent. We have to move fast, it's critical if we're to stay ahead.

A&M: From a USSOCOM/STRATCOM partnership perspective, how is the command working to grow the relationship across domains critical to current operational tempo?

Vice Adm. Kriete: There are similarities between USSOCOM and USSTRATCOM. Both are global warfighting commands and greatly dependent on intelligence information.



Vice Adm. Dave Kriete speaks to students of the Naval Post Graduate School in Monterey, CA. (USSTRATCOM)



Vice Adm. Dave Kriete learns about the B-52H during a visit to Minot Air Force Base, ND. (USSTRATCOM)

USSTRATCOM's mission to deter major power conflict, dictates we field ready, capable, and lethal forces, tailored to adaptable adversaries. Continued success means integrating the full range of missions in all domains without geographic boundaries, from USSOCOM to USCYBERCOM.

We are increasingly integrating our planning and Tier 1 exercises to remove seams between global and geographic combatant commands. We are pursuing approaches to enhance real-world planning and execution of globally integrated fires to best deliver the most effective capabilities and effects when and where needed.

We need to fundamentally relook at the way that we're maintaining our domain awareness, and that can't be done with one single widget, one single particular program. It's going to have to be a family of systems. It's going to have to include both terrestrial based capability, research and technology. It's going to have to include some air domain advances in technology and capability.

Success in the future is going to be when we apply capabilities through whatever domain we have to, through whatever means we have to, and we don't care where it comes from or where it goes to as long as it dominates the adversary.

A&M: What efforts are STRATCOM undertaking to promote extended deterrence to U.S. allies globally?

Vice Adm. Kriete: USSTRATCOM cannot accomplish its mission without integrating allies and partners across the globe. Allies are critical to responding to mutual threats and preserving shared interests.

USSTRATCOM's engagements with allies and partners are critical in shaping the strategic environment, strengthening relationships and building trust. Our efforts in this arena increase military interoperability, improve alliance capability and capacity, and integrate our critical defense missions. The command's engagements assure allies and partners of the United States' extended deterrence commitments and reinforce non-proliferation goals and objectives.

A top priority for the United States is to eliminate the proliferation of nuclear weapons, not just with our adversaries but globally. Our allies understand that we can defend them too and that's what extended deterrence is all about—meaning you can support your allies' contingencies, as well. Through a strong nuclear triad we're able to provide a critical operational capability to our allies. We exercise

these capabilities regularly to assure our allies and deter potential adversaries.

A&M: With the New U.S./Russia Strategic Arms Reduction Treaty (START) going into its eighth year, can you talk about your perspective on the value of its renewal?

Vice Adm. Kriete: New START gives the commander of USSTRATCOM two things: first, it provides a cap on Russia's strategic base line nuclear weapons and their ballistic missiles, both submarine and ICBM, as well as their bombers. Secondly, it gives us insight into Russian capabilities through the verification process. Those are hugely beneficial to USSTRATCOM. They just have to be balanced against all the other things Russia is doing outside of the treaty. Ideally, in the command's view, all nuclear weapons should be part of the next phase of New START, and not just the identified weapons that are in the current treaty.

A&M: As challenges in sustaining effective missile defense and electronic warfare capability have grown, how is STRATCOM working with the Joint Services to ensure readiness?

Vice Adm. Kriete: The Missile Defense Review outlines a more comprehensive approach to missile defense. As a combatant command we lead the warfighter involvement process, which outlines the roles and responsibilities for everyone involved and establishes a structure for collaboration and support for desired missile defense capabilities.

We routinely train with other combatant commands to exercise our integration and communication training to enhance force readiness.

Missile defense ensures a critical component of comprehensive U.S. strategic and tailored regional deterrence strategies. Paired with offensive capabilities, this combination sends a strong message to adversaries.

We do the same thing with electronic warfare, but we need to do it more. Nuclear is the back stop. It is the benchmark. If you want to be good at anything, you better practice it each and every day, and we practice the nuclear mission every day. We have to do that with electronic warfare. We have to do that with space warfare. We have to do that with everything that we have, and we have to have the right kind of tools. That's who we are and that's what we do.

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OPTIMIZING THE SPECIAL FORCES PIPELINE

The U.S. Army's John F. Kennedy Special Warfare Center and School (USAJFKSWCS), Ft. Bragg, NC, is realigning its course curriculum to better support Army Special Operations Forces (ARSOF) missions.

By BG Harrison Gilliam and Janice Burton, USAJFKSWCS



A Soldier from the U.S. Army John F. Kennedy Special Warfare Center and School performs a function check on an M4 Carbine during the 2019 USAJFKSWCS Noncommissioned Officer and Soldier of the Year Competition at Fort Bragg, NC. (U.S. Army photo by K. Kassens)

Insurgent activities and low-intensity hostilities are on an upward spiral in many regions of the world, and the mission demands on special operations units are seeing a proportionate increase in number and complexity. The expansion of special operations over the last few years has done much to allow units to meet those missions. To further strengthen the long-term readiness posture by special operations, some fine tuning of the selection and training of these unique forces is underway. The very nature of special operations missions and the intricate, seasoned skills necessary for their execution makes the quality of the individual Soldier a key component to unit preparedness and success.

Yes, that's right, changes to the Army Special Operations Forces (ARSOF) training pipelines are on the horizon. For those whom the mention of changing the pipeline is an anathema, take a second

and breathe. It might surprise you to know that the first paragraph was published in the April 1988 issue of *Special Warfare* in an article written by Brig. Gen. James A. Guest, who was making changes in the selection process. He was definitely not the first commander to make changes in the training pipeline and, will not be the last.

Changes in ARSOF Operational Environment

The U.S. Army John F. Kennedy Special Warfare Center and School, or "SWCS" has a responsibility to assess, select, train and educate every ARSOF Soldier who enters the Civil Affairs, Psychological Operations and Special Forces Regiments. Changes to training are driven by input from the operational force and changes in the operational environment. Looking specifically at the Special Forces Qualification



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Special Forces candidates from the U.S. Army John F. Kennedy Special Warfare Center and School take aim at a target during the evaluation and final phase of field training known as Robin Sage in central North Carolina. Robin Sage has been the litmus test for Soldiers striving to earn the Green Beret for more than 40 years. (U.S. Army photo by K. Kassens)

Course (SFQC), significant changes to the training pipeline have occurred more than 30 times over the past 50 years. It is the school's mission to develop training that enhances the training environment by preserving key tasks and expanding the concepts. In the case of the ongoing changes, the school is focusing specifically on the use

of unconventional warfare through resistance. The ongoing optimization will wind resistance throughout the entirety of the course.

Training at SWCS, the Army Special Operations Center of Excellence, is among the toughest and high-risk training offered throughout the armed forces. There is a reason for that: ARSOF Soldiers often conduct operations far from the flagpole, when they are often the only U.S. presence in a country, as such, they require a unique skill set that cannot be mass produced. With that in mind, during an "All Hands" with the members of the SWCS enterprise in August 2018, Maj. Gen. Kurt Sonntag, SWCS Commander, asked a question that many of his predecessors have asked before: "How do we transform the enterprise and organization structure to ensure doctrine and training prepares civil affairs, psychological operations, and Special Forces personnel throughout their careers to effectively operate as a multi-functional team in the current and future environments given operational requirements and institutional constraints?"

From that question came five new lines of effort (LOE):

LOE 1: SWCS organization structure: SWCS is properly aligned with Army Centers of Excellence command structure.

LOE 2: CA/PO/SF Pipeline Redesign and Alignment: a cohesive resistance training scenario-based course is created for all ARSOF students.

LOE 3: Resistance Course Career Curriculum: Resistance course curriculum is developed to provide in-depth knowledge at all levels of an ARSOF career

LOE 4: Force Modernization and Development Transformation: Command relationship and FMD processes are codified and properly identified and mapped.

LOE 5: Synthetic Training Environment: Develop new and innovative ways to provide training and education.

End State: SWCS is optimized to develop CA/PO/SF Soldiers capable of supporting the current and future range of military operations across the entire conflict continuum.

Pipeline Redesign and Alignment

On Oct. 18, 2018, Col. Michael Kornburger, commander, 1st Special Warfare Training Group (Airborne) brought the first of a three part plan to Maj. Gen. Sonntag. Col. Kornburger's briefing outlined the optimization of the SFQC. Historically, changes to the SFQC have received the most attention and scrutiny, ensuring that the SFQC optimization plan was spot-on and builds upon the ongoing optimization of Civil Affairs and Psychological Operations courses.

"This is the first step in our optimization," said Maj. Gen. Sonntag, when addressing his staff. "Over the next seven months, many members of our staff will be involved in this process, with a projected transition starting in June 2019. This is a big step forward, but it cannot stop here. As the SFQC cadre and staff work through this process, leaders throughout the command will look at all SWCS training in an effort to make comprehensive changes that will prepare our Army Special Operations Forces to support the current and future range of military operations across the entire conflict continuum."



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Under the direction of the 1st Special Warfare Training Group command, the staff took a comprehensive look at the course from start to finish and recommended numerous changes that would cut at least three months from the current SFQC by reducing the total training time from the start of the SFQC to the Regimental First Formation to 24 weeks, and would allow for four starts each year, versus the current six starts. Under the new plan, the four-start model would go into place in June 2019. The production model accounts for 240 students starting each iteration, with 48 students in each military occupational specialty.

The new training model bears a resemblance to the outline of the current SFQC for officers. Under the optimized program, training will focus first on individual skills, with training focusing on individual skills development. The first week of training remains the Special Forces Orientation course. It is followed by a 13-week period that includes the 10-week, MOS phase for 18 Alphas, Bravos, Charlies and Echoes and the three-week Survival, Evasion, Resistance and Escape course. Following completion of Phase 1, candidates will be divided into an Operational Detachment-Alpha construct, nested within the Pineland training scenario, which is the culmination exercise for Special Forces training. The second phase of the SFQC is considered skill application and collective training. During a seven-week period, Soldiers operating as an ODA will practice their tactical skills, which include common core, small-unit tactics, foreign internal defense, unconventional warfare and a UW scenario. Following a brief break in training to refit, Soldiers will then move into the Robin Sage culmination exercise, which is three weeks, and upon completion will participate in the Regimental First Formation.

Time savings made in this portion of the training is realized by the ODAs alternating training during the first seven-weeks, which accounts for the current number of cadre being able to carry the increased student load. Col. Kornburger and his staff believe that the emphasis on individual skills, coupled with the ODA collective training will improve the outcomes of students, who in the past may have been recycled. At the start of collective skill training, the tactical skills portion, students will be organized into ODAs with a Cadre Team Sergeant that is responsible for the mentorships of students on his ODA. These Cadre members will follow the ODA throughout tactical skills and Robin Sage to provide additional coaching, teaching and mentorship in addition to daily instruction. With each student already trained in their MOS, this provides a jumpstart to understanding their role on an ODA in the operational force.

Following the RFF, Soldiers will rotate through the 24-weeks of language training and the four weeks of military free fall. When it is all said and done, the new course will be comprised of 53 weeks of total training time for all military occupational specialties except the Deltas, whose MOS training is considerably longer than the military occupational specialties. The Delta graduates total training time if completed without recycle is 95 weeks.

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Key to the success of the new program is the early introduction of resistance and ODA operations, and the reinforcement of their importance throughout training. The new course also allows for CA,



Maj. Gen. Kurt Sonntag



Col. Michael Kornburger

PSYOP and SF trainees to interact throughout training, which is how ARSOF operates in the competition and conflict phases. While increasing the success of students in the course, the transition of the SFQC to a four-start production model maximizes resources while providing sufficient training capacity. Cadre members have more of an ability to teach coach and mentor when individual training is a priority. The collective training enhances the learning environment while increasing the understanding and comprehension of SF missions.

While the full roll out of the optimized course is scheduled for full implementation by September 2019, partial implementation is proposed for the spring and summer iterations for the SFQC, which allows the 1st SWTG(A) time to stagger MOS and SERE and start tactical skills with the requisite number of students to fill an ODA.

Col. Kornburger noted that while the changes are necessary, they will not be easy.

"We are under no impression that this is going to be an easy transition. The implementation reflects time marked for training development for each phase," he noted. "Our cadre and staff have an arduous task in front of them, but we have a professional cadre that understands the importance of getting competent, physically fit and hardworking SF Soldiers to the operational force."

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Lt. Col. Feltham is a native of Virginia Beach, VA and earned a Bachelor of Science Degree in Business Administration, Management and Organizational Development from Mount Olive College after being accepted to the Meritorious Commissioning Program (MCP).

He first entered the U.S. Marine Corps in 1989 when he began his career at Parris Island, SC as an Enlisted Marine and was subsequently assigned to Marine Corps Air Station Cherry Point as a Crash Fire Rescueman. After completion of this assignment and nearly twenty two months as a civilian, he reentered the USMC as an Air Traffic Controller and was assigned to Marine Corps Air Facility Quantico, VA earning an Approach Control Qualification. After completion of this assignment, he and his family received orders to Marine Air Control Squadron (MACS) 4, Okinawa, Japan. While stationed at MACS-4, then Staff Sergeant Feltham would earn a Federal Aviation Administration Qualification as a Certified Tower Operator and an arrival qualification, deploy with the 31st Marine Expeditionary Unit to Kuwait as part of Operation Desert Fox and selected to the Meritorious Commissioning Program; Officer Candidate Class 175 and commissioned a Second Lieutenant December 15, 2000.

From 2000 to 2003, he was assigned to MACS-2, Cherry Point NC as an Air Traffic Control (ATC) officer. While assigned to MACS-2 he would deploy as a Facility Watch Officer in support of (ISO) Operation Enduring Freedom to Kyrgyzstan. From November 2003 to May 2005, then Captain Feltham served as the Detachment Commander for MACS-2 Detachment Bravo and deployed ISO Operation Iraqi Freedom to Camp Korean Village. From May 2005 to July 2007, as the Air Traffic Control Facility Officer at MCAS New River he deployed to Kabul, Afghanistan ISO Operation Enduring Freedom as the Deputy National Security Planner for the Combined Forces Command-Afghanistan. From July 2007 to May 2008 he attended Expeditionary Warfare School at Quantico VA.

Lt. Col. Feltham began his acquisition career June of 2008 as a Contingency Contracting Officer; graduating with honors from school and selected to serve as the Deputy Chief of Contracting for II Marine Expeditionary Force (MEF) Al Asad, Iraq. In addition, during the drawdown from Iraq, he was retained and redirected to serve as the Chief of Construction for the Second Marine Expeditionary Brigade, Camp Leatherneck Afghanistan, ensuring the construction of forward operating bases and airfields. From 2010 to 2012, he was assigned as the Ground Based Air Defense Product Manager and June 2012 to July 2013, then Major Feltham was assigned as the Block IV Project Officer for the Ground/Air Tasked Oriented Radar with Program Executive Office Land Systems and selected to the 8061 profession. After completion of Marine Corps Command and Staff College, Lt. Col. Feltham reported to PMA-213 as the Deputy Program Manager for ATC Systems. Lt. Col. Feltham was selected as Team Lead for MCSC Radars and then slated for Command as Program Manager, Family of Special Operations Vehicles (FOSOV).



Lt. Col. Raymond Feltham

Program Manager
Family of Special Operations Vehicles
U.S. Special Operations Command

Armor & Mobility spoke recently with Lt. Col. Raymond Feltham, Program Manager, Family of Special Operations Vehicles (FOSOV), U.S. Special Operations Command (USSOCOM), MacDill AFB, Tampa, FL, regarding SOCOM's objective applications for its FOSOV assets as they evolve to meet the demands of global, multi-terrain operations.

A&M: Can you tell a little bit more about yourself and your career background?

Lt. Col. Feltham: Most of my acquisition career has been in the radar community. However, my first assignment as an enlisted Marine in the early nineteen-nineties was as a crash fire rescueman (airfield fireman) and is where my interest in ground mobility began with the employment of the P-19 fire truck on airfield hotspots and emergencies. Also, I was an air traffic controller and then selected to attend Officer Candidate School at Quantico in 2000. With multiple deployments to Iraq and Afghanistan after 9/11 as a detachment commander and contracting officer, my transition into acquisitions was with ground-based air defense, as the team lead (TL) managing the command and control platforms and stinger missile for the Low-Altitude Air Defense community at Marine Corps Systems Command (MCSC). My next assignment was as a team lead within the Ground/Air Task Oriented Radar Program Office (G/ATOR) with Program Executive Office Land Systems followed by an assignment at PMA 213 air traffic control

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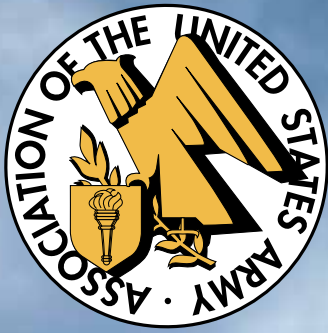
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systems as a deputy program manager. After working at NAVAIR, I was selected as TL for the Radars MCSC. My tenure there was only a year as I was selected to assume command of PM Family of Special Operations Vehicles (FOSOV) here at U.S. Special Operations Command (USSOCOM) in Sept 2019. The FOSOV team is comprised of military, government civilian and contractors, both CONUS and OCONUS, who are dedicated, professional and extremely mission focused patriots who care about the capability they provide to the operators. I am proud of the work they do!

A&M: As program manager for FOSOV, what are your priorities?

Lt. Col. Feltham: As program manager here at FOSOV, my direction has been relatively simple and direct since assuming command. I've expressed to the team our focus is to do our part, in everything we do, to save lives with the vehicles that we provide to the operators while equipping the vehicles when able and as directed with lethal weaponry and high tech mobility capabilities to give our operators the advantage over the enemy. We can leverage commercial off-the-shelf (COTS) technology to aid in modernization of vehicle platforms, for example, heavy-duty suspension or engine repower.

It is key that we as USSOCOM acquisition leaders communicate with industry at SOFIC and other venues to maintain an understanding and appreciation for emerging capabilities available in order to align and enhance our technology insertion roadmap.

A&M: What types of SOF-peculiar (SOF-P) vehicles are in the Family of Special Operations Vehicles (FOSOV)?

Lt. Col. Feltham: The SOF-P FOSOV vehicles are specifically developed to operate in the Range of Military Operations (ROMO) that our operators will use during missions. The LTATV is a SOF-modified, COTS, lightweight vehicle that is internally air transportable via V-22, H-53 and H-47 aircraft. It consists of two and four seat variants with the ability to change configuration based upon mission and/or threat. It's intended to perform a variety of missions to include offset infiltration, reconnaissance and medical evacuation.

The current Non-Standard Commercial Vehicle (NSCV) is based on commercial vehicle platforms that are enhanced with mission-specific modifications to increase protection, mobility performance, and durability.

The Ground Mobility Vehicle 1.0 (GMV 1.0) is a medium-class, high mobility, multipurpose wheeled vehicle (HMMWV) with SO-P modifications. Several variants have supported special operators reliably for more than 12 years in contingency and combat operations.

The GMV 1.1 is a highly mobile, CH-47 internally transportable special operations combat vehicle with the operational flexibility to support a wide range of lethal and non-lethal missions and core activities.

The Mine Resistant Ambush Protected (MRAP) family of vehicles currently consists primarily of the MRAP-All Terrain Vehicle (M-ATV), and RG-33-A1. Vehicles are modified to meet SOF-P requirements.

A&M: Are there any program of record milestones coming up in the near future?

Lt. Col. Feltham: There have been several recent program of record milestones and in the near future. As for the GMV 1.1 team, they recently executed a modification to the USSOCOM GMV 1.1 contract with General Dynamic-OTS adding the Army GMV 1.1 variant and associated support. This contract modification was in support of the Army Directed Requirement (DR) to accelerate fielding of nearly 300 Army GMV 1.1s to



Lt. Col. Ray Feltham (left), program manager, Family of Special Operations Vehicles, talks to a vendor at the 2018 Special Operations Forces Industry Conference. (USSOCOM)

Army's Airborne Infantry Brigade Combat Teams with First Unit Equipped (FUE) milestone of September 2018. This joint effort between USSOCOM GMV 1.1 Acquisition Programs Management Team and the Army's GMV Program Office takes advantage of previous USSOCOM investments resulting in Department of Defense realizing investment dollars in RDT&E and PROC as well as cost avoidance and significant schedule reduction estimated to be at least 4 years. Additionally, in October 2018, the United Arab Emirates (UAE) Presidential Guard Command signed the Letter of Offer and Acceptance under Foreign Military Sales (FMS) Case for the procurement of the GMV 1.1 vehicles. This FMS case was initiated in May 2018 to GMV 1.1 vehicles to operate in areas where the GMV 1.1 is going to prove its mobility capability. Furthermore, in January 2019, optional kits were installed for the UAE FMS case vehicles at Letterkenny Army Depot, PA. The following month, UAE representatives visited Letterkenny Army Depot to inspect and accept GMV 1.1s.

The NSCV team transitioned to the NSCV-II contract to provide enhanced vehicles with mission-specific modifications in protection, mobility, C4ISR, and other enhanced capabilities. Also, a relatively new acquisition avenue being used within Department of Defense (DoD) acquisitions are Other Transaction Agreements (OTA), the NSCV team initiated a prototype - OTA competition for the purpose built NSCV (PB-NSCV) platform using the U.S. Army's Tank Automotive Research, Development & Engineering Center (TARDEC) National Advanced Mobility Consortium (NAMC) OTA. The PB-NSCV is built from the ground up, which improves durability and reduces the reliance on the original equipment manufacturer model changes per year and increases the lifecycle to an expected 15 years (a \$2 million per vehicle savings over that period).

Probably one of the most enjoyable vehicles in the family of vehicles to drive is the Lightweight Tactical All-Terrain Vehicles (LTATV). The LTATV team commenced efforts to obtain industry involvement for the LTATV follow-on contract to meet Special Operations Forces (SOF) emerging requirements. Two specific requirements were identified: (1) two-seat and four-seat Diesel powered LTATV variants which shall provide a larger payload, greater range, and modular flexibility, and (2) two-seat and four-seat next generation diesel and electric hybrid powered LTATV variants. Information was received from Industry through the acquisition planning phase, including Sources Sought / Request for Information (RFI) at the November 2018 Industry Day conference. We expect the solicitation to be released in Spring 2019.

There are discussions and planning currently underway to identify how the Joint Light Tactical Vehicle (JLTV) will fit in to the family of vehicles at



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FOSOV. If the way ahead is for the JLTV to become part of FOSOV the team is excited to continue to provide highly capable tactical mobility to the operators. Additionally, you will see in the briefing this year at SOFIC not only insight on the JLTV but also the potential of a new armored personnel carrier as part for future in the FOSOV portfolio.

A&M: Where do each of the FOSOV vehicles fall in the Protection, Performance and Payload “Iron Triangle”?

Lt. Col. Feltham: It is understood that capability requirements expressed within the CPD are informed and generated on expressed threats and mission needs. Therefore, the trade space within the Iron Triangle of protection, payload and performance generate the sustainment of a family of vehicles. Because there is not one vehicle that provides one stop shopping for all mission sets, through conveyed requirements, FOSOV provides a family of vehicles that allow the operators to employ their unique mobility needs as the mission requires. It should be underscored that the Iron Triangle is relative to our Family of Vehicles. Our medium ground vehicles, to include our NSCV leverage the performance and payload aspects of the Iron Triangle. Additionally, the protection capability is always a desire to continually improve and lighten, often constrained by GVW directly related to suspension and power technology. The MRAPs were devolved by the big service at a Joint Program Office to provide maximum protection to forces in Iraq and Afghanistan. The FOSOV team has leveraged this technology and sought to increase the protection to enhance the operator's mobility protection in support of operations in all theaters.

A&M: How do C4ISR capabilities factor into the design and functionality of FOSOV vehicles? What challenges are there with C4ISR?

Lt. Col. Feltham: Albeit each of our vehicles are unique, the challenges with the installation of C4ISR capability within the family of vehicles revolve around two main considerations: (1) power demand and its impact to the vehicle's architecture and impact to the C4ISR itself and (2) the limited space and weight allotment available to install the C4ISR is crucial so that the impact to the operators is minimized.

First, most of the power demands of our C4ISR systems performance specifications typically require a specific amperage output in both 12 and 24 VDC. Therefore the impact and demand on batteries, alternators and power distribution systems increase above the vehicle's original equipment manufacturer (OEM) operational demand and increase system failure if not properly addressed. Furthermore, most would not realize the radiation hazards (RADHAZ) the C4ISR capability itself brings into the equation. Considerations of Hazards of Electromagnetic Radiation to Ordnance (HERO) and Hazards of Electromagnetic Radiation to Personnel (HERP) across the family of vehicles are many. All of these and several other constraints require experienced and trained professionals to manage with effective mechanical and electronic engineering solutions to prevent performance degradation of the C4ISR system or the vehicle itself.

Lastly, the space and weight constraint for each of the vehicles is unique. For example, the available space and weight impact of C4ISR of the NSCV and MATV to most would be obvious; the NSCV is constrained

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as compared to the larger tactical MATV, however, the design and system layout solutions in each of the vehicles are extremely different, and are not interchangeable. As such, separate internal designs require its own solution set. What may work within the confines of the NSCV will most certainly require a separate design solution to accommodate the mission set of the MATV. It should be noted that, because of limited MFP-11 funding or SOF-P equipment we avoid the acquisition of new vehicle development and attempt to leverage existing service capabilities to save on vehicle investment cost when a SOF-P variant is required. Consequently, we lose the ability to impact C4ISR integration complications at vehicle development.

A&M: How does industry interaction at SOFIC help you as a program manager?

Lt. Col. Feltham: SOFIC provides an effective forum to allow the FOSOV team and industry to interface directly with one another rather than over the internet abyss. Moreover, small businesses because of their agile intellectual solution based development have material solutions across the spectrum of our program. Unfortunately, these small businesses are often constrained by funding or forum to market their technical solutions to the military. SOFIC is one of these venues that allow industry to enlighten SOF acquisition professionals and users on their technology advancements. As a program manager, the interaction at SOFIC with industry is extremely beneficial and has often yielded solutions. Likewise, from an industry perspective, SOFIC

provides a unique and transparent opportunity between government and industry to listen directly from program managers explaining a technology gap and capability need that industry can either provide or develop.

A&M: What would you say to a new industry attendee at this year's SOFIC interested in FOSOV?

Lt. Col. Feltham: I would suggest to a new industry attendee at this year's SOFIC interested in FOSOV to actively engage and seek us out – our team is excited to hear what you can bring to ground mobility to increase our vehicles in capability, durability and sustainment. Specifically, FOSOV is seeking these technologies: Lightweight Armor for Ground Mobility Platforms; current armor solutions are heavy, limit available payload options and decrease vehicle durability, Lightweight and cost effective technologies that can replace current armor solutions; Lightweight Vehicle Components/Mods; advanced tires for all aforementioned platforms; Low SWAP / High Output Alternators; Hybrid/Electric Vehicle Capabilities; Alternative Fuel Sources; Autonomous / Semi-Autonomous Vehicle Capabilities; Semi-Active Suspension Capabilities; Advanced Situational Awareness (M-ATV/AGMS) – Battlefield Awareness; Telepresence for remote vehicle operation and/or Situational Awareness (SA). Finally, I would suggest to interfacing with other industry representatives may be of value to you. Robust cross communication may provide an avenue, resourcing or technical collaboration for future opportunities.



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TALOS: HONING THE ART OF TACTICAL PROTECTION

COL Alex MacCalman is the current Director of the Joint Acquisition Task Force and served as the Chief Engineer for the TALOS Project. He is a Special Forces officer with a functional area in Operations Research System Analyst. COL MacCalman served as an Special Forces Operational Detachment Commander for five years and led analytical studies for the Army and USSOCOM. He has a PhD in system simulation analysis, a MS in Operations Research from the Naval Postgraduate School and a BS in Engineering Management from the United States Military Academy.

Armor & Mobility spoke with USSOCOM's Joint Acquisition Task Force regarding the state of Tactical Assault Light Operator Suit (TALOS) acquisition for use with U.S. Special Operations Forces (SOF).

A&M: TALOS is organized into a Joint Acquisition Task Force (JATF) at U.S. Special Operations Command (USSOCOM) headquarters. What are some of the advantages of the JATF organizational structure? How does the JATF differ from USSOCOM's Science and Technology (S&T) Directorate? Are there any overlaps and coordination?

COL MacCalman: The JATF organizational structure fosters a culture of experimentation to inform users through iterative prototyping of new technical solutions that enhance the Special Operations Forces (SOF) mission. The JATF serves as an elite SOF problem refinement tool with a disciplined experimental process that delivers insights to the Enterprise.

The potential insights that emerge from the process can be in many forms: They may increase knowledge on existing capability gaps, inform industry solicitations on SOF needs, derive key performance parameters and key system attributes threshold and objective levels, identify technology roadmap insertion points, provide technology readiness assessments, or refine basic research questions. The JATF team is comprised of SOF operators, engineers, scientists, acquisition experts and contracting personnel. This blend of professionals creates a unique organization with a mission to define problems, rapidly prototype, learn and scale successes. The JATF is embedded within USSOCOM's Science and Technology (S&T) directorate and is led by an operational SOF Colonel or Navy Captain (O-6). The JATF complements the S&T Directorate by bolstering applied research on the Hyper-Enabled Operator (HEO) concept.

A&M: What is USSOCOM doing with the TALOS program?

COL MacCalman: The Tactical Assault Light Operator Suit (TALOS) was never a program of record. TALOS was an applied research project that sought out disruptive technologies. TALOS was



COL Alex MacCalman

Program Manager
Tactical Assault Light Operator Suit (TALOS)
U.S. Special Operations Command

chartered to explore and catalyze a revolutionary integration of advanced technology to provide comprehensive ballistic protection, peerless tactical capabilities, and ultimately enhance the strategic effectiveness of the SOF operator of the future. To achieve this, the JATF focused on developing a prototype combat suit while acting as the prime integrator, accelerating and transitioning technologies, innovating processes and fostering persistent collaboration with an emphasis on non-traditional partners.

The key outcomes of the TALOS project include pioneering of innovative processes; technology spin-outs that increased survivability, human performance, situational awareness and surgical lethality; acceleration of USSOCOM research in human-machine interface technologies and the reinforcement of our need to experiment with prototypes and foster a learning culture.

While TALOS focused on the physical domain, but now the JATF will focus on the enabling technologies from the digital and cyber domains that affect the cognitive domain. As the TALOS project draws to a close in 2019, the JATF has refocused on the Hyper-Enabled Operator (HEO) vision and concept.

A&M: The Hyper-Enabled Operator, or HEO, vision and concept is an apparent shift in emphasis from the physical domain to the cognitive and cyber domains. In your opinion, what's the underlying thought process behind this shift? Why do you think this shift is necessary?

COL MacCalman: The HEO concept emerged from the need to embrace USSOCOM's future operating environment and is intended to focus on cognition at the tactical edge - the dismounted SOF professional operating in austere or denied environments who is empowered by technologies that increases situational awareness, reduces cognitive load, and accelerates decision-making. SOF Operators, along with the rest of the military will have to operate in a complex cross-domain environment involving not only the physical domain of land, air, maritime and space but also the virtual domain within computer generated environments or cyberspace, and the cognitive domain that involves reducing our own cognitive load and increasing situational awareness, and also influencing the minds of our opponents.

HEO also centers on the reality of data: Today's technology produces exceptional amounts of data and information that can be processed, delivered to special operators at the right time to affect the outcome of an operation. USSOCOM must develop the architectures necessary to sense, monitor, transport, process, and analyze data to aggregate and present the information in a way that best informs tactical-level decision making.



A close-up of the TALOS heads-up user display and visual augmentations system, which attaches to the prototype helmet. (USSOCOM)

Defining the HEO in these ways highlights the first SOF Truth, that "humans are more important than hardware," and emphasizes the enabling technologies the tactical level operator will use and need while on a mission. Enabling technologies include data assets, adaptive and flexible sensors, scalable tactical communications, edge computing, embedded algorithms and tailorable human-machine interfaces.

Examples of HEO capabilities that can enhance cognition at the edge are real-time object recognition combined with other sensor modalities that aggregate a higher probability of identification and characterization; live language translation that enhance communications; software defined radios that acquire digital signatures; audio listening and computer vision capabilities that cue critical information requirements that can accelerate decision making; biomedical and human performance monitoring combined with spatial location of entities within the environment; social network visualizations that provide a contextual understanding of the human terrain, and many others.

A&M: Some of the TALOS technology developments are going to be further developed to advance HEO concepts. Can you elaborate more on what focus areas research and development will occur?

COL MacCalman: A few TALOS prototypes have accelerated our research in the HEO concept: The embedded computing environment and software architecture, the 3-dimensional audio headset that cues sound directions in both the ambient and RF spectrums, the visual augmentation and augmented reality systems, the biomedical monitoring suits and the operational stress heuristics that inform human performance.

HEO research focuses on identifying key opportunities to insert and integrate technology developed in the other capability areas in order to give the operator the full benefit of high-quality data and information at the tactical edge. Additionally, HEO research investi-

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gates the utility of these immersive technologies and their ability to enhance cognition. There will be many forms of HEO architectures that will be analogous to the Internet of Things architectures; the architectural form will be contingent on a desired use case and therefore, highlights our need to clearly define problems. HEO architectures will involve a variety of architectural design decisions that will impact the scalability and compliance to security standards. These design decisions will involve sensor types, routing and protocols, networked communications, edge computing, cloud services, analytics, size, weight, and power constraints, and security.

A HEO architecture will be a networked multi-tiered node topology. Physical examples of nodes are end user devices the human interfaces with, sensors, radios, computing devices, routers, platforms, space assets or cloud types. These nodes are connected via various types of data links forming a topology that will constitute a deployment of a HEO architecture. Our research will experiment on various forms of these architectures in order to understand trade space decisions, technical limitations and interface standards. The outcome of our experiments will inform our users on the viability of various solutions that will enhance the operator's cognition.

The HEO concept will continue to evolve as technological advancements emerge.

A&M: This year's theme at SOFIC is "Accelerating SOF Innovation." Based on your experience working with industry, how can a company who has never done business with USSOCOM organize to accelerate SOF innovation and support the HEO research and development?

COL MacCalman: USSOCOM believes that transformational innovation does not start with solutions, it begins with a clear understanding of a problem. A clearly defined problem will allow USSOCOM to generate ideas that potentially may solve problems. These ideas evolve into unsophisticated prototypes that are tested to learn if they are a viable solution to a problem. The faster we can arrive at this type of learning the better we can "Accelerate SOF Innovation."

At SOFIC, industry learns about USSOCOM's current programs of record, current requirements, research and development efforts and, ultimately how they can help USSOCOM make the acquisition process go faster to more quickly field the latest innovate and disruptive technology to SOF. It's a great opportunity for someone new to learn, network, and engage with the experts to better inform their decision making.

Outside of SOFIC, there are several ways industry can continue engagement with USSOCOM. The S&T Directorate publishes broad agency announcements periodically with specific areas of interest:

USSOCOM conducts technical experimentation events to provide an opportunity for respondents to interact with operational personnel to determine how their technology development efforts and ideas may support or enhance SOF capability needs. The environment facilitates a collaborative relationship between government, academia, and industry to promote the identification and assessment of emerging technologies. For more information, visit <https://www.socom.mil/SOF-ATL>.

The USSOCOM Commercial Solutions Opening provides a means to fund prototyping opportunities with existing commercial solutions that enables a more rapid and tailored acquisitions pathway aligned with the Other Transaction Authority Acquisition reforms. For more information, visit FedbizOpps.gov and search for solicitation number H92405-19-S-CS01.



An operator inside a prototype TALOS exoskeleton. The operator wears the solid oxide fuel cell like a backpack. The TALOS Project was chartered to explore advanced technology prototypes that protect the operator at his or her most vulnerable point. (USSOCOM)

The USSOCOM Cooperative Research and Development Agreement provides general access to USSOCOM gaps and needs to foster collaboration and allows for the formulation and execution of Individual Work Plans between the collaborator and SOF AT&L.

The Technology & Industry Liaison Office (TILO) is the conduit for the SOF AT&L Enterprise. TILO matches your company's product/service/capability to the appropriate personnel within the command and schedules discussions or demos. For more information, visit <https://www.socom.mil/SOF-ATL>.

Vulcan is web-based platform that enables anyone to quickly describe technology and upload supporting documentation to a secure, shared, searchable, central database. For more information, visit <https://www.vulcan-sof.com>.

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MAY 20 - 23

SOFIC

Tampa, FL

Exhibits.ndia.org

MAY 20 - 22

DLA Worldwide Energy Conference

National Harbor, MD

Wwenergyconference.com

JUN 3 - 4

Navy Contracting Summit

Norfolk, VA

Defenseleadershipforum.org

JUN 5 - 6

Military Virtual Training & Simulation

Alexandria, VA

Milsim.dsigroup.org

JUN 11-12

Future Armored Vehicles APS USA

Arlington, VA

Fav-aps.com/tacticaldefense

JUN 17 - 19

CHI's Biodefense World Summit

Bethesda, MD

Biodefenseworldsummit.com

JUN 18 - 19

Intl Summit on Borders

Washington, DC

Internationalsummitonborders.com

JUN 18 - 20

CBRNE Summit USA 2019

Dallas, TX

Cbrnportal.com

JUN 24-25

Future Soldier Technology USA

Arlington, VA

Smi-online.co.uk/defence/northamerica/conference

JUN 25 - 26

CBRN Exhibition

Fort Leonard Wood, MO

Cbrnexhibition.org

JUN 25 - 26

Police Security Expo

Atlantic City, NJ

Police-security.com

JUN 25-27

International Armored Vehicles USA

Austin, TX

Internationalarmoredvehiclesusa.iqpc.com

JUN 26 - 28

Border Management North

Detroit, MI

Bordermanagementnorth.iqpc.com/

JUL 23 - 24

CBRN Defense Conference

Wilmington, DE

Ndia.org/events/2019/7/23/2019-cbrn

AUG 20 - 22

Military Police & Law Enforcement Expo

Fort Leonard Wood, MO

Mpraexpo.com

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