Counter-UAS Technology
Chosen by The U.S. Military
**INTRODUCTION**

Whether it be the conduct of special reconnaissance (SR) or direct action (DA) missions, humanitarian aid/disaster relief (HADR) or military assistance (MA) campaigns to develop local partner forces around the world, the spectrum of mission sets employed by the various international SOF groups continues to grow, bringing with it significant demands for ever better technology and materiel. As a result, government agencies continuously considering how to optimise these force components in the face of emerging competition.

Such a transformation of SOF was discussed by the US Joint Special Operations University (JSOU) at MacDill Air Force Base in Tampa, Florida, between 7-8 January. More than 80 participants from across US government, Special Operations Command (USSOCOM) and the Canadian SOF Command (CANSOFCOM) convened to study future challenges for SOF across the operating environment.

Specifically, discussions were focused around ongoing threats associated with counter-terrorism (CT) and counter-insurgency (COIN) as well as emerging demand signals associated with the Great Power Competition (GPC) and peer, high capability adversaries including China, Iran, North Korea and Russia.

Commentary from the event also echoed JSOU’s Special Operations Research Topics 2020 document, published in June 2019, which considered how “the confluence of..."
The banner for the US Special Operations Forces Acquisition, Technology, and Logistics (SOF AT&L) Center gives an idea of the lethality and mobility that all SOF operators continually reevaluate for their ever changing missions.

The document added before highlighting the importance of multi-lateral partnerships throughout the international SOF community.

Technology areas of interest for SOF range from lethality and survivability through to the connectivity and mobility of small unit teams and operators with SOF commanders around the world also demanding disruptive technologies in the future. Examples include AI/ML and Big Data; emerging biotechnologies; advanced information and communications technologies; as well as optimised 3D printing.

Similar concerns regarding the future operating environment were raised in the biannual NATO SOF Commanders Conference which was last hosted by CANSOFCOM in Ottawa between 6-8 October and discussed SOF’s role in “peer-state competition, crisis, and conflict”.

According to NATO Special Operations Headquarters (NSHQ) commander, US Navy SEAL Vice Admiral Colin J Kilrain, Commander, SOF do not provide an end-to-end solution to the peer-state and GPC problem. Instead, he suggested how SOF could “thrive in contested spaces” in order to best contribute to operations and campaigns undertaken by the wider alliance.

Arguably the most famed special operation which was executed in 2019 saw the US Joint Special Operations Command (JSOC) successfully conducting a helicopter assault force (HAF) to kill or capture Abu Bakr Al-Baghdadi, leader of the self-proclaimed Islamic State.

Conducted on 26 October, the operation illustrated complexities associated with conducting such clandestine special operations in austere and expeditionary environments. According to Central Command’s General Kenneth F McKenzie, “actionable intelligence” had led to the development of the plan to conduct the special operations which was implemented by the US Army’s 1st Special Forces Operational Detachment-Delta.

“The special operations team was staged in Syria and launched against an isolated compound in Idlib province about four miles from the Turkish border. We assess that he was hiding in Idlib province to avoid the intense pressure that had been put on ISIS in other areas of Syria,” McKenzie explained to the media while confirming how the assault team had been inserted by rotary wing with air support from attack helicopters, unmanned aerial vehicles and fourth/fifth generation fighters.

According to a Department of Defense (DoD) statement, the assault force surrounded the compound and conducted a ‘call out’ urging those inside to surrender peacefully. Five enemy combatants who failed to give themselves up were then engaged and neutralised with Al-Baghdadi self-detonating a suicide vest improvised explosive device inside a tunnel after being pursued by a military working dog and assaulters.

“After Baghdadi’s murder/suicide, the assault force cleared debris from the tunnel and secured Baghdadi’s remains for DNA verification,” McKenzie concluded.

Armada International’s SOF Supplement will consider, the success of this mission and many other special operations requires personnel to be equipped with the best equipment in terms of lethality, mobility, survivability and connectivity.
Critical areas of interest when examining new weapons include enhanced mobility throughout confined urban environments as well as sufficient anti-armour capabilities associated with the Great Power Competition (GPC) and ‘stopping power’ to neutralise threats wearing Suicide Vest Improvised Explosive Devices (SVIEDs) similar to Al-Baghdadi.

On 21 November, Malaysian SOF published a solicitation calling for multiple small arms solutions which would be used to support Close Quarter Battle (CQB) missions associated with counter-terrorism, hostage rescue operations and urban warfare.

Due to be fielded by the Malaysian Army’s Grup Gerak Khas (Special Services Group), requirements range from the acquisition of 9mmx19mm handguns and submachine guns through to Picatinny-standard Rail Adaptor Systems capable of being integrated on board 5.56mmx45mm M4 carbines which would allow operators to attach a series of accessories including laser designators, torches and optical weapon sights.

Malaysian SOF requirements remain largely representative of the wider international SOF community which appears likely to stick with NATO standard 9mm, 5.56mm and 7.62mm calibre solutions due to interoperability with US armed forces as well as reduced logistics costs.

However, some of the most innovative trends in the SOF small arms market continue to be explored by United States Special Operations Command (USSOCOM) which continues to consider alternative ammunition types including 6.5mm Creedmoor.

**PACKING A PUNCH**

In terms of maximising levels in lethality, SOF continue to identify small arms and support weapon solutions capable of being used across a variety of environments and mission sets.

By Andrew White
The German Army SOF will receive MBDA’s Enforcer anti-tank munition following extensive end user trials.

Additional examples include Naval Special Warfare (NSW) which is in the midst of conducting a combat evaluation of SIG Sauer’s Personal Defense Weapon (PDW) which comprises a conversion kit capable of upgrading legacy 5.56mm×45mm M4A1 CQB carbines into 7.62mm×35mm (.300 Blackout) weapon systems.

Having deployed an undisclosed number of PDW conversion kits in June 2019 to multiple theatres around the world, NSW’s combat evaluation is due to be completed in May 2020 ahead of consideration for a wider procurement to equip US Army, Air Force and Marine SOF component commands.

As SIG Sauer explained to Armada International, PDW conversion kits (which comprise a replacement upper receiver) not only provide greater range and lethality for operators but also reduced size and weight for operators seeking to enhance their manoeuvrability in confined spaces. Upgraded M4A1 CQB PDW variants measure less than 66cm in total length and less than 2.5kg in weight.

Satisfying requirements for a lighter weight machine gun, USSOCOM has also signed a contract with SIG Sauer for the delivery of an undisclosed number of lightweight machine guns (LMG), ammunition and ‘next-generation’ suppressors in .338-calibre Norma Magnum (NM).

The contract, worth an undisclosed sum, follows the successful conclusion of safety certification by USSOCOM of SIG Sauer’s MG 338 model.

“SIG Sauer has completed deliveries of multiple systems, comprised of MG 338 machine guns, 338 Norma Mag ammunition, and next generation suppressors. For the first time in decades, the US military has certified a new machine gun, ammunition, and suppressor at the same time, bringing new innovation, portability, and increased lethality to our ground forces,” explained Ron Cohen, president and CEO of the company.

As Cohen explained to Armada, the SIG MG 338 provides a ‘bridge’ between legacy 7.62mm×51mm M240 machine guns and .50-cal M2 heavy machine guns.

“The SIG MG 338 is noticeably lighter [than the M240], weighing only 20 pounds (9kg), and provides significantly more range and lethality and offers a man-portable solution with similar effective-range. Making this system even more desirable is the new SIG Sauer next generation suppressor which drastically reduces the impact of harmful toxic fumes and signature, making the operator less vulnerable,” a company statement read.

The SIG MG 338 includes a short-stroke
gas piston operating system with recoil mitigation system, free-floating, quick-change barrel, ambidextrous controls including charging handle, switchable feed tray. The machine gun can also be converted to 7.62mm×51mm calibre, depending upon end user preference.

Comprising a belt-fed system, the SIG MG 338 satisfies USSOCOM’s requirement for a Light Weight Medium Machine Gun (LWMMG). Also considered in the competition was General Dynamics Ordnance and Tactical Systems’s LWMMG, also in .338-calibre.

**UNDERWATER AMMUNITION**

USSOCOM’s NSW is also exploring concepts in ammunition including rounds which can be fired while under water. Companies including DSG Technologies are supporting explorative efforts with its supercavitating CAV-X ammunition, comprising tungsten-tipped rounds which can be fired through and into water.

Designed to satisfy the operational requirements of combat divers, ammunition could be used by underwater reconnaissance and/or demolitions teams to engage enemy combatants from covered positions while under the water, thereby allowing operators to maintain the element of surprise by negating any requirement to breach the surface.

"Depending on the weapon and the used loading variant, this ammunition is suitable for use in partial or fully submerged weapons, regardless of if the target is in water or on the surface. Due to the unconventional shape and significant mass, this round offers great armour piercing capability against multi-layer structures. This shape is also very effective against targets with fibre structure or mud, even when covered by sand," DSG Technologies company literature explained.

DSG Technologies’ CAV-X ammunition, also referred to as Multi-Environment Ammunition (MEA), has been designed in two variants, comprising A2 and X2 models. Both MEA types have been in evaluation with USSOCOM since November, defence sources confirmed to Armada International.

The A2 is designed to be fired into the water from the surface or air, thereby allowing SOF operators on board rigid hull inflatable boats (RHIBs) for example, to engage enemy combat divers or swimmer delivery vehicles (SDVs).

Meanwhile, the X2 has been designed to be fired by combat divers already underwater, allowing them to neutralise enemy sentries while maintaining the clandestine nature of an operation, defence sources suggested to Armada International.

Considering the precision anti-tank capabilities of SOF organisations seeking to operate across the GPC, small unit teams must also be equipped with next-generation capabilities in terms of anti-armour systems.

Examples include MBDA’s Enforcer which on 20 December was selected by the German Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support (BAAINBw) to satisfy the German Army Special Forces Command’s (KSK’s) ‘Leichtes Wirkmittel 1800+’ shoulder-launched unguided munition requirement.

KSK has been seeking a “lightweight, day/night, precision-guided, shoulder-launched weapon system with an effective range of more than 1,800m,” an MBDA spokesperson explained.

MBDA Germany’s managing director and executive group director for strategy, Thomas Gottschild, explained how the “German customer had chosen the Enforcer after a detailed, competitive evaluation for the ‘Leichtes Wirkmittel 1800+’ requirement”.

"Enforcer provides low-collateral precision effects capabilities against the threat from lightly armoured static and moving targets, targets behind cover, and against targets at long range also in urban environments," company officials added.

"MBDA is now set to complete qualification and prepare for series production. The modular design of the Enforcer system enables a range of future development options, including a prospective ‘family’ of Enforcer munitions for land, air and sea applications,” officials concluded.

Elsewhere, Saab and Raytheon continue to develop the Carl Gustav Guided (CGG) munition in line with emerging operational requirements from USSOCOM. In October, a series of guided flight tests were conducted in Karlskoga, Sweden as well as Mile High Range, Texas, demonstrating how a semi-active, laser-guided munition will allow militaries to accurately engage stationary or moving targets at distances up to 2,000m in range.

"Raytheon and Saab have spent the last 12 months working together to develop a precision-guided munition that will penetrate multiple targets, such as light armour, bunkers and concrete structures, at extended ranges," explained Sam Deneke, Raytheon Land Warfare Systems vice president. "This lightweight round can overmatch potential adversaries while decreasing collateral damage, making it an ideal weapon when fighting under restricted rules of engagement."

Raytheon and Saab are due to test an all-up round in 2020.
Whether conducting special reconnaissance (SR), direct action (DA) or military assistance (MA) missions, SOF units must be capable of rapidly moving across the battlespace.

By Andrew White
Rotary wing assets remain one of the most critical insertion/extraction capabilities for SOF small unit teams around the world. One of the most widely used are variants of Lockheed Martin/Sikorsky’s UH-60 Black Hawk which continues to provide a flexible airborne option for SOF organisations including the Polish Special Operations Component Command (POL SOCC).

On 20 December, POL SOCC received four Polish made S-70i Black Hawk helicopters following a contract award with Sikorsky signed on 25 January 2019. POL SOCC had demanded a multi-mission helicopter capable of supporting counter terror (CT) and counter insurgency (COIN) operations as well as more conventional state-on-state operations associated with the GPC.

Air frames, which will be heavily relied upon by POL SOCC’s Tier 1 GROM special mission unit in terms of homeland security and CT missions, will provide a tactical airlift insertion, resupply and extraction capability in order to enhance the “mobility of POL SOCC sub-units”, according to an official POL SOCC statement.

Air frames will be operated by the Polish Air Forces’ 7th Special Operations Squadron in Powidz, augmenting legacy Mil Mi-17, PZL W-3 Sokol and Mi-8 helicopters. POL SOCC had also been considering Airbus Helicopters’ H225M Caracal as well as Leonardo’s AW101.

Speaking at an acceptance ceremony, Poland’s President Andrzej Duda suggested that additional helicopters could be procured for use by GROM due to increasing demands of the Tier 1 SOF unit.

Meanwhile, NATO SOF partners in Bulgaria, Croatia, Hungary and Slovenia pooled resources to open the Multinational Special Aviation Programme (MSAP) Training Centre in Zadar, Croatia on 11 December 2019.

Designed to enhance interoperability of the SOF components of participating countries, the MSAP school is already open for theoretical training with physical flight training due to begin in 2021 using a variety of platforms including Mi-171Sh; UH-60M; AS532AL Cougar; H-145M; and H225M.

“By applying NATO standards, it will increase interoperability amongst the participants, throughout the alliance and with NATO partners. As such, additional Allies and partner nations may decide to join MSAP in the future, which could lead to a further expansion of the centre’s scope,” a NATO statement explained.

Speaking to Armada International, director of MSAP Training Centre, Lt Col Tomislav Pusnik described how the centre aims to “provide training capacities required to create and sustain Special Operations Air Task Units (SOATU) in efficient way and to increase interoperability among participants”.

“Helicopters are one of the most useful assets to support special operations. For flight training, each nation will use its own nationally declared helicopters. Depending on the national decision, the equipment on the helicopters will be different but all in accordance with NATO standards and
adapted for the implementation and support of special operations. All helicopters will be armed and equipped with active and passive self-defence systems.

“In the next two to three years, some nations will transfer to more sophisticated helicopters. With continuous technological improvements, the use of more sophisticated assets and systems with characteristics of precision, speed and proper command and control procedures will be certainly seen as an advantage in highly demanding and contested environments,” Pusnik explained.

Initial theory courses include the MSAP Special Operations Aviation Planning Course which will be followed by the MSAP Crew Resource Management Course and MSAP Operational Risk Management Course. Airmen who finish all the courses as well as additional courses (NATO SOF Air Mission Commanders Course and NATO SOF Air Mission Challenge Course) organised by NSHQ in Belgium, will meet the prerequisites to begin flight training in 2021, Pusnik disclosed.

“In the future, we intend to develop additional courses including Personal Recovery, Special Operations Air Land Integration (SOALI) Course, SOF Orientation Course and other courses depending on the demands of nations. We plan to work in close relationship with NSHQ, SOCEUR and other countries which have achieved Special Operations Aviation Task Units (SOATU) capabilities in the past.”

The MSAP is also set to include tiltrotor technology, including the Bell/Boeing V-22 at the beginning of 2025 in order to enhance Personnel Recovery training.

“Our training will be focused on realistic and combat-focused training which means that the units will be trained in the same way and under the same or similar conditions in which they would fight and conduct real special air operations,” Pusnik stated.

The training centre is also set to include fixed wing support during training serials in order to fully replicate the conduct of advanced phase flight training and/or complex military exercises.

“We intend to use conventional fixed wing
units to support us, which is the practice in NATO in cases of smaller special air units with a rotary wing component only," Pusnik concluded.

**STEALTHY SWIMMERS**

In the maritime environment, SOF entities in the US and across the Five Eyes (including Australia, Canada, New Zealand, and the UK) community are set to benefit from ground-breaking technology in the form of next-generation Swimmer Delivery Vehicles (SDVs).

SOF components in the US and UK are due to introduce into service Teledyne Brown Engineering’s Shallow Water Combat Submersible (SWCS) with USSOCOM’s NSW having already received three SDVs as of September 2019 for initial operational evaluation and testing at Joint Base Pearl Harbor Hickam, Hawaii.

Designed to enhance the comfort and survivability of combat divers enduring long and arduous underwater insertions (legacy SDVs including the Mk8 Mod1 expose divers to the water without a break), the SWCS has a top speed of nine knots and maximum weight of 4,500kg. Designed to operate on a single electrical battery, SWCSs are capable of carrying six combat divers up to 50nm below the surface, industry sources informed *Armada International*. The SWCS has been designated the Mk11 by USSOCOM.

Similarly, NSW is also set to benefit from Lockheed Martin and Submergence Group’s Dry Combat Submersible (DCS) which, similar to the SWCS, allows combat divers to keep dry during underwater insertion and extraction.

NSW has already accepted one of three DCSs following an initial delivery in February 2019. Designated DCS-1, the SDV has already completed acceptance tests at Rivera Beach, Florida, ahead of entry into service later this year. DCS-2 and DCS-3 SDVs are due to enter service in 2022.

However, USSOCOM is also considering a next-generation DCS design which could be interoperable with the US Navy’s Dry Deck Shelter (DDS) which can be employed on board Block VI Virginia-class submarines.

The DDS, which comprises a protected structure which is attached to the hull of the submarine, provides access to the DCS and a means to launch and recover the SDV, thereby significantly extending the clandestine mission range of combat dive teams. DCS-1-3 are currently too big to be deployed from the DDS.

The so-called ‘DCS-Next’ concept could also consider underwater towing mechanisms for the DCS which might also be capable of carrying more than six combat divers (excluding crew of two) in the future.

Commander Scott Delwiche, undersea systems program manager for USSOCOM’s Program Executive Office – Maritime, DCS-Next stated: “Some of the major hurdles that we’re going to have to overcome are how we launch and recover the submarine? How do we handle it? How are those air, electrical or other connections going to mate to the submarine? How all of that interaction will work between the submarine and the DCS-Next?”

At the end of 2019, France’s Special Operations Command also accepted into service ECA Group’s PSM3G Special Warfare Underwater Vehicle (SWUV). Designed to carry eight combat divers including a crew of two, the SWUV has a maximum speed of 10kts and an operating depth of approximately 100m. Approximately one dozen SWUVs will be delivered to the COS.

Finally, at the SOF Innovation Network Seminar (SOFINS) near Bordeaux, France on 2 April, Alseamar unveiled its latest Murene SDV to conduct ‘Underwater Attack and Maritime Counterterrorism, Logistic and any Underwater operations [associated] with [combat] divers’.

**On 30 October, USSOCOM awarded Teledyne Brown Engineering an additional ‘follow-on’ contract of $178 million to provide additional SWCSs to NSW, although exact numbers have yet to be confirmed. The contract extension follows the “success of the SWCS programme’s EDM phase”, a Teledyne Brown Engineering statement explained.**

Elsewhere, the UK MoD has also agreed a foreign military sale for a total of three SWCSs, according to a 2018 statement disclosed by the US State Department.
Also referred to as the Subsea Light Vehicle, the Murene is designed to carry a pair of combat divers. Capable of being deployed from shore or from rigid hull inflatable boats and submarines through NATO standard 21” torpedo tubes, the Murene includes an inertial navigation system with Doppler Velocity Log and GPS. The SDV, which is capable of carrying a 50L payload, is capable of detecting obstacles up to 100m in range.

‘Murene’s small dimension; greater ease of use; and intuitive piloting, make it a perfect device [for combat divers] to sneak up on maritime targets,’ a company spokesperson explained to Shephard. ‘The full version, fitted with a Forward Looking Multi-Beam Sonar, is able to carry out seabed monitoring before an amphibious operation.’

The Murene has a top speed of four knots and maximum operating range up to 16nm when operating at a cruising speed of two knots. With an all up weight of 135kg, the SDV can be piloted in either manual or semi-autonomous mode.

SOV MOBILITY

Special Operations Vehicles (SOVs) also remain a critical piece of equipment for small unit teams seeking to conduct SR, DA and MR missions across arduous and austere environments as well as CT operations in urban areas.

Both SOV types were outlined in a solicitation by the Malaysian Ministry of Defence on 13 January 2002 with a single requirement for 16 4x4 SOVs as well as demand for four 4x4 Rapid Intervention Vehicles (RIVs). SOVs will be provided to the Malaysian Army’s GGK SOF unit in order to support “special operations deep in enemy-held territory”.

According to the solicitation, SOVs must be capable of “manoeuvring in hostile terrain with great emphasis towards stealth, speed and firepower” as well as being rapidly re-roled between SR and DA mission types.

The competition for the general purpose SOV is likely to see the participation of Cendana Auto, Kembara Suci, Weststar, and Nimr Automotive.

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Similar requirements are being pursued by USSOCOM with the ‘Follow-On Light Tactical All Terrain Vehicle (LTATV)” programme which aims at providing a next-generation SOV to replace Polaris Government and Defense’s MRZR-2 and MRZR-4 LTATVs upon contract end in July 2020.

The Follow-On LTATV will provide USSOCOM, as well as international SOF partners already operating MRZR-2 and MRZR-4 SOVs, with a capability lying somewhere between legacy LTATVs and General Dynamics Ordnance and Tactical Systems’ GMV1.1.

Specific requirements call for a ‘fly and drive’ capability which allows the follow-on LTATV to be carried inside the cargo hold of V-22 Osprey tiltrotor, H-47 Chinook and CH-53 air frames as an internally transportable vehicle. Such a concept extends the range and reaction time of SOF small unit teams conducting expeditionary operations in particular.

Additional requirements also call for electric and hybrid drive technologies; greater payload capacity; autonomous and optionally-manned features; in addition to modular mission kits including the ability to run tracks for difficult terrain. A request for proposals was originally expected to be published in October 2019. A
Personal protective equipment (PPE) remains another critical requirement for enhancing the survivability of the individual SOF operator.

By Andrew White
ARGUABLY the most important PPE selection in 2019, which appears likely to have significant ramifications for SOF partner forces around the world, was USSOCOM’s selection of Gentex Corporation to satisfy its next-generation Family of Tactical Headborne Systems (FTHS).

The FTHS competition, which included competition from 3M and Revision Military, aimed to provide SOF operators with a modular and flexible helmet which could be easily and quickly re-roled to support training and operations across the multi-domain environment, including combat diving and military free-fall.

In May and July 2019, Gentex was awarded a pair of five-year contracts to provide USSOCOM component commands with next-generation Modular Integrated Communications Helmets (MICHs) as more than 40,000 legacy Ops Core FAST SF combat helmets, also manufactured by Gentex, are phased out of service.

May’s $95 million contract will see USSOCOM operators equipped with Ground and Airborne MICHs, while July’s additional contract specifically equipping NSW personnel with a Maritime/Coxswain variant suitable to support special operations in the littoral and riverine environments.

Comprising a carbon composite design, Gentex’s winning FTHS ‘super high cut’ MICH design features a ‘bump’ helmet shell with add-on and ‘low profile’ ballistic applique shell which can be quickly clipped onto the baseline helmet.

Gentex described to Armada International how the FTHS MICH also featured the company’s own STEP-IN Visor which is compatible for night vision goggles as well as a carbon composite mandible attachment and the company’s own AMP communication headset.

According to Gentex’s principal industrial designer, Jay O’Connell, the new helmet features “improved comfort, increased stability, reduced personal signature, greater system integration and a significant weight reduction over currently fielded Ops-Core FAST helmets”.

**BODY ARMOUR**

Elsewhere, USSOCOM is also testing lighter weight body armour solutions which were initially developed in support of the Tactical Assault Light Operator Suit (TALOS) programme, a concept which was officially concluded earlier in 2019.

Designated ‘Lightweight Polyethylene (PE) Armour for Extremity Protection’, the new armour solution extends protection against small arms fire from 19 percent of body mass as currently provided by legacy ballistic plates covering the chest and back, to around 44 percent protection of body mass.

Additional areas of coverage include shoulders, arms and groin. According to USSOCOM sources, PE technology also provides up to 25 percent in weight savings over legacy solutions. PE solutions are currently in combat evaluation by undisclosed SOF units, sources disclosed.
KEEPING CONSTANT COHESION AND AWARENESS

SOF small units must be fed real-time and accurate situation awareness, particularly when operating in anti-access area denied (A2AD) environments.

By Andrew White
Describing how command and control (C2) and connectivity could be affected by the physical environment, distance from support and infrastructure or enemy activity, Systematic product manager Jesper Annexgaard warned that near peer adversaries now possessed advanced technologies that could be disruptive to such capabilities across the battlespace.

“Resilience and the ability to function with a variety of communications systems are essential if effective C2 and situation awareness are to be maintained. We have developed our systems to deliver these capabilities via SATCOM and even low-bandwidth RF communications, such as personal radios,” he highlighted.

Annexgaard described how Systematic’s SitaWare Tactical Communications optimises the use of bandwidth, recognising when it is not possible to transmit the requisite information and waiting for windows of opportunity to do so.

“In the tactical environment this can frequently be the case, such as when SOF take cover behind obstacles that restrict communications or enter buildings, it is also likely to be a factor in anti-access area denial (A2AD) scenarios.

“We also consider human factors to be of paramount importance in system design, and for the high intensity operating conditions in which SOF are typically employed the potential for cognitive overload is very real. That is why we have designed our Frontline and Edge systems – for the mounted and dismounted commanders respectively – to have intuitive interfaces and the ability to create information overlays that can be quickly added and removed.

“Our core technology is more than capable of presenting C2 and SA information on a range of device types and sizes, however, this is only useful if it is done in a manner that does not introduce cognitive burden.”

Speaking to Armada International, product manager at Thermoteknix, Alistair Brown, who has been involved in the “development, promotion and evaluation of multiple products with various SOF organisations”, described how SOF units continued to demand the highest maturity in C4I (Command, Control, Communications, Intelligence) technology.

“The increasing use of portable C4I and Android Tactical Assault Kits (ATAKs) by special forces in a number of countries increases the power and data systems on the head, including night vision, to be fully integrated,” Brown explained.

“As always, size, weight and power [SWAP] is valued by any highly mobile force. Increasing use of mobile C4I and AR [Augmented Reality] technologies increases the need for the ability to view this data both during day and night operations,” he said referencing Thermoteknix’s latest solutions including the ClipIR XD Thermal Imager; CoVid Video Injection Unit; and ConnectIR Android Image and Data Sharing App.

“Cross training between SOF forces from many countries leads to a uniformity of equipment fit and operating procedures. But the US still lead the way with new initiatives,” Brown confirmed before adding that “the speed at which these flow down from US to other NATO and friendly forces is increasing.”

“Both our ClipIR XD and CoVid, launched at DSEI 2019, allow users to have a covert feed of C4I data from ATAK systems without any loss of situation awareness,” Brown said that Thermoteknix had supplied units to a number of undisclosed SOF organisations in both Europe and South East Asia.

Thermoteknix’s ClipIR XD provides SOF operators with a fusion upgrade to legacy I2 night vision goggles with the infection of a thermal image while maintaining 40-degree fields of view.

The unit can be supplied without an internal battery requirement, allowing it to draw power from an integrated helmet system in order to reduce overall weight and optimise helmet balance. The ClipIR XD also has an option for video input, allowing users to view video overlays such as symbology directly through night vision goggles and other end user devices, Brown added.

“The ClipIR XD already has a video input and the format and connector are common to the free standing CoVid heads up display. CoVid has been trialled in conjunction with Applied Research Associates’ ARC4 Recon system by specialist user groups in the US and Europe”, Brown explained before concluding: “The SOF community perform a wide range of activities ranging from HALO parachute operations, land and sea. The ClipIR XD is fully qualified to cover all these diverse operating environments.”

Additionally, Thermoteknix has made available its CoVid Video Injection Unit which enables the use of HUDs for combat operations in complete darkness, allowing SOF operators to maintain eyes on target while simultaneously remaining hidden and observing SA data.

The CoVid unit is powered by its host system and weighs less than 50g when attached to a night vision device, company literature added.

Finally, Thermoteknix’s ConnectIR Android Image and Data Sharing App networks images and data between TiCAM 1000 cameras (TiCAM 1000A, 1000B and 1000C) and other devices including smartphones, tablets and computers.

“ConnectIR is indispensable for surveillance, homeland security, CT, military and police forces, providing near real-time
sharing of thermal and visible images with operators and target location data using commercial or military networks,” Brown continued.

**FUSED INTELLIGENCE**

US SOF units continue to evaluate L3Harris Technologies’ latest range in fused intelligence products. This includes the Fused-Ground Panoramic Night Vision Goggles (F-Pano) which comprises an upgrade of the GPNVGs currently in service with USSOCOM as well as numbers SOF entities around the world including KSK.

The F-Pano comprises a next-generation capability upgrade to end users seeking to enhance their situation awareness through the fusion of Infrared and I2 sight pictures as well as AR and wireless communications.

Designed to be integrated with any software defined radio, including L3Harris Technologies’ own AN/PRC-163 Next Generation Tactical Communications handheld SDR (recently selected by USSOCOM), the F-Pano is designed to provide end users with enhanced levels in situation awareness to support “improved
SOF operators conducting missions in A2AD environments particularly require up-to-date situation awareness and command and control. Many SOF entities around the World are adopting USSOCOM’s ATAK.

mobility, targeting and lethality”, according to the company. Providing operators with a 97-degree field-of-view and white phosphor technology in a quad-tube goggle design, the F-Pano also allows end users to access common operating environment imagery and digitally communicate position information across the battlefield, as well as determine the location and identity blue, red and green forces and other items of interest.

“The F-Pano ensures hyper-enabled special forces customers maintain operational overmatch against ongoing threats,” explained vice president and general manager of L3’s Warrior Mission Solutions business, Lynn Bollengier.

“The F-Pano also incorporates a high-resolution display and an embedded wireless personal area network that uses augmented reality algorithms to interface with the operator’s end user device. The complete system facilitates a hyper-enabled operator with the ability to interface with multiple sensors throughout the battlespace, providing enhanced interoperability and data sharing,” a company statement added.

L3Harris Technologies delivered a total of three technology demonstrators to force elements within USSOCOM in March 2019, with Bollengier explaining to Armada International how the company’s customer base remains “very specific about what they wanted in terms of mission pre-sets and information displayed on board the GPNVGs”.

Elsewhere, Spanish company NVLS is also marketing its own set of QuadEye panoramic NVGs following their unveiling at the SOF Innovation Network Seminar in France on 3 April 2019.

Featuring a similar quad-IR tube design to L3Harris’ GPNVG, the QuadEye continues to be evaluated by SOF organisations in Europe, according to Martin Snijders, marketing communication manager at NVLS’s distributor Photonis.

Providing end users with a 104-degree FOV, QuadEyes operate in the 350-1,100nm spectral range. [A]
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