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COUNTRY FOCUS: SWEDEN

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Politics · Armed Forces · Procurement · Technology

The UK Does not Follow an Isolated Avenue

The declared compromise which David Cameron snatched from the Heads of State and Government of the other 27 EU Member States in a 30-hour negotiation marathon enables him to plead for the remaining of his country in the Union while saving face. While he hurried to a cabinet meeting in London before announcing the date for the "Brexit Referendum", the consternated heads of the EU bureaucracy tried to keep their composure. "What matters is that all stayed at the negotiating table", meant Council President Donald Tusk, as if hostile conflict parties had come together to cautiously agree upon a ceasefire. Commission President Jean-Claude Juncker gave free rein to his ironic vein: "The UK has always enjoyed a certain special status in the EU. Today´s agreement once again underlined it."
In David Cameron´s interpretation, this agreement is however more than just the continuation of a tradition that allowed the British, as also some other Member States, to claim certain exceptions from a few rules for themselves. Rather, it marks a red line which the EU cannot trespass if the United Kingdom is to remain further under its roof. "We shall never join the euro. We shall never be part of a euro rescue programme, never be part of a passport-free area, of a European army or a European superstate", made Cameron unmistakably clear in a press conference. The majority of the British citizens seems to support this position not to allow any further undermining of the national sovereignty by Brussels. On 23 June, they will now have a choice. Do they consider the agreement achieved in Brussels to be reliable enough to still vote against an exit from the EU? Or do they fear that it is no more than a tactic trick to continue pursuing the integration process after the referendum? So far, it seems as if the electors will follow the recommendation of the Prime Minister and most British businesses and shy away from the risk of a "Brexit". However, it is no longer only left-wing or right-wing populists that would like to turn their back on the EU. Six government members support the campaign for an exit. They have been joined by the popular London Lord Mayor Boris Johnson who is seen as a possible successor to Cameron. He is still concerned about further centralisation of competences by the EU and the creeping superimposition of British law by European legislation.
The EU is well advised not to underestimate the symbolic effect of the agreement reached with London. A conspicuous question mark has been put behind the certainty with which a further progressing integration toward a European Federal State in Brussels was masqueraded as a dictate of historical reason. In this respect, the UK is not treading its own particular path. Also in many other Member States, scepticism has grown as to whether Europe is still on the right track. Almost everywhere in Europe, the political landscape has seen tectonic shifts in recent years. In a few countries, this has even had an effect on the composition and orientation of governments. This trend is also accompanied by new evaluations as to the role of the EU and in what direction it is to develop. Nevertheless, it is principally not questioned per se. Its economic effort to effectively promote the wealth of the Europeans through the single market is undisputed. One does not need to fear a return to national eccentricity in this area. In other areas, however, it is difficult for it to provide a comparable proof of its achievements, not least in the field of defence, for which NATO alone can provide an answer to current crises. The citizens primarily still view national parliaments and governments as democratically legitimated, which they also hold responsible for the internal and external security of their country. The EU will not fail. Because things are politically desirable only if they are also feasible, the EU will have to redefine its role.

Peter Bossdorf

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SHORAD and VSHORAD systems are used to engage low-altitude air threats, primarily helicopters and low-flying close air support. An overview of systems in use and new developments Page 57

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New Small Drone Looks Like a Hawk

(df) The Spanish company EXPAL has developed and integrated a small UAV with the shape of a bird of prey: SHEPHERD. This is an unmanned aerial vehicle (UAV) with multiple applications in the fields of defence and security, mainly in observation, surveillance and protection missions. The SHEPHERD takes the role of an advanced observer and in combination with EXPAL's TECHFIRE information system for indirect fire support, gives many additional options to military users. Its great capacity to glide and its silent engine make it almost imperceptible in this type of mission. SHEPHERD is equipped with cameras and a geolocation software that enhances it to accomplish observation and surveillance operations such as, border control, fire-fighting and counter drug trafficking.

First Australian AEGIS-Equipped Air Warfare Destroyer

(df) Lockheed Martin's Integrated Test Team (ITT) begins AEGIS combat system integration and testing aboard the Royal Australian Navy's (RAN) first AEGIS-equipped Air Warfare Destroyer (AWD), HMAS HOBART. This milestone represents a significant step towards Australia's HOBART class destroyers joining the AEGIS international fleet. The HOBART class destroyers are being built under Australia's SEA 4000 programme, which will ultimately deliver

(Photo: Australia Defence)

three advanced multirole ships. These ships will be Australia's first ships to be equipped with Lockheed Martin's AEGIS Weapon System including the SPY-1D(V) radar. When paired with the MK 41 Vertical Launching System, AEGIS is capable of delivering missiles for every mission and threat environment in naval warfare. The RAN has received the Lockheed Martin AEGIS Baseline 8 configuration, which integrates commercial-off-the-shelf technology and open architecture into the combat system.

Type 26 Global Combat Ship

(df) The UK Ministry of Defence has awarded BAE Systems a €590 million contract to progress the Type 26 Global Combat Ship programme. This decision follows the UK Government's commitment in the

(Photo: BAE Systems)

Strategic Defence and Security Review to buy eight of the advanced anti-submarine warfare ships. Effective from April 2016, the 15-month contract extends the current demonstration phase ensuring continued momentum to further mature the detailed design of the Type 26 ships and to manufacture key equipment for the first three ships. "These highly advanced ships will help keep Britain safe and support our shipbuilding industry," Defence Secretary Michael Fallon said. "Investing in them is part of our plan to increase defence spending so our armed forces have the most modern equipment they need." The Type 26 Global Combat Ship will in time replace the Type 23 frigates. Globally deployable, it will be capable of undertaking a wide range of roles from high intensity warfare to humanitarian assistance, either operating independently or as part of a task force.

■ Sweden Refurbishes 262 Combat Vehicles 90

(df) The Swedish government has awarded HB Utveckling AB, a joint venture between BAE Systems Bofors AB, part of BAE Systems Weapons Systems, and BAE Systems Hägglunds AB, a contract to refurbish 262 Combat Vehicles 90 (CV90) for the Swedish Army. The company's

(Photo: BAE Systems)

work will include refurbishing the chassis and upgrading the vehicle's survivability and turrets, as well as enhancing combat system performance. Together, these efforts will help increase the vehicles' lifespan in support of Army capabilities. The Swedish Army has a fleet of 509 CV90s. Other countries currently using the vehicle are Norway, Denmark, Finland, Estonia, the Netherlands, and Switzerland. Work starts immediately with deliveries beginning in 2018 and running through 2020. CV90 is a family of Swedish tracked combat vehicles designed by FMV, BAE Systems Hägglunds, and BAE Systems Weapons Systems, with more than 4 million engineering hours contributing to the development of this advanced Infantry Fighting Vehicle (IFV). The Swedish version of the IFV is outfitted with a turret equipped with a 40 mm automatic cannon.

■ Protection against Mini-Drones

(df) Easy to acquire but hard to fight: mini-drones are a growing threat to military and police forces and to political meetings and mass events. In the past countermeas-

(Photo: Diehl Defence)

ure systems based on interference with radio signals and GPS jamming/spoofing. Nowadays, this does not provide reliable protection. Diehl Defence has developed a countermeasure based on High-Power Electro-Magnetics (HPEM). This allows controlling the electronics of mini-drones by using electromagnetic pulses to cause mission abort. Regardless of the control method used (autonomous or radio-controlled), the mini-drone becomes inoperable when hit by a HPEM pulse at distances of up to several hundred meters and triggers the fail-safe function. Diehl's counter-UAS system offers the possibility of scalable range and the ability to intercept entire swarms of mini-drones simultaneously. It has proven its reliability during the G7 summit in Elmau. Diehl's HPEM systems do not cause harm to individuals and have already been used for stopping cars and protecting large events like the Olympic Games.

■ FREEDOM Class LCS

(df) The U.S. Navy has awarded an industry team led by Lockheed Martin a contract for one fully funded FREEDOM class Littoral Combat Ship (LCS). The contract award includes funding for seaframe construction, systems integration and testing. LCS 25 will be the 11th ship procured under the 2010 block buy contract and the 13th Freedom-class variant overall. LCS 25 is scheduled for delivery to the Navy in 2020. The Lockheed Martin-led industry team is currently in full-rate production of the FREEDOM class variant, and has delivered three ships to the U.S. Navy as of now. There are seven ships in various stages of construction at Fincantieri Marinette Marine, with three more in long-lead production. The first two ships,

USS FREEDOM and USS FORT WORTH, have demonstrated the FREEDOM variant's value to the fleet with two successful operational deployments to Southeast Asia, sailing since delivery more than 180,000 nautical miles combined. The FREEDOM variant's steel monohull design is based on a proven, survivable design recognized for its stability and reliability. With 40% reconfigurable shipboard space, the hull is ideally suited to accommodate additional lethality and survivability upgrades.

Kuwait Signs Contract for 28 Eurofighter TYPHOONs

(jh) The contract signature for 22 single-seat and six twin-seat aircraft followed the announcement of an agreement between the State of Kuwait and the Italian Government for the procurement of the aircraft on 11 September 2015. The aircraft will be delivered according to Tranche 3 standard and will be equipped with the E-Scan radar.

(Photo: Eurofighter)

The contract confirms the State of Kuwait as the eighth customer in the programme and as the third customer in the Gulf Region next to the Kingdom of Saudi Arabia and the Sultanate of Oman.

Speaking on behalf of the consortium and its Eurofighter partner companies the CEO of Eurofighter, Volker Paltzo, said: "We are delighted to officially welcome the State of Kuwait as a new member of the Eurofighter family. The confirmation of this order is further testament of the growing interest in the Eurofighter TYPHOON in the Gulf Region. It will enable Kuwait to benefit from the critical mass being developed in the Gulf and the many advantages that it brings to an air force in terms of interoperability, training and in-service support."

Since entry into service of the first Eurofighter TYPHOON at the end of 2003, more than 470 aircraft have been delivered to six nations: Germany, the United Kingdom, Italy, Spain, Austria and Saudi Arabia. The Kuwait order follows an order by Oman in December 2012 for twelve aircraft. Eurofighter Typhoon is currently in service at 22 operational units and up to now, the whole fleet has completed more than 330,000 flying hours worldwide.

India Acquires Combat Proven Missiles

(df) The Indian Ministry of Defence has signed an agreement with the U.S. Department of Defense to acquire STINGER air-to-air missiles made by Raytheon. As part of the deal, India will receive 245 Stinger air-to-air missiles along with launchers and engineering support. India's STINGER acquisition is part of a €2.7 billion deal with the U.S. that includes combat helicopters, weapons, radars and electronic warfare suites. The combination of supersonic speed, agility, highly accurate guidance and control system and lethal warhead makes STINGER a combat proven capability against helicopters, UAVs, cruise missiles and fixed-wing aircraft. STINGER not only has a surface-to-air capability from land and sea, but also an air-to-air capability that can be integrated into most fixed- or rotary-wing platforms. "India joins nations around the globe who recognize that air-to-air STINGER can be a key component of attack and light attack helicopter mission configurations," said Duane Gooden, Raytheon Land Warfare Systems vice president. "STINGER significantly improves the ability of the aircraft to successfully perform today's missions while countering existing threats."

Stemme Introduces ISR Aircraft

(jh) The German company Reiner Stemme Utility Air Systems introduced the new Q01 reconnaissance aircraft at Schönhagen airport near Berlin in March. The sensor platform has been developed on

(Photo: J. Hensel)

order to the armed forces of Qatar as an OPV (Optionally Piloted Vehicle) which can either be flown by a pilot on board or remotely controlled from a ground station via a data link. The aircraft is powered by a 3l diesel engine and has been laid out for ATOL operations (Automatic Take-Off and Landing). The Emirate of Qatar has 17 systems on order, and the first prototype has successfully completed its maiden flight, equipped with a camera, an electro-optical sensor and a radar from Thales. The aircraft is 10m long, has a wing span of 20m. and a payload capacity of 1,000kg., of which up to 680kg. can be used in support of a flight time of up to 50 hours. Operational applications planned by the Qatari forces include border and sea space surveillance and reconnaissance as well as surveillance missions in the scope of the 2022 FIFA World Cup. Although the development has been paid for by the State of Qatar Reiner Stemme company retains the full marketing rights.

Third Nation Orders AW159 Navy Helicopter

(df) Finmeccanica has been awarded a contract to supply the Philippine Navy with two AgustaWestland AW159 helicopters. The aircraft will be built in and delivered from the United Kingdom in 2018. The order, valued over €100M, includes training and multi-year support and adds to those of the United Kingdom and the Republic of Korea, bringing the total orders for AW159s to 72. The two helicopters will be primarily dedicated to anti-submarine warfare and anti-

(Photo: Finmeccanica)

surface warfare roles. The helicopters will also be capable of performing other roles including search and rescue, maritime security and maritime surveillance. The AW159 is a latest generation, multi-role, multi-mission, maritime and utility helicopter. Designed as successor to the LYNX, which still holds the 400 km/h world speed record, the new model further expands its naval capabilities and performance. The AW159 features a state-of-the-art cockpit with four large displays as well as integrated avionics and mission systems allowing the crews enhanced capability and operational effectiveness.

Swiss Combat Training Centres Operated by RUAG

(gwh) Following a contract from the Federal Office for Defence Procurement (armasuisse), RUAG Defence will continue operating the combat training centres in Switzerland for the next five years. The contract includes management, operation of the centres' system platforms, technical service, logistics, infrastructure and property management. These centres are state-of-the-art training facilities equipped with the latest systems for simulating soldiers, weapon systems and buildings integrated in different combat environments. The systems include "train-as-you-fight training" in a realistic environment, providing optimal preparation to soldiers for any future deployment, and also includes vehicles and MOUT infrastructure.

FNSS: Projects in Southeast Asia

Since its establishment in 1988, FNSS has become one of the leading manufacturer and supplier of tracked and wheeled armoured combat vehicles and their weapon systems for the Turkish and allied armed forces with its tailored, reliable, and affordable land combat system solutions. Up to day, FNSS has completed deliveries of over 2,700 tracked vehicles, some produced based on technology transfer programmes in various countries. Today, FNSS operates three major production sites worldwide.

The project portfolio of FNSS includes:

- The delivery of 270 ACV-15 and ACV-19 tracked armoured combat vehicles each for the Malaysian armed forces. The vehicles were produced locally in Malaysia based on technology transfer by FNSS.
- The production of 257 8x8 vehicles each for Malaysian Army. The serial production is currently ongoing at the DRB-HICOM Defence Technologies SdnBhd (DEFTECH) facilities in Malaysia. The required technologies are transferred by FNSS. This is the largest defence export contract of the Turkish defence industry.
- The sales and modernisation of M113 tracked vehicles for the Philippines.

(Photo: FNSS)

- The development of a medium-weight tank with PT Pindad, a facility owned by the Indonesian Government.

Beside tracked and wheeled armoured combat vehicles, the FNSS product range also includes engineering vehicles such as the Armored Amphibious Assault Bridge (AAAB) and the Amphibious Armored Combat Earthmover (AACE). As a ferry, the AAAB system can transport a MLC 21 tracked vehicle, while a two-bay ferry AAAB is capable of carrying MLC70 T vehicles. By deploying the ramps, which are carried by AAAB's hydraulic crane, and coupling three AAABs from ramp to ramp, MLC100 W vehicles can be transported on rivers or lakes. When 12 AAAB systems are coupled together from ramp to ramp, it can form a 150 m bridge suitable for the crossing of MLC100 W and MLC70 T vehicles. For specific missions numerous AAABs can be coupled together to cross wider distances. AAB is in the inventory of Turkish Armed Forces. AACE is an amphibious, armoured, tracked, combat earthmover designed for the preparation of river banks during river crossing missions. It is capable of performing bulldozing, rough grading, excavating, hauling, and scraping operations. As opposed to standard heavy-duty vehicles; AACE can increase its working capacity by taking in soil into its ballast canister. The ballast canister can be discharged any time, as necessary. FNSS also designs and produces: 25 mm, 12.7 mm and 40 mm stabilised one manned turrets and 30 mm manned and unmanned turrets. Its SHARPSHOOTER one-manned turret is being used by Turkish Armed Forces and by a number of export customers, including Malaysia.

Today, FNSS is a recognised land systems design house for the Turkish Ministry of National Defence's Undersecretariat for Defence Industries (SSM), as well as allied countries.

Europe and NATO

The Need to Take Responsibility

Ton van Loon

In 2014 Europe had to come to terms with the fact that not all of its neighbours are always "nice". The Russian invasion of the Ukraine and the shooting down of flight MH17 pointed out emphatically that the illusion of eternal, and most of all cost-free, peace in Europe was just that: an illusion.

Peace is not for free and requires hard work and financial commitment. In the words of Dutch defence minister Jeannine Hennis: "Security comes at a price. And our need for security justifies paying that price. At some point, we may be forced to act militarily in order to remain secure on the European continent"[1]. Does this imply a return to the Cold War? Of course not, but it does mean that there is a need for a geographical defence of Europe, or in other words that Article 5 of NATO is not obsolete. European NATO nations suddenly realise that old-school NATO is still very much needed.

On the other hand, 2015 put the focus on another threat to European peace and stability. The influx of refugees and the impact of terrorist attacks (culminating in Paris and Brussels) show that security cannot be seen only in geographical terms. Instability and war in the Middle East and in Africa have an immediate impact on Europe. ISIS or Boko Haram barbarism coupled with utterly corrupt and often equally barbaric regimes have resulted in mass migration towards Europe. We could have seen this coming but we preferred to remain in a state of denial – or, in the words of Thomas Gray, "Ignorance is bliss". The immediate impact of instability means we have to rethink how, and more importantly why we get involved.

(Photo: dpa)

Islamic State of Iraq and the Levant propaganda photo showing masked militants in Syria

European interests are not merely geographic in nature and therefore its defence can also not be seen solely in geographical terms. Not only the refugee problem but also access to natural resources, freedom of navigation and of course terrorist safe havens are all very legitimate security concerns that are not necessarily geographic in nature. Frans Timmermans, current Vice Chairman of the European Commission, said in 2014 that if we fail to export stability, we will sooner rather than later import instability and if that happens it will threaten not only our economy but all of our values[2]. Even he, probably, did not predict the speed at which his comments would become true. The consequence is that while most missions outside NATO have been seen as "wars of choice", now they are becoming "wars of necessity". Nations have become used to doing crisis response operations out of choice, and with limited engagement in both time and volume. To deal with the instability affecting our nations directly, it is very likely that stabilization missions will be needed for a longer period of time and with much greater resolve. Politicians like to focus on short term problems that can be resolved, but the speed at which instability is now being imported will demand discussion on longer-term solutions. After ISAF it was often heard that NATO (nations) have lost their appetite for such big involvement. That is probably true; but the choice is not ours anymore. We do not pick the crisis, the crisis imposes itself upon us.

NATO, and especially its European nations need to recognize that it needs military capabilities that can deal with both geographical, "old school" threats but also with "new school", complex threats. It is not a good idea to differentiate between (national or collective) defence forces and crisis response forces. We need to have forces that can serve our security interests across the entire spectrum.

The biggest change in the European mindset that must occur is the understanding, not only in words but also in deeds, that Europe must invest in its own security to defend its territory but also its wider security interests. *Si vis pacem, para bellum.*

Solidarity

The most crucial elements in collective defence are solidarity and cohesion. Article 5 of NATO revolves around the idea that an attack on one is an attack on all. During the Cold War no-one doubted the

Author

Lieutenant General (retd.) Ton van Loon started his military career in the Dutch Army in 1977. He commanded on operations as a battalion commander in Kosovo (1999) an as a major general in Southern Afghanistan (2006/2007). Before his retirement in 2013 he commanded I. German Netherlands Corps.

(Photo: Andreas Steindl)

Spanish Forces in NRF exercise Steadfast Jaguar 2006

idea and that was the defining deterrent against an attack. In the 25 years after the fall of the Berlin wall Europe starting cashing in on the peace dividend. The arguments used to reduce defence spending not only resulted in insufficient funding of military capabilities but also in a common belief that NATO collective defence was not so relevant any more. In the public opinion and in main stream politics NATO became obsolete and also a separate entity. If there was a threat, which no-one saw as very realistic, "NATO" would take care of it, so the individual nations did not need to spend money on their own capabilities. This NATO became more and more synonymous with the US, resulting in an enormous capability gap. Today this gap is so big that Europe basically cannot deal with its own security threats without the Americans leading. European investment in its own security is also a precondition for US engagement in Europe; if we are not willing to take care of our own security, how can we expect others to do so? It is very unlikely that the US will continue to serve as "the policeman of the world" especially if Europeans remain reluctant to do anything for themselves.

The introduction of the NRF back in 2002 was an attempt to improve (European) nations' capabilities. In the early days this idea of providing a tool for transformation was certainly a step in right direction, however nations started looking at the NRF as the default tool to deal with crisis which again allowed nations to step away from their own responsibilities. Because the US did not become heavily involved in the NRF very often the capabilities also proved to be marginal. The same risk exists with the VJTF, the idea of providing a spearhead force collectively can only function if the rest of the spear follows. To stay with the metaphor, it will also only be effective with a strong athlete (or warrior) wielding the spear.

This attitude of treating NATO as a separate entity for which nations only take limited responsibility has had a negative effect on the public perception of NATO's collective defence. In summer 2015 Pew Research Centre published a survey on NATO public opinion[3]. The survey asked NATO member publics, among others, if they believed that their country should come to the aid of another member nation if that nation was attacked. Shockingly, in only two nations a majority replied yes and both these countries are not European. This lack of solidarity is a real threat because it does take away the foundation of collective deterrence and no European nation will be able to protect itself on its own.

At the Wales Summit in 2014 all 28 nations agreed "to reverse the trend of declining defence budgets and raise them over the coming decade". It is now time to put our money where our mouth is. We cannot carry on hiding behind the Americans; we must recognize that NATO is all 28 nations. *Communitate valemus.*

Interdependency

Operations will always have to be conducted in close partnership with other nations. Even for the US developing a coalition is the preferred course of action, while for the rest of NATO it is simply a fact of life. The German CHOD back in 2012 stated that if national deployment is the exception and multinational cooperation the rule, this should be taken into account in procedures and also in exercises[4]. Without smarter defence Europe will become even more dependent on the US.

The capabilities needed to deal with crises either to defend European territory or wider interests can only be provided collectively. It is just not realistic to assume that the necessary capabilities can be provided by nations on their own. It is important to realize that true national independence is vastly more expensive. Since it is highly unlikely that defence spending will increase, dependence on other nations is the norm: multinational cooperation is no longer a choice, it is a fact.

The second element that all crises have in common is their complex or hybrid nature. In March 2015 at the EU interparliamentary meeting in Riga, Federica Mogherini, High Representative of the European Union for Foreign Affairs and Security Policy, talked about "the new security challenges posed by the so-called 4th generation's warfare, a hybrid war, which is manifested as a combination of a use of irregular and conventional military methods as well as elements from cyber, economic and information warfare, and political pressure".

The need for a comprehensive approach in crisis operations is evident. Lessons learned from Afghanistan and other recent operations indicate that the more attention is given to the build phase the higher the effectiveness of military involvement. Clearing and holding can be done (primarily) by the military but the building needs to be done

(Photo: defensiekrant)

"The Netherlands uses the same artillery gun as Germany (PzH2000) but because of modifications the 18 Dutch guns are no longer interchangeable with the Germans."

(primarily) by non-military actors. This implies that military actions need to be carefully nested with actions by other actors and logically this implies a need for dialogue between all involved actors. NATO now commonly talks about its contribution to the comprehensive approach, indicating that it is not the military that should be in the lead.

The consequence of the need for a wider structure within which the military contribution must fit, is the fact that military action is dependent on actions by others. If the building does not take place the clear and hold cannot be very effective. The military then taking over the responsibility for the building as well is not a preferable solution. The PRTs in ISAF worked better if they had a strong civilian, development and diplomatic, involvement. On the other side of the spectrum building something without creating and keeping a secure environment also does not work well. Development without security and especially spending development money without accountability can even be counterproductive[5]. The military can be the enabler for other actors but needs to realize that these other actors will provide the decisive effect.

A potential Russian threat to NATO would have a hybrid nature. It is very unlikely that Russia would use military force alone if it were to attack NATO. In this sense it is highly unlikely that the Cold War scenario will ever return. Dealing with such a hybrid threat would also involve other actors for instance to deal with a dissatisfied Russian minority that could be exploited. Thinking about comprehensive approach, and NATO contribution, is therefore not obsolete. On the contrary it is more important than ever that we develop solid mechanisms for cross domain synergy.

The new paradigm therefore is interdependency which requires a change in military culture. Military leaders need to understand that they cannot make decisions without involving others. Their effectiveness depends heavily on interaction with other, non-military, actors. In the words of General USMC James Mattis: "if you cannot create harmony across service lines, across coalition and national lines, and across civilian/military lines, you really need to go home because your leadership in today's age is obsolete".[6]

The same applies to national policies. Nations need to realize that national sovereignty is important but has its limitations. Most European NATO nations can very sovereignly decide to say NO, saying yes is much less a sovereign decision because that depends on others saying yes as well. The good news is that the understanding that something needs to be done urgently is widely shared. Winston Churchill once said: "never let a good crisis go to waste". Europe currently has more than enough crises to provide a window of opportunity for change.

Capabilities Development

The debate about building a European military, or not, is not the most important issue. Europe needs to improve capabilities before we talk about how to best organize these capabilities. Since in the short term the dependence on the Americans will remain, it is probably better to build capabilities in NATO. In Afghanistan the coalition effort was often referred to as "US and NATO", perhaps we can come to "Europe and NATO" to deal with the challenges confronting primarily Europe.

Assuming that European nations will follow up on their promise in Wales to increase defence spending the question is then of course: On what should they spend their money? The only way Europe can build capabilities that can provide a real European alternative to overreliance on America's leadership is through combined efforts. NATO's website says[7]:

In these times of austerity, each euro, dollar or pound sterling counts. Smart Defence is a cooperative way of thinking about generating the modern defence capabilities that the Alliance needs for the future. In this renewed culture of cooperation, Allies are encouraged to work together to develop, acquire, operate and maintain military capabilities to undertake the Alliance's essential core tasks agreed in NATO's Strategic Concept. That means harmonising requirements,

(Photo: U.S. Air Force)

A U.S. Air Force technical sergeant establishes satellite communications with the tactical operations centre during a dismounted patrol in Afghanistan. The U.S. Mission Partner Network and the NATO Future Mission Network will expand the coalition interoperability capabilities of the Afghan Mission Network.

pooling and sharing capabilities, setting priorities and coordinating efforts better. National efforts to build capabilities should be coordinated. If every nation buys new main battle tanks but no medevac helicopters the shortfalls will not be addressed. Coordination is also necessary to avoid every nation defining their own requirements resulting in the procurement of the same helicopter (NH90) in a multitude of different versions which then is 4 times more expensive than its US competitor (BLACKHAWK). The same applies to modifications to the same equipment that make seamless exchange no longer possible. The Netherlands uses the same artillery gun as Germany (PzH2000) but because of modifications the 18 Dutch guns are no longer interchangeable with the Germans. This has an effect on ammunition, on spare parts and of course on training, all adding to the costs.

Quick successes can be achieved without great effort, if national procurement is coordinated at an early stage. This however requires a more humble approach towards procurement. The concept of "smart buyer" suggesting military procurement agencies need to know all there is to know about the equipment that is going to be procured was a good idea when nations were buying large quantities (hundreds if not thousands) of pieces of equipment. With the much lower numbers procured today it is very unlikely that every single nation can have all the knowledge needed to really buy smart. It is much more likely that because everyone wants something else we will be buying very costly equipment that is even more expensive to operate because small numbers automatically mean high costs for spare parts. Military equipment needs to meet different requirements of course but are they really that different for every nation and do we really need a military solution for every problem? Utilizing existing technology and coordinating requirements make so much sense it is hard to explain why it does not happen more often.

Until now multinational procurement cooperation was mainly seen as a way to reduce costs. That also needs to change. More bang for the buck is clearly a good thing but we need more bang not less buck.

Areas for Improvement

The most obvious area where interdependence has to lead to a rethink of capabilities is command and control. Interdependency requires a different way of organizing command, from a vertical, command-driven approach to a more horizontal, networked approach. Systems supporting such fundamentally different thinking about command need to be:

Firstly, multinational in design. If we know we can only operate in multinational teams then why do we persist in building expensive C2 systems nationally? Not only does this cost money, it also is a waste of valuable training time. At the operational level of command (Corps and above) every staff officer will work in a multinational setting because virtually all HQs at that level are multinational.

Secondly, much more open than today's systems. To work in a networked environment we need to able to talk to each other. In the US military the development of a Mission Partner Environment (MPE) which replaces what was known as Future Mission Network (FMN) is a step in that direction. Based on experience in Afghanistan (Afghanistan Mission Network) the idea is to build a system enabling commanders to work with partners (other nations and other actors) in a common security domain.

It would be a big step towards real capabilities to combine forces in Europe if we could decide to build ONE functioning CIS system. Interdependence requires a change in mindset, away from national and military stovepipes. Of course some things will need to remain secret but being able to communicate should not suffer from unnecessary secrecy.

The second big improvement would be a substantial increase in enablers. The European Air Transport Command (EATC) is a good example of substantially increasing capabilities by working together. A similar approach could also be used to provide logistic capabilities. The NATO Joint Logistic Support Group (JLSG) concept provides a framework but needs real capabilities such as container handling equipment, forklift trucks and all the other less sexy logistical equipment without which no operation can even begin. Enablers are also needed in the intelligence field. This involves surveillance tools such as RPVs and satellites but also HUMINT. Because of the hybrid nature of most, if not all, conflicts, CIMIC or CMI is also a crucial enabler that requires investment. Perhaps the area in which improvements are needed urgently is the cyber domain. Not only to defend against cyber-attacks but also to understand how social media is used, and abused, to influence people. Cyber surveillance will have to become part of intelligence and info-ops. Research and capability development in the cyber domain is essential, which also involves a less naive approach to internet security.

(Photo: EATC)

The European Air Transport Command (EATC) is a good example of substantially increasing capabilities by working together."

At this point it is also important to underline that increasing defence spending at the expense of development or diplomacy is not a good idea. Comprehensiveness is the only way forward, defence without development makes as little sense as development without defence. Hardcore defenders of strict separation between the military and other actors need to realize that much more can be done by synchronizing efforts. The current refugee crisis cannot be dealt with by defending the borders, or by building walls, alone.

(Photo: EU)

"The refugee crisis most of all shows how nationalist, even provincial, our thinking has become."

At the height of the crisis, even last October, WFP was not able to raise all the funds needed to feed the Syrian refugees in the region[8]. When refugees in an area are not receiving enough to survive we should not be surprised that they try to move somewhere else.

Europe needs to repair, at least partially, undue reductions in the military. High end fighting units are needed, on land, at sea and in the air. The idea that a light, gendarmerie-style force would meet all our needs is misguided. Air defence, anti-submarine warfare, air-to-air combat are all back on the table but without enablers none of these can make a real difference. The same is true for cross-domain coordination, because without comprehensiveness the effect of military involvement will be limited. Investing in capable CMI units is another way of providing much-needed enabling capabilities. Nations that provide critical enablers might provide less glamorous capabilities but in the end these capabilities will decide if a mission is possible or not.

White Papers

Predicting the future has unsurprisingly proven to be very difficult. Attempting to define the threats and then calculating the capabilities needed to deal with them has not been very successful. On one hand, threats change at such a pace that planning ahead has just not been possible. But often the wish was father to the thought, risks that resulted in high costs could easily be written down to accommodate yet another budget cut. The problem with the military is that it is very hard to explain why a capable military is needed when the enemy is not at the gates. But if the enemy shows up it is too late to build up the military. That fundamental dilemma will not go away. White papers need to acknowledge that we can never predict exactly what is needed: flexibility is therefore a cornerstone for any security policy.

The current German white paper process uses a series of meetings with stakeholders (participation meetings) in which the basis is laid for a broad public acceptance for an effective military. Interestingly these stakeholder meetings look at defence from various angles, asking the question "What do we want defence to do?" from different perspectives.[9] Asking the question could be a big step towards developing consensus on the capabilities required. Broad discussion on this topic can also lead to a much better public understanding of the role of the military.

Conclusion

The modern world changes at such a tempo that it is very hard to plan ahead. A few cardinal points remain, however:

- Future military capabilities will have to rely on others. Joint, multinational and interagency must be elements of any defence development programme.
- Interdependency requires a fundamental change in mindset, focussing much more on enabling than on commanding.
- Without enablers nothing works: military capability development must take that into account.

Perhaps the most important certainty is that having a credible military is the best guarantee that we will not need to use it. Such a credible deterrent can however only be built together, and that, today, is the biggest problem. The refugee crisis most of all shows how nationalist, even provincial, our thinking has become. The New-Year's eve events in Cologne, Hamburg, Stuttgart, Zürich and even Helsinki have primarily led to a call to build higher walls along national boundaries instead of trying to think about the origin of the problem. How is it possible that young men in this day and age believe they can get away with this kind of behaviour? The outrage is not that this happened in Europe but that we only care if it does. Europe needs to reinvent itself around its values and needs to understand that retreating behind iron curtains or Dutch dykes does not work.

However, recognizing that Europe as a concept is currently at a popularity low, this is probably not going to happen soon and it is even less likely that a single European defence concept can be developed. Given this sobering fact, it would still make sense to have the development of European abilities as a cornerstone of every white paper. In recent operations the military have often functioned as a catalyst or the crucial enabler, perhaps leading by example could work here as well. Maybe every new white paper should have a paragraph about how the development of European capabilities is going to be achieved.

Finally, which capabilities we need might be a less relevant question then how do we achieve them. Do we need new submarines? Probably yes, but do we really need three northern European nations developing their own, different submarines? If we build the same one, spare parts can be shared, development costs reduced, through-life costs minimised and training executed together... It is just a thought. ■

Footnotes

1 Speech during the Future Force Conference in March 2015
2 Free translation from Dutch of the HJ Schoo lecture by Frans Timmermans on 2 September 2014.
3 http://www.pewglobal.org/2015/06/10/1-nato-public-opinion-wary-of-russia-leery-of-action-on-ukraine/
Note: not all NATO nations were included.
4 Translated from speech given by General Volker Wieker, October 2012, Bundeswehr Tagung Strausberg. Original in German: Wenn der nationale Einsatz die Ausnahme und das Wirken im multinationalen Verbund die Regel ist, müssen unsere Curricula das in der Ausbildung berücksichtigen und die internationalen Verfahren im Führungsprozess zu Grunde legen.
5 See among others. Linda Polman, The Crisis Caravan, Metropolitan Books, September 2010.
6 Quoted from http://www.dtic.mil/doctrine/fp/mission_command_fp.pdf
7 http://www.nato.int/cps/en/natohq/topics_84268.htm
8 http://www.wfp.org/emergencies/syria
9 http://www.bmvg.de

Viewpoint from Athens

"On the verge of explosion"

Dimitrios Angelopoulos M.Sc.
Advisor on Defence and Security issues

Following the EU-Turkey agreement, European Union foreign ministers have given Greece a three-month ultimatum to remedy "deficiencies" in controlling the influx of migrants, mostly from Turkey. The European Commission is threatening to remove Greece from the Schengen Zone of visa-free travel if Greece fails to remedy the problem by mid-May.

The "deficiencies" found by the European Commission are that Greece failed to properly register and fingerprint migrants when they arrived at the Greek islands in the Aegean Sea.

The agreement finalises the one-for-one principle that EU leaders and Turkey provisionally agreed on 7 March: all new irregular migrants crossing from Turkey into Greek islands will be returned to Turkey; and for every Syrian returned to Turkey from Greek islands, another Syrian will be resettled from Turkey to the EU. This temporary link between resettlement and return is feasible up to a limit of 72,000 using the EU's existing resettlement and relocation commitments, under which respectively 18,000 and 54,000 places remain available.

Another measure adopted to try to slow the flow of migrants from Turkey to Greece is being taken not by the European Union but by the North Atlantic Treaty Organization (NATO). NATO's job will not be about "stopping or pushing back refugee boats," according to NATO Secretary General Jens Stoltenberg. Instead, they will be primarily tasked to provide Turkish and Greek coastguards and the EU border agency Frontex with information on human trafficking and criminal networks operating in the eastern Mediterranean.

Defence Minister Kammenos announced that Hellenic army and air force engineers will assist in setting up hotspots on the islands of Lesbos, Chios, Kos, Samos and Leros. Dozens of relocation centres have also been established, mainly at ex-army camps on the Greek mainland, administered and guarded by the army.

Fights among stranded refugees in Piraeus and in Idomeni, Lesbos and Chios, are a daily issue between Afghans and Syrians with occasional serious injuries. More than 55,000 refugees and migrants are stranded in Greece after the Balkan countries closed their borders to the massive influx of refugees. The recent terrorist attack in Brussels makes the issue more complicated.

Greece's financial crisis is in a kind of remission, as it has been out of the headlines for a while. But Greece still owes 200 billion euros in loans and 50% of young people are unemployed. Capital controls on banks are still in place, and Greek people can only withdraw a maximum of 60 Euros per day from their bank accounts. So the financial crisis is far from over, and the mixture of the financial crisis and the refugee crisis has the potential to be explosive.

The stand-off between the government and international lenders continues. After almost six months of talks, the situation is still unresolved. Greece has implemented only about half of the measures it signed up to last summer, say European Union (EU) officials. The representatives of the troika – the European Commission, IMF and European Central Bank (ECB) – returned to Athens intending to reach a deal that would unlock another sizeable tranche of bail-out funding, enabling Greece to repay €9.3 billion ($12.8 billion) of bonds maturing in May, and start planning a return to the international financial markets with a modest bond issue later this year.

As a result of the huge economic and financial crisis, Greece's defence expenditures have been reduced from 3.1% of GDP to the current figure of 2.1% of GDP. But this is actually a 29% reduction in relative terms and an additional reduction in absolute terms because it is connected to a smaller GDP. It is also argued that 73% of Greece's defence budget is for personnel costs alone. That figure is "pre-crisis": the current figure according to the International Institute for Strategic Studies (IISS) is 57%.

The Greek parliament has passed the 2016 budget featuring tax increases and spending cuts demanded by international lenders under the cash-strapped country's third bailout package.

The 2016 budget foresees €5.7 billion (USD 6.2 billion) in public spending cuts, including €500 million (USD 543 million) from defence and €1.8 billion (USD 1.95 billion) from pensions. It also comprises tax hikes of over €2 billion (USD 2.17 billion).

The governmental coalition led by Prime Minister Tsipras and composed of the leftist Syriza and the right-wing junior coalition partner ANEL, lead by Defence Minister Panos Kammenos is not capable of managing the refugee and financial crisis issues, while the main opposition party – New Democracy, led by Kyriakos Mitsotakis, does not contribute any significant proposals that might resolve the problems – a fact that continuously strengthens the Golden Dawn far right party.

The Greek people have suffered a lot during the last six years because of the enforced austerity measures and the huge unemployment, and they are now completely desperate: Greece is "on the verge of exploding"...

The Obama Legacy and Beyond

Foreign Policy in the 2016 US Presidential Elections

Sidney E. Dean

Traditionally, foreign policy plays a subordinate role during United States presidential elections. There have been exceptions. Dwight Eisenhower was elected in 1952 partly because of his campaign pledge to end the Korean War. Vietnam War protests marked the campaigns of 1968. But by and large American voters have displayed much greater interest in economic policy and so-called social issues (encompassing everything from race relations to abortion rights). In this vein, foreign or security policy experience and expertise have rarely been vital attributes for presidential candidates.

The last person elected president with a strong foreign policy portfolio was George H.W. Bush in 1988. During his re-election campaign in 1992 President Bush emphasised his expertise, remarking that his opponent's sum foreign policy experience consisted of eating at the restaurant chain International House of Pancakes. That opponent – Bill Clinton – defeated Bush by a six percent margin.

Photo: Us Coast Guard

Before 9/11 Americans had long assumed that, with the exception of nuclear missiles, United States territory was immune to attack.

Author

Sidney E. Dean is President of Transatlantic Euro-American Multimedia LLC.

The 9/11 Factor

Then came 9/11. Americans had long assumed that, with the exception of nuclear missiles, United States territory was immune to attack. The last hostile act of any significance had been the British burning of Washington DC during the War of 1812. This sense of security was stripped away on 11 September 2001. The public, normally skeptical of "excessive" foreign engagement and reluctant to engage in major military conflicts, elevated national security to a new priority. The spectre of weapons of mass destruction in the hands of rogue states and terrorists became magnified beyond reality. This popular sentiment prompted even reluctant legislators to support the blanket authorisation of military action which led to the Iraq invasion of 2003.

However, by 2007/2008 popular criticism of the Iraq War was growing. Barack Obama was able to leverage this dissatisfaction. While his expertise and experience clearly lay with domestic issues, Senator Obama's campaign placed considerable focus on foreign policy. He emphasised the fact that he had publicly opposed the Iraq War even before his election to the US Senate. During his campaign he conducted a high-profile eight nation tour ranging from Afghanistan to the United Kingdom, including a much-publicised rally in Berlin designed to show American voters that he could communicate effectively with foreign nations. Major tenets of candidate Obama's foreign policy platform included: an orderly withdrawal of military forces from Iraq, while continuing to combat al Qaeda and the Taliban; strengthening the US armed forces by adding 92,000 ground troops, while being more selective about when and where to actually use military force; globally securing nuclear weapons and preventing the proliferation of weapons of mass destruction; and (re-)building alliances and partnerships to cooperatively address the challenges of the 21st century. Obama's multilateralist approach to diplomacy specifically stated that the United States, despite its superpower status, should subordinate itself fully to international law and should deal with foreign nations as sovereign equals.

Foreign Policy Shaped by Events

During his first term in office President Obama initially pursued this multilateralist agenda, and attempted to improve relations with Russia and the Islamic world as

Photo White House

US President Barack Obama and and the Russian President Dmitry Medvedev signed the "New START" treaty in Prague, Czech Republic, on 8 April 2010.

well as with traditional allies. Phrases such as "reset" and "new beginning" were deliberately chosen to describe the administration's early foreign policy initiatives.

But like most presidents before him, Barack Obama learned that the best of intentions will founder upon the shoals of reality. Relations with Russia reached a high point in 2010, culminating in the new START accords and Russian transit corridors for American military supplies destined for Afghanistan. By 2013 a distinct chill set in over President Putin's repressive policies at home and increasing assertiveness abroad, culminating in the 2014 Crimea invasion.

The Middle East proved even more challenging. The last US forces left Iraq in December 2011, fulfilling the campaign promise to withdraw during Obama's first term in office. This was extremely controversial at home, with many lawmakers criticising the withdrawal. By 2014 was forced to reverse course, sending more than 3,000 US soldiers back into Iraq, this time to combat ISIS. Developments in Afghanistan followed a parallel course; in October of last year the president formally declared an open-ended US troop presence in that country. Even apparent successes such as the international nuclear accord with Iran have proven to be two-edged swords, with Iran continuing to conduct unauthorised missile tests – forcing Obama to impose new sanctions against Iran within weeks of lifting previous sanctions. Not surprisingly, the president's critics in Washington lost no opportunity to denounce the nuclear accord and the return of frozen Irani assets, describing the treaty as a "victory" for America's enemies.

The Obama Legacy

Ironically, Obama's foreign policy has been attacked by both the left and the right. While he did significantly reduce the US military presence in Afghanistan and Iraq, the continued deployment of thousands of advisors, trainers and anti-terrorism specialists has disappointed supporters who hoped for a complete end to US involvement here. The same goes for his expanded deployment of drone strikes to kill suspected terrorists. For their part, Republicans have spent the past seven years criticising what they perceive as a lack of leadership and assertiveness, calling his foreign and security policy indecisive and hesitant.

The president's supporters counter, praising Mr. Obama as a leader who thinks before he acts and who rejects short-term or simplistic responses to complex challenges. Yet it cannot be denied that President Obama has repeatedly vacillated, reversing course on issues or seeing himself forced to act after prolonged reluctance. His unfortunate evaluation of ISIS as a "JV" (i.e. junior league) threat still haunts him today. He initially opposed intervention in the Libyan civil war, but was persuaded to change his position by the concerted efforts of British Prime Minister David Cameron, French President Francois Hollande, and Secretary of State Hillary Clinton. Was this a case of supporting allies, or a case of failed leadership? Given the subsequent destabilisation of Libya, Obama's initial skepticism regard-

Photo: USAF

An F-16 FIGHTING FALCON from the 480th Fighter Squadron preparing for take-off from Spangdahlem Air Base in support of Operation ODYSSEY DAWN in March 2011. US President Obama initially opposed intervention in the Libyan civil war.

Photo: johnkasich.com

Of the three remaining Republican candidates only Governor John Kasich has notable expertise in security matters.

Photo: Picture Alliance/ap

Donald Trump's views have been relegated to the radical fringe by almost all conservative foreign policy experts, but his public appeal endures.

ing intervention seems justified. And while his refusal to become directly involved in the Syrian civil war seems the responsible position, his wavering regarding supplies and training for democratic anti-Assad rebels contributed to a power vacuum ultimately filled by Islamist groups.

Of course this all begs the question: would a more assertive foreign policy over the past seven years have benefitted the United States or its allies? Or would such a policy have escalated crises which have to date been contained at lower levels of intensity? President Obama – despite the idealistic tone of his first campaign and early years in office – has largely displayed a flexible approach, adjusting positions as necessity dictates. US interests and resources are weighed carefully before decisions are made. He has routinely balanced assertiveness – such as his attempt to build an East Asian coalition to contain Chinese expansionism, or his deployment of additional military forces to Europe to dissuade Russian aggression – with continued efforts at cooperation with Moscow, Beijing and others on issues of common or global concern. His foreign policy can best be categorised as "Realpolitik", tempered by a basic "Leitmotif" that it is better to err on the side of caution. The latter might be a personal attribute of the man Barack Obama, but it is certainly influenced by his conviction that insufficient reflection and excessive activism contributed to the 2003 invasion of Iraq and to the post-invasion setbacks. History might find that President Obama missed opportunities to act quickly and eliminate a growing threat. It might equally find that he resisted numerous temptations to act rashly, and thereby prevented medium-scale conflicts from automatically escalating beyond control. Overall this approach reflects a conviction that the United States, as superpower, remains strong enough that it can afford to bide its time rather than act rashly. Or to paraphrase Theodore Roosevelt: walk softly, carry a big stick, but only use it when necessary.

2016 – The National Security Elections

The 2016 presidential campaign continues to be dominated by foreign and security policy. Chinese and Russian assertiveness, constant violence by ISIS and other extremist organisations, and the flood of refugees from the Middle Eastern war zone continue to focus the public's attention. International trade and economic policy has also taken a prominent spot, especially given the protectionist policies espoused by contenders Donald Trump and Bernie Sanders. Through mid-March the presidential candidates had conducted a total of 20 debates. The word "war" was mentioned an average of 24 times – per debate! Peace was mentioned twice per contest. China was mentioned a total 178 times, Russia 122 times. The so-called Islamic State takes the prize, with a total of 351 references during 20 debates.

Recent polls indicate that foreign policy (which is frequently conflated with national security) is now one of the top priorities for voters, especially among Republicans. Ongoing terrorist attacks keep popular interest high. Following the Paris attacks of November 2015 a Reuters poll found that terrorism had replaced the economy as top concern for American voters. This was confirmed after the 22 March attacks in Brussels, when a poll by Morning Consult found 24 percent of respondents named national security their highest priority, a jump of seven percentage points. Tolerance for radical measures is rising in tandem with the level of popular fear. A Reuters/Ipsos poll released on 30 March found that 63 percent of Americans replied that torture would be justified to extract information from suspected terrorists. This is a significant escalation from 2014, when only 45 percent of US citizens expressed this view.

Republican Foreign Policy Platforms

Ironically, voters' concern for foreign policy does not translate to a preference for experience or subject matter expertise. Republican candidates with the best credentials or the most developed foreign policy platforms – e.g. Senators Lindsay Graham and Marco Rubio – were eliminated in the

primaries. Of the three remaining contenders only Governor John Kasich has notable credentials (although best known as a fiscal expert, he served 18 years on the House Armed Services Committee), and he is trailing his opponents by a wide margin.

Donald Trump's views – which range from seizure of Iraqi oil fields to dissolution of NATO and use of nuclear weapons on European soil – have been relegated to the radical fringe by almost all conservative foreign policy experts. Former generals, diplomats, and former defence and foreign policy officials from past Republican administrations almost unanimously repudiate Trump as uninformed, unqualified, and dangerous. Still, his simplistic (and unfounded) mantra that "America doesn't win anymore", coupled with demands for European, Asian and Middle Eastern allies to pay for US military operations resonate with voters who know little about international affairs.

Senator Ted Cruz is more nuanced than Trump, but advocates an extremely aggressive foreign policy based on assertive US leadership, a massive increase in defence spending, and repudiation of compromise (his top foreign policy priority is to annul the Iran nuclear accords). Numerous statements – such as his plan to "carpetbomb" ISIS "selectively" – point to gaps in his knowledge of foreign and military affairs. Like Trump, Cruz has expressed his willingness to tolerate dictators such as Assad and Gaddafi. While Cruz pledges to stand up for American allies and interests, he summarises his philosophy: "We need to judge each challenge through the simple test of what is best for America. Because what is best for America is best for the world."

John Kasich's foreign policy platform is considerably more mainstream than his rivals'. At times his statements are contradictory. He opposes nation-building and active democratisation of other countries, saying the US should stay out of civil wars and not act as the world's policeman. On the other hand he criticises President Obama for not ousting Assad. Kasich advocates the use of US ground forces to combat ISIS, but only in a coalition including European and Middle Eastern partners. While regarding the Syrian refugee crisis as primarily a European problem, he favours working

Photo: dpa

Senator Ted Cruz is more nuanced than Trump, but advocates an extremely aggressive foreign policy.

with Europe to solve the issue while jointly standing up for common values. In Asia, he advocates tougher sanctions on North Korea and sharing conventional missile technology with Japan and South Korea. He seeks cooperation with China in order to restrain Pyongyang, but advocates a robust US naval presence to deny Beijing's claims to the South China Sea.

Democratic Foreign Policy Platforms

Senator Bernie Sanders' campaign emphasises socio-economic issues while presenting a comparatively short foreign and defence platform. He supports President Obama's deployment of additional forces to Europe, and advocates working with NATO to secure eastern European allies against Russian aggression. Overall he advocates cuts to defence spending, including spending on nuclear forces and decreasing America's overseas military presence, and believes European allies should contribute more to the joint defence. Military operations should be conducted in strong coalitions with European and other allies. Sanders opposes further NATO expansion on the grounds it would be provocative toward Russia.

Former Secretary of State Hillary Clinton is the most experienced candidate regarding foreign affairs – a fact she consistently highlights. Her expertise extends to defence policy. During her years in the Obama cabinet Clinton was frequently known to express more hawkish views than the defence secretary. She continues this assertiveness during the presidential campaign. Among other things she has advocated imposing a no-fly zone over Syria despite the presence of Russian military forces in that country – a position shared by her Republican opponents but opposed by Sanders. She consistently emphasises the need for Washington to lead globally. She remains a strong advocate of the US commitment to NATO, and calls for a strong allied response to Russian aggression. While emphasising the need for an assertive foreign policy she has stated that security should not be achieved at the expense of democratic values and human rights.

Rolling the Dice

Together the five remaining candidates represent four schools of foreign policy.

While Donald Trump's world vision lacks cohesion, his platform does display one consistent thread: money. Trump believes economic interests and "deals" are the key to foreign policy issues, whether it be demanding other nations pay the United States for security services rendered, or threatening economic consequences if nations such as China fail to agree to Washington's demands. Columnist Charles Krauthammer, a leading conservative analyst of US politics, has categorised Trump as a Neo-Mercantilist because of his fixation on money as a political force. Ted Cruz's uncompromising stance is clearly Unilateralist. Bernie Sanders' foreign policy is built around his domestic socio-economic platform; energy and resources should be dedicated to domestic reforms, while numerous trade and economic cooperation agreements would be endangered. Sanders can be classified as (at least borderline) Isolationist. All three would likely introduce tensions into current alliances and partnerships, to varying degrees and in different ways.

Photo: senate.gov

Senator Bernie Sanders' campaign presents a comparatively limited foreign and defence platform.

Photo: Picture Alliance/Newscom

Former Secretary of State Hillary Clinton is the most experienced candidate regarding foreign affairs.

Kasich and Clinton, by contrast, represent a blend of Realist/Multilateralist schools. As president, either would pursue a traditional foreign policy, guided first and foremost by US interests and Washington's global power status. Either candidate seems poised to keep the United States engaged with the world, maintaining alliances and commitments. While Kasich and Clinton have both criticised aspects of Barack Obama's foreign policy, their platforms indicate they would pursue modified by generally consistent policies. ■

J. Bo Leimand

"I have no plan B"[1] – But Has There Ever Been a Plan A?

The young sergeants and lieutenants have always been told to have a plan B when the planning for a patrol or an attack as experience shows that nothing ever goes as planned. This wisdom should also be valid for our politicians. However, apparently it is not. Every time a new crisis shows up the first question is always: "Where has that come from?", following which the "fire-fighting" starts. The last months have really been a lecture on poor handling of the crisis here in Europe. The more intelligent newspapers – at least here in Denmark – try to describe how we ended up in this situation, what should be done now and what should be done in the future. This reminds me of LTC Hal Moore, 1st Battalion, 7th US Cavalry. He was in a fierce fight with the Vietcong in Ia Drang Valley, the "LZ X-Ray". When asked about his periods of seeming withdrawal, Moore said that he had been reflecting, asking himself three questions: "What is happening? What is not happening? How can I influence the action?" This is the essence of strategic leadership[2].

What will be the consequences of this lack of leadership? There might be two options and they are not that beautiful. One is as described by Samuel P. Huntington in his book "The Clash of Civilizations and the Remaking of World Order". Already in 1992 Huntington described the hypothesis that people's cultural and religious identities would be the primary source of conflict in the post-Cold War world. Is this what we are witnessing today? The other option is the collapse of the welfare state known as the Nordic model. This is a concept of governance in which the state plays a key role in the protection and promotion of the economic and social well-being of its citizens. It was established in 1933 by the Danish Minister for Social Welfare, Mr. Steincke, before immigrants, refugees and the 1951 Geneva Convention were in the daily news from sunrise to sunset. Why does this matter right now in Copenhagen?

From a purely economical view the taxpayer's money can only be spent once and a member state of EU has to follow strict budget rules. The dilemma arises when you want to buy new equipment for your armed forces like fighter aircraft, lorries, armoured personnel carriers, etc. Should you spend your money on this or should you spend all the money on integration and welfare? At the same time, the US Government is telling its NATO partners that they should spent at least 2% of their BNP while the New York Times and others are telling the whole world that the Danes are the cruellest people on earth and should do much more for the immigrants. At one point one nearly felt guilty for the war in Syria and the other hot spots in the Middle East.

What does all this mean in a defence context? The Danish defence policy is historically based upon four-year long political agreements between a broad coalition of parties. The current one has to be renewed in 2017. Now you can read in various articles that perhaps we should wait to decide on major defence investments until we have the new agreement in place as this might also describe the overall threats against Denmark and thereby indicate what kind of equipment is to be procured. When Denmark started to look at and to invest development money into the Joint Strike Fighter programme in 1998 the international situation was quite different. There was a tendency towards "out of area" operations, whereas today we are faced with operations close to or inside the NATO area of responsibility. This might mean that we have to tailor our equipment to new scenarios again. Looking at the fighter competition in Denmark the question is if we should buy a small number of the very expensive F-35, or if we should get a good deal on the F-18 with 100 % offset compensation, or if we just should let the Danish Home Guard take care of our territorial defence. The answer is blowing in the wind and maybe the decision makers have both a plan A and a Plan B. As Winston Churchill once said:

"Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning."

1 German Chancellor Angela Merkel in the German TV talk show "Anne Will" on 28 February 2016.

2 Pp. 46-47 in "HOPE is not a METHOD" by Gordon R. Sullivan & Michael V. Harper (1997)

Back on Track

Swedish Security Alignment

Thomas Bauer

No other European country has struggled so much with its internal security political identity and orientation in recent years than Sweden. Overall, the Scandinavian area may rather lie on the edge of the new confrontation line between the West and Russia under President Putin as perceived by the global public. Nevertheless, with the Russian manoeuvres in the Baltic Sea region, Sweden has felt the concomitants of Moscow´s new excessive drive for recognition directly on its doorstep. Time for a stock analysis.

Disturbing signals have been heard in the Baltic Sea region for a few years. And what is meant with this are not the alleged submarine sightings that have been fuelling speculations about Russian activities in the Swedish territorial waters in the media time and time again. Rather, it is the official statements and announcements from Moscow that have been increasingly causing concern to the government in Stockholm. In September 2013, Russia and Belarus had jointly mobilised over 70,000 soldiers for the six-day large-scale manoeuvre "Zapad 2013" which was carried out both in the Baltic Sea region and on the banks of the Barents Sea. Officially announced in the NATO-Russia Council as a counterterrorism manoeuvre, with Zapad 2013, Moscow in fact wanted to prove the revived clout of Russian alliances for operations with geostrategic reach. Critical voices in Poland, the Baltic States and in Scandinavia accused Moscow of having launched an attack on the Western neighbouring states of the Baltic Sea. The massive appearance of landing troops and special units in co-ordination with heavy bomber units, submarine hunters and marine units with the latest guided missiles underpinned the accusations.

Since then, there has been a heated debate in Sweden about whether the implemented departure of the Swedish Armed Forces (SAF) in the 1990´s from their primary mission of territorial defence to a containment policy in the context of international operations like in Afghanistan or in Libya was not a mistake. The operational readiness was strongly questioned by the pessimistic prognoses of its own senior officers up to the High Command and the prospect of improvement does not seem very bright on account of the tensed budget situation. For this reason, with the beginning of the Ukraine conflict in February 2014, the

Photo: MoD Russia

In September 2013, Russia and Belarus had jointly mobilised over 70,000 soldiers for the "Zapad 2013" in the Baltic Sea region and on the banks of the Barents Sea.

Photo: Swedish armed forces

Around 120 LEOPARD 2 combat MBTs ("stridsvagn 122") are in use with the Swedish land forces.

Photo: Swedish armed forces

VISBY Class corvettes

Swedish government under Minister President John Fredrik Reinfeldt decided to elaborate a programme with which, through a significant increase of the defence budget, investment funds for the procurement of new weapon systems, like combat aircrafts or submarines, were to be released.

The debate about a new orientation had already flared up in 2012 and could be reduced to three key points: the dealing with the increasingly aggressive appearance of Russia in the Baltic Sea region, the obviously lacking operational readiness of the Swedish Armed Forces, and the question of the maintenance of Swedish neutrality and the status of a block-free state in view of the fragile regional and global security situation. In essence, the question was how such a substantial deterioration of the military power of the country could happen within a few years. But this question could be answered relatively fast. Like many other European states after the fall of the Berlin Wall and the end of the Cold War, Sweden had simply taken a break from dealing with the strategic orientation of the armed forces. At the end of the 1990´s, the then commander-in-chief, General Owe Wictorin, tried to combine urgently needed reforms with budget cuts adjusted to the state budget, an attempt which, like in so many other European states, was doomed to failure. An article by the Gatestone Institute published in 2015 appropriately sums up the development,

Masthead

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Office address:
Mittler Report Verlag GmbH
Baunscheidtstraße 11, 53113 Bonn, Germany
Phone.: +49 228 3500870, Fax: +49 228 3500871
Email: info@mittler-report.de, www.mittler-report.de

Director of Marketing
Jürgen Hensel (jh)
Baunscheidtstraße 11, 53113 Bonn, Germany
Phone: +49 228 3500876, Fax: +49 228 3500871
Email: juergen.hensel@mittler-report.de

Advertising Representatives:

Dipl.-Betrw. Uwe Nemeyer, optiproject GmbH – Agentur für sicherheitspolitische und wehrtechnische Kommunikation
Von-Imhoff-Weg 5, 53359 Rheinbach, Germany
Phone: +49 2226 909637, Fax: +49 2226 909653
Email: uwenemeyer@optiproject.de,
www.optiproject.de

UK/Ireland/Eastern Europe:
Stephen Barnard, c/o Mittler Report Verlag GmbH
Phone: +49 228 35 00 886
Email: stephen.barnard@mittler-report.de

USA/Canada:
Black Rock Media, Inc., Diane Obright,
810 Val Sereno Drive, Olivenhain, CA 92024, USA
Phone: +1 858-759-3557,
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Russia & CIS:
Laguk Co., Yury Laskin, General Director
Krasnokholmskaya Nab., 11/15, 132, RF-109172
Moskau, Russian Federation
Phone: 007-495-911-1340, Fax: 007-495-912-1260,
Email: ylarm-lml@mtu-net.ru

Subscription/Reader Service:
PressUp GmbH, Postfach 70 13 11,
22013 Hamburg, Germany
Phone: +49 40 41448471, Fax: +49 40 41448499
Email: mittler-report@pressup.de

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Photo: Swedish armed forces

The submarines of the GOTLAND class (shown here) will successively by replaced by new A26 submarines from Saab Kockums.

"In the fall of 1998, General Wictorin had his plan for the historical transformation all worked out. But his big mistake was that he had not grasped that the politicians had now identified defense as an area ripe for major budget cuts. [...] Then everything just unraveled. In 2000, the Swedish Parliament made a new decision on defense, to cut the budget by half. Compared to 1985, there was now only fifteen percent as many Army combat units, one tenth as many local defense units, half as many Home Guardsmen, half of the Air Force and one quarter of the Navy. The modern Swedish military, built up over a hundred years, was scrapped in ten or eleven years."

In January 2013, the then commander-in-chief General Sverker Göranson outlined a downright catastrophic picture of the condition of the SAF, according to which the combined land, sea and air forces were not in a position to defend the country in one location longer than one week.

Shrinking Stock

A peculiarity of the Swedish Armed Forces is their direct subordination to the government, and not as usual in many other states, to a Minister of Defence. This makes it a near administrative authority whose commander-in-chief in times of peace and in times of war takes over the function of a four-star general with the title överbefälhavaren. This excludes the Swedish king in spite of his appearance on official occasions in general or admiral uniform from the order and command structure. From the formerly 100,000 operational land, sea and air forces soldiers at the beginning of the 1990´s, the total number of troops has sunk to below 35,000. With the departure from compulsory military service in 2010, the number of operational reservist associations, and with it the homeland security units, has also been decreasing year after year. The land armed forces currently include barely 16,000 men and women. Ten years ago, on the other hand, there were still over 40,000 soldiers. Regarding the heavy units, the combat power of the Swedish land armed forces is based on around 120 LEOPARD 2 combat tanks that are run under the name "stridsvagn 122". In addition, there are over 500 units of the Armoured Infantry Fighting Vehicles "stridsfordon 90", which contrary to

Karlsborg Test Ranges (T&E Land Systems)

FMV's T&E Land Systems organisation manages and carries out independent evaluation and validation of land combat systems. The major locations for facilities and resources of T&E Land Systems are situated in the south-western part of Sweden, close to the cities of Skövde and Karlsborg. The T&E Test Centre in Karlsborg is located directly on the western shore of the large lake Vättern. If required, the impact area can be moved to the lake, resulting in an extended firing range (over 58 km).

T&E Land Systems have more than seventy years of experience of advanced tests on components, units and complete systems related to vehicles and weapon systems in various demanding environments. Passive and active ballistic protection, as well as IED and mines are tested. Tests can be carried out in the actual environment in which the weapon systems are to be applied, as prescribed by the customer, which creates invaluable realistic conditions. In the climate chamber, environmental tolerance and mechanical testing are performed.

Photo: FMV

The Karlsborg Test Range offers one of the largest catch boxes in the world at (25m x 20m x 35m).

Furthermore, T&E Land Systems also operate the Älvdalen Firing Range, in an undisturbed part of mid-Sweden. The Älvdalen Range is 540 km² with a 700 x 1000 m large hardened impact area, which is the natural target site for tracked and monitored firings, both inert and live. Älvdalen is ideally suited for the evaluation of long-range artillery, armed vehicle systems, large IED and mine tests but also for gun, missile and rocket firings from helicopters, as well as training and exercises with live EW-system and threats. The maximum firing range is about 42 km and the maximum detonation weight is 1000 kg of TNT.

the export variants of the model manufactured by BAE Systems Hägglund, are equipped with a 40 mm gun from Bofors

Photo: Riksdagen

"Sweden's Defence Policy 2016 to 2020" bill of 2015 was supported by almost all parties in the Swedish Parliament.

instead of the 25 mm cannon. The Patria AMV, of which currently around 110 units operate in the Swedish armed forces, with the option of 100 additional units in the future, is also used. In the area of protected transport vehicles, Sweden relies on the "bandvagn 206", which, with over 1,500 units, constitutes the largest volume land system of the Swedish Armed Forces and whose peculiarity lies in the conception as front and rear part of the vehicle. The vehicle is especially designed for the conditions of the almost impassable terrain in Swedish forests. The Bv 2006 is used in different versions, e.g. as medical, equipment and command vehicle as well as, as" pansarvärnsrobotbandvagn 2063" equipped with the weapon systems TOW and BILL, anti-tank vehicle. The standard infantry weapon is the Ak 5 (FN FNC) and the export version of the G3 produced by Heckler & Koch, which is operated under the name Ak4 in Sweden.

At the end of the Cold War, the air force, which currently show a force level of around 7,000 soldiers, also experienced a significant reduction. Sweden currently operates with approximately 80 machines of type Saab JAS 39 GRIPEN C/D, which as multiple-role aircraft, perform tasks in the area of air defence as well as being used as bombers. For the expansion of air defence, 60 machines of type JAS 39 GRIPEN E were ordered in 2014, which are to be deployed until 2018. As far as the air transport forces are concerned, Sweden can only fall back on a handful of HERCULES C-130H. Further capacities can be requested via the international air transport squadron of NATO with its C-17 GLOBEMASTER III, which is stationed in Hungary.

The Swedish sea forces are fully oriented to the protection of the coast and territorial waters as regards command and equipment, which, with a coastline of 3,218 kilometres in total, constitutes a significant challenge. Hence, corvettes and minesweepers dominate the picture as far as surface vessels are concerned. Besides the four corvettes of the STOCKHOLM and GÖTEBORG class, the first three of a total of five corvettes of the new VISBY class are already deployed. The ships are launched by Saab Kockums in Malmö. In 1999, in spite of serious concerns of the government in Stockholm due to the loss of national influence on a strategically important defence industry capacity, the formally state-controlled Kockums Naval Solutions was acquired by German shipyard HDW, which in turn was taken over by ThyssenKrupp in 2005. Due to considerable internal quarrels about the strategic orientation of the company and the economic risk within the framework of development work on a new submarine type for the Swedish marine, which was perceived as too high, Saab and ThyssenKrupp agreed upon Kockums Werft being taken over by Saab in July 2014. The concerns on the part of ThyssenKrupp about the A26 programme proved true, at least in part. For the Swedish marine, it is a far cry from the originally planned commissioning until 2018. The new submarines were originally supposed to successively replace the vessels of the GOTLAND class and the even older SÖDERMANLAND class. Due to considerable cost overruns in the programme and the difficult political constellation as a result of the change of government in Sweden in October 2014, there have been repeated delays regarding the contractual determination on the acquisition of new submarines. The lengthy process up to the sale of Kockums to Saab was an additional contributory factor which explains that a contract on the procurement of two vessels of type Saab Kockums A26 was only concluded in summer 2015. The vessels should be commissioned between 2022 and 2024

and may not exceed the budget of $1.2 billion in total. With a length of 62 metres and a displacement of 1,800 tonnes, they constitute a milestone in submarine development. The newly developed Genuine Holistic Stealth Technology (GHOST) will make the vessels almost invisible.

Defence Against Aggression and Close Cooperation

It is no wonder that many people have high expectations of a new orientation of the Swedish defence policy for the coming years as well as of the reformulated Military Strategy Doctrine (MSD). The "Sweden's Defence Policy 2016 to 2020" bill of 2015 supported by almost all parties in the Swedish Parliament sets a clear focus on the protection of state sovereignty and integrity of the country as well as on the preparation of possible crisis and war scenarios. In this connection, besides a significant increase of expenditures, the stationing and deployment of modern weapon systems and well trained combat forces must also occur throughout the country: "The defence bill now presented to parliament states that the Swedish Armed Forces, with other parts of the Swedish society, alongside political, diplomatic and economic means, constitutes a threshold against armed attack, or the use of military force to exert pressure on Sweden. A credible military capability to defend against armed aggression contributes to a peace and our political freedom. Our security policy also requires a defence force that is able to work alongside others. The Swedish Declaration of Solidarity requires that we must be able to provide as well as receive support, civilian and militarily."

The Military Strategy Doctrine picks up on these considerations and thereby stresses the necessity to ensure the defence of the country also via closer international and European co-operation. This includes the Nordic Defense (NORDEFCO) partner nations Denmark, Finland, Iceland and Norway and the NATO member states Estonia, Latvia and Lithuania. NORDEFCO was founded in 2009 as an organisation for the establishment and expansion of security policy and military relationships in the Scandinavian region and also has a Military Coordination Committee besides a Politicial Steering Committee. At the same time, the organisation also took over the duties of predecessor organisations going back to the 1960´s regarding the joint training of Scandinavian units for international operations within the framework of the United Nations (NORDCAPS) or armament co-operation (NORDAC). Before adopting the MSD, there had been many critical voices, which, based on the established NORDEFCO co-operation and the experiences from Sweden´s participation in the Nordic Battlegroup set up in January 2008, were calling for a membership option of the country in NATO in the middle term. An advocate of this request is Hans Wallmark. He is spokesman for foreign defence policy in the Moderate Party and member of the Defence Committee of the Parliament in Stockholm. In a contribution for DefenceNews in March 2016, he reiterated the demand of his party, besides an increase in defence expenditures, to also stand up for a speedy membership in the North Atlantic Alliance. "We hold the belief that having Sweden in NATO would strengthen security in the Baltic region. Having Sweden outside the alliance just increases uncertainty. A Sweden in NATO would also give us more influence over the security issues that concern us, and a place at the table where the decisions that affect us are made. Sweden needs a road map for NATO membership."

Photo: MoD DK

Regional security challenges were discussed by the Nordic defence ministers meeting in Copenhagen on 30 and 31 March 2016. From left: Swedish Minister of Defence Peter Hultqvist, Norwegian Minister of Defence Ine Eriksen Søreide, Danish Minister of Defence Peter Christensen, the Finnish Minister of Defence Jussi Niinistö, and Director of Department for Security and Defence for Iceland Arnor Sigurjónsson.

Outlook

With the documents on defence policy of the country and the Military Strategy Doctrine published in 2015, the first important steps to increase military operational readiness in the long term were taken. It is now a matter of consistently following this path of reversion to one´s own capacities and the envisaged strengthening of multilateral and bilateral co-operation within a security and defence policy context. Thereby it becomes apparent, like in many similar discussions in the other European states, that a merely national orientation is ruled out as a solution, because suitable questions and solutions to the increasingly complex conflict situation of security policy challenges can only be found and implemented within a strong European Network. To what extent a membership of Sweden in NATO should be considered as necessary cannot be answered in a short-term and politically charged debate. The already proven co-operations within the framework of NORDEFCO, the Nordic Battlegroup and with individual NATO member states have opened up opportunities for the further expansion of operational readiness and fighting power which can also be implemented without a permanent membership in the North Atlantic Alliance. On the other hand, it is much more important for Stockholm to deal more intensively with the design of a strategic narrative adjusted to the regional conditions and individual possibilities, which opens up long-term perspectives for the safeguarding of its own security policy interests and European stability as a whole. Thus, the strongly decimated armed forces could be steered back into the right waters and make a greater contribution to ensuring and projecting the security policy identity of the country. ■

Swedish Defence in a Changing Security Environment

Micael Bydén

This year represents a turning point for the Swedish defence. The armed forces have embarked on the implementation of a new defence policy adopted in the light of the deteriorating security situation in the Baltic Sea region. This is fundamentally driven by Russia's destabilising behaviour both politically and militarily, where Russia's continuous illegal annexation of Crimea and the Russian involvement in eastern Ukraine represent the greatest challenge to the European security order.

These tensions have spilled over to our immediate neighbourhood, whose strategic importance has heightened, most notably in the Baltic Sea region, but also increasingly in the Arctic. The new defence orientation marks a heavier focus on the neighbourhood in contrast to the last decades' emphasis on international operations. At the same time, Sweden will continue its international engagement. The challenges we face in the European neighbourhood, and in Syria and Iraq, points towards long term destabilisation.

Photo: Swedish Armed Forces

The Supreme Commander in talks with young Swedish infantry soldiers

Contemporary conflicts are increasingly complex. Increasingly, armed forces depend on the societies they serve, which are more interconnected and vulnerable. Modern warfare must be able to meet the full-spectrum of threats, ranging from influence operations and subversion to high-intensity warfare. Armed forces also need to achieve joint effects across all domains including information and cyber. The Swedish Armed Forces have thus accelerated their comprehensive reform effort aiming to build a robust and agile force which can respond effectively to the security challenges of today and tomorrow. The political guidance for the new defence orientation is framed in the Swedish defence bill for the period 2016-2020 that the Parliament approved last year. After two decades of successive reductions, it sets a new trend by significantly increasing the defence spending by approximately 11 per cent over the next five years. The bill calls for a renewed regional focus with emphasis on national defence. It reflects the gravity of the deteriorated military-strategic situation and demonstrates a broad political support and commitment for Sweden to contribute to the stability in the Baltic Sea region.

In essence, the Swedish defence policy rests on two fundamentals that are closely

Author

General Micael Bydén
is the Supreme Commander of the Swedish Armed Forces

Photo: Swedish Armed Forces

The Swedish Armed Forces have 15 Sikorsky UH-60 BLACK HAWK in their inventory. The aircraft was also used for MEDEVAC missions in Afghanistan.

interlinked: To reinforce our military capabilities and to build security by deepening cooperation with other countries and organisations. Furthermore, the bill calls for a renewed and modernised total defence concept, which refers to the readiness and joint operational planning of both civilian and military agencies. The total defence concept applied during the Cold War, but was dormant during the 1990s. Its reactivation is vital, both due to the emergence of hybrid threats, but also owing to the fact that the society has changed significantly the last decades with increasing vulnerabilities and dependencies. To remedy this requires close coordination between all actors engaged in total defence.

The overall priority for the Swedish Armed Forces is thus to enhance the war fighting capabilities of all three services – both in terms of equipment and personnel. The recruitment and retention of qualified women and men is absolutely essential, and investments are made to this end. Professionalising the armed forces helps us to maintain the quality of soldiers, sailors and airmen that contemporary conflict requires.

On the Army side, tanks and infantry combat vehicles will be upgraded and new mortars acquired. The Navy will receive additional personnel, a reinforced anti-submarine warfare capability, and two corvettes will be upgraded. Continued investments will be made for air defence, including fighter aircraft, JAS39 Gripen, as well as short- and medium-range surface-to-air missiles. Additional investments will be made in updating the core of the defence force, such as personal equipment, communication equipment, radar and weapon systems, as well as trucks and other equipment and logistics.

We will also add an additional light mechanised battalion to the defence structure. On the island of Gotland, we are re-establishing regular army units, including a mechanised company, an armoured company, and command and control elements. Some home guard battalions will be equipped with mortars. Pending additional political guidance, the Swedish Armed Forces will develop an active cyber capability, including Computer Network Attack (CNA).

Security in and around the Baltic Sea is indivisible and interlinked in a security complex. Sweden's security and defence policy is firmly anchored in the principle that security is built on cooperation and solidarity with others. The practical implication is that Sweden must have the ability to provide and receive military support. Therefore, we must fulfil our responsibility to strengthen our national capabilities and maintain a high level of interoperability, while solidifying the Swedish security doctrine.

This is why we further enhance our already extensive international military cooperation. Our Nordic and Baltic neighbours are naturally close partners, but we are also deepening our collaborations with the United States, Poland and other countries, as well as in the European Union, in the OSCE, as a close partner to NATO, and globally through the UN. A unified response to the events challenging European and global security is integral.

Our relationship with Finland is of particular importance. It is driven by the political aim to have a unified response option in addition to national contingency plans. The practical bilateral cooperation includes establishment of secure communications at all levels, mutual use of naval base infrastructure and air bases, as well as the development of combined units, such as a naval task group.

The transatlantic link is crucial to European security, and even more so today. To this end, we intensify our long standing bilateral defence cooperation with the United States. The United States is naturally a key partner to Sweden and a vital actor in the Baltic Sea region. The main areas for Swedish-US cooperation include interoperability, training and exercises, armament, research and development, and multilateral operations.

Our partnership with NATO remains essential, and we continue to enhance it. It provides a unique structure for interoperability, and contributes to the overall development of the Swedish Armed Forces. Tested tools like the Planning and Review Process (PARP) and the Operational Capabilities Concept (OCC) continue to serve a valuable purpose, and our participation in the NATO Response Force (NRF) remains a key component of our cooperation.

The Enhance Opportunities Programme (EOP) is the main vehicle for continued development of our cooperation. It is a flexible and useful platform based on the principle of taking the individual partner's capacities and needs as point of departure. Notably, Sweden pursues deepened co-

operation on political dialogue, exercises, training, capability development and information exchange.

The deteriorating security environment in and around the Baltic Sea region has also an effect on our cooperation with NATO. The policy framework is still that of partnership, but the practical content is under transition as the Alliance's centre of gravity is shifting from international crisis management to operations and exercises on its borders. NATO has a key role to contribute to stability in our region. Among the strategic initiatives that have already been employed within the EOP with relevance for the Baltic Sea region are political dialogue, intelligence sharing, and coordination of training and exercises. Access to the most advanced NATO exercises has long been a Swedish priority, and is just as important today.

Training and exercises are top priorities to develop our capabilities and reinforce the weave of international partnerships in the Baltic Sea region. When we step up our exercises – nationally and together with others – we strengthen our preparedness and signal our resolve to keep our vicinity stable and secure. In 2017 the biggest capstone exercise in decades will be conducted to advance the Swedish Armed Forces joint capability, at the same time as we are pre-

Photo: Reddit.com

Swedish soldiers in Mali posing with their AK5 assault weapons

paring for our contribution to NATO's high visibility exercise TRIDENT JUNCTURE 18. Already today, Swedish forces conduct exercises with international partners at different complexity levels almost on a daily basis.

While we are readjusting our focus to national defence, our commitment to global peace and security remain. Swedish forces are deployed in a multitude of challenging missions internationally, most notably in Mali in MINUSMA and in northern Iraq in the international coalition against Daesh. Even if the application of our resources certainly needs to be balanced, international and regional security as well as military capability and interoperability are strengthened through international missions. The experience gained in Afghanistan, Mali, and Iraq, outside the Horn of Africa, and elsewhere, substantiates this claim.

Photo: Anders Lejczak

Swedish JAS 39 GRIPEN fighters during the operation UNIFIED PROTECTOR over Libya in 2011

In order to respond to the new strategic context and the new defence policy, the Swedish Armed Forces have developed a new military-strategic doctrine that sets our direction for the coming five years. The key part lies in its military-strategic concept that contains the central idea on how the armed forces should be employed to respond to more complex threats.

The core of the military strategic concept is straightforward. We defend Sweden and the country's interests, our freedom and the right to live the life of our choice. First and foremost, the Swedish Armed Forces shall constitute a threshold deterring attacks of all forms. The cost of attacking, or by other means impacting Sweden, should be clear to all. This is ensured by strategic intelligence, well-trained troops with a high level of readiness, cooperation with our partners and our strong will to defend ourselves. The foundation of our defence concept is that we are defensive at the strategic level. In peacetime and in crisis, our actions will be proactive and robust aiming at being de-escalatory. Our robust actions will provide a direct threshold increasing the costs of escalation. In wartime, we will balance our actions between offence and defence to ensure endurance and freedom of manoeuvre. Any aggressor will immediately be engaged by high-readiness forces to ensure our freedom of manoeuvre. Subsequently, defence operations will be executed either in decisive operations together with partners or alone over a long period of time to wear down the aggressor.

In closing, in response to the rapidly changing security environment, the Swedish Armed Forces are reinforcing our military capability and deepening ties with international partners. The need to respond to more complex threats also requires close cooperation with civilian agencies. Building on the Swedish collaborative security policy, our new military-strategic doctrine suggests a proactive posture in our region together with partners. ■

Vidsel Test Range

Founded in 1958, the Vidsel Test Range is Europe's largest overland test and training area offering defence organisations and industry a complete testing experience all the year round. Its strength lays in the expanse where it is located; the remotest part of northern Sweden, in a region which is almost unpopulated. The missile range is 1,650 km², restricted ground space 3,300 km² and the restricted airspace over land is 8000 km².

Photo: FMV

Helicopter test at the Vidsel Test Range.

Due to the size and the varied terrain, the Vidsel Test Range is able to stage comprehensive test scenarios providing full combat loop with unlimited combinations of situations, supporting maximum surprise factor to train evasive manoeuvring. There are a large number of target areas allowing live firing, customised targets and extensive infrastructure within the test area. The range offers both real threats and simulator / emitters that can be freely deployed within the range.

An impressive array of instrumentation including optical and radar tracking systems, high-speed cameras and telemetry systems including electronic warfare capabilities and both static and mobile air and ground-based targets are available. Whether it is air-to-air, air-to-ground, ground-to-air and surface-to-surface testing, electronic warfare, UAV deployment, testing and evaluation or training and exercises, Vidsel is the place. Furthermore, Vidsel provides accommodation, spacious hangar and preparation facilities, mechanical and electrical workshops, ready accessibility by air and land, a full complement of rescue and security services as well as comprehensive guest office facilities, open broadband internet access and mobile phone coverage.

"We plan to operate GRIPEN E until at least, and most likely beyond 2040".

Photo: Swedish Air Force

Interview with Major General Mats Helgesson, Chief of Staff of the Swedish Air Force

Major General Mats Helgesson was appointed Chief of Staff of the Swedish Air Force on 1 October 2015 as the successor of General Micael Bydén, the current Chief of Defence. In this interview he addresses current considerations against the background of a changing security-political environment.

ESD: What is your assessment of Sweden's current security-political situation considering the increased level of Russian activities in your country's direct and indirect neighbourhood?

Helgesson: We have seen a significant increase of Russian activities over the Baltic Sea during the last few years.

Following the collapse of the Berlin Wall the disintegration of the Soviet Union in 1991 the presence of Russian Armed Forces in the region decreased dramatically. Flights with Russian bombers more or less went down to zero in numbers. This reduction of Russian military presence continued for many years. After the war in Georgia 2008 we have noticed an increase of exercises and other activities in our region.

Today, we consider the Russian exercise pattern similar to what we could experience during the Cold War. Our assessment is that it is a clear trend from the Russian side to regain their military capabilities over the Baltic Sea.

Overall, our political assessment of the Nordic and Baltic Sea region is characterised by stability, dialogue and cooperation. The policy pursued by Russia, on the other hand, is unpredictable and destabilising. It is inconceivable that a military conflict in our region would only affect one country. A separate military attack directly targeting Sweden remains unlikely.

I believe that the presence of our armed forces in the area and our relevance when it comes to operational capability alone or together with a partner is of highest importance for the effect of deterrence against an adversary. One substantial action we have done is that we have increased the number of scrambles with our GRIPEN QRA by almost 50 percent between 2012 and 2013, which has been continued at the same level during the following years.

ESD: What is your perception of the Swedish Air Force's current status in terms of human resources, training and materiel? Do you have a wish list / list of priority objectives?

Helgesson: I can, as the Commander of the Swedish Air Force, proudly state that I have highly skilled, professional, and effective officers, NCOs, soldiers and civilians. Regarding our equipment and level of technology, I am confident. The systems we operate in the Swedish Air Force are in many ways top shelf equipment. However, to only focus on superiority in technology or numbers is irrelevant for a relatively small country such as Sweden. For us, the objective must be to excel at an operational and tactical level, and that begins with skilled personnel and adequate training.

I would argue war fighting is not about making wishes, it's about acting. How you act is what really matters. It's how you fight with available means that count, not what capabilities you might have in theory. Operational effects are the result of our doings. When it comes to priorities, the Swedish Government and our Supreme Commander have been very precise. The first and utmost priority is to enhance the capabilities for every war fighting unit in the Swedish Armed Forces. My job is to boost the skills of our Air Force and make sure that we remain a compelling fighting force. That starts with getting the right individuals –

Photo: Jerry Gunner

18 NH-90 helicopters are on order to the Swedish Air Force. Shown here is the first aircraft for Sweden taxiing at Airbus Helicopters' facility in Marignane, France, in 2014.

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because no matter how you look at it, the people are the true power of the Swedish Air Force.
Having a broad spectrum of capabilities is, of course, demanding for a small organisation like the Swedish Air Force. Our greatest limitation of our concern will be our persistence in time

ESD: Can you elaborate on the subject of military cooperation with other air forces, both in the Nordic region and elsewhere?
Helgesson: The Swedish security policy has significantly changed during the last decades. It has shifted from Sweden as a military non-aligned nation, aimed at neutrality in war to a membership in EU 1995 with a Swedish declaration, in 2009, of solidarity and international cooperation. Today, Sweden is a member of the EU but still not a member of NATO. However, we have participated in the Partnership for Peace programme since 1994. When it comes to Swedish national defence planning, we more or less took a "strategic timeout" during roughly 10 years, beginning at the end of the 90s. During that time Swedish security policy was mainly focused on the participation in international operations. The Swedish Armed Forces became interoperable. For instance, Sweden sent military units to the Balkans, Afghanistan and Africa. One example of the Air Force is the deployment of GRIPEN fighters to Libya in the scope of Operation Unified Protector in 2011. That was the Air Force's second foreign deployment in history. The first was in 1961 when we sent the flying barrels to Kongo.
Today, there is a clear focus on regaining national defence planning, while maintaining defence forces with capabilities built upon interoperability. Therefore it is sound that we continue to foster our already established cooperation with many other air forces. The Nordic cooperation has been active for many years. One outstanding example is Exercise Arctic Challenge (ACE), which is held every second year and has become one of the biggest exercises in Europe. It constitutes the successful evolution from a mere Nordic cooperation concept to an exercise attracting many other nationalities. We are planning to deploy to the US and participate in exercise RED FLAG in 2018 for the 4th time. Our cooperation with the USAF is very valuable for many reasons.
I regard the Swedish Air Force as an effective force with many capabilities but with limited full-war fighting persistence in time. That's one of the reasons why we need to be able to fight more or less fully integrated with other nations when Sweden as a nation calls out for support or we offer our help to someone else.

ESD: What are the lessons learned from the GRIPEN deployment to Libya in 2011, both in terms of military cooperation with other allies and performance of the aircraft?
Helgesson: The Swedish Air Force made a contribution to Operation Unified Protector over Libya in 2011. From April to October we deployed roughly 100 airmen and 5 GRIPEN fighters to Sicily. Sweden provided mainly with tactical air reconnaissance to implement UN resolution 1973, with the primary focus on the protection of civilians.
With the participation in the operation over Libya under a UN mandate Sweden showed that we are a relevant partner with an adequate professional and highly interoperable capability. What I can confirm after our evaluation of our performance is that we have done the right things during the last decade. We applied necessary technical modifications to the GRIPEN fleet in order to enhance interoperability, and we have also provided crucial interoperability training for our units through, for instance, participation in challenging international exercises like RED FLAG.

ESD: Does the Swedish Air Force have any plans for a GRIPEN replacement programme?
Helgesson: In my opinion the GRIPEN A/B was relevant for the defence of Sweden. The GRIPEN C/D performs adequately today, but we need a GRIPEN E to remain operationally relevant after 2025. The Swedish Air Force is currently planning for an Initial Operational Ca-

pability (IOC) in 2023 and Full Operational Capability (FOC) in 2027 with the next generation fighter – GRIPEN E. We plan to operate GRIPEN E until at least, and most likely beyond 2040.
There has been a parliamentary investigation about the Swedish air defence beyond 2040 .When we look into the "crystal bowl" we predict future military operations to be executed in a more complex environment. The traditional arenas, air, land and sea tend to blur into each other in a much more overleaping way. Future combat systems replacing the GRIPEN and others must be designed based on a genuine integrated foundation. However, we do not yet have any dedicated plans for the replacement of the GRIPEN fleet with any other systems.

Photo: Saab

The TAURUS KEPD 350 standoff missile during GRIPEN test flights

ESD: Although Sweden provided means to fund the development of the KEPD 350 TAURUS weapon system, the system has not been introduced by the Swedish Air Force. Can you comment on the subject?
Helgesson: Sweden, SAAB, has partly participated in the development of KEPD 350 TAURUS. SAAB has test flown the missile with the GRIPEN in the early 2000s. This was done during a time when we were retiring the BK90 (cluster bomb) and investigating a long-range air-to-ground capability. The TAURUS was identified as one of the options at that time. There have not been any decisions for the procurement of the missiles in the past, but in the latest "Government Bill Defence Review 2015 for the time period 2016 to 2020", there is an opening to acquire long-distance cruise missiles in the future. However, the decision will only be taken in 2020 or thereafter and there have not been any preferred missile solutions. It is a capability we lack today and if the ongoing change of the security-political situation in our surroundings continues I would appreciate a capability long-range cruises missile capability which adds to the overall "threshold effect."
The questions were asked by Jürgen Hensel and Ulrich Renn.

"At the FMV we manage around 800 programmes each year."

Lieutenant General Göran Mårtensson was assigned the position of Director General of the Swedish Defence Materiel Administration FMV with effect from 1 February 2016. In this interview he considers current activities and comments on programmes and requirements.

Photo: FMV

Interview with Lieutenant General Göran Mårtensson, Director General, FMV

ESD: Please would you briefly elaborate on the role, organisation and duties of the FMV? Is the FMV comparable to other defence procurement organisations like the French DGA or the German BAAINBw?
Mårtensson: Yes, there are differences when you compare FMV with DGA, BAAINBw and other agencies, but perhaps more similarities. As the FMV is the Swedish procurement agency for the Swedish Armed Forces, our portfolio includes the support in the early phases of all projects, as well as support and services in support of life cycle management.

ESD: You have only been in this position since 01 February 2016. What is your perception of the FMV's current status in terms of human resources, organisation and programme management skills? Do you have a wish list / list of priority objectives?
Mårtensson: A few years ago I was the Chief of Armed Forces Training and Procurement in the Armed Forces and my opinion of the FMV has not changed since then. The Swedish Defence Materiel administration FMV is competent, well organised, and we have project management at top level. At the same time, we are struggling with the same challenges as everyone else and each one of these challenges is on my priority list: consolidate business, delivery in time, keep up support to the armed forces in a changing security environment, long term competence sourcing, to name but a few.

ESD: To what extent does the FMV assume responsibility for the R&D share of armament programmes? Do you have R&D personnel of your own?
Mårtensson: The main provider for R&D to the Armed Forces is the research institute FOI and the FMV is one of their main customers. We do not perform R&D directly but, of course, some of our personnel are working with requirements and coordination in this area, as well as keeping us updated regarding the development in several areas. One of the platforms is EDA, another Garteur, to name but a few.

ESD: What are the most important defence programmes currently executed by the FMV? What – in average – is the annual budget available for defence materiel investments in Sweden?
Mårtensson: The most important, or at least the most costly, defence programmes currently executed by the FMV are the Gripen and the new submarine programmes. Other important upcoming programmes include ground-based air defence, a new artillery system (ARCHER) and the midlife upgrade of CV 90 and our LEOPARD 2 main battle tanks (Stridsvagn 122). Total annual budget for defence materiel investments is approximately 8,5 billion SEK.

ESD: What is the status of the new Swedish submarine programme?
Mårtensson: On track and on schedule. Two subs of the GOTLAND Class in for halftime modification with scheduled de-

Photo: Saab

Based on a six-nation development effort the IRIS-T short-range air-to-air missile has been selected by ten countries. Sweden uses the air-launched version with the GRIPEN fleet, whereas the surface-launched air defence variant is subject to current procurement.

Photo: U.S. Navy

Two of the three GOTLAND Class submarines are undergoing halftime modification. Commissioned in 1996 they are the first-ever conventional submarines equipped with the STIRLING air-independent propulsion system.

liveries in 2018 and 2019. Two new Class A26 submarines will be delivered to the Armed Forces in 2024 and 2025.

ESD: Which of your current programmes are carried out in international partnerships with other national or multinational procurement organisations?
Mårtensson: We have a number of international programmes, current and planned. Current programmes include the IRIS-T short-range air-to-air missile and the BVR missile METEOR. We have procured heavy vehicles in partnership with Norway and we have recently delivered tug boats which where procured in cooperation with the Netherlands. And of course, the Gripen system is in itself an international cooperation looking at current user nations and future partners.
To conclude, there is a very long list of international partnerships at all levels, not only in the high profile programmes.

ESD: Are there defence procurement efforts executed in the scope of public-private partnerships?
Mårtensson: Yes, there are; for example the Flight Physiological Centre FPC which is managed and operated by QinetiQ.

ESD: What advice can you give to a foreign defence contractor who wants to enter into a business relationship with the FMV and the Swedish Armed Forces?
Mårtensson: Study our website for our contracts notices on www.e-avrop.com. Be known for cost effective, delivery in time and security of supply.

ESD: Are there any materiel requirements from the Swedish Armed Forces that constitute long term future challenges for the FMV?
Mårtensson: Yes, of course. As I mentioned before we have the same challenges as other nations in the EU or in NATO. At the FMV we manage around 800 programmes each year. High tech projects pose special challenges. They often circle around the question on how to provide the armed forces with systems that do not yet exist. But not all programmes are large, and the not-so-large programmes bring along their own challenges.
A few years ago almost every nation in the EU and in NATO decreased its defence budget. Not so now, so we and everybody else have to find solutions to the hard issues of supply security.
The questions were asked by Jürgen Hensel

Photo: Ibarl

ARCHER is an international project aimed at developing a next-generation self-propelled artillery system for Sweden and Norway.

A New Security Environment: Implications for the Swedish Defence Industrial Base

Robert Limmergård

Photo: SOFF

The security environment in Europe's eastern neighbourhood has deteriorated dramatically in recent years. Russia's aggression toward Ukraine shows that the country has a low threshold for the use of military force and is willing to use military means to redraw Europe's borders.

An intensified military exercise pattern in Sweden's immediate vicinity combined with a comprehensive reformation of the Russian Armed Forces has recently forced Sweden to increase its defence expenditures. The ability to deal with, amongst others, remotely-operated weapons, cruise missiles, cyber operations as well as unmanned systems, is deemed to require added strength.

The recent change in Sweden's external security environment has been described as a new 'normal' that will continue over a longer period of time. This will also have an impact on Swedish defence companies in their relationship to the home market. I can see at least four long-term trends on the horizon.

Firstly, as a consequence of the new security environment the defence industrial base will constitute an increasingly important component of Sweden's defence capability. Entry to international materiel cooperation activities to develop new defence technologies is based on access to a strong national defence industrial capacity. The strive for new technology is currently being driven swiftly by, for example, various measures and countermeasures related to Anti-Access Area Denial (A2AD). The added value of having access to a qualified defence industrial base that may grant Swedish participation in this technological development is therefore of growing significance.

Secondly, the new security environment will also mean greater demands being placed on industry to demonstrate a security of supply for the products and services they provide for varying levels of conflict. Some companies may need to give an account of their subcontractor chains which in many cases are of a global character. It may also create higher costs for the customer if the subcontractor needs to be deselected due to security considerations. It is to be expected that new principles and forms of contract for security of supply between defence industry and defence authorities and agencies will need to be developed in the near future.

Thirdly, the new security environment may also result in placing demands on industry to continuously upgrade and integrate new technology in various platforms and systems delivered to the Swedish Armed Forces. The Swedish Armed Forces have for example pointed out that the need for dealing with duel situations will increase in parallel with the capability to respond to a qualified opponent. In so doing, the technological content and performance of the platforms and systems become all the more important compared to the era when the Swedish Armed Forces mainly were focused on peace support operations.

Fourthly, the security environment contributes to an increased need for international cooperation both for the Swedish Armed Forces and the defence industry. Above all, there is a growing requirement for intensified military-technological cooperation with the United States, world leaders in this development. For example, the USA invests seven times as much in military-related research and development (R&D) than all EU member states combined. A strong transatlantic link is thus of paramount importance both for the Swedish government and for Swedish defence companies.

The new security environment will thus, as noted, pose some changes for the Swedish industrial base. However, it is rather well placed to meet the above challenges.

Author

Robert Limmergård is the Secretary General of the Swedish Security and Defence Industry Association SOFF (Säkerhets- och Försvarsföretagen)

The Swedish Security and Defence Industry Association (SOFF)

SOFF's overall objective is that security and defence enterprises in Sweden should have the best preconditions possible to develop and operate successfully. In essence this entails two courses of action: long-term effort in addressing market access and trading conditions, and working with upcoming promotional processes and activities. The Association consists of approximately 70 member companies of whom 54 are SME-companies. Saab group is the biggest member of the Association. The member companies represent about 95 percent of the collective turnover of the defence industrial base in Sweden. SOFF is a member of the ASD, NATO Industrial Advisory Group and maintains a close dialogue with its Nordic sister organisations AFDA (Finland), FAD (Denmark) and FSi (Norway) via for example NORDEFCO. http://soff.se/en/

Photos: ESD archives

More than 60% of the Swedish defence industry's turnover is generated in export. "Best sellers" include the GRIPEN combat aircraft with five export customers and the CV90 AIFV which, apart from Sweden, has been introduced into the armies of Denmark, Finland, The Netherlands, Norway and Switzerland.

Sweden has, in relation to its population, a defence and security industry that from an international perspective is both competent and competitive. Few countries are able to independently develop the types of advanced services and products in their entirety that we can in Sweden.

The industrial base cover system platforms in all domains such as fighter aircraft, naval surface vessels, submarines and land systems. This is rather unique for a country of 9.7 million people. Furthermore it also produces numerous subsystems such as, for example, intelligent ammunition, IT systems, sensors as well as niche products and services.

Consequently the defence industrial base is also exceptionally research intensive. Approximately 16 percent of the combined annual turnover of SEK 30 billion that it generates is reinvested into R&D. In other words, the industry contributes around SEK 7 billion of self-financed or customer-financed funds to R&D. This qualifies the industrial base as one of the most research-intensive technology sectors, in relation to its turnover, in Sweden. Much of the self-financed R&D is based on revenues from export which constitutes more than 60 percent of the turnover for the Swedish defence industrial base.

Yet today, the technological driver is much stronger outside the defence market than within it, which is why it is of great importance to monitor areas such as simulation, new energy sources, nanotechnology/electronics, robotics, autonomous systems, new materials, quantum information, and new manufacturing technologies. Consequently, there are expanding ties and several joint projects between traditional Swedish defence companies and commercial companies in order to take advantage of the rapid technological advancements commonly associated with the fourth industrial revolution.

A sound understanding of technology brings with it the capability to counter and prevent a technological breakthrough that can threaten the security of society. For Sweden it will be important to increase research within a growing number of potentially disruptive areas and, in particular, to see how new technology can affect the threat, risks and vulnerability to society and its citizens.

To meet this demand, Sweden needs to monitor technological development globally in order for us to be able to cooperate with the foremost players in the world which, in turn, can contribute to a stronger innovative thinking, highly skilled engineers, and a strong science and technology base – all in international partnership. ■

The Slovak Armed Forces and New Dynamics in Global Security

Milan Maxim

In 2014 Europe once again became a theatre for an armed conflict. We have been witnessing a violation of territorial integrity of Ukraine. There has been continued effort put on destabilisation of that country by military and non-military means.

The security situation in the Middle East, namely Iraq and Syria, is described as critical. Thousands of people in Africa have died in aftermath of epidemic Ebola. Those issues along with growing international terrorism, illegal migration and other security threats are reasons to assess the global security environment as increasingly dynamic and even more unpredictable than ever before.

The Slovak Republic was created in 1993. From its very first days of independence Slovakia, looking for security guarantees, has pro-actively helped to solve security crises under UN auspices in different regions of the world. It is critical to understand that the success story of the Slovak Republic – a young and dynamic Central European country – is undoubtedly linked with security guarantees provided by Slovakia's full integration into Euro-Atlantic security institutions. The Slovak Ministry of Defence and the Slovak armed forces were among those institutions that played a key role in meeting the criteria for admission of Slovakia into NATO in 2004. Simultaneously, the Slovak armed forces have been subject to accelerated strategic transformation from a robust and unsustainable structure focussed on individual defence to a smaller interoperable military organisation fully integrated into NATO's collective defence system and capable of multiple out of area deployments.

With this in mind, it is my pleasure to present perspectives of the long-term development of the Slovak armed forces in the broader context of Slovakia's NATO and EU membership.

Author

Lieutenant General Milan Maxim has been Chief of the General Staff of the Armed Forces of the Slovak Republic since 6 May 2014.

New Dynamics in the Global Security Environment

New dynamics in the global security environment are probably comparable only to the period shortly after the collapse of communism in Europe. It is not easy to predict the long-term effects of the recent situation in Ukraine on the future of Europe's security. We do not know what will be the outcomes of recent developments in Iraq and Syria or the future of failing African states such as South Sudan or Somalia.

Certainly, these dynamics are generating new security challenges that we are currently facing. However, it is a matter for discussion whether it is feasible to tackle these new challenges with the same resources allocated to defence and security in times when the security environment was relatively stable and easier to predict. Moreover, restrictive fiscal measures imposed on the defence sector in order to deal with economic crises between 2008 and 2010 are frequently still in place. Despite the fact that the economic crisis does not pose a further threat to economic stability of the European countries, it impacts on national defence budgets probably do not allow any substantial breakthrough from Europe's everlasting fragility: chronic neglect of its military power. In 2011, in his speech at the 47th Munich Security Conference, former NATO Secretary General Anders Fogh Rasmussen stated that European countries "risk a divided and weaker Europe" as they continue to drastically reduce their defence expenditures. He expressed his view that the global economic crisis might be followed by security crises unless European countries stop to dismantle their defence potential. At that time, no one probably even considered a scenario in which Europe, while still weakened by consequences of a deep economic crisis, has to face to a hybrid war on its territory with thousands of dead and wounded and tens of thousands of internally displaced persons.

In 2014, Slovakia found itself in – to date – an unprecedented security reality. Ukraine, one of Slovakia´s neighbours that has been confronted with the violation of its territorial integrity, is facing a deep security and economic crisis. For several reasons, the current crisis in Ukraine has direct impacts on our security. Therefore, Ukraine is seen as a key indicator country for the security of Slovakia. Both countries share a common border of 98 km. This is not significant from a geographical point of view. However, since that border also constitutes an external border of the EU, it is of strategic importance for both Slovakia and the EU. This border is often challenged by illegal migration and cross-border organised crime. Many of the displaced people from crises regions in the Middle East also try to reach the West using the Slovak – Ukrainian border. Almost 100 per cent of Slovakia´s oil and gas imports travel across the border with Ukraine. A significant amount of Russian oil and gas supplies to Europe flows across this border as well. Due to the fact that Russian weapon systems are still present in the inventory of the Slovak armed forces the sanctions put on Russia by the EU address the issue of our dependence

on Russian military supplies with great urgency. It should be of no surprise that the immediate security challenges Slovakia is facing since the outbreak of the crisis in Ukraine are as follows:

- Guarantee of oil and gas supplies to Slovakia,
- Reduce dependence of the Slovak Armed Forces on Russian weapon systems and spare parts and
- Counter increased risk of illegal migration and weapons proliferation.

Immediately after the crisis in Ukraine the Slovak authorities implemented a set of pre-emptive measures to raise situational awareness. Within these complex measures the armed forces of the Slovak Republic have reinforced their ability to properly react to any development in connection with the crisis in Ukraine. Slovak authorities have analysed all potential scenarios based on an option of massive humanitarian crisis in Ukraine. In the autumn of 2014, the Visegrád Group countries and the USA exercised the Article 5 military operations in Eastern Slovakia, with the aim to enhance operational coordination. In order to support NATO´s collective defence effort, our troops have also participated in these sorts of exercises abroad. As part of Slovakia´s comprehensive effort in supporting Ukraine, the Slovak armed forces have opened their training facilities for more than one hundred of Ukrainian demining and EOD-experts. The Slovak Ministry of Defence provided medical treatment for Ukrainian citizens injured during the riots in Kiev in the spring of 2014. Our disarmament and non-proliferation experts have been involved in OSCE activities concerning the crisis in Ukraine.

At the NATO Summit in Cardiff, our leaders announced that Slovakia is ready to contribute to the strengthening of the defence of NATO´s eastern flank. In that context we have already announced a decision to augment our participation at the HQ Multinational Corps Northeast in Szczecin. But from a Ukrainian viewpoint, the reverse flow of gas from Slovakia to Ukraine is probably the most substantial contribution of the Slovak Republic to Ukraine´s security. Now, Slovakia is able to support Ukraine by supplying up to 10 billion of cubic metres of gas per year.

Looking Back on Slovakia´s NATO and EU Membership

Before I outline the long-term development perspectives of the Slovak armed forces, allow me to share a brief summary of milestones of the Slovak military's history with you. On 01 January 1993 the Slovak Republic was established as a result of a peaceful separation of former Czechoslovakia. On the same day, the Army of the Slovak Republic was established with its core task to defend the Slovak Republic against an armed attack from abroad and to fulfil commitments stemming from international treaties.

During the last 20 plus years the Slovak armed forces have undergone several significant reforms. As a result from these reforms the robust post-Czechoslovak Army was converted into a smaller defence force capable of fast response operations. In 1994, only a year after its establishment, the Slovak Republic joined the NATO Partnership for Peace Programme boosting our ambition to join NATO. In 2001, a new Long Term Development Plan of the Slovak Armed Forces was introduced forming a roadmap for the long-term capability transformation. Slovakia joined NATO and the European Union in 2004. New security and defence strategy were adopted by the Slovak Parliament in 2005. Following the new military professional service law, the new military personnel management was implemented. Professional military service fully replaced conscription in 2006. In 2009, Slovakia entered the Eurozone and replaced the Slovak crown with the euro as the national currency. Following the global financial and economic crises the Slovak Ministry of Defence launched a Strategic Defence Review (SDR) in 2010. That was a logical step motivated by the long-standing reduction of the Slovak defence budget. The Defence White Paper of the Slovak Republic was completed in 2013 and new long-term capability development plans have been introduced.

The Ministry of Defence and the Slovak Armed Forces were among the key players in enabling Slovakia´s NATO membership in 2004. By joining NATO, Slovakia gained exclusive access to security guarantees based on the principles of collective defence of the Alliance. Our security, stability and prosperity are directly linked with the security, stability and prosperity of our allies. Thanks to this Slovak the economy can take advantage of considerable growth. The termination of conscription has allowed Slovak citizens to take full advantage of their right to study and work anywhere in the world according to their priorities. I would like to stress that within those 20 plus years we have managed to transform our armed forces from an excessive and hard-to-sus-

Photos: MoD Slovak Republic

Slovak soldiers during a training exercise

Slovak armed forces made valuable contributions to the ISAF mission in Afghanistan

tain post-Czechoslovak Army to a leaner and more sustainable, fully professional Slovak defence Force capable of deployment with minimum caveats.

The Slovak armed forces have been engaged in crisis response operations from the very first day of their existence. However, our full NATO membership has often been associated with the Slovak public and with lower demands for military deployments abroad. The contrary is the case. Our involvement in crisis response operations has been steadily growing while the capacity of the armed forces has repeatedly been lowered.

Since 1993 the Slovak troops have participated in more than 30 military deployments in 21 countries on 3 continents including NATO, UN, EU and OSCE operations and missions. As of today, Slovak military personnel are performing their duties in Afghanistan, Cyprus, Bosnia and Herzegovina, the Middle East and Georgia. During the last decade, the ISAF operation in Afghanistan was the centre of gravity for the Slovak armed forces. Our troops worked together with Dutch, American and later with Australian comrades in the Uruzgan Provincial Reconstruction Team. The Slovak special operations units operated in different regions of Afghanistan, predominantly mentoring and supporting the Afghan Army. Our infantry units did a great job by providing force protection for the Kandahar Airfield. The Slovak EOD team earned appreciation from our allies and partners in ISAF, performing their duties in the life-threatening environment of the Kandahar province. We continue with our support to Afghanistan beyond the ISAF mission. In December 2014, the Slovak Armed Forces deployed a new contingent of military mentors to the Resolute Support Mission. In the following months, we will be part of NATO´s collective effort to support the Afghan national security forces mainly in the arena of capability development for special operations. After we concluded our multi-year involvement in NATO´s KFOR mission in 2010, the EU mission ALTHEA became our priority in the Balkans. Today, we play the leading role in this mission. I am very proud of our soldiers who have met all the demanding operational requirements at home and abroad with great honour. They deserve our respect and recognition. Unfortunately, the active participation of Slovakia in crisis response operations resulted in casualties. The ultimate sacrifice of those who lost their lives in the line of duty will not be forgotten.

The admission of Slovakia to NATO and the EU, the long-term involvement of Slovak troops in global crisis management operations together with continuing austerity measures as a result of the global economic crisis have significantly determined the long-term transformation efforts of the Slovak armed forces.

Transformation of the Slovak Armed Forces

We see the long-term capability development of the Slovak Armed Forces as a continuous process that needs to reflect long-term trends in the development of the global security environment as well as trends in military strategy and technology. Simultaneously and without any doubt, that process is challenged by a variety of short-term security and economic issues that might have positive and negative effects on military capability development.

It is challenging to formulate an estimate of what security challenges Slovakia might face in 20 years from now. As we saw in Ukraine in 2014, it is not as easy to do that even looking at the next couple of months. I am quite confident that the authors of the Long Term Development Plan of the Slovak armed forces in 2001 did not consider a scenario in which Slovakia (since 2008 a member of the Euro Zone) would face severe effects of the global financial and economic crisis comparable only with the economic crisis of the 1930´s. In 2001, hardly any of them envisaged that the Alliance, that Slovakia was preparing to join at that time, would be deploying – and sustaining – tens of thousands of troops in combat and stabilisation operations across Europe, Asia, and the Mediterranean and the Pacific.

With respect to recent security risks in Europe, our short-term goal is to preserve the current level of defence potential in Slovakia. In 2013, the Slovak Government approved the Defence White Paper of the Slovak Republic. In that strategic document, the Ministry of Defence set the long-term development goal for the Slovak armed forces: to be a credible and quickly deployable military organisation prepared at any time to decisively and effectively fulfil its mission when protecting, supporting, defending and enforcing the security interests of Slovakia. The basis of our strategy in reaching that goal constitutes a comprehensive transformation of tactical units (battalion and below) in line with NATO standards and is closely linked to main armament modernisation projects. We also aspire to put more stability into the management of our military personnel in order to motivate highly qualified key military leaders and specialists to serve in the armed forces for longer time than today. Moreover, we are working on the optimisation of our command and control system in order to solidify its capability to react appropriately in the event of crises.

The most significant progress we currently see is observed in the arena of armament modernisation. The Defence White Paper of the Slovak Republic has identified significant delays in the modernisation projects for main weapon systems. Technologically outdated and unreliable Soviet-type weapon systems are among the main difficulties that have considerably limited our efforts to achieve our transformational goals already set in 2001. Therefore, I am glad to see promising progress made by the Ministry of

Defence as to gradual replacement of Soviet-type weaponry. In 2014, we managed to finalise the acquisition of the C27J SPARTAN transport aircraft that is to replace Soviet-type AN 26 aircrafts. We are also working on options for the replacement of our Mig-29 FULCRUM combat aircraft, Mi-17 HIP transport helicopters and air traffic control radar systems. As far as our land forces are concerned, we are on track with the gradual replacement of personal weapons and logistic equipment. I strongly believe that the Ministry of Defence will soon reach a decision to launch major re-equipment projects for our land forces.

The development of long-term capabilities of the Slovak armed forces belongs to fundamental pre-requisites for the provision of security to our country and its citizens. Our general objective is to continuously develop our national military capability and thus to contribute to the common defence and potential of the Alliance. Through reinforcement of our national defence we contribute to reinforcing the defence of our allies. It is the assumption of a new dynamic in Europe´s security and resulting risks to the security of the Slovak Republic that will initiate new strategic discussion on the transformation of the Slovak armed forces. Nevertheless, I firmly believe that in the coming years we will be witnessing gradual increase of military expenditures in Slovakia and continuity of major rearmament efforts.

The Future of International Military Cooperation

Every individual country has to deal with the question of what policy should be applied at both national and NATO levels so that the struggle to generate more security with the same resources can really bring reasonable results in terms of a stronger defence for the Alliance. From a long-term perspective, continuation of a less coordinated and nationalised approach to the development of the whole spectrum of military capacities may cause irreversible damage to the future defence posture of the Alliance.

I am fully convinced that recent developments in the security environment will be of even more importance to broad regional military cooperation. One of the most frequent discussions within NATO and EU applies to the idea of pooling and sharing of military capabilities. From an economic point of view it undoubtedly makes sense assuming that to pool and share capabilities does not mean lowering national capability development goals. Therefore, we should look for new perspectives as to pooling and sharing of military capabilities within NATO and EU. We should continue to promote

Photo: photocommunity.de

Slovakia's MiG-29 FULCRUM are earmarked to be replaced by modern Western fighters.

Photo: wikipedia

The Mil-17 and its derivatives – shown here is an aircraft in service with the Egyptian Government – are undoubtedly among the most reliable multi-purpose rotary-wing aircraft ever built in the Soviet Union. The Slovak Air Force still operates 14 Mil-17 and one Mil-8 helicopter.

regional defence cooperation with the aim to sustain and to enhance nationally owned core military capabilities. Concurrently, within the NATO and EU we should seek for a robust set of commonly resourced, commonly developed, commonly trained and commonly employed strategic enablers. Those two lines of comprehensive and closely coordinated capability development should allow European countries to sustain their core national military capabilities while strengthening NATO's and Europe's overall defence capacity.

Slovakia, together with the Czech Republic, Hungary and Poland, is a member of the Visegrád Group. Let me use this opportunity to highlight recent achievements as an example of intensifying regional defence cooperation. In 2016, the Visegrád Group countries will provide their first common EU Battlegroup. This will constitute the first milestone in long-standing bilateral and multilateral military co-operation among those central European countries. Working with lessons learned from building the V4 EU Battlegroup the Visegrád Group countries agreed on a long-term vision for deepening their defence cooperation. According to this vision practical defence cooperation among the Visegrád Group countries shall focus on three critical areas:

- Capability development, procurement and defence industry;
- Establishment of multinational military units;
- Education, training and exercises.

Furthermore, the Visegrád Group heads of government tasked their defence ministers to further enhance the V4 defence cooperation by exploring the possibilities of forming a permanent V4 modular force which could be used as a Visegrád contribution to NATO and EU rapid reaction forces as well as in crisis management operations. Common V4 training and exercise strategy should support V4 ambitions regarding building V4 common capabilities.

In conclusion, let me state that a firm anchoring of Slovakia into Euro-Atlantic security structures offers our nation a unique historical opportunity to develop as an independent and democratic society. The Slovak armed forces will continue to contribute to solving security crises where necessary thus accomplishing its mission, when defending and enforcing the security interests of Slovakia. And, facing recent dynamics in the global security environment we will continue with our transformational efforts with the aim to prepare the Slovak armed forces for future security challenges. ■

10 Years of System Life Cycle Management in NATO

Peter Janatschek

The aim of System Life Cycle Management (SLCM) is to optimise defence capabilities taking into account performance, cost, schedule, quality, operational environments, integrated logistic support and obsolescence over the life cycle of the system.

NATO SLCM in its present form is the result of an evolutionary development which started a long time ago. In the early nineties the first generation of armament systems that had been developed and produced in the scope of multinational efforts – like the MRCA TORNADO – entered service. NATO and the nations involved soon recognised the need for multinational guidance, not only for operations but also for logistic support.

Furthermore, the development of multinational standards and specifications commenced and it became evident that complex armament systems needed effective information technology support throughout development and production as well as during their entire life cycle, involving both industry and the armed forces as the users.

The Long Way from CALS to SLCM

In 1989 NATO recognised the need to address defence system life cycle management and support issues in a coordinated approach and manner. Following a NATO Industry Armaments Group (NIAG) prefeasibility study on Computer Aided Logistics Support (CALS) (later renamed to Continuous Acquisition and Life Cycle Support) and work in AC/301 "Standardization of Materiel and Engineering Practices" the creation of the NATO CALS Organization was decided by CNAD late in 1993. The NATO CALS Organization under CNAD consisted of a governmental and an industrial pillar. The industrial pillar was headed by the NATO Industry CALS Group (NICG), subsidised and in existence under NIAG until the end of the year 2000, supported by the NICG-Executive Group. The governmental side of the NATO CALS Organization was directed by the NATO CALS Management Board. Representatives of participating nations who had signed the NATO CALS MoU were the voting members. Other NATO – and Non-NATO nations as well as representatives from other NATO agencies participated as observers. The NCMB provided direction to the NATO CALS Office (NCO) as the permanent workforce. The NCO was resourced by the MoU nations and was situated at the NATO headquarters.

The NCMB led a CNAD-initiated NATO Working Group on Life Cycle Management. It identified that through adoption of Life Cycle Management (LCM) principles, NATO could develop more integrated, efficient, and customer-oriented processes. The ISO 15288 Standard on System Life Cycle Management was proposed to provide the framework. After the 1999 CNAD tasking the NCMB examined options for a transition of CALS activities. In May 2001 the CNAD endorsed the transition of NATO CALS to a CNAD Partnership Group for Defence System Life Cycle Integration (CPG LCI) which met in November 2001 for the first time as AC/325. At their autumn meeting in the year 2000 the NIAG agreed to support the new CPG LCI by establishing an Industrial Life Cycle Integration Group (ILCIG).

AC/327, the "Life Cycle Management Group", was formed in 2003 following the merger of four former groups, AC/250 on Quality Assurance, AC/301 on Standardisation of Materiel and Engineering

2. POLICY STATEMENT

2.1. To achieve an integrated approach to the delivery of defence related capabilities for NATO operations, it is Alliance policy that Nations and NATO Authorities apply the principles of Systems Life Cycle Management as elaborated in this policy document.

2.2. The North Atlantic Council (NAC) approves the NATO Policy for Systems Life Cycle Management. The Conference of National Armaments Directors (CNAD) is its custodian.

3. AIM

3.1. The aim of SLCM is to optimise defence capabilities taking into account performance, cost, schedule, quality, operational environments, integrated logistic support and obsolescence over the life cycle of the system.

3.2. The NATO Policy for Standardisation calls for the use of civil standards to the maximum practicable extent. ISO/IEC 15288, "Systems Engineering – System Life Cycle Processes", is already in use in several Nations and provides a general framework that is neutral to extant individual Nations' Acquisition Processes. Following this guidance, NATO will use ISO/IEC 15288 as the basis for implementing SLCM.

3.1. I recommend the NATO Policy for SLCM as a basis to enable the contributors to the fulfillment of NATO military capabilities to work together to achieve efficient and timely delivery of military systems that meet the military needs at affordable cost.

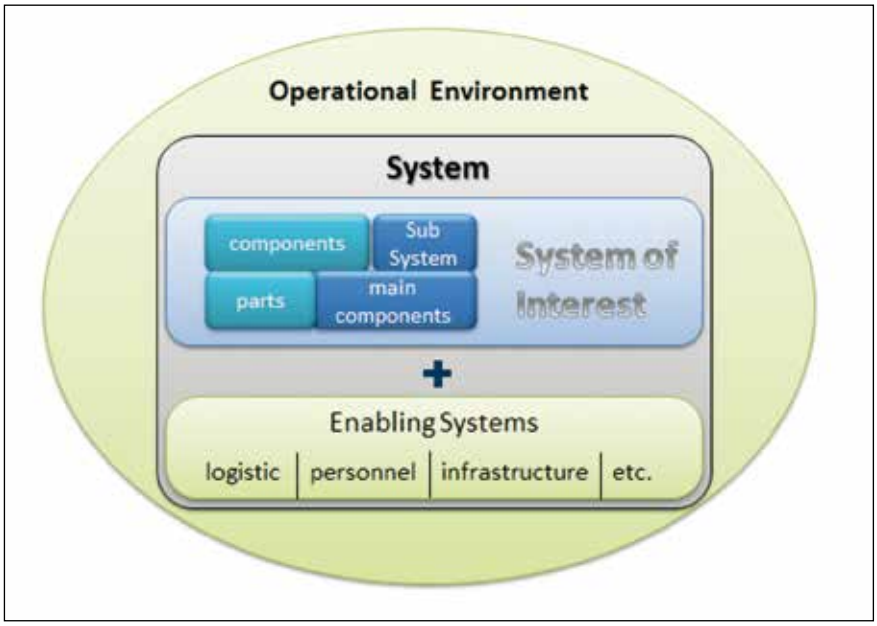
4. Unless I hear to the contrary by 16.00 hours on 13 January 2006, I shall assume Council approval of this policy.

(Signed) Jaap de Hoop Scheffer

NATO SLCM Policy Statement

Author

LTC (ret) Peter Janatschek is the Managing Director of the CALS Forum Deutschland (CFD) logistics association.



SLCM system concept

Practices, AC/313 on Acquisition Practices and AC/325 on Life Cycle Integration. This merger followed the 2002 review of NATO committees conducted under the direction of the Deputy Secretary General when the opportunity was taken to form a Life Cycle Management Group under CNAD. The title CNAD Partnership Group (CPG) originated in 1997 when those groups in CNAD fully open to Partner Nations participation were so designated.

The period after 2002 has also been a time of "transformation" in NATO, with a new military command structure being established, the formation of Allied Command Transformation (ACT) and Allied Command Operations (ACO), emphasis on NATO's capability needs for new operations 'out of area', and enlargement in NATO membership in 2004 to 26 member nations.

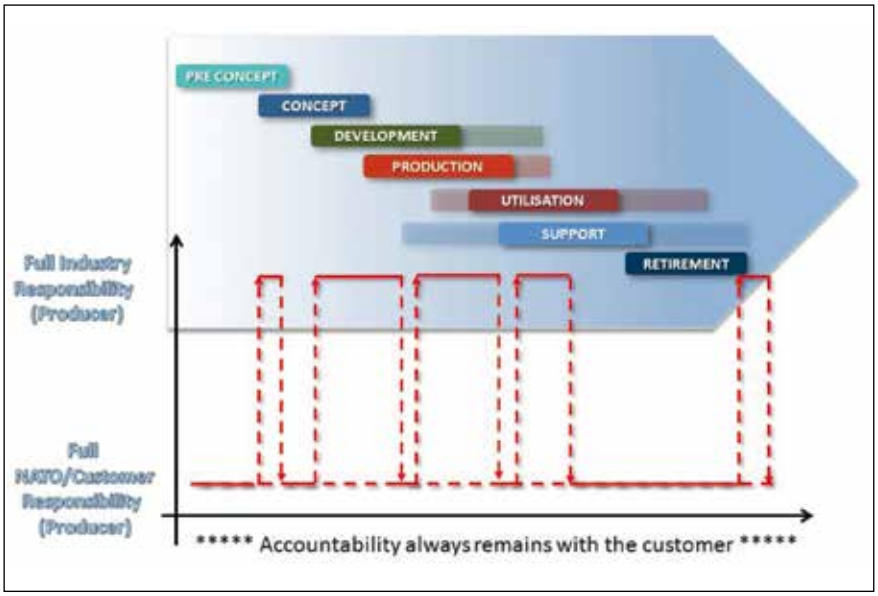
SLCM Policy and Organisation

In June 2006 the North Atlantic Council (NAC), the highest authority in NATO, approved the NATO Policy for Systems Life Cycle and directed the Conference of National Armaments Directors (CNAD) to be its custodian.

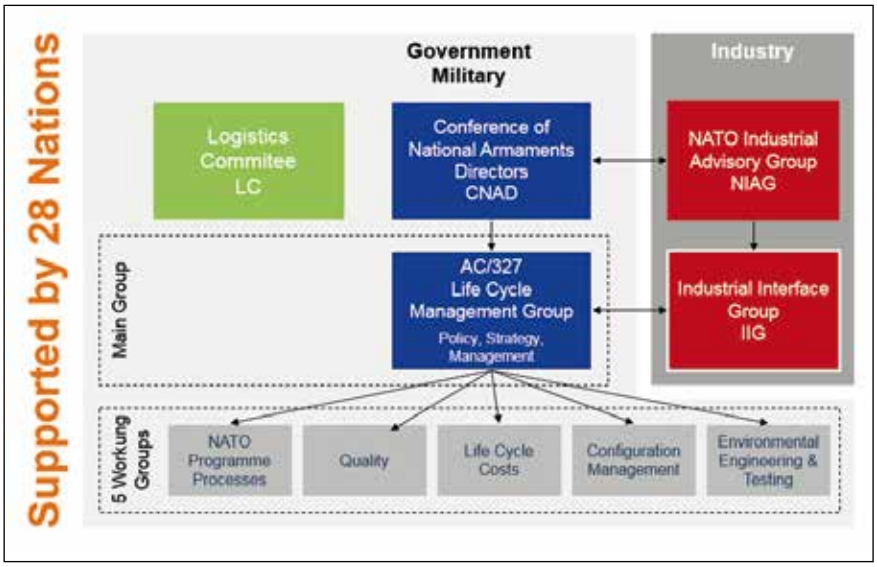
The NATO Policy for SLCM presents the principles and objectives of SLCM and how these may be implemented in NATO and by whom. The aim is to promote the acquisition of military systems for NATO that fulfil the full range of through-life requirements in a cost-effective manner. The significance of this aim becomes apparent when it is understood that through-life costs of military systems greatly exceed the initial development and procurement costs.

The NATO Policy for Standardization calls for the use of civil standards to the maximum practicable extent. ISO/IEC 15288, "Systems Engineering – System Life Cycle Processes", is already in use in several nations and provides a general framework that is neutral to extant individual nations' acquisition processes. Following this guidance NATO will use ISO/IEC 15288 as the basis for implementing SLCM. This allows for traditional acquisition as well as for iterative developments and procurement cycles where necessary for the implementation of required capabilities.

As a main group subordinate to the Conference of National Armaments Directors (CNAD), the Life Cycle Management Group (LCMG) – AC/327 is responsible for NATO policies, processes, procedures, methods and agreements in support of the conception, development, production, acquisition,



SLCM stages covering the execution of a programme



SLCM meeting structure

use, support and retirement of defence and security systems, services and equipment to meet NATO life cycle, quality and interoperability requirements. At present it is supported by 28 nations.

Mission

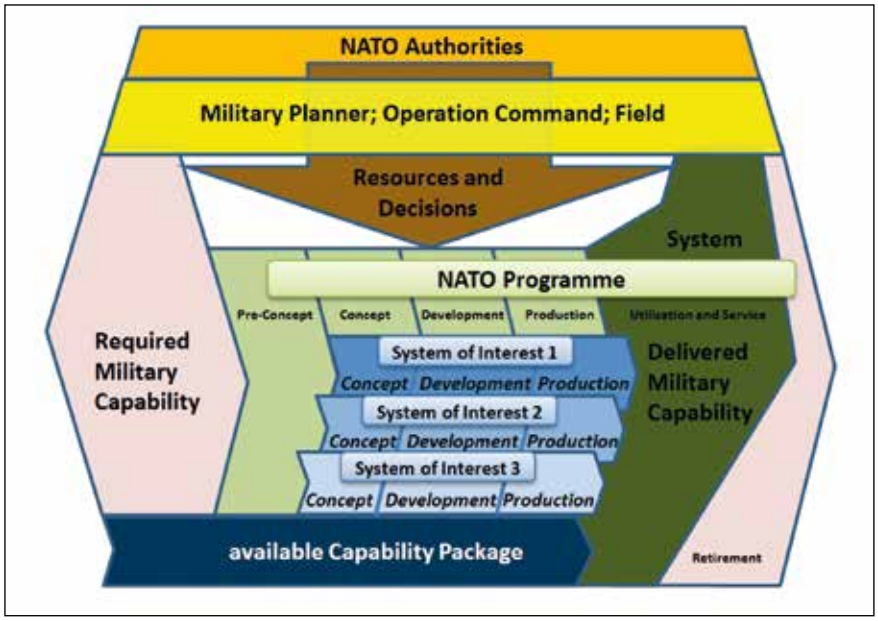
The mission of AC/327 Life Cycle Management Group is to provide the means to optimise the defence and security capabilities of NATO member nations and Partnership for Peace (PFP) nations developed, nationally or multi-nationally, and cooperatively, in terms of performance, interoperability, sustainability and cost by facilitating and encouraging:

- Appropriate standardisation of life cycle management policies, processes, procedures, methods.
- Effective and disciplined life cycle management of systems, services and equipment.
- Appropriate interoperability of systems, services and equipment.

Vision

The LCMG vision is commonality, consistency and completeness within NATO in the fulfilment of the life cycle, quality and interoperability requirements of NATO capabilities. In other words this means that the right equipment, well maintained and supported, has to be handed over to the operator at the right time and at the lowest possible whole-life cost. In order to further define this vision, three goals were identified that highlight specific target areas upon which the NATO SLCM organisation focus in working towards the future state:

- Current and future operations are well supported and sustained, in terms of both NATO capabilities and NATO nations' industrial capabilities.
- NATO, national and multinational armaments programmes are effective and efficient, supported by sound and appropriately consistent policies, processes, standards and tools.
- NATO and member nations' armed forces are supported by sound national and regional industrial bases that are capable of effective partnering, pooling and sharing through appropriately common policies, processes, standards and tools.



Relationship between NATO programme, system-of-interest and military capability

Objectives

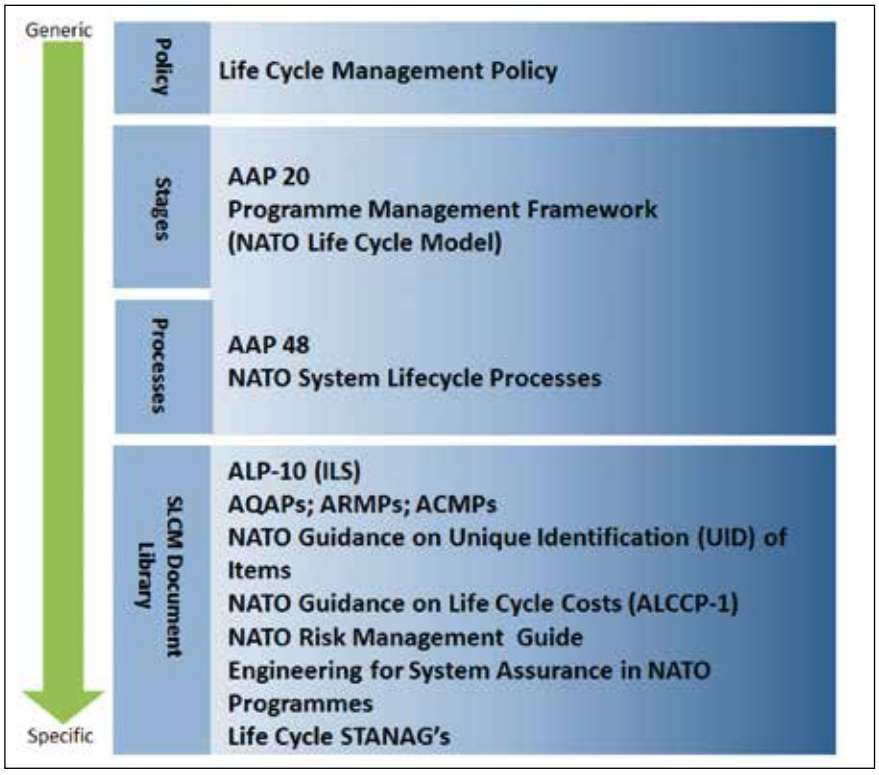
In support of achieving this vision, two major objectives have been identified:

- Systems employed in NATO-led operations have appropriate standardisation and technical interoperability enabling seamless operational interoperability and supportability.
- NATO and the nations are able to seamlessly collaborate in systems development, acquisition and support through the application of appropriately consistent and common policies, processes, standards and tools.

The LCMG can establish up to nine subordinate working groups as required for the conduct of its work. Working groups may be permanent ("domain") or non-permanent depending on the tasks assigned.

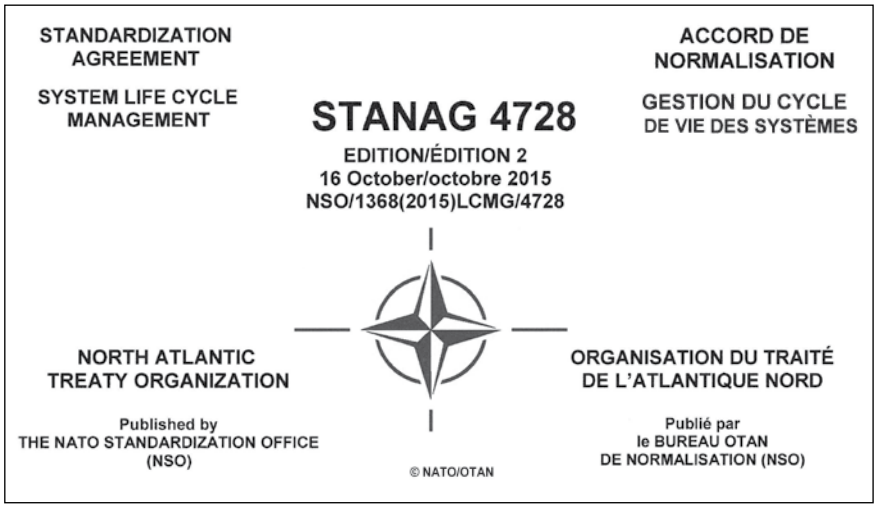
As of March 2016, the following five working groups have been active:

- **Working Group 1 on NATO Programme Processes**
  Responsible for NATO policies, methods, procedures, guidance and agreements concerning NATO programme processes;
- **Working Group 2 on Quality**
  Responsible for NATO policies, methods, procedures and agreements concerning NATO life cycle quality, standardisation, development, updating and application of STANAGs, STANRECs and AQAPs on the basis of the concept of quality assurance in the acquisition of defence products;



SLCM document framework

- **Working Group 3 on Life Cycle Costs**
  Responsible for developing standardisation recommendations related to life cycle costing, to capture new NATO and national sources of expertise;
- **Working Group 6 on Environmental Engineering and Testing (EE&T)**
  Responsible for providing guidelines on the management of environmental testing of defence materiel, to characterise and define joint environments during storage, transportation, handling, deployment and use, and to standardise environmental test, analyse, verification and guideline procedures.
- **Working Group 7 on Configuration Management**
  Responsible for NATO policies, methods, procedures and agreements concerning NATO life cycle configuration management.



STANAG 4728 "System Life Cycle Management"

SLCM Products

The LCMG and its working groups together with the participating nations have developed and published a large number of SLCM agreements and documents:

- STANAGs and STANRECs on SLCM, Quality, Environmental Testing, Calibration, Obsolescence, Naval Paints, Configuration Management, Electronic Components, R&M, Packaging, Fire Assessment of Materials, Engineering Documentation, Product Life Cycle Support;
- Allied Publications that support these STANAGs, plus additional Guidelines for Life Cycle Costing, Risk Management, UID, ILS, Joint Procurement, Project Management;
- Training packages that accompany many of these areas and publications.

This SLCM Document Library is part of the public E-Library of NATO.

The Way Ahead

SLCM in NATO looks into a promising future. In STANAG 4728 participating nations agree to apply the system life cycle management framework in armaments projects supporting NATO capabilities.
In addition to the work presently ongoing two important areas should be men-

tioned. Life cycle management is part of five distinct capability areas of the NATO Support and Procurement Agency (NSPA) and the Alliance Future Surveillance and Control (AFSC) will use the LCM Model of Stages and Processes as the basis to identify and document stakeholder requirements

NATO Support and Procurement Agency (NSPA)

In April 2015 the NATO Support Agency (NSPA) became the NATO Support and Procurement Agency. This change marked the expansion of agency capabilities to include all aspects of systems procurement from initial acquisition throughout sustainment, which means throughout the whole life cycle of the system.

NSPA is now even more effectively positioned to offer the full range of design, acquisition, logistics and procurement support services for complete weapon systems across five distinct capability areas:

- Systems procurement and life cycle management,
- Support to operations and exercises,
- Strategic transport and storage,
- Logistic services and project management,
- Fuel management.

Alliance Future Surveillance and Control (AFSC)

The E-3A, probably the most effective NATO capability for more than 60 years of service, providing airborne early warning and control and supporting many other mission areas, will retire around 2035. Bearing in mind that there are long timelines to design, procure and field systems, planning for a follow-on system (Alliance Future Surveillance and Control (AFSC) must start as early as possible. Looking at the NATO SLCM activities and the SLCM products NATO recognised soon that there is an available and already approved framework for programme management within NATO, which can serve as a valuable help and methodology for structuring and planning programmes in the pre-concept stage.

Based on AAP-20 "NATO PROGRAMME MANAGEMENT FRAMEWORK (NATO Life Cycle Model)" a tailored approach to identify and document stakeholder requirements was started in 2015 with the following aims:

- Three staff-level working groups leading day-to-day efforts in order to define requirements.
- Generic military requirements at a lower level of granularity with the aim to propose options and solutions.
- A number of promising options foreseen to satisfy those requirements in later stages
- A high-level plan for the potential AFSC concept stage
- AFSC project group of allied representatives reporting to CNAD and providing governance against an agreed pre-concept stage plan

Conclusion

After a long development and evolution, NATO Systems Life Cycle Management in its present organisation and with its products has been and still is an indispensible factor contributing considerably to NATO's and nations' efforts to develop and field the needed capabilities to meet their strategic objectives. Being responsible for developing and implementing NATO policies, processes, procedures, methods and agreements in support of the conception, development, production, acquisition, use, support and retirement of defence and security systems, services and equipment to meet NATO life cycle, quality and interoperability requirements, NATO SLCM enables multi-national co-operation for the delivery of interoperable and affordable military capabilities to ensure and improve NATO forces' effectiveness over the whole spectrum of current and future operations. ■

Military Training – Shifting Priorities

Trevor Nash

The military's approach to how it undertakes its training is going through a period of change. In part, this is due to a number of factors that may be considered as those pulling training in a specific direction and those that are pushing it.

The pull factors are not particularly new and include topics such as declining defence budgets, environmental pressures and the need to counter a swathe of diverse threats. It is perhaps the latter that presents the biggest issue to modern military planners. For a decade or more, military forces have been engaged in low-intensity asymmetric operations in Iraq and Afghanistan but following Russia's annexation of Crimea and operations in Ukraine, many European nations are re-focussing on high-intensity armoured operations.

At the other end of the spectrum, the attacks in Paris have led military forces, particularly those of France and Belgium, to adopt a para-military, home defence posture. The challenge of training across such a broad spectrum is considerable and is presenting military planners with some thorny issues as they adopt and procure future training systems.

As to the push factors, modern technologies, especially those from the entertainment sector such as games and home cinema applications, are certainly enhancing solutions in the virtual training market. Companies such as Bohemia Interactive Simulations (BISim) have taken serious games-based training solutions to new levels for virtual training while the home cinema sector has spawned a range of high-fidelity display technologies from companies such as JVC and Sony that are now commonly being used in the military training market.

This growing fidelity within the virtual training domain is perhaps the key component of live-virtual balance argument that is currently taking place. In essence, this argument asks how many live rounds should a soldier fire; how many hours should a pilot fly; or how many torpedoes should a submariner fire for real compared to undertaking the same tasks in a virtual simulator? In short, is it worth spending $60,000 an hour to fly an F-16, or $1,000 in the weapon systems trainer (WST)?

Photo: AU Gov DoD

Aircrew flying a mission in the C-130J Full-Flight Mission Simulator during Coalition Virtual Flag 15

One approach that is gaining some momentum is the idea of integrating the live, virtual and constructive (I-LVC) domains into a single training environment. Originally conceived in the US and evaluated in projects such as Boeing's Project Alpine, the I-LVC approach is workable but is it credible? Can a range of different simulators, with different levels of fidelity and different operating systems be networked together to provide each operator with a meaningful training experience within the bounds of a "fair fight"?

The arguments for and against I-LVC continue to run and exercises such as Coalition Virtual Flag and Blended Warrior highlight the ability of technology to network across platforms and domains. The question remains though, just because we can, should we? Military training is undertaken to enhance operational capability and effectiveness and with I-LVC, the real cost-benefits are yet to be proven.

The costs associated with training using real platforms has recently been highlighted by the Royal Canadian Air Force (RCAF). The RCAF's training philosophy is transitioning from, "one that relies on aircraft to one that exploits new technologies to train aviators in a simulation-focused system."

By 2025, the RCAF plans to have a training strategy in place that will, "leverage, live, virtual and constructive domains within a networked common synthetic environment The system will optimise the means by which RCAF aviators achieve and maintain readiness, fully exploiting advances in both technology and training methodologies."

To achieve that goal, the RCAF is going to need the assistance of industry and it is this relationship between industry and the military that is vital in providing enhanced training. Throughout the world, the repository of knowledge pertaining to training and simulation is manifestly in the hands of industry with the military staff system creating a transitory presence in the training and simulation sector that sees the staff officers responsible for simulation in post for only a few years. Industry has the edge

Author

Trevor Nash is the Editor of MTSN and Jane's Simulation & Training Systems (JSTS) and providing simulation and training consultancy services to industry and government organisations.

Photo: Zwilling

Rheinmetall Defence Electronics (RDE) runs the combat training centre GÜZ of the German Army in the scope of a public-private partnership.

when it comes to simulation knowledge.

At the recent Defence Simulation, Education & Training (DSET) event in Bristol, UK, Brigadier Mitch Mitchell, the Head of Technology School at the Defence Academy, pointed out how industry and the military must work more closely together, "to exploit technologies and improve education and training." He told his audience that, "simulation was essential to meet future operational requirements," and recommended that "the military and industry should undertake joint training and education courses" to understand each other more.

One area where the training and simulation industry is taking a leading role is in the area of training service provision. With this approach, the military takes on the responsibility of providing a turnkey training solution whereby the military customer places industry under contract to provide a given training outcome. That outcome might be to provide X number of helicopter pilots each year that are trained to a specific prescribed standard.

There are various approaches to this training service provision model. The first is the US Air Force aircrew training service (ATS) approach whereby the Government owns all of the simulators and training infrastructure with industry providing instructors and simulator maintenance technicians. Examples of these programmes include the USAF KC-135 ATS that is run by CAE and the C-17 ATS supported by L3 Link.

A similar approach has been taken by the German Government in selecting an industry partner to run its Gefechtsübungszentrum (GÜZ) combat training centre in Altmark. Rheinmetall Defence Electronics (RDE) is currently half way through a four year contract that is expected to be worth €70 million.

The other model is exemplified by the UK public private partnership (PPP) model whereby industry owns the synthetic training equipment, training equipment, instructors, maintenance staff and infrastructure. Industry is under contract to provide a specified training outcome and any spare capacity can often be sold to third-parties to the financial benefit of industry and the military customer.

This partnership approach can be seen in Brunei where CAE (60%), in partnership with the Brunei Government's Ministry of Finance (40%), runs the country's Multi-Purpose Training Centre (MPTC). Currently housing simulators for the PC-7 and S-92, a third device for the S-70 is to be installed later this year.

Photo: CAE

Brunei's Multi-Purpose Training Centre (MPTC), run by CAE, is an another example for partnership between industry and government.

The S-92 simulator highlights the potential of service-driven training centres. The domestic business on the simulator comes from Shell Brunei but around 75% of business revenues comes from third-party customers such as Bristow Helicopters Australia, China Southern Helicopters, CHC (Australia) and in the near future, the Royal Thai Air Force.

Once established, these training service partnerships seem to work well and are becoming increasingly popular throughout the world; that is not to say that all is well on the procurement front. In the US, two issues seem to predominate; the apparently automatic protest generated by a defeated competitor after a contract award and the lowest price technically acceptable (LPTA) selection process.

In the case of the former, such protests delay the eventual award of the contract and thereby can prevent the military undertaking training for a given platform. LPTA was initiated to reduce the opportunity for protests to arise by providing a checkbox approach to meeting specified technical standards. If all of the standards were met, the company with the lowest bid price would win. Sensible in theory but many companies argue that such a procurement process does not allow for the insertion of innovative technologies that can improve training outcomes. In short, LPTA procurements stifle innovation and curtail flexibility.

As the military reflects on its future training requirements there is little doubt that technologies such as serious games, high-resolution displays and increased graphics processing power are pushing training down the virtual route. The use of the virtual domain is clearly growing, as can be seen by the RCAF's initiative, but live training is still central to stimulating the psychological and physiological senses.

Technology, after all, is just a means to an end and as far as the military is concerned, that end state is enhanced operational effect. Training technologies need to be matched to defined operational outcomes and the expertise to achieve such ends does not always lay with the military. Increasingly, simulation and training vendors are the subject matter experts (SME) and it is incumbent upon the military to recognise that fact and work more harmoniously together. ■

Defence Programmes & Requirements in the Gulf States

David Saw

Normally writing about the Gulf States regarding their defence programmes and requirements is a matter of embracing conventional wisdom. The conventional wisdom is that the Gulf States have a vast amount of money, they have legitimate security concerns and they are in the market for advanced defence equipment to meet those concerns.

Purchasing defence equipment not only gives them organic military capabilities, it also allows them to build security relationships with supplier countries. These relationships give them influence in the supplier countries, offer them the potential to receive military assistance from supplier countries and more direct continued support in terms of spares, upgrades and training for the equipment they have purchased.

Photos: US Air Force

A Boeing F-15S of the Royal Saudi Air Force (RSAF), one of 72 supplied between 1995 and 1999. More recently the RSAF has contracted to buy 84 new F-15SA aircraft, with the existing F-15S fleet to be upgraded to the new configuration. Qatar has expressed an interest in acquiring up to 73 Boeing F-15E aircraft.

All of this is a winning proposition for both sides of the equation. The US, Europeans and others need a stable security situation in the Gulf due to the fact that oil and gas from this region is seen as essential to the continued health of the global economy. Defence equipment purchases by the Gulf States sustain the defence industry in the supplier countries and also provide them with a means to influence the Gulf States.

The Gulf States can lock in further Western support through the provision of basing facilities. In November 2015 work started on a new base for the UK Royal Navy in Bahrain, the US Navy already has a presence in Bahrain, there are also US bases in Qatar, and in the United Arab Emirates (UAE), plus a French naval base and other military facilities in Abu Dhabi, UAE.

With these foreign bases, allied to the ability of the Gulf States to purchase whatever equipment they might need to support well developed indigenous military forces, added to their considerable wealth, the security architecture of the region appeared to be somewhat secure. Then in December 2010 the Arab Spring started, and would go on to demolish the comfortable security architecture of the Gulf: and in the wake of the Arab Spring came ISIS. Iran, long a major security concern for the Gulf Arabs, also started flexing its muscles and priming its surrogates to fight.

In a little over five years since the start of the Arab Spring, the security and now the economic challenges facing the Gulf States have reached new levels of complexity. There is a whole litany of challenges to be faced by security planners in the Gulf. Threats include the Syrian Civil War, ISIS, other flavours of political Islam, the conflict in Yemen and Iranian ambitions in Iraq, Syria, Lebanon and the Yemen. There is also the potential for Iranian-inspired subversion in Bahrain or even Eastern Saudi Arabia.

It is also becoming clear that the long-held assumption that the US would always step in as the eventual guarantor of security in the Gulf is no longer reliable. On the one hand the Obama administration seems mesmerised by the possibility of achieving some kind of understanding with Iran and seems prepared to go out of its way to accommodate Tehran, a move watched with suspicion in the Arab capitals. On the other hand there is little evidence that the US will go out of its way to support its regional allies; the fact that they let Mubarak fall in Egypt in 2011 hardly inspires much confidence. Even worse from the perspective of the Gulf States is that the US appears to be intent on handing back US$ 150 billion in Iranian assets that were previously sanctioned to Tehran's control. Essentially bolstering Iranian finances while the Arab states are haemorrhaging money.

Disappearing Money

There is a commonly held view that the Gulf States are awash with money and that conventional financial rules do not apply to them. Unfortunately, this is not true. In fact many of the Gulf States are now having to confront significant financial problems. Problems that have both social and security implications. The principle cause of this is the decline in the oil price. In June 2014 a barrel of the benchmark West Texas Intermediate (WTI) crude oil was priced at US$ 105, by December 2014 the price had fallen to US$ 59 a barrel. By the close of trading on 20 January

Author

David Saw is a specialist defence writer based in Paris, France, and a regular contributor to ESD.

A Lockheed Martin F-16E Block 60 fighter of the United Arab Emirates Air Force (UAEAF), one of 80 F-16E/F Block 60 aircraft delivered between 2004 and 2007. The UAEAF intends to retire its Dassault MIRAGE 2000-9 fleet, potentially selling them to Iraq, prior to selecting a new combat aircraft which could be the Dassault RAFALE.

2016, the price for a barrel of WTI was US$ 26.68.

This is an extraordinary decline by any standards, and what is worse for oil producers is that forecasts for the remainder of this year and into 2017 do not offer much relief. According to the US Energy Information Administration (EIA) Short-Term Energy Outlook (STEO), released on 12 January 2016, the average price of WTI in 2016 will be US$ 38 per barrel and US$ 47 per barrel in 2017 (the other oil price comparator is Brent Crude and STEM suggests this will run at US$ 40 per barrel in 2016 and US$ 50 in 2017). The OECD-linked International Energy Agency (IEA) laments a glut of oil in the market which is not likely to disappear in the short-term and inevitably this drags down prices. Other forecasts have crude oil prices in 2016 running substantially lower than the EIA STEO figures.

Looking at oil prices in isolation means very little, one needs to have context. The oil producing states have a minimum price per barrel at which they can balance their budgets. These countries also have fiscal reserves that they can call upon to carry them through years of low oil prices. The problem comes when the minimum oil price they need is high and their fiscal reserves are low.

For Qatar the minimum oil price is US$ 50 a barrel, but they have 25 years of fiscal reserves and so they can deal with low oil prices for a while. Kuwait's minimum oil price is in the region of US$ 60 a barrel, but they also have 20-25 years of fiscal reserves. The UAE minimum oil price is in the region of US$ 70 a barrel, although with 30 years of fiscal reserves they can deal with low prices. Iraq has a minimum oil price of some US$ 75 a barrel, and it has no fiscal reserves. Iran's minimum oil price is around US$ 80 a barrel, with fiscal reserves enough for eight years. Oman has a minimum price of around US$ 90 a barrel and five years of fiscal reserves. Bahrain has a minimum oil price in excess of US$ 100 per barrel and has less than five years of fiscal reserves. Then we have what might be a surprise for many people: Saudi Arabia has a minimum oil price requirement of some US$ 105 per barrel and has less than five years of fiscal reserves.

(Foto: Archiv ES&T)

Kuwaiti M1-13 APCs and supporting infantry come ashore from a US Navy LCAC during Exercise EAGLE RESOLVE in March 2015. Traditionally Kuwait has never been a big spender in terms of military equipment. But an order for 28 combat aircraft TYPHOON has been awarded and there are requirements to upgrade many land systems.

Saudi Arabia finds itself caught in a financial trap of its own making and how it escapes from that trap will directly impact security and stability in the Gulf. The Saudis believed that they could rebalance the oil marketplace, force out non-OPEC producers like the US who, thanks to fracking, were gaining an increasing market share, and then get the oil price back to a level that met their needs. To achieve this they flooded the market with oil, drove the price down and then were horrified when they discovered that the price kept on going down. As noted above there was a glut of oil on the market and the laws of supply and demand cannot change that, not even for Saudi Arabia.

Despite this, Saudi Arabia intends to keep pumping oil as it believes that the market will rebound in the direction that it intends. Of course whether that is sound policy remains to be seen. We know the Saudi foreign reserves fell from US$ 746 billion in August 2014 to US$ 647 billion at the end of December 2015. We also know that the Saudi currency, the riyal (SR), is coming under a lot of pressure and that many expect the peg of US$ 1 to 3.75SR to become unsustainable. Should the currency peg fail the result will be a further reduction in oil prices and even more pressure on the Saudi economy.

Saudi Arabia is coming under enormous financial pressure at precisely the wrong time. According to the US Central Intelligence Agency (CIA) World Fact Book, Saudi Arabia has a population of 27.752 million, of whom more than 30% are non-Saudis (there are an estimated 1.5 million Pakistanis alone in Saudi Arabia). As a means of keeping internal dissent under control, the Saudi government pays out enormous sums in subsidies to Saudi citizens for housing, food, water, electricity and suchlike. Even so, it believed that between two and four million of the Saudi population are below the poverty line; according to some more recent reports it could be as many as six million people. That is between 10% and 30% of the population! Youth unemployment (ages 12 to 24) runs at 29.5%, yet Saudi Arabia imports thousands of foreign workers annually.

Photo: US DVIDS

A Column of Qatar Emiri Land Forces (QELF) AMX-10RC reconnaissance vehicles during an exercise with US troops. QELF armour capabilities are being upgraded with the arrival of the first of 62 LEOPARD 2A7 tanks and 24 PZH 2000 self-propelled howitzers from KMW in Germany.

Photo: US DVIDS

The Westland COMMANDO helicopter was acquired in three different variants by Qatar (Mk.2A, Mk.2C and Mk.3) for transport, VIP and anti-shipping missions, a total of 12 entered service. The COMMANDO will be replaced by the NH90, 12 TTH and 10 NFH variants are to be acquired under the terms of a US$2.8 bn contract being negotiated.

Saudi Arabia needs to cut the increasing budget deficit, but can it take the risk of reducing subsidy payments? It is unlikely to want to cut defence and security spending which account for 25% of the government budget. Indeed, it intends to increase defence spending through to 2020 to provide it with the systems and equipment necessary to counter regional threats such as Iran. Elsewhere, current military operations in Yemen are said to be costing US$ 6 billion a month (Saudi intervened in Yemen in March 2015). Not only is the intervention in Yemen expensive, but Saudi Arabia also finds itself having to defend its own territory from Tactical Ballistic Missile (TBM) attack from SCUD and OTR-21 TOCHKA missiles from Yemen. To add to that you have the cost of supporting Egypt: in 2014 Saudi Arabia and the UAE are said to have primed an aid package to Egypt worth some US$ 20 billion. It is also believed that the recent major defence purchases made by Egypt from France and Russia were bankrolled by Saudi money. That is not to ignore the US$ 3 billion in Saudi money committed to procurement for the Lebanese military from France.

Choices

The Saudi government finds itself in a situation where it is going to have to make some very hard choices, as it has to cut government expenditure or it has to get more money. As the oil price is unlikely to rise, it appears that the government will seek to impose tax increases to raise revenue. It is also looking at a privatisation programme for state assets, including the sale of shares in the national oil company Saudi Aramco, arguably the most important enterprise in the Kingdom.

In these circumstances might it not have seemed logical to pursue courses of action that were subtle and would not spur dissent? Perhaps not, as on January 2, 2016, the Saudi authorities executed 47 prisoners convicted of terrorist offences, many of whom were al-Qaeda linked. However, one of the executed was Saudi Shia cleric Nimr al-Nimr. The Shia form between 10% and 15% of the Saudi population and are most numerous in the Eastern Province of Saudi Arabia, the centre of the Saudi oil industry. The execution of al-Nimr was hardly likely to keep the simmering tension in the Eastern Province under control. Elsewhere, the Saudi embassy in Iran was attacked after the execution of al-Nimr, leading the Saudis to break diplomatic relations with Iran on January 4, 2016. Subsequently Bahrain and Sudan broke relations with Tehran,

Photo: US DVIDS

A US officer stands with a Royal Saudi Land Forces (RSLF) tank commander in front of a RSLF M60A3 tank. The RSLF has some 400 M60A3 tanks in service and around 300 AMX-30 tanks in service; both of these vehicles need replacing. However, both tanks have been used operationally by the RSLF in Yemen.

while the UAE reduced the level of its diplomatic relations with Iran.

The end result of all of this is that the battle lines are clearly being drawn in the Middle East. These battle lines are based on the fundamental fissure in the Islamic world between Sunni and Shia, with Saudi Arabia acting as the champion of Sunni Islam and Iran as the champion of the Shia. Saudi Arabia and the other Arab powers look with great concern at Iran's attempt to have a Shia Crescent that encompasses Iran, Iraq, Syria and Lebanon. They see Iran as an aggressive power that has territorial ambitions, and as previously noted these ambitions extend beyond the Shia Crescent towards Bahrain, the Eastern Province of Saudi Arabia and Yemen. Arab governments are also focussed on internal threats such as al-Qaida, ISIS and the Muslim Brotherhood, the UAE having been particularly abrupt on dealing with the Muslim Brotherhood.

Yemen is where the Gulf States confront Iranian-backed forces, with military contingents from Saudi Arabia, UAE, Bahrain, Qatar, Kuwait, Morocco, Jordan and Sudan all involved. It is worth noting that the UAE has established a brigade-strength force of some 1,800 contract soldiers from Latin America, mostly of Colombian-origin, that it has recruited over the past few years, and that around 480 of these were deployed to Yemen in November 2015. The fact that the UAE is using contract troops indicates that they are casualty adverse. Involvement in significant combat operations is expensive in terms of money and materiel, and inevitably this will have a budgetary impact in the Gulf States.

Photo: French Air Force

The Middle East has changed the fortunes of the Dassault RAFALE, firstly with Egypt who in February 2015 placed the first export order for the type, with 24 signed for. Then in May 2015 Qatar signed for 24 RAFALE aircraft, although the contract did not come into effect until December 2015. For France the next regional objective is to persuade the United Arab Emirates to opt for RAFALE.

Photo: US DVIDS

A Kuwaiti Army Ranger fast ropes from a Kuwait Air Force AS.322 SUPER PUMA helicopter during Exercise EAGLE RESOLVE held with US Forces in Kuwait in March 2015. Kuwaiti troops are now participating with the armed forces of the other Gulf States in military operations in the Yemen against Iranian-sponsored forces.

Key Areas

For the Gulf States the current security situation is extremely concerning, especially as it comes at a time when their prime revenue generator – oil – is not delivering the necessary funds. This does not mean that the defence procurement environment in the Gulf States is suddenly going to disappear; on the contrary there are numerous major programmes on the horizon. The challenge will be to understand the logic behind these programmes.

Qatar provides an interesting example of this. Remember at this point that Qatar is not under any real financial pressure: the Qatar Emiri Air Force (QEAF) has 24 Dassault RAFALE aircraft on order – a significant increase on their current fighter force of 14 Dassault MIRAGE 2000-5 EDA/DDA. It now transpires that Qatar has requested up to 73 Boeing F-15E EAGLE aircraft, according to Senator Bob Corker, Senate Foreign Relations Committee chairman, with the request having remained unanswered for some two years. Qatar would place a first order for 36 aircraft and these would be delivered 42 months after contract signature. Such a contract would preserve F-15 production at Boeing and help to keep Boeing in the fighter manufacturing business.

One would have to ask how Qatar would suddenly be able to generate the aircrew for an initial purchase of 36 aircraft? – bearing in mind that the F-15E has a crew of two, on top of the 24 RAFALE that the QEAF has on order. There are positive aspects though: if Qatar purchased 36 of 73 F-15s it would win an awful lot of friends in Washington.

Another potential fighter sale that has been waiting for final approval in Washington is the acquisition of 28 Boeing F/A-18E/F SUPER HORNET fighters by Kuwait, the purchase of the SUPER HORNET would be very welcome to both Boeing and the US Navy. The Kuwait Air Force (KAF) had previously taken delivery of 40 Boeing F/A-18C/D aircraft between late 1991 and August 1993 (it intends that these aircraft will remain in service until 2030). Yet last September it appeared that the KAF was on course to purchase 28 Eurofighter TYPHOON aircraft. Should it want to purchase both SUPER HORNET and TYPHOON then Kuwait is perfectly capable of affording to do so. However, the key is which purchase(s) will benefit Kuwaiti security interests – both in terms of operational capability and diplomatic influence, and that will be the decisive factor.

These two combat aircraft programmes illustrate the complexity of the defence procurement scene in the Gulf. Money might be harder to come by in the region, but money is still available and requirements of all types exist in profusion. ■

TIGER Combat Helicopter

Multinational Capability Enhancement

Markus Lönnig

Air-mobile forces of the army make a specific contribution to the overall system of the German Armed Forces´capabilities. In essence, it is about the ability to use the air dimension for land operations in a combined armed forces and multinational context.

Air mobility of the ground forces enables the commander to take control and to react quickly and over long distances. Courses of action are increased in terms of time and space.

Pictures: Bundeswehr

A German TIGER combat helicopter deployed to Afghanistan

In this context, the TIGER combat helicopter will remain the means for air-to-surface effect in the German Army even in the long run. In order to maintain and further optimise this high-grade capability, the TIGER combat helicopter is being further developed within the scope of the four-nation TIGER Capability Assurance Programme (TIGER CAP).

Airborne weapon systems are of particular operational importance because they can support the ground forces in all deployment scenarios. Especially in initial operations they can make a major contribution to establishing and maintaining control over the air space, thus creating the condition for further operations of ground and naval forces.

The TIGER is currently the only airborne weapon system of the German Army. As an independent combat element, the TIGER can operate in areas where weapon systems on the ground cannot operate or only to a limited extent (e.g. due to ground conditions or infrastructure). In addition, it can quickly reach its areas of deployment, promptly close gaps in combat operations or very quickly strengthen other elements on the ground.

In large-scale offensive operations, the TIGER enables the engagement of enemy forces before they can have an impact on own operations (remote areas deployment), thereby demonstrating the highest effectiveness due to its high flexibility and agility. In this respect, its firing power generally exceeds that of the enemy´s weapons on the ground. Its operations are only restricted regarding its dwell time on site and in the case of unfavourable geo factors (flying weather).

Author

LTC Markus Lönnig is the TIGER Programme Manager in Branch II 3 of the German Army Concepts and Capabilities Development Centre.

TIGER Programme in Retrospect

The development of the TIGER combat helicopter started in the 1980´s as a bi-national project of Germany and France. The objective was to jointly develop a modular basic helicopter for attack, reconnaissance and anti-tank deployments. Originally planned for a very large number of units and linked to the development of many new technology areas, this project also reflected the motivation of European armament. After the German reunification and associated security policy changes, the programme was adapted in the two countries both in terms of quality and quantity.

The German TIGER Today

In 2005, the first German TIGER helicopters were delivered to the German-French Training Centre in Le Luc (France) for pilot training. Since then, the continuing intake, necessary training, the simultaneous deployment testing, deployment preparation, deployment realisation and follow-up have determined the service.

The last TIGER is expected to be delivered at the end of 2018. Due to the particular aviation requirements regarding qualification, certification and approval of new developments and the associated necessary lead time, the four TIGER user nations (Germany, France, Australia and Spain) decided at the end of 2012 to embark on a common path regarding its continued development.

The German TIGER combat helicopter (unique feature: mast-mounted sight) was developed to carry out the anti-tank-, escort- and missions in support of ground troops.

Protection

A redundant design of critical systems as well as electronic self-protection with laser, radar and missile approach warners

Overview

- Flight time: 2.5 – 3.5 hours without external tanks, depending on the type of deployment, travel speed 120 knots
- Four weapon stations, including
  - two internal stations with either 12.7 mm GunPod HMP or 70 mm rocket sub-system (RSS) with max. 19 rockets (high explosive) or launcher with four HOT anti-tank guided missiles or launcher with four PARS 3 LR fire & forget anti-tank guided missiles
  - two external stations with two STINGER air-to-air guided missiles each

TIGER combat helicopter weapons fit today

and decoy systems against infrared-guided guided missiles (flare) and radar-guided missiles (chaff).

Sensors

- Commander/gunner: OSIRIS mast-mounted sight with daylight channel (black-white) as well as thermal imaging device and laser range finder, helmet-integrated night-vision devices.
- Pilot: Pilot Sight Unit (PSU, a forward looking infrared flight control system (FLIR) and helmet-integrated night-vision devices.

As the only combat helicopter worldwide the German TIGER is capable to switch between night-vision device and FLIR in the helmet system with hardly any delay at night, i.e. between image intensification and thermal imaging.

Communication

The German TIGER is fitted with a VHF FM radio device, a UHF/VHF combined device, as well as radio equipment in the HF range. Furthermore, due to the operations support system, it is equipped with a battlefield management system which can exchange through radio data transmission situation and order modifications or further data with the ground station and the command post, respectively. This capability is currently also a unique feature of the helicopter and, similar to the PSU functionality, is expected to be also introduced by the other TIGER nations in the future.

At the time of the planned service introduction, the TIGER MK I version was a path-breaking weapon system, overall an ambitious project with many technical innovations. It is also due to the large number of technical innovations that the service introduction of the TIGER was delayed significantly. Against the background of a changed security policy environment and new technical/tactical requirements, the current capability profile of TIGER is no longer optimized to fulfill all relevant tasks.

ASGARD

The ASGARD (Afghanistan Stabilisation German Army Rapid Deployment) configuration fulfilled the recognised deployment capability requirements to a significant extend. For missions under the ISAF mandate in Afghanistan some technical improvements were introduced. The ballistic protection of the crew was increased, a much needed fourth radio (multiband including SatCom/TacSat) was installed, the reliability of the software was improved, and sand filters for the engines as well the capability for mission recording – a legal requirement – was implemented. The experiences from operations in Afghanistan and elsewhere are positive. Twelve aircraft have been introduced in this configuration which serves as the basis for continued developments.

TIGER Mk II

Training planning, deployment availability as well as logistic supportability has been significantly improved through a fleet of identical aircraft. Based on the positive operational experiences with the ASGARD configuration and considering the directive of a "feasible concept" for necessary individual measures, initiatives as well as suggestions from the troops have been implemented in a harmonised package – the TIGER MK II.

An important feature of the TIGER Mk II is the ASGARD design adoption. Further improvements include:

- Better precision of the 70 mm rockets (semi active laser seeker);
- Tiger Helicopter Outer Rockets (THOR), which are capable to fire the 70 mm rockets from external stations;
- Laser protection (blinding and infrared laser) for the crew;
- Combat fuel tank to increase the operations range;
- Commander´s laser pointer for easier cooperation with ground troops,
- Further increased ballistic protection for crews.

In this respect, all aircraft are converted to ASGARD standard and the number of aircraft is increased to 20 so-called "ASGARD equipment units". The "ASGARD equipment unit" comprises inter alia ballistic protection, the fourth radio and the mission recording device.

The decision to procure 20 of these as part of a total of 40 operational TIGER helicopters is in response to the rules of economic efficiency. These aircraft can be equipped and converted with little time and effort; as a result, this will not impact flight operations because for each available TIGER the equipment unit will remain available for operations, whereby a demand-related increase of the component sets is possible at any time. Already in the standard conversion of the entire fleet to the ASGARD ver-

TIGER ASGARD in Afghanistan during mission preparation

sion, first obsolescences will be eliminated. According to the current status, the conversion of the TIGER fleet will be carried out from 2018 and completed in 2024.

Obsolescences

Obsolescence refers to the future, beginning, actual or apparent non-availability of components, materials, resources, processes, services and/or know-how. The reason for an obsolescence may lie in the technological "ageing", a legal requirement or an economic decision. Capability preservation within the scope of obscolescence management is possible in several configuration degrees.

The basic premise is that a capability is degraded unless the technical implementation is changed. In the 1980s, the anti-tank capability could be best achieved with the HOT anti-tank guided missile. On modern battlefields, with the sensors and self-protection systems of present and future combat vehicles, the use of HOT does no longer promise the desired results due to its system parameters. HOT could be replaced with a similar system incorporating all (tactical) parameters (range, operational procedure) in the scope of an obscolescence management effort. Technically, this would eliminate the obscolescence. However, the anti-tank capability remains significantly restricted and is further degraded over time. Hence a more progressive approach is necessary.

TIGER Capability Assurance Programme (CAP)

Until the mid of the 2020s, technologies implemented in the TIGER helicopter will become unavailable. This means that the TIGER will continuously lose capabilities if these foreseeable obscolescences cannot be eliminated. Following this logic, the TIGER CAP was launched with the Tiger Capability Assurance Working Group (TCG) in 2012. The members were the four TIGER user nations. In the meantime, however, Australia has decided to decommission the TIGER fleet by mid of the 2020´s due to changed political strategies.

The objective is the preservation of capabilities and, where possible, capability expansion within the scope of a feasible concept. The multinational approach is to support highest possible advantages through synergy effects. The Tiger CAP shows very clearly that the nations receive and would like to expand the same capabilities in many areas. Identical technical implementation leads to significant direct and indirect saving options without losing capabilities.

Continued Development Requirements

Based on the conception of the German Armed Forces and the guidelines for future development, the following basic requirements for a combat helicopter can be derived from a conceptual point of view. Among others, a German TIGER combat helicopter should:

- Be ready for deployment within the scope of initial operations, for operations to prevent international conflicts and to master crises, for national defence as collective defence, for rescue, evacuation and freeing of hostages abroad, for use in operations of lower, middle, and high intensity under the climatic and geographical conditions of the anticipated areas of operation and for precise, selective and scalable deployment against a broad range of targets on the ground and in the air;
- Be able to contribute to the support of operations of land and naval forces, support of operations of specialised and special forces, for joint fire support, for tactical air mobility of ground forces and for establishing and maintaining control of the air space;
- Provide sufficient protection against an anticipated spectrum of threats in the area of operations;

Aircraft lining up for an exercise

- Show a high level of interoperability and compatibility to provide its capabilities to a large number of users with a high degree of efficiency in single or combined operations of the German or international armed forces ;
- Show a high degree of modularity to adjust, improve and expand the capabilities of the weapon system as economically as possible, and
- Comply with the current legal and regulatory situation for the preservation of security in the air space.

Way Ahead

The broad requirements to be met by the future TIGER Mk III combat helicopter go much beyond its current capabilities. In order to formalise these further development needs, the TIGER Update Requirement Sheets (TURS) were developed and formulated within the TCG with the respective national priorities. Thus, these TURS are capability requests, of which clearly over 50 different ones could be worked out.

German and French TIGER – enhancing similarities

The TURS are classified according to different fields (with a few examples):

- Communication: long-range and short-range communication, radio data transmission;
- Armament: range and precision, guidance control, impact at target, gun improvements;
- Sensors: PSU, mast-mounted sight, target illumination, passive coordinate detection;
- Battlefield management system: retrofit of combat capabilities, integration of tactical data links, integration with C² systems;
- Navigation: memory, GPS stability;
- Human machine interface: applies to all aspects of the helicopter;
- Cooperation with UAV: integration of sensors, steering system;
- Electronic combat: passive and active protection measures;
- Improved maintainability and reliability: platform, sea-based deployment;
- Improved avionics architecture: various options.

These fields are not to be viewed as self-contained, rather they show system-related interdependencies, while it is up to each nation within the framework of their own specifications and goals to take part in the TURS and to bring in their own characteristics (must/should/can). This iterative process makes it possible to implement national interests and to benefit from the experience of the others.

The interests of the German Army are represented by the Army Concepts and Capabilities Development Centre. Within the scope of the holistic army development concept, the German part of the TURS was prepared and agreed with the other nations.

The TURS are the cornerstone for further development work, whereby the next step after July 2015 is the architecture study in cooperation with industry. This study is limited to 18 months and will provide findings on feasibility, risks, technological challenges, approval and costs. The close monitoring of the study by the respective consumers/nations is an inherent element of the study's structure. Regular meetings and workshops on e.g. Human Machine Interface ensure that the interests and requirements of the nations are taken into account to the maximum extent.

Particular emphasis has been put on the preparations of the "Translation Armed Forces – Industry" or to put it simply "Soldier – Engineer". The use of external consultants as well as the drawing up of the operational intent (mission-specific representation of the future deployment principles of the TIGER Mk III in a special software tailored to the needs of the industry) are part of this preliminary work of the Army Concepts and Capabilities Development Centre. Furthermore, personnel organisational measures have also been taken in order to answer questions from industry as quickly as possible.

Following the results of the architecture study, the nations will have to decide on the respective system architecture, i.e. which capabilities are to be implemented and to what extent. Thereby further steps by industry are to be monitored closely in order to ensure a maximum level of commonality. The delivery of the first TIGER Mk III is planned for 2024.

Summary

With the TIGER Mk III, the German Army will clearly enhance its capabilities. The focus of the continued development is the significant improvement of sensors, armament and communication, and hence of the overall effectiveness. The TIGER Mk III will be able to identify, record and evaluate threats and targets faster. It will be integrated with different C² systems and will be able to communicate faster and more reliably. As a result, it will be capable of engaging the target spectrum with greater precision, in a scalable manner and over a longer distance, and at the same time operate effectively and efficiently.

The intended measures for the TIGER Mk III are designed for mid-term implementation. They mainly serve to preserve the deployment maturity (to a large extent through the planned elimination of obsolescences). The implementation will enable the TIGER weapon system to meet the capability requirements of a German combat helicopter to a large extent until 2040+. Only with the implementation of these measures the Army can take advantage of the full potential of the TIGER as a flexible operational and future-oriented weapon system of the land forces. ■

Short and Very Short Range Air Defence

Doug Richardson

Short-Range Air Defence (SHORAD) and Very Short-Range Air Defence (VSHORAD) systems are small and mobile surface-to-air missile (SAM) systems intended to protect targets from strike and close-support aircraft, helicopters and air-to-surface missiles, or from observation by unmanned air vehicles.

Such small SAM systems offer no significant degree of area-protection; their role is primarily that of point defence, although a limited route protection capability does exist. Typically a VSHORAD has a range of around 3-4 km, while a SHORAD will have a maximum range of 5-12 km.

A short article cannot provide details of all the systems currently in service or under development, but will serve to show the range of technical solutions available.

Photo: USMC

Launching of an FIM-92A STINGER missile

VSHORAD systems often take the form of a pedestal-mounted light missile system. These carry one or more ready-to-fire missiles, and most can be linked to some form of command and control network that can assign targets to the system, and co-ordinate the fire of multiple launchers.

In many cases, the missile is one of the many shoulder-fired man-portable air-defence systems (MANPADS), so the effectiveness of the system is limited by the light weight of the missile (typically 10-12 kg) and the small warhead it carries (typically between 1 and 1.5 kg.). In some cases, designers have opted to use a heavier custom-designed missile such as the MBDA MISTRAL (19 kg), NEX1 FUTURE CO Chiron/Singung (14kg), the Saab Bofors RBS 70 (16.5 kg). This allows a greater maximum range and higher engagement envelope, and the installation of a warhead weighing up to 3 kg.

Most of these weapons use passive infrared (IR) homing, but like the follow-on BOLIDE version, the RBS70 uses laser beam riding. Although not a widely-used guidance method, laser-beam riding is highly resistant to countermeasures. The FIM-92 STINGER carries a 3 kg warhead, heavier than that of most MANPADS, so it is hardly surprising that the US weapon has formed the basis of several multi-round launch systems. Raytheon offers a tripod-mounted STINGER system that combines four ready-to-fire missiles with a high-magnification optical sight and a forward looking infrared (FLIR) tracking system suitable for use at night and in bad weather. EADS/LFK offers a simpler solution that mounts two STINGER launchers on a tripod.

Mounting lightweight systems on a vehicle was an obvious way of fielding a mobile VSHORAD. First fielded in 1989, the Boeing AVENGER is in service with the US Army and US Marine Corps, and with at least three export customers. It consists of a High-Mobility Multipurpose Wheeled Vehicle (HMMWV) armed with a turret carrying eight ready-to-fire STINGER missiles. These weapons are aimed using an optical sight or a forward-looking FLIR system, while a laser rangefinder is used to confirm that targets are within missile range. A single M3P 12.7mm machine gun is available for self-protection, and for use against targets at very short range.

From 2000 onwards, many US-operated systems were fitted with a "Slew-To-Cue" (STC) targeting system able to use information received via datalink from the Forward Area Air Defence (FAAD) C2I system to direct the turret towards a potential target.

The concept of mounting STINGER systems on a vehicle was also adopted by other nations. Aselsan has developed two pedestal-mounted STINGER configurations for the Turkish armed forces. When mounted on a LAND ROVER, the system is designated ZIPKIN, while the M113A2-mounted variant is known as ATILGAN. MBDA's European vehicle-mounted Low-Level Air Defence System (LLADS) consists of four STINGERs, plus a FLIR or low-light TV and an optional laser rangefinder, mounted on a Mercedes Benz GD 250 all-terrain vehicle.

Japan's Type 93 Kin-SAM mounts two four-round packs of Type 91 Kin-SAM MANPADS and an EO sensor on a KOHKIDOHSHA (4 × 4) high-mobility wheeled chassis,

Author

Following an earlier career in engineering, **Doug Richardson** is a defence journalist specialising in topics such as aircraft, missiles, and military electronics.

Photo: US Army

The warhead of the STINGER missile is heavier than that of most MANPADS, making the weapon a good basis for mobile VSHORAD systems such as this Boeing AVENGER.

while Poland's POPRAD launcher for the indigenously-developed GROM MANPADS can be installed on a ZUBR armoured vehicle or a Land Rover.

Rheinmetall Defence Electronics took the concept of customer choice to a new level when it developed its ASRAD system. This can use a wide range of wheeled and tracked vehicles, and be armed with between two and four ready-to-fire STINGER, MISTRAL, IGLA-1, or RBS 70 missiles. The ASRAD-R version developed in conjunction with Saab Bofors Dynamics uses the BOLIDE.

China has developed a number of mobile systems based on the missiles from its MANPADS systems. Based on an HMMWV look-alike, Poly Technologies' FB-6A is armed with four FN-6 missiles and a single 12.7 mm machine gun. Sensors include an electro-optic system incorporating a TV camera, thermal camera, and laser rangefinder.

China Aerospace Science and Industry Corporation (CASIC) and China North Industries Corporation (NORINCO) teamed to create the FLG-1, a NORINCO WZ 550/551-series chassis armed with four QW-series MANPADS missiles, an electro-optical sensor package, and what is probably a surveillance radar.

China has also used the WZ 551D wheeled 6x6 chassis as the basis for a mobile SHORAD armed with four PL-9C SIDEWINDER-class air-to-air missiles. First marketed in 1989, it has been offered under the designations PILI and PEN LUNG.

The HMMWV chassis forms the basis of Taiwan's ANTELOPE, a system based not on the Stinger but on the locally developed TIEN CHIEN 1, a SIDEWINDER-class air-to-air missile. The vehicle is fitted with a radar, FLIR, and four ready-to-fire missiles.

Radar-guided air-to-air missiles can also be used in the surface-to-air role, but the resulting heavier and longer-ranged systems, for example the Rafael SPYDER, can be considered outside of the scope of this article.

The former Soviet Union also saw the virtues of using passive IR guided missiles in SHORAD systems. Like the earlier 9K31 STRELA-1 (SA-9 "GASKIN"), the KB TOCHMASH 9K35 STRELA-10 (SA-13 "GOPHER") was successful on the export market, winning orders from more than 20 nations. It is a tracked system armed with four ready-to-fire 9M37, 9M37M, 9M37MD, or 9M333 IR-guided missiles. Its longevity, and the limited defence budgets of many users, have prompted the development of several upgrade schemes.

Thales Air Systems' STARSTREAK entered service in 1995 in its vehicle-mounted Self-Propelled High-Velocity Missile system (SP HVM) form. This consists of an ALVIS STORMER tracked vehicle fitted with a turret carrying eight ready-to-fire rounds, as well as a roof-mounted Thales Optronics Air Defence Alerting Device (ADAD). A three-round Lightweight Multiple Launcher version is also available. STARSTREAK has a flight speed of around Mach 3.5, and delivers a payload of three laser-beam riding darts.

SHORAD missiles often weigh 50 kg or more, offering a longer range, and carrying a warhead that often weighs 10 kg or more. Some, such as the MBDA RAPIER/JERNAS, take the form of towed system, but a more common solution is to mount the system on a wheeled or tracked vehicle. This provides the ability to change position rapidly in order to cope with a developing threat, to reposition defence capability to protect a temporary asset such as a refuelling or regrouping area, or to keep up with rapidly-moving friendly forces. Where fixed assets such as an airfield or command centre need permanent protection, a SHORAD could be installed on a shelter or other form of redeployable cabin, but in a world where SAM systems are often singled out for early attack at the outbreak of hostilities, a vehicle-mounted system seems a better solution.

The classic mobile SHORAD fielded from the 1970s onwards included the Thales CROTALE and CROTALE NG and MBDA/Euromissile ROLAND. These used semi-active command to line-of-sight (SACLOS) guidance, a scheme in which a guidance system in the aiming unit detects any deviation between the missile's flight path and the line-of-sight to the target, and sends the radio commands needed to steer the missile onto the line-of-sight to the target.

Photo: Saab

Night firing with RBS 70 NG VSHORAD from Saab at a Live Demo in 2011

The nearest Soviet-era equivalent of these West European missiles was the Almaz-Antey 9K33 OSA (SA-8 "GECKO"). This used radar-based command guidance, and a similar scheme was retained for the vertically-launched Almaz-Antey TOR (SA-15 "GAUNTLET").

Several nations have developed SHORAD solutions that seem to have been derived

Graphic: Nudelman Precision Engineering Design Bureau

Russia offers the widely-deployed STRELA-10 (SA-13 GOPHER) VSHORAD system in the upgraded 10M4 version shown here.

Photo: Thales

CROTALE NG – seen here at the 2007 Paris Air Show – was the final variant of this widely-exported French SHORAD. It uses the VT-1 missile developed by what was then LTV Missiles and Electronics Group.

Photo: MBDA

The exact configuration of the FLAADS Land has yet to be revealed, but will probably be similar to the trials vehicle shown in this publicity photo.

Photo: Russian Ministry of Defence

A Russian PANTSIR system (right) stands guard to protect S-400 launchers (left).

from CROTALE. These include China's FM-80 and FM-90, and Iran's YA-ZAHRA. The Iranian system may have been reverse-engineered from CROTALE hardware captured from Iraq during the 1980 to 1988 Iran/Iraq War, perhaps with the addition of technology from the FM-80.

An industrial team headed by what was then the Special Products Division of Daewoo Heavy Industries (now Doosan Infracore) developed the CHUN MA (PEGASUS) mobile SHORAD, and the system became operational with the South Korean Army in 1999. It consists of a tracked vehicle with a turret fitted with an E/F-band surveillance radar, a Ku-band tracking radar, electro-optical sensors, and eight missiles. The turret is similar to that of the CROTALE NG, but the missile is of new design. A version based on a wheeled chassis has been offered for export.

When Russia moved a battery of S-400 TRIUMF (SA-21 "GROWLER") SAMs to Syria in November 2015 following the downing of an Su-24 strike aircraft by Turkish F-16 fighters, its arrival caught the attention of TV networks. Less attention was paid to the deployment of the KBP 96K6 PANTSIR (SA-22 "GREYHOUND") SHORAD system to the same Syrian base. Initial TV reports showed a basic PANTSIR, but later footage showed the presence of the much-improved 72V6-E4 combat vehicle, which has a surveillance radar based on two phased-array antennas mounted back-to-back. This configuration was first reported as a new variant developed for Algeria. In its earlier form, PANTSIR is in service with at least ten export customers.

In addition to being armed with 12 57E6 missiles, the turret of PANTSIR vehicles also features two 30 mm 2A38M 30 mm cannon. This type of combined gun/missile armament has become a Russian speciality. The earlier 2K22/2K22M TUNGUSKA (another KBP product) has four or eight ready-to-fire 9M311 TREUGOLNIK missiles, plus two twin-barrelled 30 mm 2A38M cannon. Other countries have adopted combined gun/missile systems. For example, Israel's MAHBET system consists of an M163 VULCAN Air Defense System (VADS) self-propelled anti-aircraft gun (SPAAG) version of the M113 Armoured Personnel Carrier modified to add a four-round STINGER launcher to the vehicle's 20 mm GATLING gun turret.

One of the most interesting SHORAD currently under development is MBDA's Future Local Area Air Defence System (FLAADS Land), due to replace the current Rapier Field Standard C. This uses the company's Common Anti-air Modular Missile (CAMM), a 99 kg weapon that will also arm the Royal Navy's SEA CEPTOR SAM system.

A truck-mounted launcher able to carry twelve missiles was used for early test firings, and may indicate the likely configuration of the FLAAD land vehicle. The missile is vertically launched. A cold-gas system is used to eject it from the launch canister, a feature that will minimise the launch signature. The system's command and control facilities will have to interface with current or planned surveillance radar systems via a datalink, so each fire unit will have minimal radio-frequency emissions that would betray its position to enemy elint sensors.

Once launched, the missile will perform a turnover manoeuvre, ignite its rocket motor, then fly towards the target via inertial guidance updated by a dual-band two-way datalink. Terminal homing will be via a Ku-band active-radar seeker.

The British Army is expected to begin training on the system in 2018. MBDA sees Australia, Brunei, Malaysia, and Switzerland as potential near-term export customers. ■

Successful Insertion Needs the Best Tools

Tim Guest

In recent years the nature of warfare has changed dramatically. Military units, equipment and standard operating procedures are being constantly adapted to address new threats. Nowhere are the changes more noticeable than amongst the world's Special Forces, who are called on increasingly to counter new threats, from many directions.

Scene Setting

Deep penetration by land, sea, or air is the typical route into traditional Special Forces (SF) mission territory. More recently, SF units have had to place greater emphasis and adapt their preparation and training to counter "terrorism scenarios" in order to prepare them to face perhaps the greatest current threat to modern societies and democracies.

When inserting an SF unit into a hostile situation or territory, once all planning, preparation and rehearsals have taken place – if such are practical and if time permits – "deliberate insertions" as opposed to "rapid response operations" are the determining factor. Arrival in theatre is the first, critical operational phase. But whether a covert operation in an urban scenario, or a more overt air assault, some things never change in the run-up to an operation. As an old military adage goes: "Prior planning and preparation prevent p*** poor performance": there are still some fundamentals that apply in any insertion scenario.

Intelligence, deception, security, equipment and rehearsals, are all elements of an insertion that must be considered in the planning phase – and there are many more factors beyond the scope of this short article.

Photo: UK MOD

One of four UK Royal Marines LCAC platforms

Good intelligence is vital and any SF team must be provided with the very best in order to be able to plan a successful mission. Maps, blueprints, aerial photographs, all deliver vital details and even the help of Google Street View in an urban setting, or Google maps in a rural situation might help; current and forecasted weather information will also be critical. And last, but not least, information about enemy dispositions, numbers, locations, equipment and capabilities is critical.

Another factor to consider in planning an SF insertion is the use of deception, a key element in the creation of surprise. Sun Tzu, in The Art of War, could not have emphasised the importance of deception more. He said that "All warfare is based on deception"; a series of his quotes emphasize how this "tactic" is as important to any SF unit planning an insertion today as it was when these words were first written some 2,500 years ago.

"If your opponent is of choleric temper, seek to irritate him... Pretend to be weak, that he may grow arrogant... If he is taking his ease, give him no rest."

"Your opponent is unprepared because you have deceived him. He does not expect you because you have irritated him, made him arrogant, and denied him the rest required for him to regain his senses and reconsider his vulnerable position."

Today, more and more SF insertions are likely to be covert in their execution, due

Photo: Vogo Engineering

The South Korean company Vogo Engineering has been developing and manufacturing SDVs for many years. Here is the 35 knot, 10-man, 1.5 tonne SDV 1000.

Photo: U.S. Navy

Members of SEAL Delivery Vehicle Team Two (SDVT-2) prepare to launch one of the team's SEAL Delivery Vehicles (SDV) from the back of the LOS ANGELES Class attack submarine USS PHILADELPHIA (SSN 690) on a training exercise.

to the nature of the threat. But no matter how good the SF manpower and how precise their tactics, without the very best equipment to support them in their task there is a potential problem – this expensive manpower asset is unlikely to return.

Tactical Insertion in a CT Scenario.

ESD spoke with Steve Heaword, Technical Director at Crib Gogh and tropical capability advisor to Dstl in the United Kingdom. Heaword told ESD that with modern terrorists today hiding "in plain sight", amongst urban populations, SF teams must do likewise, becoming part of the environment, if possible. This is difficult in certain cultures but adequate intelligence might allow to insert an SF team into a safe house until required to act. Heaword said that the days of going into a situation with "all guns blazing, with helicopters, etc, as a calling card" is an approach that, in Mogadishu for example, cost lives in what was expected to be an easy operation.

"Covert insertion is the only way for an SF team," added Heaword, adding, "The only SF team that actually welcomes the notoriety of no one knowing who they are is the SBS. They are such a small outfit but are hugely impressive and professional; everything they do is covert. In an amphibious insertion they might go in using a scuba re-breather tanks underwater; if the mission is on land they will probably be dropped off a considerable distance from their objective and "yomp" the rest of the way. Their approach to insertion is extremely effective."

"The essential factor in warfare is speed."

Insertion may be quick or slow, shallow or deep, but the requirements will be met by air, ground and sea, or a mixture of these, depending on the requirements for stealth or – as also highlighted by Sun Tzu – speed: "The essential factor in warfare is speed." Speed and stealth are not mutually exclusive. Very often a balance has to be struck, and perhaps the main difference between modern SF operations and their predecessors is the limited-duration / full recovery aspect: months-long forays into hostile territory are difficult to countenance in a world of modern communications and social networks, while the prospect of deployment without an exit plan is politically and socially far less acceptable than regime-changing invasion without an overall goal or an exit strategy.

It should also be mentioned – although it is a separate discussion – that the greatly enhanced capabilities of modern SF over their predecessors comes with a greatly enhanced load to carry, and most Western armies already load their regular troops to and beyond their physical limits. SF (and regular) planners must look at mechanical options for transporting those capabilities after delivery into theatre, whether in the form of traditional small vehicles, unmanned "mules" or even an exo-skeleton solution.

Space precludes going into any significant detail, but while the basic principles of SF insertion have remained largely unchanged over the years the details are very significantly different, driven by developments in electronics, material science and signature management capabilities. In the air, HALO parachute delivery benefits from more advanced parachute design and materials, supported by better guidance and navigation systems and enhanced survival equipment. Fixed wing aircraft profit from advanced coatings to deny radar lock, and can offer the ability to fight either on the way in or out – and can be made extremely quiet. Rotary wing alternatives offer potentially more accurate delivery closer to an objective – and the essential exit options. Recent developments in the hybrid world of tilt-rotors offer an interesting blend of capabilities.

On land the ubiquitous Land Rover has been largely replaced in first-world armies, but in numerous "hot-spots" it remains a stripped-down stalwart, joined by up-armoured Land Cruisers and increasing numbers of much smaller, often skeletonised "assault vehicles" and the like, mostly with 4 wheels but occasionally with 3 or even 2; and while the prospect of sending a lone officer into the anticipated big battlefields of Western Europe on a single-cylinder motorcycle would never have been a realistic "act of war", a group of motorcycle-mounted SF is a very viable option in the modern asymmetrical mission spectrum.

Interestingly, despite the prevalence of land-based disputes in the 21st century, the most intriguing developments in terms of SF insertion options are being made in the naval realm. Possibly this is a consequence of the US forces' famous "Pivot to Asia" or perhaps it is just a reflection of the insurmountable lack of capability in conventional land and air forces that NATO currently and enticingly offers for testing. Be that as it may, the largely insurmountable problem of avoiding or disguising the wake of a moving surface ship has prompted several submerged / submersible / semi-submersible development programmes to be launched around the world: and while these platforms have applications extending deeply into the mission spectrum of SF they are equally useful in the critical infrastructure / harbour / coastal protection role, and have clear applications for offense, defence and deterrence... (SB)

SF Assets Need the Best Equipment Money can Buy

The more critical the job, the more critical the equipment: the military must get the best possible return on investment. ESD understands that it costs between £30k and £40k to train a standard British Army infantry soldier and over £70k to train a Royal Marine Commando. Each time either is sent to learn and qualify in a new skill that investment increases. The cost to train an SF operator is in the region of £3million. Not only does it make sense to try and maximise the return on such an investment, but it also makes absolute sense to support such "expensive" troops in their tasks with the best equipment available.

According to Heaword, "The problem is that the equipment procurement people do not always buy the best equipment for the best troops. You should not look at these men as an expendable item. They simply are not expendable. You want to use them and you will want to re-use them again and again to get value for money from your trained and honed human asset."

One possible solution is to permit SF personnel to source their own "best" kit, with the caveat that allowing individuals to buy what they want, if it is not government-supplied, can create different problems of its own. One major drawback is a relative lack of knowledge; what "the guys" like to use is not necessarily the best kit to keep them alive. This requires the supporting industry and media to step up to the plate in terms of providing information – and the soldiers and operatives to do the same in terms of seeking it out and receiving it. On the other hand, for SF as well as for regular troops, advertising what equipment you want starts an information flow that ends up with the information in the public domain and known to the very people to be "engaged". And of course, knowing a certain piece of equipment is in service allows the terrorist to adapt.

The US SOCOM Fleet Recovery

The Department of Defense's Fiscal Year 2016 budget request for SOCOM is almost double the FY 2014 request for US$ $37.4 M, at US$ 73.5M just for tactical vehicle acquisition. The implication is that much of SOCOM's existing fleet has been used hard.

The Ground Mobility Vehicle (GMV) 1.1 programme accounts for much of the requested amount, with GD OTS under a US$ 562M, 7-year contract to develop and manufacture the replacement for the AM General M1165A1 Special Forces HMMWV. Full rate production is scheduled to begin in 2016, with up to 1,300 vehicles scheduled for delivery. GD is building GMV 1.1 on the basis of the FLYER 72 vehicle, giving scalability from 2,500lbs to 11,000lbs, and transportability inside a CH-47 without modification. This meets the DoD requirement for a fast, roll-on, roll-off capability at speed. Work at GD is progressing on the FLYER 60 platform, for which the company is in its final year of a 3-year programme to supply up to 10 vehicles under SOCOM's Internally Transportable Vehicle (ITV) acquisition push. ITV is slightly smaller than GMV 1.1, and fits inside a CV-22. It can be equipped to execute various missions, ranging from SAR to Light Assault, and from Recce to Command to humanitarian assistance.

The CV-22 is also able to carry Boeing's PHANTOM BADGER. Closely related to the TROJAN RABBIT, launched on 1 April 2016, 14 of these vehicles can be carried in a C-17, and two fit into a CH-47 or C-130, permitting the rapid application of significant force. PHANTOM BADGER has been in production since late 2013 and continues to attract potential export interest. Again, the PHANTOM BADGER can support a range of missions.

Continuing down the CV-22 transportable options, Polaris Defense has also been building vehicles for SOCOM. Deliveries of the DAGOR ultra-light combat vehicle began in 2014 – to which ESD was introduced in October 2015, at AUSA – and since 2013 Polaris has been supplying both MRZR and Lightweight Tactical All-Terrain Vehicles to the Command. Every variant of Polaris Defense's military vehicle range is in service with the US Special Forces, and the company also supplies over 20 foreign countries. DAGOR can be underslung by CH-47, CH-53 or UH-60 helicopter, and can carry up to 3,250lbs cargo or 9 soldiers. As the latest member of the Polaris Defense family it has been engineered to meet stringent requirements in terms of air transportability and advanced off-road mobility, and designed to be easy to maintain and to use.

Photo: Boeing

Two PHANTOM BADGERs from Boeing fit into a CH-47 CHINOOK

British-Australian company Supacat continues to propose the LRV 400 Mk2, a lightweight reconnaissance vehicle intended for Special Operations Forces. The earlier LRV 400 Mk1 was developed to fill the gap between quad bikes and the company's HMT series, which includes the JACKAL, COYOTE and HMT EXTENDA. Available either as a 4x4 or 6x6, the Mk2 is described as a "scaled-down version of JACKAL" with the same all-terrain performance, carrying up to four people at speeds of up to 100 mph (162 kph) to an operational radius of some 500 miles (800 km). The LRV 400 Mk2 fits inside a CH-47 CHINOOK fully mission-ready.

The Expensive Option

The Joint Light Tactical Vehicle (JLTV) will initially be used by the U.S. Army and U.S. Marine Corps. However, the winner of the JLTV competition, Oshkosh, says that the vehicle is "very well-suited" to Special Forces' missions. Oshkosh was awarded the contract in August 2015 and the GAO has rejected protests filed by the defeated bidders. JLTV is not cheap, especially fully-outfitted, and although it is highly capable in all types of terrain, and able to be equipped with comprehensive capabilities – it remains a relatively expensive option, and one therefore for which export other than through FMS might be limited.

The Oshkosh M-ATV remains in use with U.S. SOF, to meet their specific requirements, including rapid egress, storage, payload and visibility, and the M-ATV is designed to accommodate a full C4ISR suite as defined by the special forces." The M-ATV is the smallest and most mobile of the MRAP family, also built by Oshkosh.

The Economy Option?

A new Non-Standard Commercial Vehicle (NSCV) contract from SOCOM was announced in May 2015, and RFPs are currently awaited. In February 2015, SOCOM issued an RFI looking for details on vehicles "typically found in central Asia" including dual-cab pickups such as the Mitsubishi L200, Toyota Hilux and Toyota Land Cruiser 79; sport utility vehicles, including the Land Cruiser 76, 78 and 200; vans, such as the Toyota Hiace; and saloon cars including the Mitsubishi Lancer and Toyota Corolla and Camry. Premium SUVs such as Land Rovers and Range Rovers are not part of the RFI.

Having already built some 300 Hilux, Land Cruiser 200 and Land Cruiser 70-series vehicles for SOF, Battelle is a prime contender, and the company is able to meet all of the numerous requirements listed in the RFI.

Also considering the requirement is Navistar Defense, whose Special Operations Tactical Vehicle – Blended (SOTV-B), also seen at AUSA 2015, looks like a standard, non-descript pickup truck but whose demure appearance hides significant armour and capabilities of interest to SOF – "hiding in plain view"... (sb)

PIRANHA 5 – The New 8x8 Armoured Vehicle for the Spanish Army

Nuria Fernández

The PIRANHA 5 armoured Infantry fighting vehicle developed by General Dynamics has been chosen by the Spanish Ministry of Defence as the base platform for the future VBR 8x8 of the Army, a long awaited programme that was finally launched in 2015.

The Spanish companies Santa Bárbara Sistemas (a subsidary of General Dynamics European Land Systems in Spain), Indra and Sapa have received a first research and development (R&D) contract with a volume of €89.2 million (US $99 million) to conduct a temporary joint venture named "UTE VCR 8x8".

This R&D contract was signed last December. It provides for the delivery of five PIRANHA 5 vehicles within three years (2016-2018). The joint venture will have to develop different technological projects related to security measures, situational awareness, long-range vision, fuel efficiency for engines, and command and control.

General Dynamics-Santa Bárbara Sistemas is already working on the prototype required by the Spanish Army. The original PIRANHA 5 was designed by Mowag, the Swiss branch of the company. Mowag has built PIRANHA vehicles for more than 20 armies. The US Army's STRYKER vehicle is also inspired by the PIRANHA family.

Indra is the main Spanish defence technology company, and Sapa offers a range of products in the fields of transmissions, control electronics, power electronics and electrical machines. Upon completion of the evaluation and risk reduction phases the Spanish Ministry of Defence plans to sign an agreement to build 400 vehicles with a budget of US $1.5 billion. According to Pedro Morenés, the Spanish Minister of Defence, the new vehicle of the Army will be subject to export efforts as "100 percent Spanish". That means that the Spanish joint venture will have the design authority of the project.

The Ministry has also decreed that the programme must take advantage of the participation of other smaller national companies that can provide highly specialised and innovative systems, such as Tecnobit in the area of optronics.

The participation of these companies will contribute to increase the national components of the new vehicle and, at the same time, to ensure the production and engineering capabilities, considered strategic capabilities for the Spanish defence sector.

As usual in so-called "Special Armament Programmes", the 8x8 vehicle contract will be pre-financed by the Ministry of Industry, which has a part of the budget assigned for "Support to Technological Innovation in the Field of Defence".

On 31 July 2015 the Council of Ministers approved the budget agreement between the Ministry of Defence and the industry. According to this agreement, the Ministry of Industry anticipates €89.2 million in three instalments: 40.8 million in 2015, 30.6 million in 2016 and 17.8 million in 2017. The Ministry of Defence will return these amounts in 2018.

Photos: author

A maximum level of protection against mines and IED (improvised explosive devices) for the crew has been one of the main requirements of the Spanish Army.

A Vehicle Designed for the Future

With an estimated cost between €3.8 and €5.5 million, according to industry sources, the PIRANHA 5 is a highly mobile, armoured multi-role wheeled vehicle with a high payload and a large utilisable internal volume.

Also, Santa Bárbara Sistemas (SBS) emphasise the vehicle's growth potential and flexibility allowed for long service periods and a reduction of maintenance and support costs.

The vehicle is designed with the maximum level of protection against mines and IED (improvised explosive devices), one of the main requirements of the Spanish Army after 13 years in Afghanistan, and has a modular adaptable integrated protection layout which can be tailored according to emerging threats.

Author

Nuria Fernández is the editor of the Spanish edition of the online newsletter infodefensa and a regular contributor to ESD.

PIRANHA V in APC configuration with machine gun and smoke launchers

With development starting in the 1970s, the PIRANHA family comprises 4x4, 6x6, 8x8 and 10x10 variants. Over 10,000 vehicles of this kind are in global service today.

A modular and open architecture allows for versatile systems integration in support of different configurations. The system has been laid out for the integration of an integrated starter generator (ISG) that can generate energy for the systems on board and, at the same time, provide up to 100kw to power military or civil facilities. In addition to that, with a payload of up to 15 tons the vehicle has the necessary capacity to integrate any required mission element.

Another feature of relevance is the high manoeuvrability thanks to an economic Fuel Efficient Drive train System (FEDS) and the high performance diesel engine according to EURO III standard, which provide the expected power and operating ranges. The vehicle even has a growth potential for hybrid boost power. In addition to that, the semi-active hydro-pneumatic suspension system with height management control enables highest mobility and excellent ride comfort for the crew.

The PIRANHA 5 can be transported by land, at sea and in the air, which makes it particularly suitable for rapid deployment operations.

The Spanish company also points out that the PIRANHA belongs to a family of armoured vehicles tested in different scenarios and operations and that it has incorporated the lessons learned from its 20 users.

In Spain, SBS has participated in every significant armoured vehicles contract for the last 50 years. As a result, the company has the necessary R&D and production capabilities for an entirely Spanish product. In addition to that, it has the required staff and means to provide full support services.

A Long Awaited Programme

The VBR (Vehículo de Combate sobre Ruedas – Spanish for wheeled armoured vehicle) 8x8 Programme has been long awaited by the Spanish Army, which needs, in the short term, to equip the new organic multitask brigades (BOP) and, in the medium to long long term, to replace the current wheeled armoured vehicles (BMR) and even some tracked vehicles like the M-113.

In 2009, the Ministry of Defence sent the first Request for Information (RfI) to some companies to collect updated information on armoured 8x8 vehicles on the market. At that time the Ministry had planned to award contracts in several phases. In the first phase, the forecast was to buy 300 vehicles in three configurations: personnel carrier, exploration and command and control. Other configurations – recovery, mortar carrier, communications, EOD or forward observer – would arrive in the following stages.

Nevertheless, the continuous reductions of the defence budgets and the cuts in current expenses caused by the financial crisis prompted that the launch of the programme was postponed year after year.

Finally, in May 2015, the Ministry reopened the programme with a new RfI sent to five national and international companies: General Dynamics-Santa Bárbara Sistemas, CIO Iveco-Oto Melara, Nexter, Patria and the ARTEC consortium formed by Krauss-Maffei

The vehicle during performance tests. The rope cutter in front of the open hatch is to support protection against IEDs.

According to current plans the Spanish Army is to procure up to 400 VBR type vehicles.

Wegmann (KMW) and Rheinmetall.
The five companies had already shown their proposals in response to this requirement at several exhibitions and events in the months before.
GD-SBS submitted a proposal for the PIRANHA 5, the vehicle chosen some weeks before by the Danish Ministry of Defence to replace the M-113 tracked vehicles.
The proposal by CIO Iveco-Oto Melara was the FRECCIA, an armoured combat vehicle developed for the Italian Army which had already provided proof of its value in operations.
The French company Nexter offered the VBCI, a vehicle in service with the French Army and also proven in operations.
ARTEC's bid was for the BOXER, a vehicle ordered by the German and Dutch Armies in 2006 (472 vehicles in nine different configurations). And Patria's candidate was the AMV (Armoured Modular Vehicle), an 8x8 vehicle with an excellent mobility that can be produced on the base of three different platforms.
Undersecretary of State for Defence Pedro Argüelles then insisted on the contractor having the intellectual property and design authority of the vehicle in order to be able to modify and export it without asking for permission from the original manufacturer.
After evaluation of the five proposals in August the Ministry decided to ask for more detailed offers from Santa Bárbara Sistemas, Indra and Sapa.
Months later, in December, the Ministry awarded the contract to the three companies to develop different projects "aimed at analysing the viability of new technologies, incorporating strategic capabilities of the national industry and reaching the level of maturity required to enable their integration into the 8x8 platform".
The launch of the VCR 8x8 programme, together with the new F-110 frigates programme, marked the beginning of a new 'investment cycle' in Spain, according to the Undersecretary of State to the Defence Commission in Congress during his remarks to explain the new budgets. The Undersecretary also asked the Parliament for political consensus to protect investment in defence and endow the armed forces with a more stable financial framework.

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Submarine Weapons and Sensors – Trends and Developments

Bob Nugent

It is an interesting time in the history of the submarine as a naval weapon. In just over 100 years the submarine has gone from an experimental auxiliary and scouting platform to one of the primary (and in some navies the leading) components of fleet structures.

And navies are accelerating efforts to expand and improve their submarine forces. The U.S. and Western Europe continue to lead in most aspects of submarine weapons and sensor development, but the gap is narrowing. Around the world the submarine is gaining an increasing share of naval shipbuilding and systems investment – a trend seen in global navies, emerging regional powers, and even local and coastal fleets.

At least two factors seem to be at work here. The submarine retains its traditional advantages of stealth and manoeuvrability across a broad set of anti-ship, land strike and strategic deterrence missions, making it a very versatile platform providing high operational return on investment.

And the increasing vulnerability of surface ships – magnified by technology developments in information technology, robotics and materials – also seems to be contributing to the surge in submarine acquisition.

Some measures of the growing importance of the submarine in the world naval balance can be found in AMI's most recent 20 year naval ship acquisition forecasts. AMI projects that over the next two decades, spending on new submarine construction (hulls and systems) will account for almost a third of all global naval spend on new ships through 2035. This translates into 368 new nuclear and conventional submarines forecast to be acquired by 40 different countries over the next two decades. Of those, 124 (almost one third) are in the Asia-Pacific region, another 50 hulls are projected for Russia, and over 30 for countries in the Mid-East and North Africa.

Author

Bob Nugent is a Virginia-based Affiliate Consultant for AMI International in Bremerton, WA, USA.

This 20-year sub spending forecast has increased by 50% (over US$100 billion) since 2010. This does not represent a "rising tide raising all boats" phenomenon. Rather, navies are shifting resources away from other platforms and capabilities to invest in new submarine programmes. And submarines continue to represent the single most expensive type of warship to build, measured on a ton-for-ton basis.

Moreover, forecasted growth in submarines is strongest in the firmest kinds of planned spending – programmes with detailed budgets and schedules, documented requirements, and concept design/development work already underway.

The world's largest navies continue be the largest buyers of new subs – the U.S., NATO, China, Russia and India together account for just over 50% of future new sub acquisitions in the next 20 years.

That said the proliferation of planned submarine acquisitions will bring submarine capability to new places. Countries like Saudi Arabia, the UAE, Morocco, Myanmar, and even Azerbaijan are all devoting time and resources to consider how to add the submarine dimension to their force structures. Others are recapitalizing existing sub capability with modernisation programmes – countries such as Egypt and Peru.

The global submarine scene will continue to show a pattern of increasing investment, proliferation of operating navies, and diffusion of technical and tactical expertise. In such a setting, developments in submarine weapons and sensors will take on increasing importance in setting out qualitative difference that are required for smaller navies to counter more numerous rivals. This short article considers some trends in submarine weapons (missiles and torpedoes) as well as developments in combat systems that will influence the future balance of the world's submarine forces.

Photo: US Navy

The USS CONNECTICUT (SSN 22), a SEAWOLF class attack submarine of the US Navy

Submarine Weapons Developments.

Submarine Missiles

The U.S. Navy has recognised a gap in submarine-based anti-ship missiles and is working to fill it. The Navy's last sub-launched anti-ship missile – the UGM-84A HARPOON – was retired in 1997. For almost 20 years the primary anti-ship weapon in the U.S. submarine force has been the Mk 48 heavy torpedo. While an effective

Photo: defensie.nl

A Russian submarine of the KILO class

weapon, the Mark 48 has a much shorter engagement range compared to anti-ship missiles in service with many other navies around the world.

U.S. programmes to address the gap in submarine anti-ship missiles reflect several approaches. The first is a "new build" research and development programme. Lockheed Martin is developing a new "Long Range Anti-Ship Missile" (LRASM) under a programme funded by DARPA and the U.S. Navy. The LRASM will initially be tested in air- and surface-launched prototypes. However, given the submarine anti-ship missile gap concerns voiced by U.S. Navy leadership, and a service-wide effort to disperse striking power among a wider set of platforms (the "Distributed Lethality" operating concept), a sub-launched variant of the LRASM is likely also being looked at.

Another approach is to modernise and add capability to an operational missile system. In this case the Raytheon TOMAHAWK Land Attack Missiles (TLAM) represents a potential option to add anti-ship striking power to the submarine fleet. The U.S. Navy successfully tested a Block IV TLAM as an anti-ship missile, hitting a moving target at sea in 2015. The current Block IV TLAM in service now is a weapon primarily intended to strike fixed targets ashore, so would require some modification for the ASM role.

A third approach is to adapt the latest generation of smaller anti-ship missiles developed in Europe for submarine use. One promising option is a submarine version of Norwegian company Kongsberg's operational NAVAL STRIKE MISSILE (NSM). Here Kongsberg is working with companies in Europe (fellow Norwegian firm Nammo and UK's Babcock) as well as U.S. joint venture partner Raytheon.

Kongsberg's submarine variant of the NSM modifies the F-35 JOINT STRIKE MISSILE (JSM) variant to be launched from the standard 533mm torpedo tube. A 2014 teaming arrangement between Kongsberg and Raytheon will offer the JSM to the United States Navy for their Offensive Anti-Surface Warfare (OASuW) requirement.

As the U.S. Navy plans competition for the OAsuW program in 2017, it is expected to evaluate all these options – the Kongsberg/Raytheon JSM, the Lockheed Martin Long Range Anti-Ship Missile (LRASM), and the modified TOMAHAWK. The competition is expected to evaluate submarine and surface launch modes for these weapons.

Russia has invested heavily in submarine-launched cruise missile capability, notably the 3M-14 KALIBR missile designed for submarines. The Russia Navy's Project 636 diesel-electric submarine "ROSTOV-ON DON" launched KALIBRs against Syrian land targets from a position in the Mediterranean Sea in December, 2015. The KALIBR is an updated variant of a missile that went into service, with ranges of up to 2,500 km claimed by Russian sources. And the KALIBR is designed to operate from smaller displacement platforms like the Project 636, successor to the widely exported "KILO" class of conventional submarine.

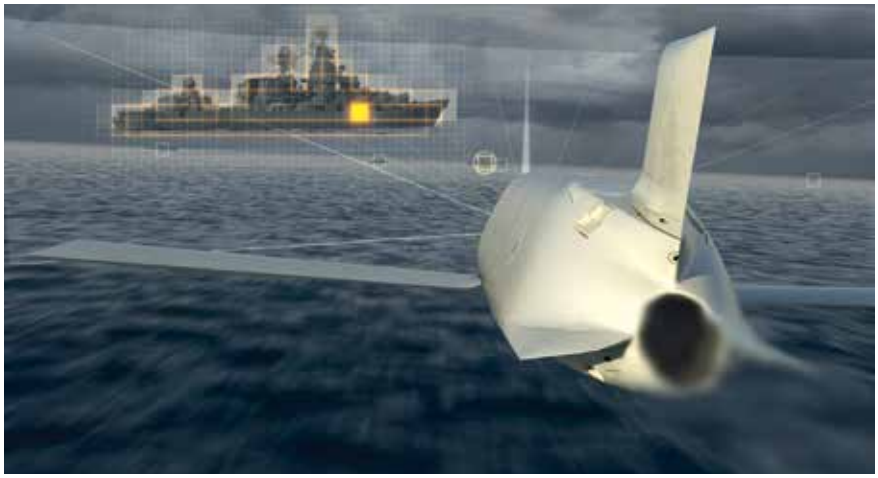
Chinese moves to improve and expand its submarine-launched missile capability have also accelerated over the past decade and represent a primary driver of increased naval missile defence and anti-submarine capability investments, especially in the Asia-Pacific region. China's submarine missile arsenal has been enhanced with the widespread deployment of the submarine-launched YJ-18 having an assessed range of over 500 km. The older YJ-82 submarine launched missile has a range of under 40 km.

Submarine Anti-Air Missiles

As noted above, more submarines are coming into service around the world. And increasingly these submarines are operating in the near shore EEZ and littoral environment, where aircraft (fixed wing and helicopters) pose a primary threat to submarine operations.

Photo: PLAN

Chinese nuclear submarine



Graphics: Lockheed Martin

Lockheed Martin's new "Long Range Anti-Ship Missile" (LRASM) is designed to meet the needs of U.S. Navy and Air Force warfighters in a robust anti-access/area-denial threat environment.


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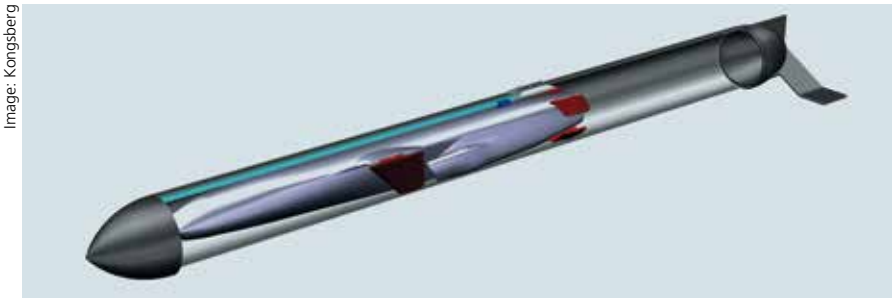
Photo: Raytheon

Launching of a TOMAHAWK Land Attack Missiles (TLAM) Block IV from Raytheon

Image: Kongsberg



Kongsberg offers a submarine variant of its operational NAVAL STRIKE MISSILE (NSM) to be launched from the standard 533mm torpedo tube. The figure shows the NSM packaged in a torpedo tube canister with folded wings. The available space in the canister behind the missile is for a booster.

Photo: ATLAS ELEKTRONIK

The SeaHake mod4 from ATLAS ELEKTRONIK

So while submarine-launched anti-ship missiles are attracting a lot of attention, programmes to develop new anti-air missile capability for submarines are also progressing. One example is the IDAS (Interactive Defence and Attack System for Submarines) programme. German companies Diehl BGT Defence and ThyssenKrupp Marine Systems are working on an IDAS capability to enable submerged submarines to counter airborne ASW threats. The IDAS missile is launched from a torpedo tube by means of a specialised launching container. The missile is guided in flight through a fibre optic cable to keep positive operator control for target ID and final engagement decisions. The IDAS is also described as capable of engaging small fast surface vessels and land targets in near-shore locations.

Submarine Heavyweight Torpedoes

While missiles are a focus of submarine force modernisation around the world, the long-range heavyweight torpedo remains the "main battery" of most submarines today, with active torpedo acquisition programmes continuing in many countries. European naval industry continues to lead in the number and capability of heavyweight torpedoes offered for domestic and export submarine customers:

The BLACK SHARK ADVANCED (BSA) produced by Whitehead SistemiSubacquei (WASS) in cooperation with the Italian Navy will replace the A-184 heavyweight torpedo on the Italian Navy's U212 class. The BSA is also supplied to the Hellenic Navy (Type U214), French Navy (BARRACUDA SSN, ANDRASTA SSK), and SCORPENEs of the Chilean Navy and Royal Malaysian Navy. The BSA's range is about 50 km.

The F21 heavyweight torpedo jointly designed and produced by French company DCNS and German ATLAS ELEKTRONIK is expected to become operational this year. The F21 is a dual-purpose torpedo that is effective against submarines and surface vessels. The F21 will replace the French submarine fleet's F17 mod2 torpedo aboard French nuclear attack and ballistic missile submarines as well as conventional subs. The torpedo is estimated to have a range in excess of 50 km.

The SPEARFISH advanced heavyweight torpedo from BAE Systems uses a gas turbine engine powered by Otto Fuel. The SPEARFISH is capable of ranges up to 48km at low speeds.

Saab's Torpedo 62 (Torpedo 2000 for export)has a pump jet engine capable of reaching targets over 40km away.

The ATLAS ELEKTRONIK DM2A4 SEEHECHT is the primary weapon of German Navy Type 212 submarines. The heavyweight torpedo, weighing 1.37t, can be launched from both submarines and surface ships. While the DM2A4's and its updated export version SeaHake mod4's primary engagement range is in the 50-75 km range, an extended range variant of the torpedo has achieved ranges of more than 140 km in a 2012 test firing.

The Mk48 ADCAP Mod 7 Common Broadband Advanced Sonar System (CBASS) developed by Lockheed Martinis a primary submarine weapon system for the U.S. Navy. Australia, Canada, Brazil and the Royal Netherlands Navy operate the Mk 48 as well. The Mk 48 is also OTTO-fuelled and can reach ranges of 50 km or more. The

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U.S. Navy is currently planning to restart production of the Mk48 – some 15 years since series production halted.

Submarine Sensor Developments

Weapons tend to get most of the attention and funding when future submarine capability is discussed. However the accelerating revolution in information processing, materials, and manufacturing techniques are generating new approaches to submarine sensors. Among the more notable developments:

Towed Sonar Arrays for Smaller Conventional Submarines

Industry leaders in submarine sensor systems are focusing new capability offerings on the "disadvantaged users" who are the bulk of the existing global inventory of submarines – conventional submarines displacing 3000t or less (full load). The power and space limitations of these subs have traditionally limited equipping them with the towed passive arrays commonly fitted on larger submarine types.

One example is the work by German company ATLAS ELEKTRONIK to reduce the size of the handling system and total array volume required to stow aboard the submarine. Compact modular towed array handling systems, making use of recent advances in manufacturing and materials technologies potentially offer smaller submarines better towed array capabilities compared to conventional hull-mounted sonar suite.

UUV Offboard Sensors

Another option to overcome the "tyranny of weight and space" that limit submarine sensor options – especially on smaller hulls-- is to remove some of these systems from the submarine altogether. In this operational concept, the submarine is more "platform carrier" than front end platform itself – akin to the aircraft/aircraft carrier operational division of labour.

The US advanced defence research agency DARPA announced in early 2016 a programme to develop a sonar system on board an unmanned underwater vehicle that can be deployed from a submarine to "mitigate the limits of passive submarine sonar sensors." The Mobile Offboard Clandestine Communications and Approach (MOCCA) programme seeks to overcome two primary challenges of this operational and technological concept: secure communications and vehicle size. That programme is slated to run over the next 36-48 months.

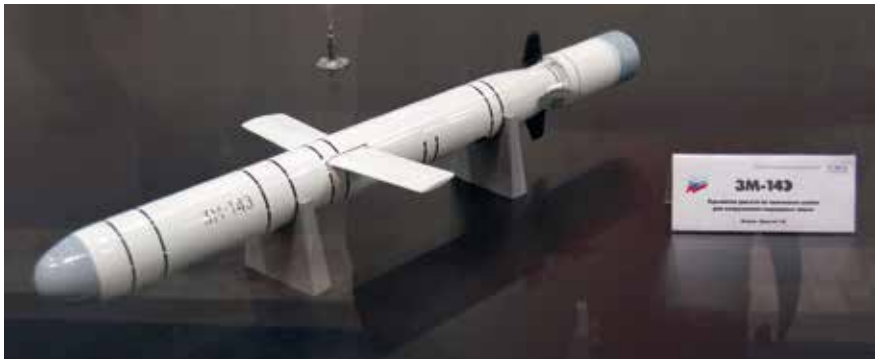
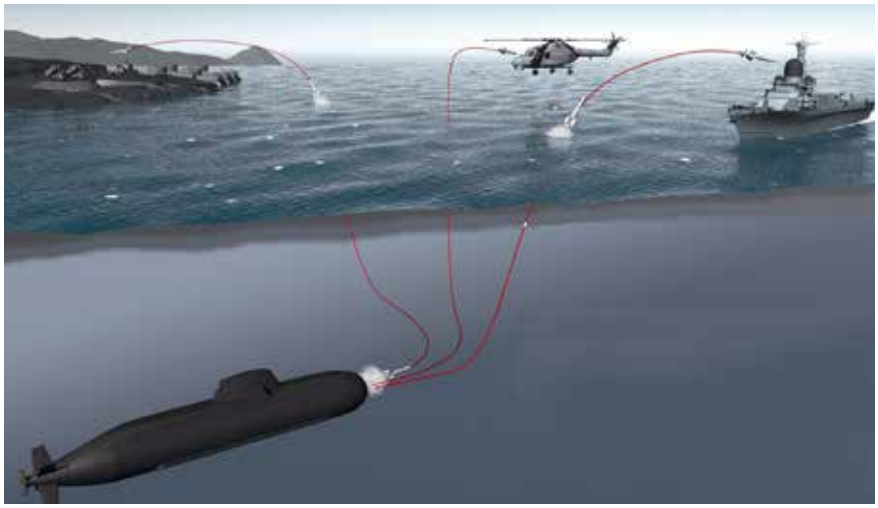


Photo: HOBATOP

3M 14E, the land attack variant of the KALIBR missile



Graphics: HDW

The Interactive Defence and Attack System for Submarines from the German companies Diehl BGT Defence and ThyssenKrupp Marine Systems enables submerged submarines to counter airborne ASW threats.

Photo: DCNS

The F21 heavyweight torpedo jointly designed and produced by French company DCNS and German ATLAS ELEKTRONIK is expected to become operational this year.

Accelerating Sensor and System Modernisation with Open Architecture

Another means to accelerate sensor and combat systems performance is to tap into commercial industry developments which are recognised as outpacing tech refresh rates possible within most defence acquisition systems.

The Navy's "Acoustic Rapid Commercial-Off-The-Shelf Insertion" (ARCI) -programme has taken this approach with sonar system modernisation. The programme regularly refreshes central processors with COTS computer technology and software. ARCI processors handle data from the submarine's spherical array, hull array, wide aperture array, high-frequency arrays, and towed arrays.

Given the success of the ARCI approach, the "hunt is on" to apply the methodology to other combat and weapons systems improvements. And this is true not only in the submarine enterprise, but for other areas of leading edge systems development such as unmanned systems. ■

Combat Aircraft in Europe

Multiple Markets and Multiple Choices

David Saw

Ever since the 1950s there has been one truth in heavyweight combat aircraft procurement, that while each succeeding generation of combat aircraft offers more performance it comes in tandem with an increase in costs, both in terms of procurement and sustainment.

The end result is that although one might have better aircraft, one will almost certainly have fewer of them. Eventually this brings one to a point where increases in quality can fail to compensate for lack of quantity.

There is nothing particularly shocking about cost escalation in defence procurement, but in the context of the current European combat aircraft marketplace higher prices are coming at a time when defence budgets are not over-endowed with cash. Furthermore it must be remembered that many European nations have been perfectly happy to seek to avoid major defence procurement programmes on the basis that there is no major league threat. They have also not been that concerned by the decline in their military capabilities, as evidenced by the savage cuts to the Netherlands Army armoured vehicle fleets for example.

One must also note that popular opinion in Europe has hardly been that supportive of combat aircraft procurements. Something that was demonstrated most obviously in Switzerland with the TTE fighter programme, where the plan to acquire 22 GRIPEN E fighters at a cost of US$ 3.27 billion, announced by the Swiss authorities in 2011, was rejected by the Swiss public in a referendum in May 2014. Although rebuffed in their fighter procurement plans in 2014, now, nearly two years on, the Swiss military is looking once more at a new fighter programme and intends to start the groundwork shortly for the new programme, with a view to entering the competition phase in 2017.

Elsewhere in Europe there are a number of countries with combat aircraft acquisition programmes at various different levels of intensity. Our objective in this article is to identify the European countries with viable combat aircraft programmes and then look at the aircraft that are most likely to meet their needs. There is a caveat in all of this though: the best laid defence procurement plans rarely survive a collision with political realities. The global economic situation is hardly that inspiring, should there be a major economic downturn it is inevitable that defence programmes will be cut. On one hand, the refugee crisis sweeping Europe will impose significant, and in most cases unanticipated, financial burdens on European nations and the obvious place to look in search of funds to cover this burden is defence budgets. On the other hand, the influence of people and events cannot be underestimated. Vladimir Putin's increasingly resurgent Russia has gone a long way to convincing many European politicians that the possession of a viable defence capability might all of a sudden be a good idea.

What this all means is that the European combat aircraft marketplace of today cannot be characterised as predictable in any way, shape or form. There are so many factors, both political and economic, currently in play that the word complicated appears to understate what is taking place. We also have to remember that a key player in this European combat aircraft drama is not even European, and that key player is the United States. Therefore we have to take into account the fact that whatever happens in the US will have implications in the European combat aircraft marketplace.

Photo: US Air Force

A Lockheed Martin F-35A LIGHTNING II at Mountain Home Air Force Base, Idaho, to use the range complexes around the base. The F-35 JOINT STRIKE FIGHTER (JSF) has had a difficult development programme, yet even so it should become a dominant combat aircraft in Europe over the next few years.

The Answer and the Question

Before we get to US involvement in the European combat aircraft scene, it is necessary to look at European products that are influential in the marketplace. In the 1970s, air forces and aerospace companies started work on a number of proposals aimed at generating a new state-of-the-art combat aircraft that could be built in a collaborative manner. By the early 1980s this had evolved into the Future European Fighter Aircraft

Author

David Saw is a specialist defence writer based in Paris, France and a regular contributor to ESD.

Photo: US Air Force

A trio of advanced combat aircraft over Langley-Eustis, Virginia:a French Air Force Dassault RAFALE, with a Royal Air Force Eurofighter TYPHOON FGR4 and a US Air Force Lockheed Martin F-22 RAPTOR. In the end the RAPTOR proved too expensive for even the US Air Force, for RAFALE and TYPHOON though opportunities for export still exist.

Photo: Ilmavoimat

The Boeing F/A-18A/B/C/D found three European customers in the form of Spain, Finland and Switzerland. Finland acquired 64 F/A-18C/D between 1995 and 2000, one of which is shown here. Finland is now looking for an F/A-18C/D replacement under the HX fighter programme, with contract award due in early 2021.

(FEFA) concept. Then in 1985 the European collaborative approach broke into two. This resulted in Britain, Germany, Italy and Spain working together on the Eurofighter TYPHOON, while France developed a national combat aircraft solution in the form of the Dassault RAFALE. The Luftwaffe would accept the first TYPHOON into service in August 2003, with the French Navy having taken the first RAFALE into service in December 2000. The other European combat aircraft contender comes from Sweden in the shape of the GRIPEN and once again the initial work started at the end of the 1970s.The GRIPEN prototype flew in 1988, with service entry in 1997.

For various reasons all three of these European combat aircraft took longer to develop than initially envisaged and also ended up being substantially more costly than anticipated. These were contributing factors to many of the customer nations cutting the numbers of aircraft that they had promised to order. Originally the Eurofighter programme was going to amount to 620 aircraft split between the four partner nations, today orders from the partner nations amount to 472 aircraft. However, export sales have made a significant contribution to the programme, Austria with 15, Oman with 12, Saudi Arabia with 72 and a 28 aircraft order from Kuwait is perhaps within touching distance.

RAFALE has also faced issues with its national customer and order numbers. Originally, France was looking at 286 RAFALEs, but in the end the French Air Force committed to 132 RAFALE B/C, with the French Navy taking 48 RAFALE M. Export success proved elusive until 2015, when orders were received from Egypt for 24 aircraft and from Qatar for 24 aircraft, with India

Photo: US Air Force

Shown here at Red Flag 16-1 at Nellis in Nevada, the Lockheed Martin F-16 remains one of the most successful combat aircraft of the modern era. In a European context it is in service with Belgium, Denmark, Greece, the Netherlands, Norway, Portugal, Poland and Turkey. Lockheed Martin hopes the JSF will repeat the success of the F-16.

announcing an intention to proceed for 36 aircraft, although negotiations to formalise an order are still ongoing. Other international export opportunities, like the United Arab Emirates (UAE), still exist for RAFALE and the aircraft ought to be under consideration for the resurrected Swiss fighter programme.

The GRIPEN is the lowest-cost European contender. Sweden has ordered 204 aircraft, and since then the Czech Republic (14 aircraft) and Hungary (14 aircraft) have leased the GRIPEN. The first export customer for the GRIPEN was South Africa who acquired 28 aircraft. Since then Thailand has acquired 12 and more recently Brazil opted to order 36. Brazil was also the first order for the advanced GRIPEN NG variant. Able to offer both new build and second-hand aircraft, GRIPEN still has a role to play in ongoing European combat aircraft competitions, where this Swedish solution retains significant cost advantages.

Meanwhile in America

To summarise, there are three credible European solutions to future heavy combat aircraft requirements in Europe. However, being European gives them no advantages as far as current combat aircraft requirements are concerned. Indeed it is the US industry that has numerous advantages in many upcoming European combat aircraft

Photo: Saab

A GRIPEN NG displaying an impressive load of IRIS-T and Meteor air-to-air missiles and a GBU-16 PAVEWAY II laser-guided bomb. The GRIPEN NG is being actioned to meet the needs of Brazil, but it also offers future export customers a very credible combat aircraft choice.

competitions. Firstly, there is the political strength of the US, the lobbying power of its industry and the economic/industrial incentives that it can bring to the table to take into account. Then there is the fact that the US is the incumbent combat aircraft supplier in many European countries. Plus, history indicates that the US can land major deals in Europe at the expense of European competition.

Back in the 1970s the air forces of Belgium, Denmark, the Netherlands and Norway joined together to form the European Participating Air Forces (EPAF) grouping that would work to jointly acquire a successor to the Lockheed F-104 Starfighter. In June 1975 it was announced that the EPAF nations would acquire 348 General Dynamics (later Lockheed Martin) F-16A/B aircraft, with Belgium taking 116, Denmark 58, the Netherlands 102 and Norway 72. These European countries became the first F-16 export customers, with F-16 related work sustaining the aerospace industry in the four countries for a considerable period of time.

One could argue that the EPAF F-16A/B order made the F-16 an international success story; indeed, the four EPAF nations eventually ordered 524 F-16A/Bs between them. Turkey, which would build many of its F-16s, acquired 43 F-16C/D Block 30, 117 F-16C/D Block 40 and 110 F-16C/D Block 50 aircraft with deliveries between

Photo: US Air Force

An Italian Air Force Eurofighter TYPHOON of the 4th Stormo based at Grosseto, Italy, participating in Red Flag 16-2 at Nellis in March 2016. This was the first time Italian TYPHOON aircraft had participated in Red Flag. Eurofighter war awarded a contract for 28 TYPHOON from Kuwait in April 2016.

1987 and 2012. Between 1989 and 2010 Greece would take delivery of 40 F-16C/D Block 30, 40 F-16C/D Block 50 and 90 F-16C/D Block 52. Poland would acquire a total of 48 F-16C/D Block 52 aircraft between 2006 and 2009, while Italy would lease 34 F-16A/B aircraft between 2003 and 2012, with Portugal receiving 48 F-16A/B Block 15/Block 15OCU aircraft, both new and US surplus, from 1994 to 1999. Between 1979 and 2012 European / NATO nations would acquire 1,032 new F-16A/B/C/D aircraft.

Although the F-16 became the dominant presence in terms of combat aircraft in Europe, one should not ignore the Boeing F/A-18 HORNET. Between 1985 and 1990 Spain received 72 EF-18A/B, Finland received 64 F/A-18C/D between 1995 and 2000, with Switzerland taking 34 F/A-18C/D between 1996 and 1999. So Europe was worth 1,202 advanced combat aircraft to Lockheed Martin and Boeing between 1979 and 2012. Any way that you want to look at it, Europe was and is a very important market for the US combat aircraft industry.

The US intends to continue its dominance of the European combat aircraft scene and the primary mechanism through which this is to be achieved is through the Lockheed Martin F-35 JOINT STRIKE FIGHTER (JSF). There is little point in providing a history of the JSF, suffice to say this programme remains the biggest procurement effort currently being undertaken by the Pentagon.

Lockheed Martin was awarded the JSF System Development & Demonstration (SDD) contract in October 2001. This was to be the aircraft that would replace the F-16, F/A-18 and others in US service. The aircraft also had international industrial participation: Britain was a Tier 1 partner, with Italy and the Netherlands as Tier 2 partners, with other original partner nations being Australia, Canada, Denmark, Norway and Turkey. The JSF was the programme that was going break the link between more capability and cost. Not only was this aircraft going to be more capable and affordable for the users, its success was going to bring a veritable bonanza of work to the aerospace industries in the US and the eight original partner nations.

According to the then-JSF Program Executive Officer in an interview at the 2009 Paris Air Show, the US and the eight partner nations were going to procure 3,000 aircraft between them, while export sales could add another 3,000 aircraft to this total, potentially making this a 6,000 aircraft programme. Some seven years on we can see that these programme numbers are wishful thinking. The JSF programme has not been easy, the aircraft is still not ready for prime time service and it is now far more expensive than originally anticipated – though to be fair, no recent advanced combat aircraft programme has been able to be delivered on time and on cost!

Despite all of this, the JSF will inevitably become the primary replacement for existing combat aircraft in Europe. Of the original eight JSF partner nations, both Britain and Italy remain totally committed to this programme, the same is true of Turkey and of Australia. The Netherlands and Norway are also committed, but the recent change of government in Canada puts their participation in doubt, and Denmark will have to have a competition to meet its needs. Another key point to note is that the numbers of JSF that will eventually be acquired are still not set in stone. JSF is not the only game in town, though. The Boeing F/A-18E/F SUPER HORNET has been offered to both Denmark and Switzerland, with Finland representing an evolving opportunity. Logic would seem to indicate Belgium ought to follow the Netherlands into the JSF orbit. Poland also looks to be a future JSF possibility, while other opportunities such as Slovakia appear destined for second-hand or leased aircraft, possibly in a lighter class.

Combat aircraft opportunities exist in Europe outside of JSF, so there are possibilities for F/A-18E/F, GRIPEN, RFALE and TYPHOON. The crux of the problem though is simple: at this time how much money is really available for combat aircraft? ■

Photo: Royal Australian Air Force

A Royal Australian Air Force (RAAF) Boeing F/A-18F SUPER HORNET ejects flares during a training mission. European markets such as Denmark, Finland and Switzerland are very important for Boeing as it seeks export sales for the SUPER HORNET to sustain production of the aircraft.

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"We expect to provide much more local content in our projects and products."

Photo: SSM

Interview with Hüseyin Avşar, Head, Department of Land Platforms, Turkish Undersecretariat for Defense Industries (SSM)

ESD: What exactly are your responsibilities as SSM's Director of Land Platforms, who do you report to, and how is your department structured?

Avşar: Before I answer the question, I would like to briefly elaborate on the mission and structure of our Undersecretariat which will help to explain my department and my position.

SSM is one of two Undersecretariats of the MoND and basically in charge of advanced defence procurements, industrialisation, R&D activities and life cycle management systems a nd sub-systems. Unlike other governmental institutions the vertical hierarchy at SSM is very limited which enables us to take quick and effective decisions, decrease the response times and conduct projects efficiently.

The department heads of SSM report to relevant Deputy Undersecretaries. The Deputy Undersecretary, to whom I report, is in charge of all platform projects.

My department comprises two project groups – Battle Tanks & Tracked Vehicles and Wheeled Vehicles & Special Projects – with nearly 20 employees.

As the Land Platforms Department, our major responsibility is to meet land systems requirements of the Turkish Armed Forces (TAF) and the Turkish Police with a significant share of local content and industrialisation in accordance with our strategic targets. We aim to create a self-sufficient Turkish land platform industry to the maximum possible extent and enable sustainable growth. I strongly believe that we have already achieved a lot, however, it is still not enough to reach our goals. We will invest much more efforts and hopefully be one of the key land platform manufacturers in the world in the near future.

ESD: What are the current priorities of your work? Which major objectives are to be met?

Avşar: In the 21st century the global system is going through major transformation with increased uncertainty and volatility. Under this uncertainty pressure and future combat environment, the major objective of our department is, as I mentioned before, to create sustainable growth for the local military vehicle industry. For this major objective our priorities are to

- Meet the entire TAF and Police Department's needs with the capabilities of our national defence industry;
- Optimize the performance, budget, schedule and industrialisation aspects of the vital projects;
- Export our products to emerging markets;
- Achieve Performance Based Logistics (PBL) in our projects;
- Apply the strategies to maintain a competitive local industry and to improve the quality and quantity of the qualified human resources.

ESD: Without any doubt, the ALTAY MBT programme must be among your currently most demanding challenges. What is the status and the projected further time schedule of the programme?

Avşar: I agree. Taking the complexity of MBTs into consideration, the ALTAY Project is the most significant project and we are paying utmost attention to it.

Currently, we are conducting very comprehensive and thorough qualification and acceptance tests including endurance and reliability, mobility, protection, fire power, EMI/EMC, command and control etc. with 3 different prototypes. I can proudly state that so far the achievements of these tests, which commenced on 20 April 2015, are above our expectations and if it goes like that we will have successfully qualified ALTAY as the first national Turkish main battle tank by the end of 2016. On the other hand, we have already initiated the serial phase arrangements and activities concurrently with the development phase and the first batch of ALTAYs is scheduled to be produced and delivered in 2018. Following deliveries of the first batch, we will enrich the ALTAY vehicle family by developing the engineering vehicles such as recovery vehicle and mine clearing systems using the ALTAY chassis.

ESD: In the scope of the ALTAY programme, can you elaborate on the individual agreements between SSM and your Korean partners, Turkish and possibly foreign defence industries?

Photo: OTOKAR

The ALTAY will be qualified as the first national Turkish main battle tank by the end of 2016.

Avşar: If your question is for the serial production phase of ALTAY Project, I could say that it is a bit early to talk about the project model, foreign agreements, main contractor and sub-contractors, etc. However, I can tell you that the ratio of industrial participation/offset will be 70%minimum. On the other hand, all these questions will be clarified in 2016 after we conclude the serial production arrangements.
For the development phase, OTOKAR is the main contractor of the project and the activities are being carried out in scope of the agreement between SSM and OTOKAR. OTOKAR has also signed a Technical Support and Assistance Agreement with the Korean Hyundai-ROTEM company. Returning to your question, there is no agreement between SSM and any foreign party. This will also be the case in the serial production phase, which means that SSM will only sign a main contracting agreement with a local company. The major subcontractors of the development phase are ASELSAN for the tank electronics, MKE for the main gun and ROKETSAN for the armour.

ESD: At the recent IDEF exhibition in Istanbul FNSS presented two new vehicle designs. To what extent are these developments supported and/or funded by public means?
Avşar: Frankly speaking, the development phases of these two new vehicles (KAPLAN and PARS 4x4) were neither supported nor funded by SSM or any other state agencies. As I know, these vehicles were designed and developed by FNSS engineers without any external support or assistance and funded in house by FNSS R&D expenditures.
On the other hand, this constitutes a perfect example for the maturity level of the Turkish military land vehicle industry. Besides the local defence projects, FNSS and other local companies progressively develop indigenous vehicles in response to local and global warfare trends and land vehicles projection by undertaking the non-recurring costs and marketing them to internal and external markets. They sometimes submit bids in the scope of local military projects with these vehicles, which is a big advantage for the government supporting a lower project budget and schedule. These vehicles are sometimes delivered to foreign armies even before the Turkish Armed Forces introduce them.

ESD: How would you assess the development of the Turkish military land vehicle industry since the foundation of SSM/DIDA (Defense Industry Development and Support Administration-Later named SSM)? Which capabilities can be provided indigenously, and where do you still have to rely on international cooperation?

Photos. FNSS

At IDEF 2015 FNSS presented two new vehicle designs: KAPLAN (above) and PARS 4x4.

Avşar: Over the last 30 years since its foundation, the Undersecretariat for Defense Industries has made significant achievements in building the blocks for a modern national defence industry in Turkey, with notable results in the land vehicle industry.
At the beginning, the local industry had some production capability, however, the design and development skills were very limited, even almost none. Therefore, during the 1980's and 1990's, the requirements of the TAF were met either through the direct procurement from abroad or local production under licence.
Following this era, thanks to the experiences gained from these procurements, our local companies were encouraged to design, develop, qualify and manufacture their own products. So that during the 2000s, we have managed to conduct local development projects such as ALTAY, LEOPARD 1 Modernisation, Amphibious Assault Bridge, and fortunately most of these projects were completed successfully. The remaining projects are still on track and we expect the same achievements from these as well.
On the other hand, the achievements that I have already referred to do not mean that "we are done". Nowadays, not only my department but the entire SSM is working on the life cycle management. Hopefully, in the future, we will not only procure and deliver the systems to the user but we will also manage the life cycles of our systems so that we will be able to provide better systems in terms of cost effectiveness and logistics.
As a result of considerable dedication and efforts, key defence industry institutions have been established to meet the requirements of the TAF locally, each filling an important void in its field. Currently the Turkish land vehicle industry is capable to develop all kind of land platforms indigenously.
However, our local industries still have some dependencies, not at the system level, but with regard to some sub-systems, including armament, sensors, armour material, suspension and propulsion systems. We expect to deal with these issues in the near future and provide much more local content in our projects and products. ■

The interview was conducted by Korhan Özkilinc.

General Curtis M. Scaparotti New SACEUR

The North Atlantic Council approved the nomination of General Curtis M. Scaparotti, United States Army, to the post of Supreme Allied Commander Europe. General Scaparotti (right) is currently serving as

(Photo: U.S. DoD)

Commander, United Nations Command, Combined Forces Command, United States Forces Korea. His recent positions include Director of the Joint Staff and ISAF Commander. Upon completion of national confirmation processes, he will take up his appointment as successor to General Philip M. Breedlove, United States Air Force, at a change of command ceremony at the Supreme Headquarters Allied Powers Europe in Mons, Belgium, expected in spring 2016.

Martin Fausset new CEO of Elbit Systems UK Limited

(df) Elbit Systems UK Limited (ESUK) announced the appointment of Martin Fausset as CEO with effect of March 1, 2016. Fausset will report directly to Bezhalel Machlis, Elbit Systems' President and CEO. Prior to his joining ESUK, Fausset held a number

(Photo: Elbit Systems)

of senior positions in the Aerospace, Defence and Automotive sectors, including at AgustaWestland, Rolls-Royce and Ricardo PLC. He brings extensive international business and board experience from across a number of sectors and markets. ESUK has a number of wholly-owned subsidiaries in the UK that provide advanced technology solutions for military and commercial applications across Air, Land and Marine markets. An ESUK-KBR joint-venture was recently awarded a contract to deliver the fixed-wing Military Flying Training System for the British armed forces. In addition, Elbit Systems' joint company with Thales UK is the provider of the WATCHKEEPER programme, the new UAS of the UK armed forces.

ESD Has Started a New LinkedIn Group

(df) LinkedIn has become a more and more important source for information. The magazine European Security & Defence has therefore started a LinkedIn group to share information between industry and experts, to start discussions on security topics and to get in touch with users in the military. Members of this group will also get the latest messages on the magazine's activities, upcoming events of special interest for the military community and also a global exhibition schedule. The information exchange between group members is of highest interest, of course. Latest discussions included news on the risk of laser attacks on pilots, an analysis on Syria-Turkey intervention and news on the UK's longs-awaited Multi-Role Vehicle – Protected (MRV-P). Like all social media this LinkedIn group is not a one way information sharing portal, but a place to discuss, to ask questions, share information, get in touch with the editorial team of ESD and ESD Spotlight or meet partners in defence industries and military throughout Europe. This community is still growing and the editorial team of ESD hopes to meet you there!

Airbus Sells its Defence Electronics Branch

(ck) Airbus Group SE will sell its defence electronics branch to Kohlberg Kravis Roberts & Co L.P. (KKR), a global investor, for Euro 1.1Bn. The defence electronics branch has 4,000 employees and generates a turnover of about Euro 1Bn. Airbus will retain

(Photo: Airbus)

a minority interest. Johannes Huth, a KKR representative, said: "We are glad that we have been chosen as the best partner for the defence electronics branch. KKR has the financial ressources, detailed knowledge of the global industry sector and an international network all of which is necessary to generate growth and facilitate the company's development."

Airbus Group Proposes New Board Members for Approval

(wb) Airbus Group SE has published the agenda and other related information online for its AGM being held on 28 April 2016 in Amsterdam. Among the proposed resolutions, shareholder approval will be sought for the appointment of three new independent non-Executive Members to the Board of Directors. Catherine Guillouard, aged 51, Deputy CEO of Rexel SA and a Member of the Board of Directors of Engie SA, would replace Anne Lauvergeon, 56, whose mandate expires at the close of

(Photo: Airbus)

the AGM. Claudia Nemat, 47, a Member of the Board of Management of Deutsche Telekom AG and a Member of the Supervisory Board of Lanxess AG, would replace Manfred Bischoff, 73, whose mandate expires at the close of the AGM. Carlos Tavares, 57, Chairman of the Management Board of PSA Peugeot Citroën and a Member of the Board of Directors of Faurecia (a subsidiary of Peugeot SA), would replace Michel Pébereau, 74, whose mandate expires at the close of the AGM.

Patria Becomes a Finnish-Norwegian Company

(df) The Ownership Steering Department in Finland's Prime Minister's Office has released information about Patria's new minority owner and ownership structure. The State of Finland is to sell 49.9% of the defence company Patria Oyj to Kongsberg Defence & Aerospace AS. The total value of the transaction is Euro 270M. The transaction is expected to be concluded during the second quarter of 2016. After that the State of Finland will own 50.1% of Patria Oyj. Kongsberg is more than 200 years old, and the State of Norway is its main stake-

holder with more than 50% ownership. Kongsberg has four Business Areas: Maritime, Defence Systems, Protech Systems

(Photo: Kongsberg)

and Oil & Gas. The Group employs some 7,700 persons and operates in more than 25 countries. Kongsberg's turnover in 2015 was Euro 1.8Bn.

PLATH's Intelligence Workshop in May

(df) The 7th Intelligence Workshop by PLATH will be held on May 10, 2016, prior to the EW Europe 2016 conference. To fulfill the continuously growing expectations of the international audience PLATH evaluated the recent intelligence requirements as well as the newest trends and technologies. Resulting from the comprehensive market analysis, border security will be the main focus of the 7th Intelligence Workshop. In times of the refugee crisis and terrorism it is essential to detect, locate and identify individuals and their networks. To identify threats before they occur, COMINT technology supporting (existing) border security solutions will be highlighted. Use cases and challenges will be discussed during a special session on border protection. An additional session "Combining sensitive data" will provide new solutions and ideas of processing and analysing IP and

(Photo: PLATH)

metadata. The 7th Intelligence Workshop will close with the session "Bringing down COMMS", highlighting new and smart jamming capabilities. The Intelligence Workshop is a full-day event, which is free to attend.

NITEC'16 in Estonia

The NATO Communications and Information (NCI) Agency and the Association for Communications, Electronics and Information Systems Professionals (AFCEA Europe), the two "number ones" in communications and information technologies, are partnering for the fifth time to support the Alliance on this crucial way into the future by providing a highly professional and attractive stage for discussing and showcasing the latest technological developments at the annual NCI Agency Industry Conference and AFCEA TechNet International (NITEC). NITEC'16 will be held at the Swissôtel Tallinn, Estonia from 7 to 9 June 2016, organised in cooperation with the Estonian Ministry of Defence and will bring together over 500 senior government, military and industry leaders as well as defence and security experts. Taking place in the run-up to NATO's Warsaw Summit, the event will provide an excellent venue to address how NATO entities and industry can collaborate more effectively in a new era of shared risk to build resilience through developing and delivering secure C4ISR and cyber capabilities. The conference programme on "Building Resilience through Secure

C4ISR: NATO-Industry Collaboration in a New Era" will focus on the new way of engaging with industry adapted to the diversity and simultaneity of threats and rapid technological developments, while providing concrete opportunities to connect, exchange views, discuss lessons learned and collaborate with industry partners. Over all three days NITEC'16 will also present an Industry Exhibition to allow a closer look at cutting- edge hard and software applications as well as in-depth discussions in reserved meeting areas and during conference breaks. B2B speed dating sessions will help to find new partners and to increase business opportunities. Beyond that, enjoyable social events will be provided to allow intensive networking and relaxation after busy working days. Registration is open and the latest programme is available on www.nitec.nato.int.

Lockheed Martin and ORBCOMM Join Forces for IoT Footprint

(df) Lockheed Martin and ORBCOMM have signed a Memorandum of Understanding to enhance their footprint in the area of Internet of Things (IoT) technologies. As the world becomes increasingly connected and automated, Lockheed Martin plans to leverage ORBCOMM's Machine-to-Machine (M2M) portfolio and expertise to explore opportunities for customers and across the corporation. Space-enabled solutions in particular provide satellite connectivity and services for IoT applications that require wide-area coverage and integration with multiple tiers of information technology. "The vision of the Internet of Things promises to change how society benefits from machines embedded with greater intelligence, improving the decisions organizations make and ultimately the quality of service delivered to their end users," said Dave Markham, Vice President Strategy and Advanced Programs at Lockheed Martin Space Systems. "To that end, we look forward to exploring future opportunities with a satellite M2M market leader like ORBCOMM." The two companies will jointly explore future satellite and hybrid satellite/cellular M2M opportunities primarily in the government sector in the United States, as well as select international markets. Collaboration may span a range of activities, including joint business development, portfolio evolution and allied partnerships.

Deliveries of Bell Helicopter

(df) Bell Helicopter, a Textron Inc. company, delivered 175 aircraft in 2015, a combination of its current production products as follows: 52 x Bell 429, 12 x Bell 412 (EP/EPI), 99 x Bell 407 (GX/GXP), 12 x Bell 206L4. The regional deliveries include 28 commercial helicopters to countries in the Pacific Rim, 69 civil aircraft in North America, 31 deliveries in Latin America, and 47 helicopters across Europe, the Middle East and Africa. The company also launched the Bell 407GXP and announced the largest helicopter order in Bell Helicopter history for 200 x 407GXPs to Air Methods Corporation. The first of those aircraft were delivered in January 2016. Improvements to the Bell 412 helped secure a major win in Japan and will serve as the foundation for Japan's Ministry of Defense UH-X development programme. UH-X is a co-development programme between Bell Helicopter and Fuji Heavy Industries for approximately 150 helicopters, to be delivered over the next two decades. "2015 was a challenging year for the helicopter industry with ongoing impacts of the decline in oil and gas, continued geopolitical unrest and global economic uncertainty," said Mitch Snyder, Bell Helicopter's president and CEO. "Despite tough market conditions, Bell Helicopter expanded its market presence and secured a number of key wins."

(Photo: Bell Helicopters)

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