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Iran Remains a Problem State

For years, the five veto powers of the UN Security Council (and at the same time nuclear powers) of China, France, the United Kingdom, Russia and USA, together with Germany, have striven to get Iran to back down. Now, the preliminary agreement from Lausanne seems to have found a solution in Vienna, with which the danger of an atomic bomb in the hands of the Tehran Mullah regime has been averted until further notice.

The cornerstones of the agreement read as draconian restrictions on the Iranian nuclear programme, which the ruling powers consistently allege only serves civil purposes. The number of centrifuges required for uranium enrichment must be reduced from currently 19,000 to 6,000 in the next ten years. The existing stocks of enriched uranium will be reduced from 12,000 kilogrammes to 300 kilogrammes. In the future, the enrichment must only occur up to a share of 3.67% of the isotope Uranium-235, it must be at 90% to be usable for an atomic weapon. Iran may use the facilities in Arak und Fordo only for research purposes now. The International Atomic Energy Authority (IAEA) will be granted extensive control powers for 25 years, to monitor adherence to the agreements. These are not only limited to civil systems and research facilities, but also include military properties, if there is justified suspicion that activities are in progress on them, which infringe the agreement. If Iran, attested by the IAEA, complies with its obligations, the economic sanctions which have severely affected the country in the past few years will be lifted step by step. However, the import and export of weapons will remain forbidden for a period of five years. The embargo for all products that could be required for the manufacture of ballistic missiles will be adhered to for a further three years.

However, even after this agreement, Iran is still in possession of the knowledge (and the infrastructure for its further development), which enables them to manufacture atomic weapons. Only time has been gained, if they decide to revoke or circumvent the agreement reached again. According to the experts, they would then need around a year, to rise from an emerging nuclear power to a nuclear power. However, this time gain could – it is hoped – be large enough to take the pressure off their strategic opponents in the Middle East, primarily Saudi Arabia, to also think about nuclear weapons, and therefore avoid entering into an atomic arms race in a region that is already characterised by conflicts.

The Vienna agreement is a success in its efforts to contain the proliferation of weapons of mass destruction. However, it does not mark a fundamental change in the relationship with Iran. Iran remains a problem state, which is taking sides against strategic partners in the West – at all the sites of conflict in the region – Syria, Iraq and Yemen. In particular, Israel rightly perceives the policy of Tehran as an existential threat. This will be defused if Iran's short term access to nuclear weapons can be ruled out. On the other hand, however, Israel must fear that lifting the sanctions against Tehran, will give the opponent back their economic potency, which has been lost in the past few years. A boom could lead to the now fragile public acceptance of the regime growing again. Above all however, they will be given significant means to subsidise their allies such as the Hisbollah movement and the Assad regime.

Therefore, the reaction of the Arabian Sunni opponents of Iran to the Vienna agreements was also cool. They know that even in the short term, this could mean a shift in power in favour of the "Shiite crescent". What was negotiated over Israel's head must not be at the expense of Israel. The West must consider the security interests of the only reliable ally in the region. Furthermore, even after Vienna, they won't be able to afford neutrality in the conflict of the alliances, which have formed around Saudi Arabia on the one side and Iran on the other. Actually, it is neither in their own interests, nor does it serve conflict resolution to take sides here. Only a solution which also complies with Shiite interests, and here particularly the interests of Shiite minorities in Sunni majority societies, is conceivable here. However, the current regime in Tehran still can not be a partner in the search for such a solution.

Peter Bossdorf

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Italy's Ministry of Defence has launched the Navy's fleet renewal programme to cope with military, peacekeeping and civil protection requirements at and from the sea. Page 42

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The modular concept of the ALTAY facilitates the integration of technologies emerging in the future, a fact that will pay off in terms of competitiveness on the markets. Page 71

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The same countries that impose embargoes on selling components to Israel or its defence industry often embrace Israeli technologies for defence modernisation. Page 82

ASR-NG for Australian Air Bases

(gwh) Airbus Defence and Space has received two contracts worth approximately €130 million from Australia's new Capability, Acquisition and Sustainment Group to equip and support nine military and civil/military Australian airfields with the world's newest and most powerful airport surveillance sensors. Ten ASR-NG (Airport Surveillance Radar – Next Generation) radars will provide enhanced input into the Australian National Air Traffic Management Surveillance picture and contribute to the achievement of Air Battle Management missions.

(Photo: Airbus DS)

Deliveries, including nine complete and one training system, are planned until 2020. ASR-NG consists of a solid state primary radar using an advanced signal processing technology for medium and long-range air traffic surveillance. It closes the gap between a tactical medium range air surveillance radar and a classical air traffic control radar. ASR-NG integrates with the MSSR 2000 I (Monopulse Secondary Surveillance Radar) secondary radar for automatic identification of individual cooperative aircraft.

ATM at MSPO 2015

(jh) Under the motto "Detect – Process – Act", ATM ComputerSysteme GmbH (ATM) from Constance (Germany) will present the Vehicle Observation System (VOS) for enhanced perception of dangers and improved command capability at the 23rd International Defence Industry Exhibition MSPO in Kielce, Poland, from 1 – 4 September 2015 at booth E-29. When facing asymmetric threats, the protection of soldiers and vehicles is often a matter of seconds. Camera systems help the driver, provide support when operating the weapon station and increase situational awareness. Because these cameras have mostly been stand-alone solutions there have been problems with the timely processing of the relevant information, because cameras could not be operated in parallel at the workstations. The Vehicle Observation System from ATM now links all camera systems via a central computer interface, creating a cross-system view concept that enables different camera images to be accessed from every vehicle workstation with a display. Either an analogue or a digitised image is shown on the display depending on the role. The VOS has a modular design and is suitable for logistic and combat vehicles alike. Additional sensors and systems can be integrated with the system. The VOS can significantly improve crew reaction times and provides an optimised situational picture.

Helicopter Air Crew Training System

(df) Airbus Helicopters has achieved factory acceptance of HATS01, the first of fifteen helicopters of the H135 family (EC135 T2+) for the Helicopter Aircrew Training System (HATS) for the Australian Defence Force (ADF). Boeing Defence Australia will be the prime contractor for the new training system. Under the JP 9000 Phase 7 HATS project, a new joint helicopter training system for both Army and Navy aircrew will utilise the EC135 T2+ helicopters, along with flight simulators and a new flight-deck equipped sea-going training vessel. The EC135 T2+ is a highly advanced military training helicopter, offering a glass cockpit with high visibility, a multi-axis auto-pilot, the performance and safety of a twin-engine helicopter replacing current single types, plus other advanced technologies to help instructors perform training missions safely and provide the ADF with the flexibility to undertake additional missions. The helicopter is part of successful training systems in Germany, Switzerland, Spain and Japan, and is in service in Australia with the Victorian and New South Wales police forces.

(Photo: Airbus Helicopters)

Cased Telescoped Cannons

(df) CTA International (CTAI), the joint venture of BAE Systems and Nexter, has been awarded a €212 million contract from the UK Ministry of Defence, which marks an important milestone for CTAI to deliver a new capability to the British Army's new vehicle programmes. The contract for 40mm cased telescoped cannons for the UK's Scout and Warrior Capability Sustainment Programmes, will be the first time with this state-of-the-art munitions technology in full production. The programme will see CTAI deliver a total of 515 cased telescoped cannons over seven years, with the first cannons scheduled for delivery in mid-2016. The design provides a weapon that is both powerful and compact with low intrusion, allowing the munitions to be fired at high elevation and on the move. This capability will give the British Army increased flexibility to use their new vehicles in different theatres.

(Graphic: BAE Systems)

Delivery of Final Bell 412EP

(df) Bell Helicopter announced the final delivery and acceptance of eight Bell 412EP helicopters to the Philippine Department of National Defense (DND). The eight Bell 412EP helicopters, fully configured and equipped with advanced features, were purchased with the government-to-government contracting support of the Canadian Commercial Corporation (CCC), and fully meet the

(Photo: Bell Helicopter)

DND's modernisation requirements. Bell Helicopter began staged deliveries of the eight aircraft in June, to be used for combat utility and VIP transport operations, as well as relief efforts. The Bell 412 and its variants offer the most rugged medium twin-engine helicopter available, with the best readiness rate of any helicopter in its class. The Bell 412EP easily fulfills many mission critical helicopter operations worldwide, offering reliable performance in some of the most extreme climates. Its dual digital automatic flight control system with available IFR option and Category A/JAR OPS 3 capability provides greater control and improved situational awareness. With a cruise speed of 122 knots (226 kph), range of 357 nautical miles (662 km) and an expansive cabin easily accommodating 13 passengers and two crew members, the Bell 412EP is capable of fitting multiple mission criteria.

■ PlumeSIM CBRN Simulator

(df) Argon Electronics releases the second generation of its CBRN simulator named PlumeSIM. It will be showcased for the first time at DSEI. PlumeSIM is a wide area field exercise and table top training system using Argon CBRN/HazMat simulators. The portable system enables remote instructor management of its chemical and radiological simulator instruments under a fully configurable 'virtual plume', in real time, over user-selected mapping. Users are USAF, Canadian Armed Forces and UK MOD amongst

(Photo: Argon Electronics)

others. The system allows instructors to manage detection instrument training of multiple personnel simultaneously, recording the actions of trainees from a central location. The design of PlumeSIM allows for any type of training map to be uploaded to the software, even homemade sketches. This versatile system can first be used in the classroom with a table-top mode, where trainees use gaming controllers to move around an on-screen training area during the virtual plume scenario, and their activity can be recorded and analysed before they venture into a field training exercise. After classroom training, trainees can practice with PlumeSIM in the field, using body-worn player units which track location, monitor activity and maintain communication with the exercise control system, so the instructor can monitor their location on the control base map via a long range radio comms link in real-time.

■ Czech JAS-39 GRIPEN Secure Iceland

(df) Four Czech Air Force JAS-39 GRIPEN aircraft are currently conducting air patrols and training in the skies above Iceland under the Alliance's air surveillance mission for the Nordic NATO Ally. The fighter jets and 70 personnel took up their duties at the end of July. Their task is to provide

(Photo: Milan Nykodym)

"airborne surveillance and interception capabilities to meet Iceland's peacetime preparedness needs." The Czech Air Force will conduct the mission through 29 August 2015. This is the fourth deployment of Czech GRIPEN fighters to defend NATO nations' airspace. In 2009 and 2012, Czech GRIPENs provided air policing over the Baltic States, and in 2014 they operated over Iceland for the first time.

Drew Defense Add Value to Pilot Training

Shoulder-launched, man -portable surface to air missiles (ManPADS) are a serious threat to helicopters and other low flying aircrafts. The onboard Common Missile Warning System (CMWS) notifies the pilot about an incoming SAM, but without the visual effect of the M176 pyrotechnic simulator he would only obtain an audio alarm but would not see from where the threat is coming. The M176 provides a smoke trail (simulating the flight path of a surface to air missile) for about 150 meter and thus visualises during training what an aircrew would see during a ManPADS attack in theater of operations. Generally the Weapon Effect Simulator (WESS) is integrated into training systems providing the stimulus into the CMWS of combat aircraft. The ManPADS simulator is a member of a large family of pyrotechnic simulators which provide realistic theatre of war scenarios and add stress inoculation to the combatants. Whilst the usage of laser- or radio-frequency-based training systems allow for very sophisticated weapon training, the visibility on the training ground is only achieved through pyrotechnic battlefield and weapon effects. Pyrotechnic simulation support a variety of training applications such as IED awareness, military operations in urban terrain, force on force and force on target training.

Protection against Micro-Drones

(df) Micro-drones are easy to obtain, produce, use and therefore a very cheap and effective weapon for terrorists. On the other hand they are, due to size and signature, hard to detect and fight. At the G7 summit in Germany a new security solution for the protection against micro-drones made its debut in theatre. Under leadership of the company ESG the industry partners Diehl Defence und ROBIN Radar Systems have been working intensively since early 2015 on a joint solution as a defence against threats due to the unauthorised use of commercial micro-drones. The solution focuses on electronic detection, verification and countermeasures as well as appropriate means of command & control. All elements were integrated with the ESG command system TARANIS. TARANIS was not only used for simple data exchange between systems, but also responsible for an easy

(Photo: ESG)

to understand operational picture and the distribution of information to the security forces.

First Flight of the LEGION POD Sensor System

(Photo: Randy Crites)

(df) Lockheed Martin's LEGION POD recently completed its first flight test, successfully tracking multiple airborne targets while flying on an F-16 in Fort Worth, Texas. LEGION POD was integrated onto the F-16 without making any hardware or software changes to the aircraft. Additional flight tests on the F-16 and F-15C will continue throughout the year. "LEGION POD is a production-ready, multi-sensor system," said Paul Lemmo, Vice President of fire control at Lockheed Martin Missiles and Fire Control. "With our most advanced hardware and software, a hot production line and an established logistics depot, LEGION POD provides a high-performance, low-risk, affordable capability to warfighters today." Equipped with an IRST21 infrared sensor and advanced networking and data processing technology, LEGION POD provides high-fidelity detection and tracking of airborne targets. It also accommodates additional sensors without costly system or aircraft modifications. Additionally LEGION POD accommodates additional sensors within its current structure, acting as a multi-function sensor suite without costly aircraft or system modifications. This ensures it can meet both current and emerging customer requirements. Housed in a 16-inch diameter structure, LEGION POD's baseline configuration includes an advanced processor and datalink capability in addition to its infrared search and track technology. With the ability to accommodate additional sensors at low cost, LEGION POD fulfills most warfighters' critical needs.

Wide Area Motion Imagery

(jh) Exelis Inc. gave a presentation of the CorvusEye airborne sensor systems to representatives of the German Armed Forces, Federal German Police and State Police including the Federal Criminal Police Office and several State Police offices. The presentation was organised by Exelis' local representative Griffity GmbH and was assisted by representatives of the Dutch company Vigilance as the integrator and operator of the airborne platform on dis-

(Photo: Exelis Inc.)

play, and the German Fraunhofer IOSB research organisation. The event took place at the Hangelar airfield near the City of Bonn and attracted some 80 attendees. CorvusEye 1500 is a wide area surveillance system developed by Exelis on the basis of the US military's GORGON STARE programme as a system which for example was used by the U.S. Forces in Iraq and Afghanistan aboard REAPER UAVs for surveillance and reconnaissance missions. CorvusEye is offered in response to evolving and partly asymmetric threats for both military and civilian applications for police and security forces. Although the system is subject to ITAR (International Traffic in Arms Regulations) it has been cleared by the U.S. Government for export to some 50 countries.

New Diesel Gensets for the British DUKE Frigates

(df) Rolls-Royce is to supply a total of 48 MTU diesel gensets, worth approximately €90 million, for 12 DUKE-Class (Type 23) frigates used by the UK's Royal Navy. It is the first time that MTU engines will be in use with the Royal Navy in combat ships. The vessels were built between 1985 and 2002 and each will be equipped with four new MTU 12V 4000 M53B diesel gensets,

(Photo: MoD UK)

as part of the Royal Navy's vessel life extension programme. The propulsion system will comprise Rolls-Royce SPEY SM1A or SM1C gas turbines with the MTU diesel gensets, enabling the vessels to accelerate to up to 28 knots. The diesel gensets, which each deliver 1,650 kW, will be delivered from late 2016. The deal also includes a comprehensive logistics package for the provision of spare parts and introductory training package.

Turret for the SCOUT SV

(df) Lockheed Martin UK has contracted with Rheinmetall's Defence arm to manufacture the turret structures for the British Army's new SCOUT SV Reconnaissance vehicle. The order, issued in London, is worth a total of €130 million and covers production of up to 245 units. The SCOUT SV Base Turret System now of producing consists of the turret structure and weapon mount (TSWM) for the SCOUT SV Base Turret System, a 40mm medium-calibre turret solution. The first production unit is scheduled for July 2016.

First ATAK Batch Delivered

(df) Turkish Aerospace Industries (TAI) has completed the delivery of the first batch of T129 ATAK multirole combat helicopters to the Turkish Land Forces. The successful delivery of the first batch of helicopters is a major milestone for the Turkish aerospace and defence industry in terms of design, development and international collaboration. T129 ATAK has been optimised to meet and exceed the "hot and high" performance requirements for harsh geographical and environmental conditions while providing a day and night all environment capability; effective, precise weapon systems and at the same time low visual, aural, radar and IR signatures. High levels of crashworthiness and ballistic tolerance provide high battlefield survivability. The helicopter may be provided with MIZRAK ATGMs, and CIRIT (70 mm guided rockets) designed for Turkish Armed Forces. Further armament options include HELLFIRE and SPIKE ATGMs, STINGER A/A missiles. A new FLIR system increases image quality and range performance with real-time image processing and multiple target tracking with high resolution thermal camera, laser rangefinder, designator and spot tracker. The relatively small radar cross section and state of the art systems counter measure systems help to provide high battlefield survivability, low visual, aural, radar and IR signatures.

(Photo: TAI)

The Polish Security and Defence Policy

The global balance of political, economic and military powers in the contemporary international system is characterised, among other things, by the emergence of new powers on the international stage (such as the People's Republic of China and India) and the evolutionary and relative decline in the civilizational, political and military importance of the United States.

Krzysztof Miszczak

The basic element of the current development of the European international order subsystem is a definitive end of the post-Cold War era and the ensuing political, economic and civilizational degradation of the neo-imperial Russian Federation. It has been caused, among others, by a radical strategic turn made by Russia in relationships with the countries of the Western hemisphere. Russia dismisses the Western offer to foster cooperation within the scope of constructing common international security structures based on respect for international law.

Poland's Geo-Political Environment

Comprehensive and structural transformations of the international system forced Poland to re-appraise its "traditional" methods of international activity it was deploying until recently. This process is aimed at adapting the traditionally functioning coordinates of Poland's own policy in the field of foreign affairs, security and defence and their transposition into an efficient instrument of pursuing national interests in the new and actively growing international geopolitical environment, as well as at fostering and considering the structures of cooperation and geo-economic dependencies. With Ukraine in turmoil, Poland is more acutely aware of its vulnerability than at any moment since the end of the cold war. Today, Poland finds itself in a situation that is highly uncomfortable for its security and defence policy from the perspective of state interests. Its security environment to the West and to the South is formed by partner countries, such as Germany, the Czech Republic, Slovakia and Hungary. Like Poland, they are NATO and EU member states. Additionally, the latter three have cooperated with Poland within the scope of the so-called Visegrad Group. Furthermore, Poland has formed a so-called informal and exceptional structure of cooperation and consultation with Germany and France, i.e. the Weimar Triangle. Poland's direct neighbour in the East is Ukraine, with which Poland also has no alliance relations, even though maintaining its territorial independence and sovereignty is in the fundamental interest of Poland's security. Despite the short border with Russia to the north (Kaliningrad Oblast exclave), an independent Ukraine pursuing pro-Western politics is pushing the Russian Federation geopolitically away from the Polish border and more to the East. Belarus is also Poland's direct neighbour but is completely dependent on Russia both politically and economically. As regards the Baltic states, Latvia and Estonia are Poland's allies in NATO and EU but their societies feature large Russian-speaking minorities. Meanwhile, Lithuania is Poland's

Photo: author

Photo: Ministry of Foreign Affairs, Poland

"Weimar Triangle" summit in Wrocław (Poland) on 3 April 2015; from left to right: Frank-Walter Steinmeier, the German foreign minister, and his colleagues Laurent Fabius (France) and Gregorz Schetyna (Poland)

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ally in both these organisations and is home to a considerable and politically significant Polish minority.
Today, Poland's actual partnership relations with any of its allies and partners are not ordered enough to ensure its security to a sufficient extent.

Polish-German Relations

The annexation of Crimea, pending war in the east of Ukraine, the political and military conflict with Russia through its permanent military and logistics support for the separatists in the east of Ukraine, as well as the risk of Ukraine's economic and financial crash, together gave rise to a situation of permanent threat and a rapid decline in the level of security in Central and Eastern Europe, including Poland. Additionally, the awareness of this threat is deepened by the ongoing process of renationalisation of foreign affairs and security policies pursued by leading European countries (Germany and France). Poland's sense of alienation in the region is intensified by their consideration for the fictitious threats to Russia's security, visible in highlighting the need to respect the provisions of the Founding Act on Mutual Relations, Cooperation and Security between the Russian Federation and the North Atlantic Treaty Organisation of 1997 (violated by Russia on numerous occasions) and by the objections (voiced, among others, by Germany) to Poland's main ally locating permanent NATO bases in Poland and the Baltic states. The lack of understanding and empathy in the German society for the threats to Poland's security arising from geopolitical aspects does not support the creation of a feeling of trust between those two partners within the NATO (according to a new Pew Research Center poll, most Germans say that if a Polish NATO partner were attacked by Russia they would be against offering military help) and gives rise to far-reaching uncertainty in which Poland's security may be sacrificed by its neighbours in attempts to ensure their own security.
Although Poland has been pursuing the "reset" policy in relations with Germany versus the Russian Federation and has been recently proactively supporting German policy with regard to Ukraine, Polish-German relationships remain a relation of unequal partners. What is more, Germany has even downplayed Poland's political interests in the East of Europe and failed to support Poland's expectations regarding its involvement in direct consultations with the Russian Federation viz. solving the conflict between Russia and Ukraine (the Normandy format) despite prior close cooperation in this respect within the scope of the Weimar Triangle. It has been interpreted by Poland as a sign of accepting Russia's demands to remove Warsaw from participating in direct negotiations with Russia and Ukraine and a suggestion that Germany is pursuing an independent policy in relations with Russia upon ignoring Polish interests; such an approach is well-remembered from history.

Photo: NATO

From Poland's perspective it is NATO and, above all, the United States that remain the main guarantors of its security.

Strengthening Polish Military Power

Nevertheless, Warsaw has been staunchly supporting the policy of EU sanctions connected with Russia's imperial policy. There are, however, deep differences between the European partners and the partners of Polish security and defence strategy regarding the assessment of the level of neo-imperial policy pursued by the regime of Russia's President Vladimir Putin. Based on its historical and very negative experience and a sense of responsibility for the security policy, threatened so many times in the past, in the face of Russia's aggression in the East, Poland cannot rely on a "wishful thinking" policy and must focus on the real basis for its implementation, taking into consideration its own, i.e. real economic and military potential. For that reason, the current challenges in the East of Europe are of the highest priority for the Polish foreign policy from the strategic perspective. The issue of building a security environment in Europe with Russia ruled by V. Putin will always be defined by Warsaw as a threat to Poland's own security as it would be pursued at the cost of the interests of the Russian Federation's closest neighbours. As long as Russia does not reinstate the policy of cooperation and does not cease confronting its neighbours, this policy of the Kremlin will be categorically dismissed by Warsaw, NATO and the EU alike. For that reason, the neo-imperial policy of Putin's regime had to cause retorsions on the whole transatlantic security system of NATO, the EU and above all the United States. It also forced Warsaw to initiate a process of strengthening its own security and defence system, taking into consideration Poland's relatively weak position in the area of European security. In the light of the reforms and modernisation of the Polish Armed Forces (started in 2014 and planned until 2022), the importance of four European armament programmes pursued by the European Defence Agency have been taken into account. It involves, above all, the support for such initiatives as: developing infrastructure for constructing unmanned planes, adopting political framework for cybernetic security and for developing the strategy for maritime security as well as for the operation of the Common Security and Defence Policy, the possibility of mid-air refuelling as well as further expansion of the satellite commu-

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nications. Poland is striving at a sustainable development of the defence industries in all member states and at releasing the funds allocated to financing research and technologies of the defence sector as well as at executing dual-use undertakings (i.e. simplified transfer of technologies and know-how between EU member states). Poland wants to make its forces significantly more lethal in case of an attack. In 2014, Poland increased its arms budget by 13% and in 2015 this increase will ultimately amount to 20%. Over 10 years, €32billion will be spent on armaments. However, it will not ensure the country's security in any sufficient manner. Poland will still be unable to defend its territory on its own. Out of 100,000 people in the Polish Armed Forces, only 40,000 are soldiers prepared to fight at the front line. The remaining 60,000 include administration, staff and logistics personnel. Furthermore, Poland lacks air defence and territorial defence forces. Without cooperating with its NATO allies, Poland will be defenceless in the face of a potential aggression from the East.

Photo: NATO

Bronislaw Komorowski (left), the former President of Poland, and the former NATO Secretary General Anders Fogh Rasmussen during a press conference at the Wales summit: "The decisions made during the last NATO summit in Wales are a breakthrough in the history of this organisation and a return to its basic tasks of guaranteeing collective security to its member states."

Security Guarantors?

Because neither Germany and France on the one hand nor the ineffective EU security structures on the other are making any progress in creating a truly Common Security and Defence Policy, from Poland's perspective it is NATO and, above all, the United States that remain the main guarantors of its security. This is why it is in Poland's best interest to encourage and involve the USA and EU countries on a permanent basis in the plans to solve Polish security policy problems. It is also for this reason that Poland (i.e. both the ruling parties and the opposition) is rather critical of the plans to create a European army. A potential second military alliance in Europe (next to NATO) is considered unnecessary by Warsaw; it would weaken NATO itself which remains the best guarantor of Poland's security. For a European army to ever be created, first a common foreign policy of the European Union would have to be agreed on; this, however, remains an illusory task in the nearest future due to the political unwillingness on the part of EU member states to give up their sovereignty in the field of national security. The key to the European security lies in maintaining the nuclear balance of power versus Russia. Only the United States are capable of ensuring any such real balance.

In this context, while the decisions made during the last NATO summit in Wales (Newport, 4-5 September 2014) are a breakthrough in the history of this organisation and a return to its basic tasks of guaranteeing collective security to its member states (enforcing Article 5 of the Treaty on collective defence), the consequences of implementing these decisions remain unclear for Poland. Despite the categorical dismissal of the Kremlin's aggressive policy versus sovereign Ukraine, there was yet again a difference of opinions between NATO's member states which confirmed an underlying conflict of interests regarding the operational implementation of the provisions stipulated in said article in case of an emerging threat on the part of Russia to the security of NATO's member states.

For Poland, the lack of political will among other NATO member states as regards permitting the West European and US troops to station in their territories on a permanent or rotation basis, including the organisation of collective training and manoeuvres, is only an expression of the organisation's weakness and a real confirmation that the levels of security within NATO have different priorities and that the organisation has no common security strategy in relation to Russia. For Warsaw, the so-called NATO Spearhead, i.e. Very High Readiness Joint Task Force (VJTF, Readiness Action Plan from June 2014) to be used in case of threats from the Eastern part of Europe whose long-term (though not constant) deployment will start in 2016 and be continued in 2017 within the territories of the NATO member states in Central and Eastern Europe is too small in terms of personnel and has no appropriate firepower to discharge its role, i.e. deter a potential aggressor from the Eastern Europe. Despite the already started and strategically important cooperation within the scope of the German-Dutch-Norwegian brigade, Warsaw perceives the VJTF forces as a temporary and insufficient solution (5,000 soldiers, deployable within up to 5 days). Increasing the readiness of the International Corps Northeast command in Szczecin (as from 1 June 2015), involving, among other things, expanding its personnel element from 200 to 400, is a positive but insufficient stage on the path to preparing any potential defence operations within the territory of CEE countries. Moreover, the announcement of increasing budgetary outlays on the military to 2% by NATO's member states remains a void declaration followed by no real expenditure. Poland will reach that threshold in 2016. In 2015/2016, Poland's security within NATO should be boosted through increasing the numbers of the NATO Response Force (NRF) to 30,000; increasing the operating readiness of the so-called NATO spearhead; as well as by joining Germany, France, Italy, Spain and the United Kingdom as part of the Immediate Response Force. This process should be completed by the time the NATO Summit in Warsaw takes place in June 2016. The basic goal of the Polish security and defence policy is to guarantee the permanent deployment of NATO forces in Poland's territory.

The Ukraine Issue – Implications

In this respect, however, the interests of Poland and other NATO member states are not fully convergent. Poland should strive to bolster its own role in the political and economic structure of the European Union as it could support its security interests and boost Warsaw's importance in the geopolitical calculations of its allies on the European continent. The current aggressive policy of Russia versus Ukraine and its other neighbours remains the greatest challenge for Poland's foreign policy, defence and security. Next to close contacts with the USA, an in-depth development of Polish-German cooperation within the framework of the EU Eastern Partnership and European Neighbourhood Policy would meet the strategic goal of both Polish and German foreign and security policy, i.e. the pursuit of increased cohesion within the EU in its external actions (discharging the decisions of the European Council from December 2013 and June 2015). This is why both these countries should become one of the main pillars stimulating the development of political and military integration processes for the whole of EU and strive to devise a common strategy encompassing a unified foreign and security policy, a common security and defence policy and the European neighbourhood policy. Poland is supporting the agreement reached at the Minsk summit with regard to solving the conflict between Ukraine and Russia, aware that while both these countries support the agreement, they interpret it differently on the basis of completely deviating goals of the actual parties of the conflict. In Poland's opinion, Russia perceives Minsk II as an instrument for reinstating its control in Ukraine and counteracting the future integration of Kiev with the EU structures. An additional goal of the Russian policy is to manage the crisis in the Eastern part of Ukraine through appropriate political, propaganda and military measures in such a way so as to destroy the unity of EU member states and weaken NATO. This is why the support of its European partners for Poland's policy in its relations with Russia is of key importance to Warsaw. Only a close cooperation in the Eastern policy could curb the impression that there is an asymmetry of in the balance of the Western political power and prevent its exploitation by President Putin's administration for the purposes of pursuing his own imperial goals. Poland is interested in achieving a maximally permanent cease-fire permitting the internal stabilisation in Ukraine and consequently the execution of basic reforms of its political and economic system. At the same time, Poland belongs to the group of countries which are the most interested in solving the Ukrainian conflict on account of their own security and trade policies and their shared active participation in discharging the principles of the so-called Eastern Partnership as an element of the EU neighbourhood policy aimed at developing intense political and economic relationships with EU's eastern neighbours and the South Caucasus region.

Photo: dpa

Russian President Vladimir Putin, German Chancellor Angela Merkel, French President Francois Hollande and Ukrainian President Petro Poroshenko during the Ukraine peace talks in Minsk, Belarus, 11 February 2015

Multilateral Initiatives

In the light of the financial and economic crisis in EU member states, a general decline in the level of trust observed in their societies, and the threats emerging in the eastern part of Europe as well as caused by rising international terrorism, Poland should head a European debate and create conditions for EU societies to accept faster the increasing civilian and military external intervention capacity of the whole EU. For that purpose, Poland should cease to interact with its partners by way of developing only bilateral relations and should put forward multilateral initiatives instead. They must be based on developing cooperation within the scope of a broadly understood strategic security dialogue within the European Union itself and a wide-scale opening to the development of multilateral cooperation of a multi-level system of global security. Warsaw's approach to NATO, EU and the OSCE must also be changed; this means that the declarative strengthening of the instruments of influencing the security and defence policy of the Polish state must be replaced by a real one. The Europe of today, wallowing in a deep identity crisis and confronted with asymmetrical/hybrid threats, should become in the future a multilateral and cooperative organism of political, economic and military collaboration. The value of EU's security encompassing its Eastern part will be important to Poland only if the EU member states strive to come up with a collective position regarding the creation of a transparent EU military strategy leading to proclaiming a consistent military doctrine of that international organisation. It should become the basis for announcing codified guidelines, i.e. the so-called White Paper, with legal force for all EU member states and aimed at devising and implementing a holistic strategy for the EU foreign policy, which means implementing a comprehensive approach to reacting in crisis situations (energy, maritime and cybernetic security). As a country of a medium-level economic and military potential within the European Union, Poland should in its own best interest strive at maximising cooperation within the framework of NATO and at a gradual development of the Common Security and Defence Policy as one of the basic instruments for crisis reaction in which the civilian and military component together with in-depth cooperation in the field of security and defence with other EU member states as well as countries from outside the Euro-Atlantic region is a sine qua non condition for ensuring the fundamental security interests of the Polish State. ■

Viewpoint from Paris

A Lucrative Game at which France is very Good

David Saw

French President François Hollande hardly comes across as a charismatic politician, but this lack of charisma was one of the factors that propelled him to victory in the May 2012 election. By portraying himself as 'ordinary' Hollande was able to tap into the mood of the French electorate, they no longer wanted the excitement of Sarkozy, instead they were looking for a safe option in a time of uncertainty.

The Hollande government offered what you might expect from a left-of-centre European political party. That also applied to foreign policy as well, the Parti Socialiste (PS) was hostile to French military involvement in Afghanistan and in the election campaign Hollande had promised to withdraw French troops. In June 2012 it was announced that French combat troops, 2,000 out of the 3,400 French military personnel then in Afghanistan, would be withdrawn. This was achieved in November 2012, leaving 1,400 troops for logistics and training tasks, with all of these withdrawn by 31 December 2014.

Hollande is now more than three years into his five-year term of office, but regarding his domestic political agenda it has not turned out as he or the PS would have liked. The economic picture is bad, unemployment remains extremely high and nothing the government seems to do changes anything, consequently Hollande's popularity slumped.

The municipal elections of March 2014 saw major losses for the PS resulting in the Hollande administration moving towards the political centre with the appointment of Manuel Valls as Prime Minister. Now the plan was to embark on a policy of reform in French institutions and kickstart the promised economic recovery. Nobody was buying that, as result in the European elections of May 2014 the PS lost heavily, then came the Senate elections in October where the PS-led coalition lost control of the Senate. More bad news followed in the March 2015 Departmental Elections where the PS lost again.

Domestically it has all gone wrong, but surprisingly in terms of foreign policy François Hollande has proven to be a rather robust player. France has shown that it is ready to intervene militarily in pursuit of national and multinational/coalition objectives, believing that these operations offer strategic, political and economic benefits. By contrast the Cameron government in Britain appears to be increasingly allergic to foreign military involvements.

In January 2013, under Operation Serval, France committed significant forces to confront the Jihadist threat in Mali. Bearing in mind French political interests in both West and Central Africa, they expanded the scope of their anti-Jihadist operations under Operation Barkhane, which superseded Serval from August 2014 onwards, and covers multiple nations in the Sahel. France has also played a significant role in air operations against the Islamic State in Iraq, flying combat missions from September 2014 onwards as a part of Operation Chammal.

France has also put tremendous efforts into stimulating defence equipment sales as a part of its foreign/economic and defence policy matrix. The French political left has never seen any problem in supporting the sale of defence equipment. After the al Sisi coup in July 2013, the United States effectively abandoned Egypt and this created the opportunity for France to move into the vacuum. There were sound political reasons for this, but major defence sales resulted including four GOWIND 2500 corvettes for DCNS (signed July 2014) and a major set of contracts for 24 Dassault RAFALE and a DCNS FREMM class frigate amongst other things in February 2015.

Then in May 2015 Qatar ordered 24 RAFALE (potentially options on 12 more), this coming weeks after India announced that it would buy 36 RAFALE from France (the size of this deal might yet increase as contract negotiations continue). France is also hoping to land at least two RAFALE deals in the early part of next year. This could see the United Arab Emirates place a major order, with the other opportunity potentially being Malaysia or Indonesia according to speculation in France.

At home François Hollande might be mildly toxic, internationally it is a very different story. Do not expect France to confront Russia or anything like that, but do expect to see France continue to follow its own foreign policy path: it is a lucrative game and France is very good at it.

Sights on FRONTEX

Thomas Bauer

The current discussion in Europe about how best to handle the flow of refugees has cast an organisation into the limelight that was created in 2004 to strengthen cooperation between national border security authorities. In addition to supporting EU member states in training border guards, the aim was to coordinate the fight against crime along the border. The rising tide of refugees has raised the pressure on the EU to focus on external borders from a different perspective and provide appropriate responses.

The origins of FRONTEX date back to the 1980s. The starting point for the organisation was the idea shared by Belgium, Germany, France, Luxembourg and the Netherlands, of creating a common European region in which border controls between individual states could be eliminated. In 1985 this deliberation resulted in the signing of the first Schengen Agreement in which the five signatory states agreed to a gradual elimination of border controls on the movement of persons. In 1990 a second Schengen Agreement was signed which regulates the individual provisions for the application and implementation of the 1985 convention. The elimination of border controls, and thus the creation of the so-called Schengen Area were not implemented until five years later, in 1995. The Treaty of Amsterdam in 1997 framed the provisions of the Schengen Agreement in European law. Finally, in 2004 European lawmakers resolved to include newly acceded EU member states from Eastern Europe in the Schengen area by 2007. The year 2004 also saw the beginning of an effort to build up a European authority to handle the security of the EU's common external border. The European Agency for the Management of Operational Cooperation at the External Borders of the member states of the European Union was born. The common abbreviation FRONTEX comes from the French frontières extérieures, or "external borders." The headquarters of FRONTEX has been in Warsaw since 2005.

Photos: FRONTEX

FRONTEX Headquarters in Warsaw, Poland

The main office established there currently employs some 300 people and brings together under a single roof tasks previously performed at six ad hoc offices in the member states, which used to handle the individual tasks for the protection of the EU's external borders.

Tasks and Operations

FRONTEX has a broad spectrum of responsibilities. In general, its activities fall into three key areas: analysis, coordination and practical support for training and operations. FRONTEX creates detailed risk and hazard analyses on the EU's external borders using the Common Integrated Risk Model (CIRAM) as a basis for allocating resources provided by the member states. Another field of analysis is concerned with research in the field of security technology, as well as advising the member states' security services with regard to modern technologies for border security. One result of this work is the introduction of the European Border Surveillance System, or EUROSUR for short, in 2013. The EUROSUR network combines satellite-monitoring data from member states to create a common basis for assessing the situation on the EU's external borders. At the same time, information about possible threats to the other member states is disseminated via a communication platform. The system, which in its initial stage is for the Mediterranean region, will be expanded to include the other EU countries by 2020. EUROSUR is expected to make customs and border protection easier for the member states and help them better target and coordinate their efforts against human traffickers and drug smugglers.

FRONTEX coordinates joint operations between member states in monitoring the EU's external borders, close cooperation with major EU partners such as Europol and CEPOL, as well as cooperation with the security authorities of third countries. The latter also applies to the repatriation of people who have illegally entered the EU. Practical assistance to member states comes in the form of training for border guards and the introduction of uniform training standards on the one hand, and organising repatriation operations on the other. In special situations for which a member state requires more technical and human resources, FRONTEX is also active, as was the case during the 2012 European Football Championship in Poland and the Ukraine. In its actual operations FRONTEX distinguishes between joint operations and rapid border interventions. The latter involves the immediate support against sudden threats in border traffic of a member state on the EU's external border. An example of this was the three-month-long mission on the land border between Greece and Turkey,

The EUROSUR network combines satellite monitoring data from member states to create a common basis for assessing the situation on the EU's external borders.

which was replaced after three months by Joint Operation Poseidon. Joint operations have more lead-time, which allows comprehensive analysis and planning. In the planning process, a distinction is made between land, air and naval operations. No organic resources are available for FRONTEX operations. Instead, the organisation depends on member states committing dedicated personnel that are managed as European Border Guard Teams (EBGT). The primary areas of operation for joint operations are on the land border between Europe and Turkey, the Canary Islands and the Mediterranean zone between Sicily and North Africa.

FRONTEX in the Mediterranean

In its handling of refugees, critics charge that the European Border Agency has transitioned over the years to a counter-refugee organisation. This accusation was levelled against the backdrop of isolated incidents in the Mediterranean Sea, where naval vessels deployed in support of a FRONTEX operation forced refugee boats to turn back under threat of force. In this case the debate revolved around a charge that FRONTEX was violating human rights, on the one hand, and claiming legitimate security interests of EU authorities seeking to prevent covert infiltration of terrorists among the refugees on the other. Discussions in the European Parliament led to the adoption in 2014 of an external sea borders regulation, which in addition to implementation of extra-territorial border controls at sea by FRONTEX also includes an obligation to rescue vessels in distress.

Currently two FRONTEX operations are underway in the Mediterranean region. While Operation POSEIDON SEA focuses on the Eastern Mediterranean in the area between the west coast of Turkey and Greece, the forces of Operation TRITON are deployed in the waters around Sicily. TRITON is the successor operation to the Italian rescue programme MARE NOSTRUM, Rome's response to the refugee tragedies in the Mediterranean in October 2013. By October 2014 the operation had saved more than 130,000 people from drowning because once the Italian Navy secured the refugee boats, they were towed to the nearest safe harbour. Italy was quick to push for a European solution because the increasing number of refugees had pushed that country's capacity to its limits. The Operation TRITON ships initially operated only in Italian waters, whereas the Italian ships during MARE NOSTRUM penetrated far into Libyan waters. The area of operations was expanded in April 2015 on the insistence of a number of human rights organisations to include an area 130 miles south of Sicily, since most refugee boats were in distress shortly after leaving Libyan waters. At the same time, the financial resources for Operations POSEIDON SEA, POSEIDON LAND and TRITON were trebled. Prior to the increased funding, spending had only amounted to a third of Rome's Operation MARE NOSTRUM budget, which drew significant criticism of the EU approach.

Resources and Equipment

In addition to the political debate on how to deal with the refugee issue, the transition from MARE NOSTRUM to TRITON revealed yet another fundamental problem of FRONTEX, the lack of its own assets. Shortly before the start of Operation TRITON, the European border management agency had to urgently remind the member states to make good on their commitments of ships and personnel. The states were unable to provide some of the resources they had originally committed – partly for technical reasons, but also due to other ongoing operations under NATO or European security and defence policy commitments. In the field of aviation and maritime surveillance FRONTEX is still dependent on the capacities of member states. Even the EUROSUR system is based for the most part on contributions from the National Coordination Centres (NCC) set up in each country. The EUROSUR Fusion Service, which is in use in its initial phase, is supposed to merge information available at the European level from satellite imagery and other surveillance systems. This includes information from the European Maritime Safety Agency (EMSA) and the European Space Agency (ESA). FRONTEX publishes a report every year on the commitments of member states to the

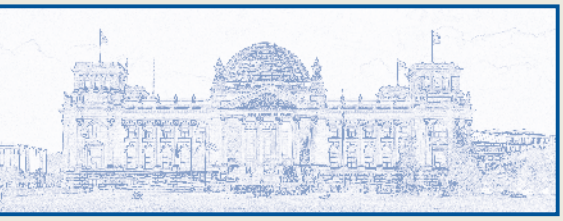
FRONTEX Operation TRITON is the successor operation to the Italian rescue programme MARE NOSTRUM.

European Border Guard Teams (EBGT) and the so-called Technical Equipment Pool (TEP), which is composed of the commitments of the respective member states for joint operations. The 2015 report made reference to the agency's efforts not only to shape the contributions of the member states more effectively, but also to build its own capacities. This point is in line with the agreed rules of FRONTEX. For instance, the agency is permitted to procure or lease equipment and services either on its own or in coordination with the member states. In a first step, the focus will be mainly on systems for aerial surveillance within the framework of joint operations. In an initial trial, capacities and services were booked on the civilian market and tested in an operational area between Bulgaria and Turkey. From May to July 2014, 115 flight hours were logged over the course of 35 flights. An initial evaluation showed that the technologies and services provided by the civilian supplier fully met the requirements of the joint operation with the result that in future the organisation will increase its use of existing resources from civilian providers. Of particular importance in this regard is the response time of the civilian provider and its capability to respond rapidly to FRONTEX taskings while ensure deployment to the required location. Another key aspect was the capability to network and embed collected data and information into the FRONTEX network.

Protection or Isolationism?

For FRONTEX, development and deployment of the latest technology in the field of border control, maritime and aerial reconnaissance is increasingly taking centre stage. In the process, the organisation is taking care to ensure that national strategies are interface-capable with the EUROSUR network. That is the only way new insights can be transferred as near real-time situational pictures, which serve as the basis for robust decisions and the swiftest possible responses to security threats. For FRONTEX, this is also the basis of a decision to rapidly acquire tugs to rescue refugees in distress. By contrast, critics see this as a worrying trend towards an increasing militarisation of border control.

But the discussion over technologies and the use of warships to control the EU's external borders obscures a much more central issue, the question of how the European Union deals with migrants and refugees. Related to this is the question of whether Europe is doing enough to help prevent the flow of refugees at their point of origin; that is, whether it is promoting the foundations of democracy and a degree of prosperity in the crisis-ridden and impoverished areas of the world. If not, the EU member states will eventually be faced with the question of why they are willing to combine their high-tech surveillance and reconnaissance systems, including naval forces, in FRONTEX, in operations against illegal flows of immigrants and yet are unwilling to make a contribution to the elimination of the negative conditions at the origin of those flows. The work of FRONTEX is therefore directly linked to the European Security Strategy (ESS) and its implementation in the form of diplomatic measures, economic development assistance, and civilian or military operations of the European security and defence policy. In a comparison of the multi-year debate over the extended security concept with the FRONTEX understanding of security, at least some discrepancies cannot simply be dismissed out of hand. The discussion over the commitment of national capacities and continued networking of security agencies should be used by member states to develop a complementary understanding of security in the European Union that goes beyond FRONTEX. ■



Viewpoint from Berlin

Germany's Answer to New Security Challenges

Wolfgang Labuhn

In 2016 the German Government intends to publish a new White Paper outlining Germany's national security policy and the future of the Bundeswehr, i.e. the German armed forces. Meanwhile recent developments like Russia's annexation of the Crimean Peninsula in March 2014 and its massive support to the separatist forces in the Donbass region of eastern Ukraine have forced policy makers in Berlin to take action long before the new German security policy is set out on paper. With Russia no longer being „a partner", as Defence Minister Ursula von der Leyen has stated repeatedly, the focus has now shifted to re-strengthening the Bundeswehr's capabilities to fight a conventional land war in Europe rather than expanding its capabilities to participate in international peace-building and peacekeeping operations under the auspices of the United Nations. Decisions taken so far have amounted to nothing less than a U-turn in German defence policy and point to a renaissance of armour and infantry in particular:

- The number of LEOPARD 2 main battle tanks is to be increased from 225 (current planning) to around 320 in future. About 100 older LEOPARD 2 MBTs now stored by manufacturers will be bought back from industry at a price of €22m to be upgraded to current requirements – with costs as yet unknown.
- From 2016 onwards €620m will be allocated to the purchase of 131 additional GTK BOXER armoured personnel carriers raising their number to over 400 vehicles (compared to previously planned 272 vehicles).
- A new tank battalion including 44 LEOPARD 2 tanks will be deployed at the Bergen-Hohne garrison in northern Germany which will be returned by the British Army to the German Government by 2016.
- The new security challenges could also mean a much longer life-cycle for Germany's remaining fleet of 85 TORNADO fighter planes which are currently being equipped with an updated avionics system software. The TORNADO jets could now remain in service well beyond 2025, possibly until 2040.
- The German Ministry of Defence has opted for Lockheed Martin/MBDA's Medium Extended Air Defense System (MEADS) and will order 4 MKS 180 multi-role combat ships for the German Navy – each project with a price tag of around €4 billion.
- According to a new „Strategy Paper to Strenghten the German Defence Industry" published in July the German Government has finally decided to treat the development and production of tanks and submarines as key industries within the national defence industry. As recently as October 2014 this status was questioned in a Ministry of Defence paper.

Furthermore, Germany has been playing an active role in the implementation of the NATO Readiness Action Plan approved at the Wales Summit in 2014. Germany is currently leading, together with the Netherlands and Norway, the interim Very High Readiness Joint Task Force (VJTF) which was able to prove its capabilities at the NOBLE JUMP exercise in Poland in June 2015. In addition, the Bundeswehr's Multinational Joint Headquarters Ulm will contribute comprehensively to the TRIDENT JUNCTURE exercise in southern Europe this autumn involving 36,000 personnel from more than 30 allies and partner nations. Germany will contribute some 3,000 troops, warships, air transport and aerial re-fuelling capabilities to NATO's biggest exercise since 2002 which will test the deployment capability of the NATO Response Force (NRF). All in all, about 154,000 German troops will take part in international exercises this year – twice as many as in 2013. Meanwhile, Germany together with Denmark and Poland is developing the Headquarters Multinational Corps Northeast at Szczecin/Poland to a high-readiness capability to command forces deployed to the Baltic member states of NATO and Poland, if so required. At the same time, Germany is strengthening the bilateral defence cooperation with NATO partners like Poland and Lithuania.

And most importantly, the German Government has put on the brakes on the decline of the defence budget that had been shrinking continually ever since the end of the Cold War. In 2016 defence spending will rise by €1.4billion to about €34.7billion. By 2019 the defence budget is to rise to €35.2billion with the procurement share rising from 15% in the current budget to 19% in 2019. However, these figures are still a far cry from NATO's appeal to member states to allocate 2% of their respective Gross Domestic Product (GDP) to defence. At the moment the German defence expenditure amounts to a mere 1.2% of the GDP. In view of positive GDP projections until 2019 it could actually sink to 1.1% by then. 2% of GDP would mean a German defence budget in the region of €55billion – which the German electorate would never accept.

Italy's Defence White Paper – Implications

Luca Peruzzi

The year 2015 will be recorded as a major milestone for the future of the Italian armed forces' structure and capabilities if the developments indicated in the new Defence White Paper, which was officially posted on the website of the Ministry of Defence on 30 April, will be implemented in time and the relevant budget will be allocated. However, concerns arose from the Defence Planning document for the 2015-2017 period, submitted by Defence Minister Roberta Pinotti to the Parliament on 14 May, which heavily impacts on operations, maintenance and procurement funding.

The first main innovation introduced by the new White Paper considers the geographical areas where Italian armed forces will be employed in the future. In addition to defending and securing national borders, the White Paper indicates the Euro-Atlantic and Euro-Mediterranean areas as vital for the protection of the national strategic interests, while contributing and participating to crisis management and stability operations outside these areas, as well as civil protection operations.

In addition to contributing to the collective defence of the North-Atlantic Alliance and Europe, the White Paper describes the Euro-Mediterranean zone as the principal area of national intervention. According to the document, stability and democratic development in the countries of the Mediterranean Basin represent Italy's priority objective, suggesting more intense military cooperation with this zone's nations. "Italy could be the leading nation particularly in those areas where the direct knowledge of the contest is deeper for historical, social and cultural proximity". Whenever required, "the Ministry of Defence is to be ready to assume direct responsibilities in response to crisis situations". According to remarks by the Chief of Defence, General Claudio Graziano in front of the Defence Commitee of the lower chamber of the Parliament (Camera dei Deputati) on 5 August, Italy is today leading UNIFIL, KFOR and EUNAVFOR MED operations. This, however, represents a downsizing of the national political and military ambitions compared to the previous "Enlarged Mediterranean Zone", adapting them to the currently limited financial resources, and reducing them to the core of the national interests.

The new 'prioritised strategic areas of intervention' and outlined missions, together with constrained financial resources, take to a personnel trimming from 190,000 soldiers and 30,000 civilian employees to respectively 150,000 and 20,000 staff by 2024. The Ministry of Defence "will track the target for a younger, slimmer and flexible personnel structure, with more modern recruitment criteria and carrier progression", supported by a law package (which base is to be ready within six months from the tabling of the White Paper) considering the requirements dictated by a fully professional military force. Moreover, "to mitigate the possible risks linked to a reduced force structure, the creation of a reserve force will be studied". The Italian Armed Forces' expenses for human resources today amount to more than 70% of the 'Defence Function' budget, leaving only the remaining resources for operations, maintenance and procurement. However, to move towards a more balanced ratio, as well as increasing the limited period of voluntary service to reduce the average age require long-term investments and incentives with funding stability, as stated by General Graziano.

The "Military Instrument" will be the subject of the "Strategic Defence Review" document to be elaborated and issued by the Chief of Defence to the Ministry of Defence within six months from the tabling of the White Paper. It will define the armed forces' structure, personnel, materials and financial needs as well as future personnel reserve, the capacitive, training and readiness levels. The "Strategic Defence Review" will also open the way to a new programmatic 15-year general plan document as well as major developments in the procurement sector. Although it does not elaborate on major defence procurement programmes, the White Paper introduces a law encompassing a six-year period (the same period as covered by the national budget laws), to be updated every three years. In addition to providing budget resource allocation

Photo: Italian Navy

The Italian FREMM frigate VIRGINIO FASAN employed in the scope of a humanitarian rescue operation for migrants in the Mediterranean

Photo: diepresse.com

The share of the Italian defence budget allocated to human resources amounts to almost €10 billion in 2015.

stability, the latter "will also allow the necessary Government and Parliament supervision on main acquisitions".

All the functions related to the procurement, logistics and infrastructure will be devoted to the current National Directorate of Armaments, encompassing the institution of a Defence Logistic Command. The White Paper also establishes an industrial and technology strategy, encompassing a new wide-spectrum cooperation framework among the defence, industry, universities and research institutions.

The Italian Armed Forces' indicated transformation process also passes through the reinforcement of the power attributions to the Minister of Defence and Chief of Defence. The latter will report on all aspects related to generation, training, readiness, employment and logistic support of the armed forces. A vice-commander for operations, directly reporting to the Chief of Defence, will be responsible for operational planning and forces employment. He will head a Joint Forces Command (already established), coordinating the single armed forces operational commands to be designated Component Commands. To cope with current and foreseeable threats, he will also control the Joint Special Operations and the to-be-established Cyber Warfare Commands. He will head every type of military operation, even if it involves only one component.

Concerns about the future of the Italian Armed Forces, however, arose analysing the three-year period (2015-2017) budget-planning document or "Documento Programmatico Pluriennale per la Difesa per il triennio 2015-2017", presented to the Italian Parliament but not publicly distributed, just two weeks after the White Paper had been tabled. The 'Defence Function' (excluding the 'Territorial Decurity Function' assigned to the Carabinieri armed force) allocated budget for the year 2015 amounts to €13,186.1 million, which represents a €890.8 million (-6.33%) reduction compared to 2014. The military and civilian personnel expenses account for €9,663.7 million with an increment of €152.3 million (+1.6%) compared to 2014. The budget allocated for operations and maintenance amounts to €1,149.7 million, a 14.5% (-€195 million) reduction compared to 2014, while the most significant decrement is constituted by the procurement figure devoted to the qualitative and technological modernisation of the military instrument, including acquisitions and research. The latter figure is €2,372.7 million, thus a €848 million (-26.33%) reduction compared to 2014. However, the Ministry of Economical Development adds €2,508.7 million funding to this figure in 2015. The 2016 allocated budget (€12,734.6) is a further overall cut by 3.4% compared to 2015, while procurement reduction (totalling €1,974.2 million) amounts to 17,9% compared to 2015. The 2017 budget is further reduced to €12,709.9 millions but cuts are within 1% in all areas. With reference to the Italian Gross Domestic Product (GDP), the defence function for 2015 represents a 0.803% share, which will fall to 0.759% and 0.738% in 2016 and 2017 respectively. ■

The UK Defence Scene 2015

Morgan Douro

To say that the United Kingdom's defence community is waiting with bated breath for the outcome of the current Strategic Defence & Security Review (SDSR) might be overstating the case somewhat. It is undeniable that there is high interest throughout the country – and, indeed, among its allied nations – in the determinations and recommendations that will set the agenda for British defence policy for the next five years (and have an effect for longer than that) but there is very little expectation that there will be dramatic change.

Such changes as may be instituted by the SDSR are likely to be incremental in nature rather than introducing sweeping transformation. In addition, the likely nature of those incremental changes is widely expected to be of a 'chipping away at establishment' character rather than wholesale cancellation of procurement programmes. In other words – more of the same, more or less.

(Photo: MOD Crown)

Royal Marines from Alpha Company during Operation DAAS 7B in Afghanistan. One of the consequences of closing the door on British involvement in Afghanistan has been a higher degree of uncertainty than usual over the exact nature of the threat.

Author

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While it is difficult not to share the widespread scepticism being broadly trumpeted in the popular and specialist press – some of which are far less well-informed than others – it is also difficult not to have a degree of empathy with the difficult task faced by those responsible for the conduct of the review. It is a trying time for defence planning in a post-Afghanistan, post-financial crisis world.

Fundamental Challenges

To fully appreciate the complexity of the task at hand, it is worth reflecting in some detail on the challenges facing British defence and security. What, precisely, are we defending and securing against and what obstacles stand in the way of adopting simple, graceful solutions?

That is not as simplistic a question as it might at first appear. The complex and interwoven issues that will drive the SDSR are legion – but it is possible to summarise them. The fundamental challenges that have to be overcome in making defence and security policies for the United Kingdom "fit for purpose" can be brought into context in five areas of activity and/or attitude.

Threat assessment is perhaps the most crucial and arguably the most controversial issue the review will address, swiftly followed by the ever-present question of resources – financial, structural and human. The review takes place in an environment over which politics is the driving force. It also takes place at a point in time at which questions of the right force mix – if there is ever a 'right' solution to this perennial problem – have led to significant debate, often exacerbated by political considerations or global events. Finally, the issue of resistance to change continues to exercise an influence that is often increasingly difficult to counter.

Threat Evolution

One of the consequences of closing the door – at least partially – on British involvement in Afghanistan has been, according to some observers, a higher degree of uncertainty than usual over the exact nature of the threat. The fact that the SDSR in 2010 was renamed – adding the word 'Security' – was a direct reflection of the recognition that defence and security are today inextricably linked. That recognition continues with the current iteration of the review and, indeed, has solidified and taken a more immediately apparent form in the intervening five years.

Some would argue that Britain's capability to wage so-called conventional warfare

has been eroded in the last fifteen years partially as a direct result of the concentration on the expeditionary warfare operations demanded of the armed forces in Iraq and Afghanistan and – not to put too fine a point on it – the political pressures, largely flowing from public opinion that with the end of the Cold War there were no longer any major adversaries against whom conventional warfare would need to be waged.

(Photo: MOD Crown)

HMS KENT carries out manoeuvres as part of Combined Task Force (CTF) 473 off the coast of Djibouti. Even though much smaller, the costs of operating Britain's armed forces have risen significantly over the past twenty years.

No matter what one's personal political leanings might be, the spectre of a resurgent Russia, flexing its muscles in areas as far apart as Georgia, Ukraine and the Baltic States, is one that must give defence planners pause for thought. Leaving aside arguments of the political origins of this resurgence – and the part played in it by "Western intransigence" from Russia's perspective – there can be little doubt that there is a much higher prospect today of conventional conflict – albeit probably on a limited scale – in the European theatre of operations than there was at the turn of the century.

At the opposite end of the spectrum – in terms of definitions of warfare – lies the issue of threats coming from non-state actors. Events in the Middle East and North Africa over the last two to three years show the absolute necessity of maintaining capabilities and planning capacity for hybrid warfare and asymmetric warfare operations. These range from participation in offensive air operations to small unit counter-insurgency operations, embracing 'aid to the civil power' and psychological warfare on the way. Which requires a totally different mind-set, force mix and readiness state to that necessary for conventional warfare.

A third aspect – important but by no means the only remaining component of the challenge – is the issue of cyber warfare. While recognition of the nation's vulnerability to cyber attacks has taken hold of government and, to a large degree, the general public within the last decade, the evolution of a cohesive response is taking time. Which is not to say that progress has not been made – the National Cyber Strategy has set the development of effective response on a useful and valuable path – but the SDSR will have a major role to play in continuing to promote the necessity for cyber defence and security.

Budget, Budget, Budget

The financial question is more – much more – complex than merely accepting the fact that public spending must be cut to address unsustainable levels of debt. Against the debt mountain should be considered the effects on the armed forces of an ageing population, the growth in operational costs and the inevitable growth, in real terms, in unit cost of major platforms and weapon systems.

Analysis of Britain's public spending, according to research conducted by several non-governmental organisations, reveals that the costs associated with the change in the population dynamic has resulted in a doubling of real-terms expenditure on health and social services, including huge increases in the provision for pensions. This has both direct and indirect effect on the armed forces, in that the provision of such services diminishes the share of public spending available for both operational and procurement purposes for the military. The shrinking size of the military, caused in the main by the necessity to cut budgets, has also had an effect. Even though (much) smaller, the costs of operating Britain's armed forces have risen significantly, in per capita terms, over the past twenty years or more. Contributory factors include government legislation, costs associated with rationalising and improving Defence Estates and the impact of changing force mixes that demand greater emphasis on logistic support and non-combat but essential support structures. The cost, for example, of airlifting supplies and personnel into the Afghan theatre has caused major headaches over the last decade.

On top of all this, the financial impact of procuring modern combat and support systems has risen almost exponentially. Although technology provides for enhanced capability from multi-role platforms and their associated weapons, it comes at a price. Even though the requirement is often considerably lower, in terms of units, than the platforms they are replacing, the unit cost of sophisticated and capable platforms such as the F-35B have a direct effect on the ability of the procurement budget to cater for the originally predicated quantity.

Political Pressures

By their very natures, defence and security policies – and all the consequences stemming from their development and implementation – are dominated by politics. In its turn, the political scene is, for better or worse, prey to the often capricious nature of public opinion.

Through demonstrations against the war in Iraq, the conflict in Afghanistan, air operations in the Middle East, the maintenance of a nuclear deterrent and the perceived levels of government expenditure on defence, added to the parliamentary pressures and activities of various interest groups, public pressure mounts up to an almost intolerable force on politicians to be seen to do something – almost anything – to "correct" the situation. Although there are pressures brought to bear from the opposite

(Photo: Catherine Bebbington/Parliament UK)

Question Time: Prime Minister David Cameron during a House of Commons debate

pole – from those who believe defence is an insurance policy and understand that a premium has to be paid – in all honesty these pale into insignificance in their effect on political decision making.

As well as the "not in my name" lobby that militates against what we might consider adequate levels of defence expenditure, there is the "body bag" syndrome. Public displays of empathy for the casualties suffered by our armed forces, ranging from the silent observers of funeral cortèges through our streets to the establishment of well-supported charities to supplement the efforts government makes on their behalf, are eloquent testimony to the degree to which public opinion influences political ability to balance the defence and security books, in terms of making adequate provision for these essential functions.

What do we actually need?

The immensely difficult decisions regarding the right force mix for the armed forces is perhaps the most unenviable task faced by the SDSR. All of these decisions depend on a complex mix of factors, but perhaps the overriding one is the great width of current and evolving threat considerations.

If we need to prepare for the possibility of limited scale conventional warfare, we need to revisit the issues of modern armour and anti-armour weapons, more robust tactical communications, new integrated training solutions for platform operations and tactical engagement and a fresh look at battlefield structures to support modern operations of this type. If, on the other hand, we need to focus on low-intensity, expeditionary style conflict, we need different systems, more focus on the human dimension and cognitive dominance in our training programmes and greater, more seamless interoperability and commonality with our allies as well as between the branches of our own services, not to mention the need for larger and more robust logistic support. If we need to do both (which we do) then, arguably, the pot is not big enough in terms of financial and other resources, which requires compromises to be made – which is what the SDSR is all about, when it comes to the final analysis.

On top of this, of course, lies the cyber dimension. With a nascent strategy in place, we have yet to properly define a routine response to the increasing incidence of electronic attack on our military and civil structures – indeed, our way of life. One of the certainties about cyber defence policy is it requires significant investment in human capital – finding, recruiting, retaining and training the right sort of people in the right numbers. And that is an expensive prospect – a necessary one, but one that has a knock-on effect elsewhere in the budget process.

But we have always done it this way – and won

Resistance to change is endemic – though academics argue, with some justification, that from a population dynamics perspective, that resistance is changing into much broader acceptance of the necessity for continued change in the current and coming generations. Indeed, the Ministry of Defence itself can lay legitimate claim to having changed significantly in its processes, attitudes and policies in recent years. But change has to be embraced by all – and there are still an infinite number of cases in which sensible change is delayed or, in some cases, cancelled, as a result of the inability of 'the machine' to champion the cause. The answer to curing this – which some might see as the biggest intangible problem to be overcome – it not simple. And, to be honest, it is not a problem that the SDSR is intended to find a solution for – that will require a pan-governmental approach that will include much better education of public opinion.

Whither UK Defence?

It is evident to any with an interest in UK defence that we are at a crossroads. It is a crossroads, however, in which every route is twisting and camouflaged, in which all roads do not necessarily lead to a unique destination and from which there are no clear signposts to act as clues.

The SDSR will not take place in a vacuum or in the dark. It will be as robust and as decisive a solution as is possible, given the complexity of the interwoven considerations that constitute its background. But it is unlikely to present a solution that is acceptable to all and will inevitably make compromises that will be unacceptable to many. The United Kingdom is an important player on the stage of global politics and the publication of the SDSR, scheduled for this autumn, will attract comments positive and negative – the latter outweighing the former considerably, in all probability.

Which means British defence and security will continue to be a national struggle, one in which government, industry, academia, the armed forces and the general public themselves will all have a continuing role to play. It also means an end game is not yet in sight: we will continue to do the best we can with what we have and to hope that future events will not prove that effort to be inadequate. ■

The US National Military Strategy 2015 – a Georgian View

Beka Kiria

It is imperatively important to underline the fact that the recently published National Military Strategy of the United States of America 2015 describes the global security environment as being most unpredictable. This document foresees current security threats on a continental level and highlights the list of countries and regions in which it differs from its preceding document.

In terms of importance amongst US security documents, the first, core paper is the National Security Strategy (NSS); a highly significant document delineating the wide-ranging goals of a nation. Then comes the National Defense Strategy (NDS) which relates to the defence role in implementing the strategy underlined in the NSS.

Finally, a step down on the third layer comes the National Military Strategy (NMS), which will be discussed below. In essence, NMS highlights the role of the military in supporting the NDS and NSS, emphasising the roles of airpower, sea power and land power.

A new strategy tends to be more concerned with the trends that global disorder has significantly increased and that the worldwide security environment is becoming more unpredictable. Nevertheless, the National Military Strategy of the United States of America 2011 describes the evolution of a "multi-nodal" world characterised more by shifting, interest-driven coalitions based on diplomatic, military, and economic power, than by rigid security competition between opposing blocs.

Former strategies focused on institutionalising reform of the Defense Department and rebalancing short-term, urgent needs with preparation for future challenges. Moreover, the 2010 Quadrennial Defense Review (QDR) was considered to be an important step towards this goal. However, the new document mainly focuses on international security challenges and threats, rather than domestic reforms in the defence sector.

Furthermore, international security priorities have – moderately – changed. In the past, activities in the Middle East by the nuclear-armed Iran were one of the top world threats, together with Afghanistan in the South Central Asian region as the sanctuary of al Qaida and the epicentre of violent extremism.

In general, 9/11 rhetoric seems to be gradually relaxing, and the new NMS 2015 addresses the need to counter revisionist states that challenge international norms, and extremist organisations (VEOs) that undermine trans-regional security. In terms of the US foreign strategic shift, Asia is certainly far more attractive. For instance, strengthening alliances and deepening security cooperation with Singapore, Indonesia, Malaysia, Vietnam, Bangladesh, Thailand and India are essential in order to maintain regional peace.

Five security trends can be deduced from the New US National Military Strategy:

The US is more inclined to foster partnerships and alliances around the globe, hence from the military strategy point of view success will increasingly depend on interconnection and support of the US military instrument to other instruments of power. Nonetheless, in the past the US policy-makers defined their role as an enabling capacity in order to assist other nations in achieving security goals that could advance common interests. It is clear that the US globally repositioned itself and became more explicit about its security intentions with a new strategy. Presumably, the importance of State actors, especially beyond NATO and the European Union, will increase. For example, so called future newcomers in NATO – Georgia, the Ukraine and Moldova – could be secured in order to avoid political pressure from Russia. A significant US political presence and support in Eastern Europe, especially by 'instruments of power' is expected.

The future of conflicts appraised as long-standing processes, which are not quickly resolved. New battlefields are considered more technically challenging, and the control of escalation is assessed as being more and more significant and difficult. In addition, developments in the strategic environment are perceived as being

Photo: U.S. Navy

By 2020 about 60 percent of the US fleet will be deployed to the Pacific – a strong indication for the strategic shift towards Asia

Author

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much accelerated, due to globalisation, the resulting demographic shifts, technological diffusion and competition for resources. In terms of natural resources, a good example is the scarcity of water especially in Middle East, Africa and South Central Asia, which is challenging for governments. Finally, uncertain global climate change, emphasised in terms of natural disasters and the limited ability of developing States to respond adequately to them: for instance, recent floods in Tbilisi – capital of Georgia – resulted in the escape of wild animals after intensive flooding of the River Vere. The Government's response to this natural disaster was not adequate, rapid or effective, and as a result 19 people died.

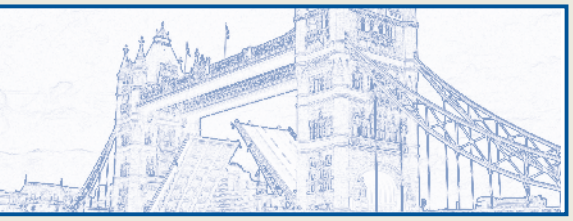
Under the former US strategy non-state actors, such as violent extremist organisations (VEOs) and non-state adversaries in the area of WMD proliferation and nuclear terrorism were clearly emphasised and these are still kept as the top priority. However, the new strategy lays more stress on states and nations, in particular those states that are challenging international norms. In this regard, Russia breached the sovereignty of its neighbours and achieved its goal of achieving the political establishment of Russia being perceived through the prism of military power. Russia's military actions are considered to be in violation of numerous agreements that Russia has signed. Furthermore, Moscow was committed to act in accordance with international norms after signature of these agreements. In general, the Russian political attitude towards neighbouring countries will strengthen US-Georgian ties and US-Eastern European security cooperation. As a result, after the Ukrainian scenario, the West can be assured that Russia is still a big threat to European security.

Photo: U.S. Navy

More than 600 U.S. and Georgian soldiers took an active part in the joint exercise NOBLE PARTNER held in May 2015.

Iran poses strategic challenges to the international community, because of its nuclear and missile ambitions. The activities of Tehran are noted as being the source of destabilisation for many nations. From the geographical perspective, regional instability could affect the security environment and economic growth of all the countries of the Caucasus.

In the list of violent extremist organisations (VEOs) besides al Qaida, the self-proclaimed Islamic State of Iraq and the Levant (ISIL) is a major source of regional destabilisation. Such radical groups serve to radicalize populations, spreading violence and leveraging terror to impose their visions of societal organisation. As a result, numerous Georgian nationals have been recruited by ISIL on religious grounds, and human traffic flows now from the Caucasus to the Middle East. Moreover, there are fighters from all over the world in ISIL, to the alarm of many citizens of the Northern Caucasus and Georgia. Furthermore, ISIL announced the formation of a new governorate, which means that ISIL will probably span several regions of Georgia and the Russian Federation. In this regard, tightening of US-Georgian alliance is necessary in order to tackle and take preventive measures against this issue. ■



Viewpoint from London

Tim Guest

The UK's Syrian Prevarications

The terrible beach massacre in Sousse, Tunisia, at the end of June, in which the majority of victims were British, may mark a turning point for the UK Government in its hitherto restrained approach to operating against Isis. Then again, it may not, even though the murders of 30 of its citizens are, surely, reasons enough to approach the matter with urgency and an iron fist.

I'm forced to vacillate myself because the widest range of UK politicians are involved in determining if this is, indeed, a turning point beyond which they will either up the ante, or keep prevaricating as the situation in Syria and Iraq gets worse. The UK Parliament's liberal left already ensured a vote on the matter in 2013 went against the coalition government of the time. They, again, will likely oppose latest moves by the new Conservative Government, led by the same Prime Minister, David Cameron, for the UK to become more fully involved in Syria, when the matter is addressed in Parliament in September (Sousse+3 months). And that 'likely' opposition is even more probable now that it has come to light that RAF personnel have already been actively taking part in actions over Syria as embedded participants with the USAF since last year. This silent participation, drawing flak from many, has only now come to light as a result of a freedom-of-information request by the human rights organisation, Reprieve, but paints a clear picture for the government's detractors that Fallon et al are gently nudging a mission-creep along in the direction of full Syrian involvement, without due consultation with Parliament. Not good for inter-party relations. And while this shows some refreshing sense of urgency and spunk on the parts of the Secretary of Defence, Michael Fallon, and the PM, who sanctioned the secretive decision to allow UK military personnel to take part over Syria, its legality will now be scrutinised in lengthy and, no doubt, very expensive Parliamentary and legal investigations.

In 2013, when the vote went against the government, a large number judged that decision as having been right because the situation in Syria was unclear. Today, however, if there was ever a time for decisiveness and action against a clear and present danger, it is now. Unfortunately, the government's actions to move things along covertly without consulting parliament may backfire. It shows the parliamentary liberal left and future, new labour leadership, for whose appointment in September they must wait before taking a vote, sufficient contempt to give them an excuse to opt for continued abstention from operations over Syria. Let's hope not.

However, with the Syrian situation becoming even more complex through Turkey's involvement, with its 'unclear' disposition towards both the PKK and Isis, a strong, decisive alliance is needed to end the Isis nightmare once and for all – it's an alliance in which the UK must play a full, not just piecemeal, part.

At time of writing, September is a relatively long way away, particularly for those who may fall victim to Isis in the meantime and, certainly, for the families of victims killed in Sousse, for whom the murders have seemingly, so far, gone unpunished. Let's hope Mr Fallon and Mr Cameron formulate the right approach and reasoning, so, when the time comes, they can persuade even the most vehement liberal that joining in full combat missions over the skies of Syria – not just recon and intel missions – is now, absolutely, the right thing to do.

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Reforging Ideas into Reality

Polish Armed Forces Plans for the Future – at NATO and National Level

Mieczysław Gokuł

In 2014 a quarter of a century had passed since the historic changes in Central and Eastern Europe led to the dramatic re-shaping of the security environment in our part of the world. Poland regained full sovereignty and later on joined the community of the democratic nations – NATO and the European Union.

Changing Security Environment

When the peace process ended the war in the Balkans, European countries started to think that such a painful "vaccination" made our continent immune against open conflicts and wars in the future. Any larger scale armed conflict in this part of the world seemed unimaginable, thus generating an impression among European nations that we could expect to live in "everlasting peace". With the events in Ukraine this period reached its end, bringing about a substantial change in the perception and assessment of the geo-strategic environment. Suddenly many of us have realised that crucial historical dilemmas and security concerns, thought to have vanished with the collapse of the Soviet Union, have been dormant only for some years, and now they seem to be re-awaken again. As a surprise for the international community, actions organised and led by Russia in Crimea resulting in an official incorporation of the peninsula, taken with a cynical disregard of the international law, were only the beginning. Further masterminding of the protracted crisis and waging a "hybrid war" in eastern Ukraine has brought a clear understanding – peace in our part of the world is not granted forever, and stability in Europe could be more fragile than we all would think and hope.

We should add to this Russia's intensive military activities both on its own territory and beyond – including the Arctic and the North Atlantic, as well as Moscow's aggressive rhetoric towards regions with Russian speaking population. We cannot exclude that Moscow might be willing and ready to adopt the "Ukrainian scenario" for the other countries in Russian neighbourhood.

The crisis in Ukraine revealed an urgent need to update geopolitical thinking in NATO about European security. The Alliance must respond to this "game changer".

(Photo: JFC)

General Mieczysław Gokuł (right) and General Lothar Domröse, Commander Joint Force Command

Newport Summit

The ongoing changes in the security environment underline again that defence of the national territories of NATO members matters first and foremost for our societies. The Alliance must respond to these expectations by reiterating and reinforcing its core mission stemming from Art. 5 – Collective Defence. Such understanding was clearly visible during NATO's Newport Summit in 2014 – probably the turning point in NATO history since its enlargement. The heads of states and governments clearly stated in the Wales Summit Declaration that "We ... have gathered in Wales at a pivotal moment in Euro-Atlantic security". The conflict in Ukraine was clearly recognised in the Declaration as a reason for the change: "Russia's aggressive actions against Ukraine have fundamentally challenged our vision of a Europe whole, free and at peace".

NATO must respond internally to these developments and in the future, at least in some respects, the Alliance may and should resemble its previous posture and activities. It is why the Readiness Action Plan (RAP) agreed upon during the Summit is of particular importance. It will have a significant impact on the develop-

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General Mieczysław Gokuł
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Photo: Wikipedia

The KTO ROSOMAK, an 8×8 multi-role military vehicle, is a licensed variant of Patria's Armoured Modular Vehicle.

ment of NATO's capabilities and ability to accomplish its missions. NATO's military forces must be organised and prepared to face this rapidly changing strategic and geopolitical situation.

In the Polish perception of security we attach high importance to the permanent presence of NATO forces and infrastructure on the eastern flank as a token of solidarity and reliability of member states. The Polish Armed Forces will contribute to the entire spectrum of RAP activities and obligations – both as a force provider and host nation. We understand that only the full implementation of the RAP facilitates the stabilisation in Europe and as such shall be NATO's ambition and ultimate goal. NATO members agreed during the Newport Summit that defence budgets amounting to 2% of GDP should be the aim, while at the same time at least 20% of the expenditures should be allocated for force modernisation. Poland will reach this goal starting from 2016. The legislative process to increase defence spending from currently 1.95% to 2.0% of our GDP has commenced recently and is well on track.

Political Guidance

Political Guidance is an integral part of the NATO Defence Planning Process (NDPP). It constitutes an internal agreement among member states on NATO's defence objectives, priorities and ambitions. The document provides planners with high level directives, thus Political Guidance 15 is supposed to lay a firm basis for the next NDPP cycle.

Poland holds firm stance that the new Political Guidance should present a comprehensive direction for NATO's long-term strategic military adaptation. Any lowering of the Level of Ambition would affect the cohesion of the Alliance. The new Political Guidance must clearly define a number and scale of operations which NATO will be able to conduct concurrently, either as collective defence or crisis response operations adjacent to NATO territory, as envisaged in the NATO Strategic Concept. Detailed guidelines for the next Capability Requirement Review should aim at controlling sufficient capabilities to achieve all of NATO's goals, with the focus on collective defence.

Four Pillars of NATO Readiness to Face Global Challenges

In the Wales Summit Declaration NATO members agreed to implement different measures to address challenges the Alliance is facing today.

- **Visual Assurance (Presence)**

Para 7 of the "Declaration" stipulates clearly that "The assurance measures include continuous air, land and maritime presence and meaningful military activity in the eastern part of the Alliance, both on a rotational basis". All activities are intended to show the strength, firm commitment, unity and resilience of NATO.

Within the framework of the implementation of assurance measures, the Polish Armed Forces:

– Deployed the air components to the Baltic air policing mission, Polish Navy ships to the Standing NATO Groups and aircraft to execute reconnaissance flights over the southern part of the Baltic Sea;
– Intensified military training and increased number of military exercises, including allied ones;
– Organised and conducted international exercises in Poland with the participation of military units from NATO countries, periodically stationing on our territory;
– Improved and intensified the air policing in the Polish airspace;
– Increase activity of ISTAR assets.

- **Very High Readiness Joint Task Force (VJTF) – "Spearhead Forces"**

Measures agreed in Newport included a substantial enhancement of NRF responsiveness in order to allow appropriate and timely reaction in case of crisis. Selected very high readiness force packages from

Photo: Politico.eu

In April 2015 Poland selected the PATRIOT system from Raytheon as its surface-to-air missile defence platform of choice.

NRF will constitute a Very High Readiness Joint Task Force (VJTF), consisting of a land component (battle group) and augmented with appropriate air, maritime special forces and support elements. In February of this year, Poland's Defence Minister Tomasz Siemoniak declared that Poland is ready to take on responsibilities as a framework nation for these so-called spearhead forces in the nearest future. The first exercises for initial VJTF were conducted on Polish territory this year.

- **Command Structure**

The Headquarters of the Multinational Corps North East (HQ MNC NE) – located in Szczecin, Poland – plays an important role in the Baltic Sea region, gathering nations with a similar understanding of security in Europe. It is also the main footprint of NATO's force structure at the eastern flank of the Alliance. HQ MNC NE, due to its unique location, structure of personnel and regional knowledge should play an important role in planning and executing tasks focused on collective defence in the regional context.

The Ministers of Defence from the MNC NE founding nations Germany, Poland and Denmark announced during the Newport Summit their decision to raise the level of readiness of the HQ MNC NE from a Forces of Lower Readiness Headquarters to a High Readiness Force Headquarters. As described in "Framework nations' planning guidance for HQ MNC NE transition to HRF Corps HQ" and accepted by the ministers on 24 April 2015, "HQ MNC NE will prior to the Warsaw Summit be ready to execute command and control over the VJTF when deployed in the north-eastern region of the Alliance (EST, LVA, LTU and POL) as well as the NFIUs. In parallel HQ MNC NE will develop a C^2 capability with a goal to execute command and control over further element of the NRF and follow-on forces by the end of 2017".

- **Advance Planning**

Advance planning, as one of the operational planning categories, is based on hypothetical scenarios, predicting possible events and circumstances that NATO may be confronted with in the future. In accordance with NATO procedures, advance planning should lead to the development of a Contingency Plan (COP), Generic Contingency Plan (Generic COP) or Standing Defence Plan (SDP). Preserving effective planning capabilities requires constant training and mastering of the existing mechanisms. From our perspective "ability to planning" itself is of utmost importance – understood as a capability to timely and properly react to a changing reality, like we are facing today. We are fully aware that every specific contingency plan has its limitations – that in reality it is useful in the initial stage of operation only. The contingency plan constitutes a basis and a starting point for further current operational planning process.

For Poland, advance planning should be a complete process – producing in the end the detailed contingency plan for a member country, or a group of countries, namely the plan responding to the real threat assessment and relevant hypothetical scenarios. To retain planning capability at appropriate level NATO must conduct advance planning and prepare fully-fledged contingency plans on a regular basis. Contingency Plans must not remain static. NATO must be in a constant process of their reviewing and revising.

Photo: Kongsberg

In 2008 the Norwegian company Kongsberg was awarded the contract for the coastal defence version of the Naval Strike Missile (NSM). A second unit is planned for procurement.

New Quality – Transformation of the Polish Armed Forces in the Incoming Decade

The transformation of the Polish Armed Forces must be seen in conjunction with the ongoing process of NATO transformation. All decisions taken at the national level are synchronised and coherent with those adopted in the Alliance. The capability goals laid down in 'NATO Forces 2020' give us a firm basis for a long-term vision of capabilities required by the Alliance in 2020 and beyond.

Photo: JFC

Forty AGM-158 JASSM long-range air-to-surface missiles are subject to procurement for the Polish F-16 fleet.

At national level the main guidelines for the transformation come from the National Security Strategy of the Republic of Poland that was approved by President Bronisław Komorowski on 05 November 2014. In Section 117 the document stipulates: "The most urgent preparedness tasks in the field of national defence include the continuation of the development of operational capabilities of the Armed Forces of the Republic of Poland, having regard to the interoperability level required within the framework of NATO". Our aim is to sustain the armed forces which are modern, mobile, flexible, well-trained, properly structured, sufficiently armed and equipped in order to fulfil their tasks whenever the situation requires.

The global economic crisis has a negative impact on defence budgets of the majority of the NATO and EU countries. From the Polish perspective, a well-thought and carefully implemented transformation process is a tool to ensure rational and efficient spending of limited national funds to provide our Armed Forces with capabilities to cope with today's and future threats and challenges.

The main efforts have been focused on upgrading and modernising military equipment. The top priorities have been derived from the "2013-2022 Key Directions on the Polish Armed Forces Development as well as its Preparation for Defence Operations" document issued by the President of Poland on 08 November 2011.

The three following functional areas have been identified:

- C4ISR,
- Air and missile defence as well as
- Mobility and manoeuvrability of forces,

which should play a crucial role in the process of the PAF development.

The agreed priorities confronted with the results of the operational capabilities review led us to the establishment of 14 operational programmes (also called armament programmes). The programmes, covered by the "Polish Armed Forces Development Programme 2013-2022", enable streamlining of the whole modernisation process of the Polish Armed Forces.

Seven programmes are continued from the 2009 edition. These are air and mis-

Masthead

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Photo: Airbus Helicopters

Previously named EC-725 Airbus Helicopters' H225M 5-blade aircraft has been selected in response to the Polish Armed Forces' requirement for 50 helicopters.

sile defence, utility, specialised and VIP helicopters, integrated C4ISR systems, the TYTAN advanced individual combat system, training systems and simulators, the ROSOMAK APV and the SPIKE ATGM. Five programmes have been updated compared to the 2009 edition to meet new requirements. These are: response to maritime threats, aerial and geospatial reconnaissance (UAVs), transport aircraft, advanced jet trainer (AJT) and artillery modernisation. Two new programmes have been added to the package, namely tank and mechanised forces modernisation and long range surveillance and special reconnaissance
Among other functional capabilities, C³I, reconnaissance and surveillance, strike, and force sustainability and protection will remain vital for the accomplishment of priorities set by the President of Poland.

- **The C³I capability** remains crucial for effective management and command and control of the armed forces. Its development will be driven by the requirement to build up for the Polish military a secure and efficient system of data collection, analysis and information distribution, as well as to create databases accessible for all players of crisis management or war operations. The key areas to be developed will cover information and communication technologies, network-centric infrastructure, IT security and data integrity, simulation systems integration, and integration of command and control systems. The broadband transmission systems and cryptography will enable secure systems integration. From a user point of view the results will be seen as an effective battlefield management system.
- The main modernisation efforts in the area of the **reconnaissance and surveillance** capabilities development will include:
  - Acquisition of various UAVs (ranging from mini through to MALE class), including UCAVs – unmanned combat air vehicles, and broadening of the access to satellite systems at both tactical and operational level;
  - Service introduction of a whole range of special reconnaissance vehicles (including unmanned), capable of operating in hostile environment;
  - Provision of a multi-level information awareness system through the implementation of automated reconnaissance data analysis and distribution tools.

• The enhancement of **strike capabilities** will be focused on the improvement of their range and effectiveness, making them a credible deterrence. The strike capabilities will be enhanced in three categories:
  – Ground-to-air strike – by acquiring short and medium range air and missile defence systems;
  – Surface strike (surface-to-surface and air-to-surface) – as a result from the procurement (and modernisation) of LEOPARD 2 tanks, multi-role and attack helicopters, MLRS, 155 mm wheeled and tracked self-propelled howitzers, 120 mm wheeled and tracked self-propelled mortars, a family of assault vehicles (based on a new universal tracked modular platform), as well as air-to-surface long range missiles;
  – Maritime operations – through the acquisition of new submarines, warships and the second coastal defence missile unit.
• Enhancement of force **sustainability and protection** will be achieved with the acquisition of new capabilities providing security in the area of:
  – Isolated personnel retrieval – acquisition of specialised combat search and rescue helicopters (CSAR);
  – Maritime rescue operations – acquisition of a vessel capable of conducting SAR operations, including submarine immersion evacuation;
  – Engineering support – acquisition of engineering and trawling carriers based on the new universal modular tracked platform, naval mine sweepers, as well as naval vessels and naval bases supervising systems;
  – CBR Defence – acquisition of new contamination reconnaissance vehicles.

Summary

The implementation of the majority of these programmes is well on track. Some crucial decisions have recently been taken. Forty AGM-158 JASSM long-range air-to-surface missiles have been ordered for our F-16 aircraft. The Government of Poland took a decision to acquire eight batteries of the US PATRIOT air and missile defence systems. In the final stage of the tender for multi-role helicopter, Airbus Helicopters' EC-725 CARACAL was chosen for final tests before concluding an agreement for fifty helicopters.
However, this visible progress should not lower our guard. We have to be aware that even with the best planning and programming the procurement phase may hamper final deliveries. The successful execution of armament programmes not only depends on the decision makers' will and wishes or the budget affordability, but predominantly on the ability of industry to produce systems consistent with military requirements in time. Offset arrangements with foreign bidders require the transfer of cutting-edge technologies to the Polish defence industry. There are some concerns as to whether it will be able to successfully implement them for the production processes, but I am convinced that the ongoing consolidation of the defence industry will make it capable of meeting our expectations. ■

"The US has never turned its back on Europe."

Interview with Lieutenant General Ben Hodges, Commanding General United States Army Europe (USAREUR)

Photo: USAREUR

ESD: What is the Mission of U.S. Army Europe? We have observed that the "pivot" to Asia has not been hugely successful, effective or relevant, so: How important is the European theatre to the US?

Hodges: The mission of U.S. Army Europe is to train and prepare capable forces for global engagements; strengthen the Alliance; build partner capacity and capabilities; support NATO; and continually improve the readiness and quality of life of our workforce. As the U.S. Army's representative in Europe, we advance U.S. interests as a visible symbol of commitment to security. From our headquarters in Wiesbaden, Germany, U.S. Army Europe covers a 51-country area of responsibility and spans seven major garrisons in three countries. We have approximately 30,000 soldiers forward stationed in Europe, plus the Regionally Aligned Forces and those rotating through for exercises. Our enduring purpose is to be responsive and engaged while developing strong relationships that set the conditions for multinational interoperability.

While I cannot speak on the success of the rebalance as it applies to Asia, it is important to remember that the US has never turned its back on Europe. It is here where we have our longest alliances and partnerships, including NATO and here where we find many of our partners and Allies for the most complex missions we face around the world. The US and Europe share many common values and trade – about half of all global economic trade in the world are between the US and EU.

ESD: What is the structure / ORBAT of the U.S. Army in Europe, and to whom does the CG report? How does USAREUR fit in with NATO?

Hodges: USAREUR is responsible to both U.S. Army Headquarters in Washington, DC and US European Command (EUCOM), as the joint combatant command for all US military forces in Europe. As such, the Commander reports to both the Chief of Staff of the Army and the EUCOM commander.

USAREUR is the United States' land forces contribution to NATO. We readily train alongside our allies in NATO-sponsored, bilateral, and multinational exercises and, as I said before, have deployed alongside them in support of humanitarian and contingency missions around the world.

USAREUR is also administratively responsible for all US personnel in NATO via the NATO Brigade, located in Sembach, Germany.

Photo: U.S. Army/Sgt. James Avery, 16th Mobile Public Affairs Detachment

Battle demonstration during 18 June 2015, the final day of SABER STRIKE 2015 at the Great Lithuanian Hetman Jonusas Radvila Training Regiment. SABER STRIKE is a long-standing U.S. Army Europe-led cooperative training exercise.

Most recently, we tripled our personnel contribution to Multinational Corps-North East (MNC-NE; located in Poland), adding 19 Soldiers and a brigadier general. The U.S. is integrated into numerous NATO efforts through multinational training and exercises and US contributions to NATO headquarters.

ESD: Country alignment: what is your view of the most important national alignments within Europe, and from Europe to the U.S.? What would you like to see strengthened?
Hodges: This is a difficult question to answer. The United States has had strong ties with Europe since our inception as a nation. Several European countries are among our oldest allies; many are strong trading partners; Germany, Italy, and Belgium provide stationing for USAREUR troops; many other nations are our allies and partners through NATO and bilateral agreements; military and political leadership in so many European countries are helping NATO and the EU face a complex security environment. All of that said, NATO is the most successful alliance in the history of the world and I think that's where I'd focus.
Since the Wales Summit, many NATO Allies have increased their defence spending and assurance measures in Eastern Europe in accordance with the Readiness Action Plan. Adaptation measures are moving forward with the Very High Readiness Joint Task Force and NATO Force Integration Units. From my engagements with my European counterparts, I know that we will see more consolidation of efforts and increasing leadership from our Allies.

ESD: Do the Central and Eastern European countries really offer great strategic benefit to NATO, and what do they bring to the table in terms of training and in terms of operational capabilities?
Hodges: I disagree with the premise of your question. Countries request to be a part of NATO, for the collective defence the Alliance; they pursue NATO membership, not NATO pursuing them in what some have referred to as "NATO expansionism." It's a difficult and long process to join NATO and if they can meet the requirements set forth and can contribute to the prescribed terms for Collective Defence, then I think it is fair and beneficial to the Alliance.

ESD: Looking ahead, what do the U.S.'s forward deployment and missile defence doctrines imply for Europe?
Hodges: I think the most important thing is that our European allies and partners know that we, the United States, continue to be committed to our relationships here. We're all facing shrinking budgets and a complex security environment, but despite those things we are still here to build a collective military capability to strengthen our alliance's security.

ESD: If we do this interview again in two years, what would you like to have achieved, and what developments would you most wish to see?
Hodges: In two years, I'd like to see a more balanced capability set within U.S. Army Europe, using resources from the units stationed here, rotational forces and assets from the National Guard and Reserves. With a more balanced US capability, we are more prepared to enable NATO and support our Allies and partners. Additionally, I'd like to see NATO nations having increased interoperability across all spectrums, especially communications. Of course optimally, I'd like see peace and security throughout Europe and its neighbours. I'd especially like to see President Putin recognize and respect international boundaries and the territorial integrity of all countries in Europe. ■

The questions were asked by Stephen Barnard.

Viewpoint from Washington

Chet Nagle

The Pivot Problem

Lack of a coherent United States foreign policy has resulted in a deadly kaleidoscope of Middle East wars. But even worse for America's economic and military security was President Obama's first term announcement of a phantom "pivot" to the western Pacific.

That ballyhooed pivot was supposed to counter communist China's effort to dominate the South China Sea, 1.4 million square miles of water surrounded by Hong Kong, Taiwan, Philippines, Indonesia and Vietnam. It has vital sea lanes that are crowded with 40 percent of the world's ocean traffic, highways that carry US$5 trillion of commerce each year, including half the globe's oil shipments.

But the White House has recently realised that the Pentagon has neither the materiel nor the personnel to commit to such a grand notion. So the word "pivot" was changed to "rebalance" and ballyhoo was muted. Washington now assures itself and the world that even though China is building a great arsenal, America's military remains unmatched in advanced ships and aircraft, and especially in the experience-based knowledge of how to effectively operate them. But quantity counts too.

As always, naval and air power are the tools needed to master control of the vast reaches of the Pacific, and the quantitative numbers that China and the United States are posting are not very comforting for Washington. This year, the U.S. Navy will deploy an average of 58 ships to the Western Pacific, increasing to 64 by 2020. On the other hand, the Office of Naval Intelligence (ONI) predicts that China will deploy up to 78 submarines and more than 170 major warships by 2020. That means China will have 248 warships and subs in the Western Pacific opposed by just 64 U.S. Navy vessels. ONI also reports that China's coast guard has more ships today than the combined coast guards of all the other nations in the region!

What about quality superiority? China is currently deploying twelve Luyang III-class destroyers, their version of U.S. Navy Aegis cruisers, each with 64 vertical launch cells, each cell with one to four anti-ship cruise missiles (ASCM) or anti-aircraft missiles. The Pentagon has no equivalent to China's YJ-18 operational supersonic ASCM, not even on its drawing boards. The YJ-18 is also on China's new nuclear subs and, with a range of 250 miles, poses a dire threat to U.S. carrier groups, especially when it is launched in large numbers.

And aircraft superiority? The prototypes of China's new J-20 and J-31 fighters are now in the air. Both can fly at Mach 2, the J-31 even faster, and both have an unrefueled combat radius of 1,240 miles. The vaunted F-35C Joint Strike Fighter has a top speed of Mach 1.6 and an unrefueled combat radius of 700 miles. Of course, China is now promoting foreign sales of their J-20 and J-31 fighters as much less expensive alternatives to the F-35.

Strategic weapons superiority? The Wu-14 hypersonic strike vehicle can embody a nuclear or conventional warhead, and it is known to have been tested approaching its targets at Mach 10 (7,680 mph) while making violent evasive manoeuvres. Such a vehicle delivered on top of the 2,485 mile range DF-16 ballistic missile might possibly be defeated by lasers and other directed energy weapons. If only U.S. bases, ships and carriers had them today.

The ONI report does sound one cheerful note, however, in that China's military forces afloat and in the air have made only "sporadic" progress in integrated joint-warfighting capabilities. Which raises the question of why those same Chinese forces are invited to learn and train in RIMPAC, the world's largest naval exercise? Surely the intelligence gained by U.S. forces about China's sporadic integrated warfighting prowess will be a fraction of what China will learn about American techniques and expertise.

History teaches us that an unchallenged China will not hesitate to use deadly force to gain territory that it believes essential to its strategy, just as soon as it is able to do so. For example, in 1974 China used force to take the Paracel Islands from Vietnam; in 1988 Vietnamese troops were slaughtered on the Spratly Islands; in 1995 Mischief Reef was taken from the Philippines; and as recently as 2013 Philippine ships were forced off the Scarborough Shoal.

What is the U.S. answer to China's aggressive actions and strategy to command the sea lanes of the South China Sea? Congressman Randy Forbes, House Seapower and Projection Forces Subcommittee Chairman, has succinctly stated his own China strategy: First, have a clear objective – that is, a peaceful and lawful Pacific; Second, speak truth to Chinese power; Third, punish Chinese provocations (e.g uninvite them from RIMPAC); and Fourth, clearly communicate the strategy to American citizens and to China.

In contrast to the clear and open statement by Rep. Forbes, the Pentagon's version of a Pacific strategy was recently heard in July at the confirmation hearings of the new Chief of Naval Operations, Admiral John Richardson. That admiral answered Senator Tom Cotton's question: "Is China an adversary?" by saying, "China is a complex nation." That adroit evasion is in keeping with the comment made by Admiral Samuel Locklear, former commander of the U.S. Pacific Command, who when asked in 2013 to describe the greatest threat to his Pacific command, replied that it was global warming.

Today, Washington's power centres are talking of a "re-pivot" that is supposed to counter Russian aggression in Ukraine and eastern Europe. Unfortunately, today's Pentagon is very short of credible pivot power.

The Military Engineering Centre of Excellence

Christian Wilhelm

The Military Engineering Centre of Excellence (MILENG COE) in Ingolstadt is home to NATO Military Engineering. It brings together peerless military engineering expertise in the domains of policies and doctrine as well as training and education. Within the scope of the "Smart Defence" project, work here is carried out independently and on a multinational basis for NATO and the 16 participating countries. MILENG COE's Director is the Principal Advisor, Military Engineering, to Supreme Allied Command Transformation in Norfolk (USA).

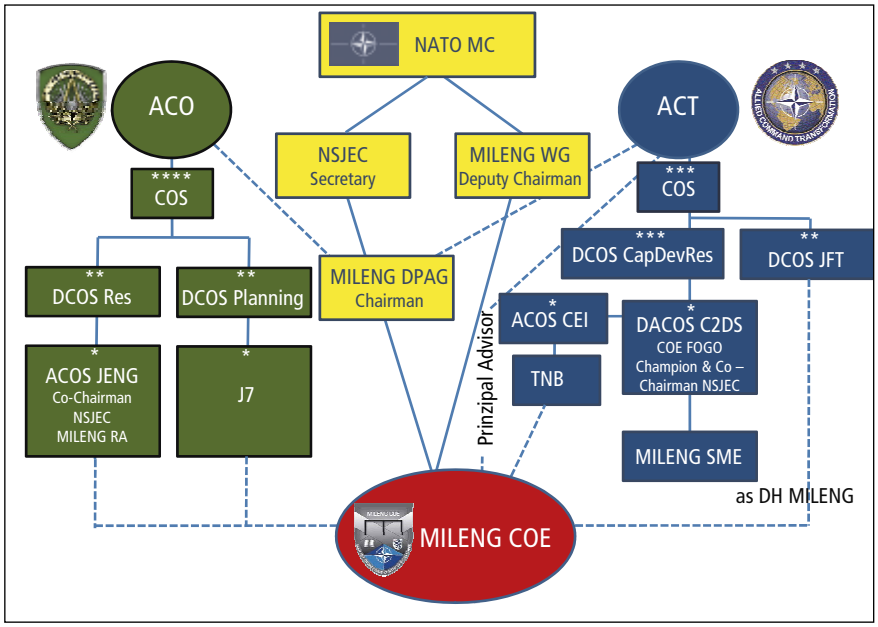
Within the NATO Military Command Structure (NCS), Allied Command Transformation (ACT) has a key role to play in shaping the future of the Alliance. It is where the idea originated to pool existing national knowledge and skills in centres of excellence, and to make them available for the transformation process of NATO and interested non NATO states. This concept was originally termed the MC Concept for Centres of Excellence and has now developed into a network of 22 Centres of Excellence (COE) accredited by the North Atlantic Council (NAC).

Centres of Excellence: "Ask, not task"

A COE is a nationally or multi-nationally funded International Military Organisation (IMO). It lawfully and deliberately exists outside the NATO command structure and the national command structures so that both NATO member states and e.g. members of the Partnership for Peace (PfP) programme retain the right to participate in it. The "NATO COE Accreditation Criteria" stipulate that all COE must work in accordance with NATO procedures, regulations and standards. A Memorandum of Understanding (MoU) forms the contractual basis for establishing a COE and for its work. The MoU regulates the relationship between supporting framework nations, sponsoring nations and the primary customer, NATO. MILENG COE has 16 sponsoring nations (to become17 when Hungary joins), making it the COE with most participating nations. There are over 50 roles within MILENG COE, 38 of which are currently filled. The MILENG COE Director is a German, as are a further 13 staff in cross-divisional positions, two of which are covered by air force personnel. The voting rights of each National Senior Joint Engineer on the Joint Steering Committee ensure that each sponsoring nation has equal participation. The Director of MILENG COE is responsible only to this "board", which decides the centre's work on an annual basis, and which approves requests from the Supreme Allied Commander Transformation (SACT) for the NATO command structure. This is necessary for the COE to have an active role supporting SACT in developing NATO. The Chairman of the Steering Committee is the General of the German Army Corps of Engineering and Commander of the German Army Engineer School and Army School of Construction Engineering.

Military Engineering COE: "Interoperability is a Question of Attitude"

In addition to having compatible material and equipment, a further basic prerequisite for the Alliance to have effective and efficient defence capabilities is a common operational understanding of the harmonisation of requirements, procedures and training. At the heart of the "Smart Defence" concept, which has entered the NATO mindset, is the notion of multinational burden-sharing and the interoperability of operational forces. MILENG COE's task is to further develop joint capabilities



(Images: MILENG COE)

MILENG COE involvement at strategic level

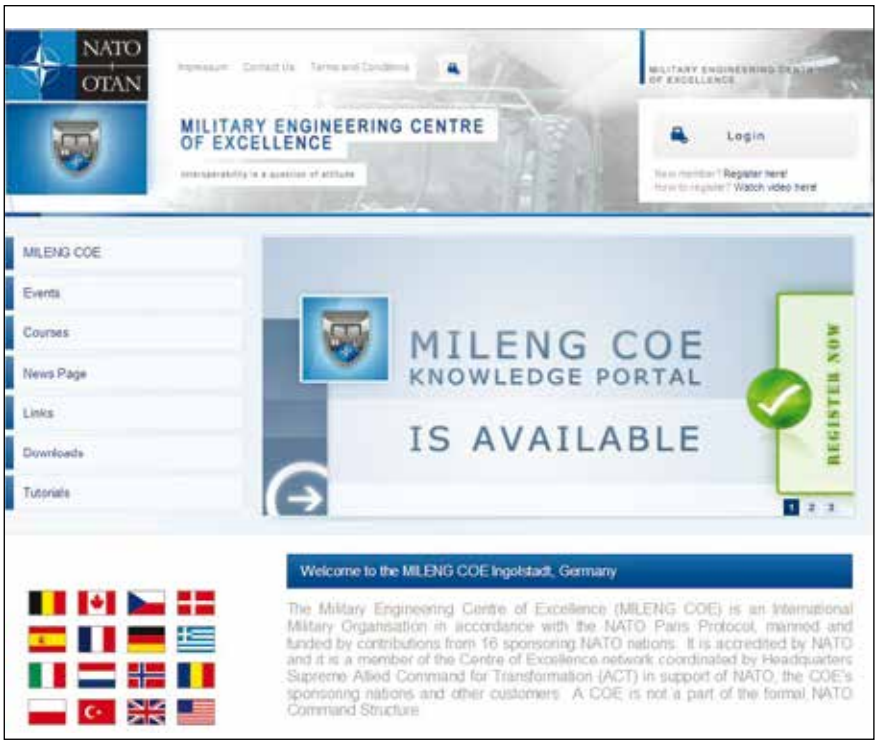
Author

Lieutenant-Colonel (Reserves) Christian Wilhelm has been Public Affairs Officer at the MILENG COE in Ingolstadt since 2010.

that contribute to the role of military engineering (jointness), and to promote and facilitate the relevant standardisation and interoperability.

Within the framework of assessing and advancing NATO capabilities, MILENG COE, together with the Chair of the MILENG Defence Planning Advisory Group (DPAG) and the Deputy Chair of the MILENG Working Group (MILENG WG) from the NATO Standardisation Office, has significant influence on decisions made as part of the NATO Defence Planning Process (NDPP). MILENG COE provides the secretariat for the NATO Senior Joint Engineer Conference (NSJEC), the forum for the NATO member states' most senior representatives in the field of military engineering. As such, it contributes to coordination between the Military Committee, ACO and ACT at a strategic level.

However, the professed aim of providing more effective support to NATO-led operations (and others) is not one that can be achieved through technical and planning measures alone. Practical training and a new attitude to cooperation are required for true interoperability.



The MILENG COE Online Knowledge Portal

Policies, Concepts and Doctrine: "Doctrine Development" and "Future Operations"

NATO documentation also reflects the need to make enhancements and, at a time of scarce resources, to consider new developments. The basic document covering all aspects of military engineering is MC 0560/1, the "Policy for Military Engineering". Additional documents derive from this policy and are coordinated centrally by MILENG COE. They include the Allied Joint Publication "MILENG" (AJP 3.12) and the subsequent Allied Tactical Publications "MILENG" (ATP 3.12.1), "Military Search Doctrine" (ATP 3.12.1.1), "Military Search Training Requirement" (ATP 3.12.1.2) and "Route Clearance" (ATP 3.12.1.3). MILENG COE is also the central coordinator for the NAC policy "Power Generation for Deployed Forces Infrastructure".

The Policies, Concepts and Doctrine Branch (PCD) is responsible for improving existing standards and specifications and for forecast analyses. Through the work of this branch, MILENG COE acts as a think tank, supporting work on developing a security policy description of the world by contributing specialist MILENG knowledge. It is involved in the Strategic Foresight Analysis (SFA), Framework for Future Alliance Operations (FFAO) and Urbanisation projects, which describe the thematic issues and concerns for a changing world in the period until 2030 and beyond. The results are summarised in studies and serve as a basis for providing advice and developing specifications at the military-political level in NATO and NDPP.

For example, Strategic Foresight Analysis 2013 establishes the basis for the future security of the Alliance, based on the principles of NATO's Strategic Concept 2010. It outlines four key security-related areas – politics, people, technology and environment – which are then subdivided into a further 15 areas. Examples are the shifting global power (politics), urbanisation (people), access to advanced technology (technology) and environmental/climate change (environment). The Framework for Future Alliance Operations builds on this and summarises these 15 trends in 10 descriptions of possible world instability. They include a wide range of possible crises and conflicts, which NATO could face in the year 2030 – from the effects of a major natural disaster causing mass displacement to conflicts. Future NATO missions, in particular operations in an urban environment, also pose new challenges to

Training at METLC 1/2015

military engineering, for example due to the infrastructure involved.

Training & Education: Multi-Level Training and High Intensity Conflict

Given that individual preparation is a prerequisite for collective success, individual and collective training are considered to be very closely linked. This holistic approach is based on training the staff of NATO's multinational headquarters at a tactical, operational and strategic level. It is supported by the fact that MILENG COE, in its capacity as Department Head for Military Engineering Education & Training, will in future be responsible at NATO level. It also encompasses the areas of environmental protection, route clearance, infrastructure and military search.

The Military Engineering Tactical Leaders Course (METLC), Military Engineering Operations & Planning Course (MEOPC) and Military Engineering Advanced Operations and Planning Course (MEAOPC), which are currently offered through MILENG COE, focus on stabilisation and support operations (SptOps). By way of contrast, the NATO Military Engineer Staff Officers Course (NMESOC) is more generalised and tailored to the specific needs of the HQ of the permanent NATO command structure. The courses – currently still based on scenarios such as Afghanistan – are constantly being updated in line with developments in the geopolitical situation. In the past, the focus was – quite rightly – on asymmetric warfare, but this is now complemented by elements of conventional warfare in High Intensity Conflicts (HIC).

In 2014, a total of nine courses were carried out at Ingolstadt. Together with the training conducted in Greece by the Mobile Training Team, this means that over 200 participants from 22 countries received training. Most of the training was undertaken by trainees from the sponsoring nations, but three PfP countries also availed themselves of the training offering.

MILEG COE plans to completely overhaul the training offering in June 2015, with a view to redefining the balance of course content. The aim is to achieve a ratio of 2/3 HIC to 1/3 SptOps. This would be in line with the guidelines issued by SACEUR at the last NATO Training Synchronisation Conference in February 2015. The MEAOPC is likewise being adapted to meet the new needs of the NATO command structure, particularly since gaps in training have been identified there.

Information Hub: Information Exchange Seminar and Industry Day

The free and willing exchange of information plays a prominent role in all areas of military engineering. Consequently, MILENG COE also views itself as a "communication enabler" between all stakeholders in the community of interest, which has a broad scope, encompassing military roles, civilian non-government organisations and industry stakeholders.

The military engineering knowledge portal operated by MILENG COE (www.milengcoe.org) represents only the technical aspects of Information and Knowledge Management (IKM). The Information Exchange Seminar is a platform for discussion with highly-qualified partners for the sponsoring nations, NATO member states, military and civilian organisations. This year's theme of "Warfighting" also reflects the changed framework conditions for military engineering and is expected to stimulate a discussion on future developments. Industry Day 2015 – once again the largest specialist defence industry exhibition for military engineering solutions – is being held in parallel, creating cost efficiencies for participants attending both events. ■

Italian Navy Launches Fleet Renewal

Luca Peruzzi

With the contracts awarded for three of four of the Italian Navy's new generation combatant and support vessel programmes between May and July of this year, Italy's Ministry of Defence has launched the service's fleet renewal to cope with present and future military, peacekeeping and civil protection requirements at and from the sea.

According to Admiral Giuseppe De Giorgi, the Chief of Staff of the Italian Navy, today's fleet consists of some 60 ships, with an average availability of only 20 of them, due to a lack of funding for means in support of sustainment and procurement over the last ten years. 54 ships will be retired within the next decade, with some 30 new units entering service.

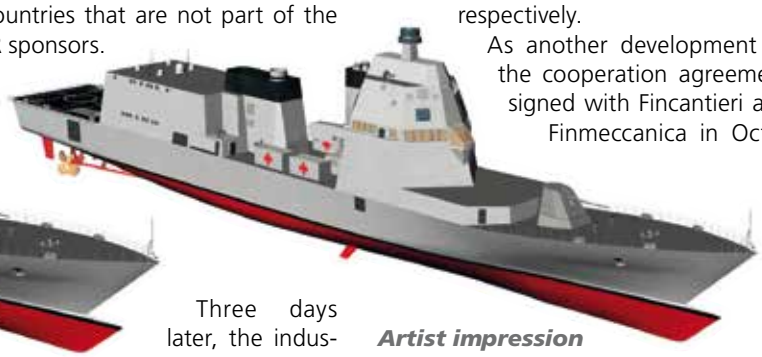
Pictures: Author

Deliveries of the Combat Patrol Vessels (PPA) in full configuration (FOC-L) are to commence in 2021.

Approved by Italian Parliament at the end of 2014, the multi-year procurement programme called 'Legge Navale' or 'Naval Law' to renew the Italian naval fleet and to sustain the national naval industry sector is based on a €5.4 billion (US$6.05 billion) budget considered in the Government's budget law.

The latter covers the initial procurement phase for a new long-term shipbuilding plan for the design, construction, delivery and long-term logistic support of six multi-role combat patrol vessels (with an option for four additional units) called PPA (Pattugliatore Polivalente d'Altura), one each logistic support ship (LSS) and landing helicopter dock (LHD), and two multi-role high-speed vessels for special force operations.

On 4 May, the European OCCAR procurement agency (Organisation Conjointe de Cooperation en matiere d'Armament) announced that the multipurpose combatant patrol ship (PPA) and the logistic support ship (LSS) programmes were formally integrated with the agency's procurement structure and the respective programme offices have been established in Rome (PPA) and La Spezia (LSS). According to military and industrial sources, the two programmes' management by OCCAR offers important benefits with regard to contractual and programme schedule developments, facilitating international cooperation with third countries that are not part of the OCCAR sponsors.



Artist impression of the PPA variant in light configuration (FOC-F) as it is planned for delivery in 2024.

Three days later, the industrial consortium (RTI – Raggruppamento Temporaneo di Impresa) which includes Fincantieri as the prime contractor and Finmeccanica's Selex ES as a principal subcontractor, announced that OCCAR signed a contract for the design and construction of six PPA multipurpose patrol combat ships (with an option for additional four units) and the logistic support ship (LSS). Finmeccanica, through Selex ES, will be the prime contractor for the new units' entire combat system, providing the latest generation combat management suite, sensors and weapon systems package, supplied by Selex ES, Oto Melara, WASS, MBDA and Elettronica.

The industrial consortium also outlined that OCCAR has already launched Phase 1 of the overall package, including the design and construction of the first PPA and the LSS for an initial contract value of €372 million (Fincantieri's and Finmeccanica's share is €220 and €152 million respectively). The delivery of the LSS is planned for 2019, while the first-of-class PPA will follow in 2021. Both vessels will be built, fitted out and delivered at Fincantieri's naval yard at Riva Trigoso (between Genova and La Spezia) and Muggiano (La Spezia).

The overall contract value for the design, construction, delivery and an initial ten-year in-service support package for the seven ships is approximately €3.5 billion, split up between Fincantieri and Finmeccanica with €2.3 and €1.2 billion respectively.

As another development of the cooperation agreement signed with Fincantieri and Finmeccanica in October 2014, the RTI consortium announced on 1 July a €1.1 billion (US$1.3 billion) contract award by the Italian Ministry of Defence's General Directorate for Naval Armaments (NAVARM) for the design, construction, system integration and delivery of a new Landing Helicopter Dock (LHD) by 2022. The contract award (where Fincantieri's and Finmeccanica's share is €853 and €273 million respectively) includes logistic services and in-service maintenance support for the first ten years of the vessel's life cycle. The LHD will be built at Fincantieri's Castellammare di Stabia shipyard near Naples, while system integration (centred around the combat system), testing and acceptance trials are expected to be conducted from the Muggiano shipyard near La Spezia.

According to Admiral De Giorgi the new two multi-role high-speed boats for special forces operations known as Unità Na-

vale Polivalente Altissima Velocità (UNPAV) will be designed and built under a contract to be awarded by the Italian MoD in December this year, with delivery of the first-of-class planned for 2017.
In his latest remarks Admiral De Giorgi stressed the export opportunities offered by the ships' innovative design and requirements as well as the almost total (ca 90%) Italian industry content of these ships providing stability to the naval and defence sector.

Common Dual-Use Requirements

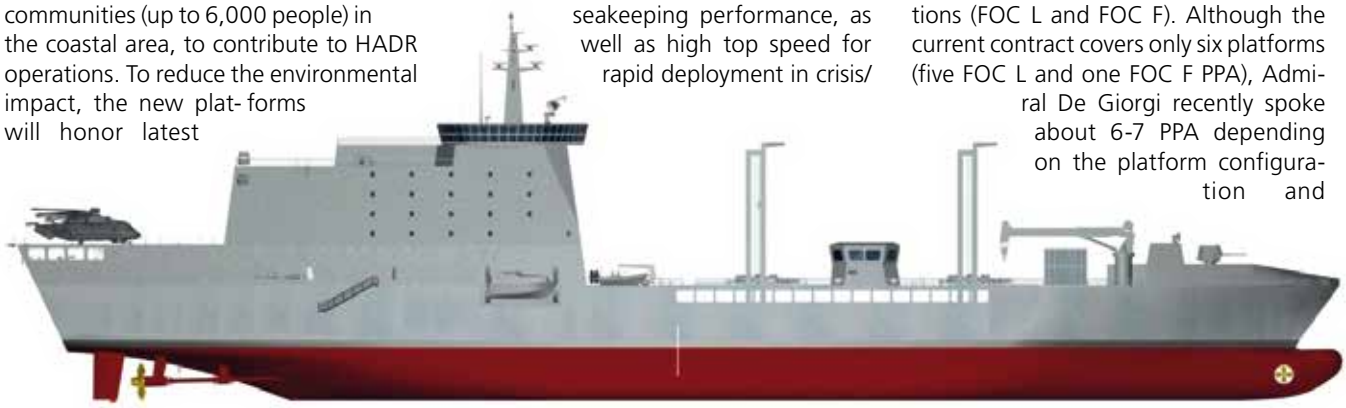
The Italian Navy's new vessels' design (except for the special forces units) are characterised by a common innovative approach based on a 'dual-use' requirement which ranges from military and humanitarian assistance and disaster relief (HADR) operations within and outside national borders through to peacekeeping missions, with a high level of modularity in order to obtain high operational flexibility during the in-service timeframe, limited environmental impact during both the in-service and decommissioning phases, as well as a high level of automation to limit manpower requirements and reduce life cycle costs.
The new vessels will have comprehensive search and rescue capabilities and will be able to autonomously embark, disembark and manage containers, materiel and boats, in addition to providing electrical power and water for small communities (up to 6,000 people) in the coastal area, to contribute to HADR operations. To reduce the environmental impact, the new plat- forms will honor latest MARPOL rules as well as the 'Green Fleet' programme, focussed on the use of alternative fuels, emission cut systems and potentially the LNG (Liquified Natural Gas) solution. Moreover these vessels will have large and reconfigurable spaces for multiple tasks and additional personnel, as well as an innovative modular, scalable, open architecture combat and weapon system suite with integrated topside arrangement and common sensors.

Combat Patrol Vessels (PPA)

To replace a range of vessel types (from frigates to patrol ships), the PPA project has been laid out to contribute to HADR operations including civil protection, as well as to operate in traditional military scenarios. To cope with these requirements, the Italian Navy has developed a platform with excellent seakeeping performance, as well as high top speed for rapid deployment in crisis/ disaster relief operations, and reconfigurable areas for modular mission payloads. According to the Italian Navy's Chief of Staff's latest presentation, the highly innovative PPA design is expected to reach the system design review (SDR) and critical design review (CDR) milestones in May 2016 and February 2017 respectively in order to conduct acceptance and operational trials in light of a planned delivery date for the first-of-class (FoC) in 2021.
As the 'one size fits all' platform concept is designed to perform a wide spectrum of missions, the PPA units are to be delivered in both 'light' and 'full' configurations (FOC L and FOC F). Although the current contract covers only six platforms (five FOC L and one FOC F PPA), Admiral De Giorgi recently spoke about 6-7 PPA depending on the platform configuration and relevant acquisition costs. The other hulls will be delivered one each in 2022, 2023 and 2025, with two in 2024. The FOC F variant will be ship number four (to be delivered in 2024).
The PPA's main platform design features include a wave-piercing bow, stabilising fins, reduced-signature superstructures, and a reconfigurable area for modular mission payloads under the flight deck, followed by a stern compartment for

Pictures: author

The PPAs' sterns will have a modular architecture which can be configured in response to different requirements



With a planned delivery in 20190 the Logistic Support Ship will be the first unit to enter service in the scope of the Italian Navy's 'Legge Navale' procurement effort.

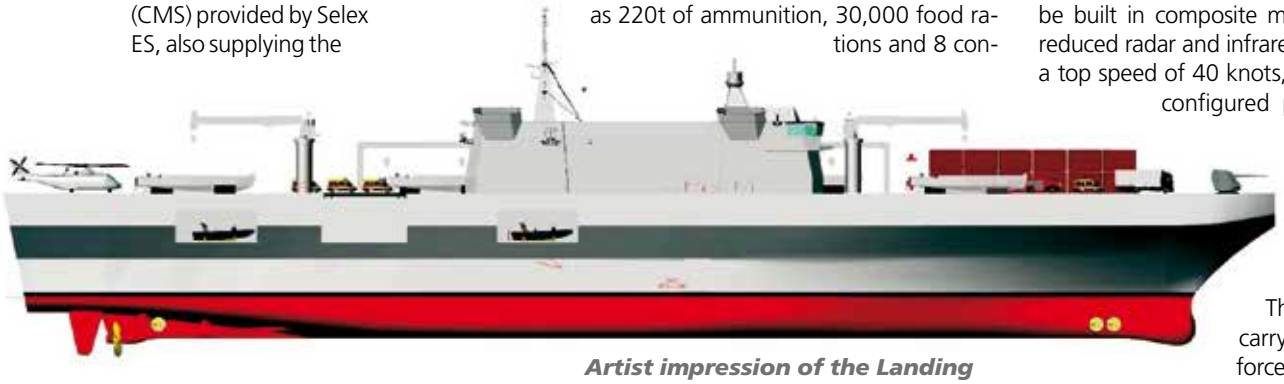
launch and recovery of 9-metre RHIBs, variable depth sonar (VDS) and weapon systems. With a displacement of around 4,500t, 129m in length and a beam of 16m, the central over-main deck mission payload area can accommodate up to eight containers or two up to 15-metre rescue boats with respective embarking/disembarking equipment. The propulsion system will be CODAG-configured with two electric motors for low-speed operations, two shafts with CPP and conventional rudders. Max speed will be 32 knots, while on diesel engines and electric motors the PPA will reach up to 25 and 7 knots respectively, with an endurance of 5,000 nm at 15 knots.

The low signature superstructures are divided into two main blocks, including the forward one with integrated bridge and co-located combat information centre, surmounted by a sensor suite-populated topside, and the rear one with a hangar for one AgustaWestland EH-101 or two NHIndustries SH90 ASW/ASuW helicopters.

Thanks to the high level of automation the PPA requires a complement of only 90, with a total accommodation capacity for up to 200 persons. Fincantieri and Selex ES will develop the two-officers control station derived from an aeronautical cockpit design, capable to conduct and manage the platform, propulsion, surveillance and self-protection suite, and incorporating augmented reality and latest head-up display technologies. The modular combat system will be based on a new combat management system (CMS) provided by Selex ES, also supplying the topside sensor suite with planar and circular antennas. The fully-equipped configuration is expected to include a new AESA dual-band (X/C) surface/air search and track radar integrated with Elettronica's EW suite (RESM, CESM and RECM), new IRST together with dual-band (X/Ka) fire-control-system and navigation systems, advanced software-defined radio and satellite communication suite and IFF, in addition to a WASS low-frequency VDS as a passive towed-array sonar. Armament will comprise an Oto Melara 12/64 mm LW gun with VULCANO ammunition, one 16-cell VLS for ASTER 15/30 surface-to-air missiles, for which MBDA is offering the CAMM-ER (Common Anti-Air Modular Missile-Extended Range) version system, a 76/62 mm SUPER RAPID gun in a new 'over-deck' version plus two remotely-controlled 25 mm guns, 2-or-4 double launchers for MBDA TESEO anti-ship missiles, both WASS heavy and lightweight torpedoes launchers and Oto Melara multi-role decoy launchers. The PPA and LSS will be also equipped with long-range acoustic devices.

Logistic Support Ship (LSS)

With a displacement of 23,000t, a length and beam of 165 and 24 metres respectively, the LSS will be fully compliant to double-hull and latest MARPOL requirements, with a diesel-electric propulsion generating a top speed of 20 knots and an endurance of 7,000nm at 16 knots. With rotary-wing accommodation for two EH-101 helicopters capable to operate from the stern deck, and hospital areas for NATO Role 2 capabilities with 20 beds and 5 intensive care units, the LSS will be able to sustain a group of 4-5 ships for 15 days in out-of-area operations. It will be equipped with four side stations for fuel and potable water, two for heavy-duty payload and a rear fuel transfer station, in addition to providing electrical power ashore, carrying 6,700, 3,700 and 800 cubic metres of naval and air carburant plus water, as well as 220t of ammunition, 30,000 food rations and 8 containers. The LSS will offer accommodation for 200 persons, of which 167 are crew, with a modern combat system including surveillance radar, EW suite, IRST and military SATCOM. The armament suite will include a 76/62 mm SUPER RAPID gun in STRALES configuration and two 25 mm guns. LSS' steel cut is planned for first-quarter of 2016, with delivery in 2019.



Artist impression of the Landing Helicopter Dock which has been laid out to accommodate a variety of naval craft, including the U.S. Navy's Landing Craft Air Cushion (LCAC).

Landing Helicopter Dock (LHD)

With the steel cutting scheduled for the autumn of 2017 and planned delivery in spring 2022, the 22,000t displacement, 210m long and 30m large LHD will feature a full flight deck with at least five helicopter landing spots, hangar with extensive facilities and a well deck capable to accommodate both national and NATO craft, including the US Navy's LCACs. Designed to carry out both disaster relief and humanitarian crisis support operations in addition to more traditional military tasks, the new LHD will have 1,200 metres linear of deck for vehicles as well as accommodation facilities for around 1,000 persons (including 450 crew), an expandable NATO Role 2 hospital area with 20 beds and 6 intensive care units, plus electrical power generation for ashore needs. The propulsion suite in CODOG configuration is able to reach a top speed of 24 knots plus electric motors for low-speed operation, supporting 7,000 nm of endurance at 16 knots. With a single-island design, the LHD will have a PPA-derived combat system including a new Selex ES AESA rotating L-Band long-range radar and a weapons fit including three 76/62 SUPER RAPID in STRALES configuration and Oto Melara multi-role decoy launchers.

According to the Italian Naval Staff, the two new special forces UNPAV combatants will be built in composite material, featuring reduced radar and infrared signatures and a top speed of 40 knots, with a CODAG-configured propulsion plant (two diesel plus one GT) a displacement of 150 tons, 39m in length and 8m beam. They will be able to carry up to 20 special forces (SF) in addition to a crew of 9. With a reconfigurable deck to accommodate SF equipment, including two high-speed boats, these vessels will have a sophisticated navigation, command and control suite, in part with ballistic protection, a sensor and armament package based on dual-band radar and EO/IR turrets, a 12.7 mm remotely controlled weapon system, up to six 7.62 mm guns and one 40 mm grenade launcher. The first vessel is planned to be launched in the first quarter of 2017 with delivery scheduled for the same year. ■

Logistics Vehicles for the European Market

Gerhard Heiming and Michael Horst
with contributions from Miroslav Gyürösy, Korhan Özkilinc

The security challenges we face in Syria and Ukraine, and in connection with the pandemic in West Africa, are not about to lessen. When considering likely future operational scenarios for European armed forces we assume they will primarily involve ground forces in urban environments.

While troops continue to face symmetric and asymmetric action, there is also an increasing trend for conflicts involving hybrid elements. In hybrid scenarios, regular forces and irregular forces – which may have a degree of military organisation – work together, sometimes under common leadership or united by ideology in the pursuit of a common goal. There are several factors that can put enemy asymmetric forces in a position to adapt their approach and operate more aggressively. They can use knowledge gained from regular servicemen defecting to their cause; they may also capture equipment or receive external support. The so-called Islamic State's reign of terror is a recent example of this.
It is important that the right logistical support be in place to ensure that our own military forces can perform across the full spectrum of operational scenarios, with a high level of endurance for sustained operations in a given area. Available own logistics forces can provide this support. Additional assistance could also come from host nation support, allied and friendly forces, and civilian contractors, who can provide a range of support services.
Military forces on operational missions need – depending on the level of endurance required – logistical elements that can ensure supplies reach the forces and that cover the full scope of their materials logistics. The way logistics forces are deployed is dictated by the requirements of the forces they are supporting, and their tactical and operational needs. During longer operational missions, logistics forces still depend on reliable supplies from the home base. In terms of supply and transportation, this requires a wide range of stock to be held available in a fixed location, and a more limited range of stock to be mobile for mobile operations.
Logistics vehicles are needed to maintain supplies or ensure a supply-run during operations. They have to be optimised for transportation in difficult conditions. They must be able to safely follow the movements of the battle groups, whilst maintaining the supply chain.

(Photo: Iveco)

Euro-6-compatible cargo trucks like the Iveco TRAKKER are increasingly required by European armed forces

Requirements – a Selective Review

Military logistics teams must be able to support troops and their equipment across the whole spectrum of operational scenarios, 24/7, 365/365, in virtually any climate, and meet a range of infrastructure requirements and various logistical needs.
The vehicles required for this are chiefly optimised for transportation. It is essential to have a range of vehicles with different load capacities, so that the most appropriate vehicle for the operational scenario and requirements can be used. For special operations and Special Forces, it is also usual to provide air-transportable logistics transport vehicles – suitable for loading onto the available aircraft – for tactical and strategic air transportation.
These vehicles are optimised for „harsh" military operations with enhanced off-road capabilities and resistance to extreme climates. COTS products are not usually designed for these particular scenarios. Vehicles can also be equipped with command and control equipment designed to enable instantaneous communication and cooperation between the forces being supported and the entire logistics system, including both wireless voice communications and the transmission and processing of comprehensive logistics data: these bring their own de-

mands in terms of power and cooling requirements.
As far as possible, cargo carriers and standardised (i.e. as far as technically feasible, aligned with standard norms) containers are designed to be modular in order to simplify the logistics of handling cargo and carrying out transportation tasks, and to retain flexibility for a wide range of tasks. This is not always feasible. Deciding which transport vehicle is suitable largely depends on the volume / weight of the cargo, the load bearing capacity of the vehicle and the width of transport routes.
In the European Union, new motor vehicles are subject to stringent emission standards – currently Euro 6. In some theatres of operations it is not possible to source the quality of fuel required for this standard, so in order to be able to use the vehicles for official duties, military forces make use of exemptions, which permit them to operate under the provisions of other emissions standards (e.g. Euro 3). These exemptions generally only apply to operational missions and training.

Protection Requirements

Current threat scenarios are used as the basis for developing protection for land forces in future conflicts. The logistics forces need to be allocated so that they meet the requirements of the operating forces in terms of command capabilities, responsiveness, flexibility, mobility, sustainability, survivability and protection. Armoured logistics vehicles are only required for logistical tasks if there is a risk of them coming under enemy fire. When armoured vehicles are used, protecting the crew takes precedence over protecting the cargo. Another crucial consideration is self-protection – weapon stations that can be operated and, if necessary, loaded under protection. Adding protective equipment always reduces the free payload capacity.
This means that logistics vehicles need fittings and equipment that afford them a similar degree of protection to that afforded the troops they are supporting. Logistics vehicles basically need the same protection as the tactical vehicles of the troops they are supporting.

Classification

A balanced range of vehicles is essential to satisfy the various requirements arising in operational conditions. The German Bundeswehr differentiates between the many armoured vehicles it has in use (or in the procurement process) as follows:

- Armoured command and multi-purpose vehicles
- Armoured transport vehicles
- Armoured special purpose vehicles and
- Other armoured vehicles.

Armoured transport vehicles are classified according to their maximum military payload. All in all, they offer a broad range of armoured transport space, providing a suitable solution for every task. Nevertheless, the total number of vehicles and designs for customised solutions is kept to the bare minimum in order to reduce procurement, operational, training, and logistics costs. This is achieved by adhering strictly to the "family concept" and implementing a high degree of modularity.

(Photo: Daimler)

Extreme mobility and agility, a small silhouette and high protection are characteristics of the armoured UNIMOG.

The basic requirements for armoured logistics transport vehicles:

- RAM-D (Reliability, Availability, Maintainability & Durability)
- air transportability,
- ballistic protection and protection against artillery fragments,
- protection against mines, IED,
- NBC protection,
- self-defence under protection,
- electronic protection, signature suppression,
- command capabilities and
- off-road capabilities, manoeuvrability and range.

Protection is limited – due to cost and weight considerations – to the driver's cab.

Technical Developments

Modularity is essential for the optimum performance of logistics tasks. In logistics, it is advantageous to have vehicle families with driving modules and modules that provide additional capabilities, for example logistics tasks (for example, the GTK BOXER). A system like the German MULTI (German abbreviation for "mechanical exchange, storage and transport integration"), a kind of Palletized Load System (PLS) also has advantages, because cargos can be set down and the load carrier does not need to be attached for time-consuming tasks, such as refuelling.
Removable cabins, with or without armour – with seating for troops – which can be attached to the relevant vehicles and cargo carriers depending on threat levels, reduce costs and optimise the potential load.
During operational missions, it is not usually possible to adhere to the latest Euro emission standards (e.g. Euro 6), so a simple on/off switch– if possible, something that can be operated by the crew –is required to safeguard the operation of the motor even when fuel quality is poor.

Vehicle Manufacturers and Products

With their production programmes for the civilian market, all the major truck manufacturers cover the entire payload spectrum, the demand for short, medium and long distance transportation and for off-road capabilities. Civilian vehicles can be adapted to meet military requirements with a greater or lesser degree of development. Sales activities, development and production are usually carried out by internal business units or a specially

(Photo: Daimler)

The ZETROS from Daimler is designed for heavy duty in extreme terrain and already proven in Afghanistan.

formed subsidiary company or joint venture.

Most of the available military logistics vehicles are based on all-terrain trucks for the civilian market. Their frames, power trains, axles and wheels are essentially the assemblies for civilian heavy goods vehicles. Modifications for military use mainly affect the electrical installations, increased fording ability or, in particular, involve adding an armoured cabin for the vehicle's crew, plus tyres with run-flat properties.

The general similarity to civilian vehicles makes worldwide logistical support easier. Military users benefit from the uniformity, which simplifies training for operators and maintenance personnel and reduces supplies of spare parts.

This article focuses on a selection of manufacturers and consumers, and on transport vehicles used purely for logistics. For the sake of clarity, other support vehicles are not discussed here.

Vehicles from European Manufacturers

Daimler

Daimler created its Mercedes-Benz Special Trucks Business Unit to develop and market special heavy goods vehicles (not just military vehicles). It meets military requirements by using mass products for military vehicles with specific performance features.

UNIMOG

The UNIMOG is a compact vehicle and agile on the ground, making it perfect for safe transport on narrow roads and off-road. Vehicles in the U5000 class have a flexible ladder frame and welded cross members to carry military payloads up to two tonnes. Enclosed power trains and drive shafts ensure safe operation in snow, on sand, gravel and mud and make the UNIMOG a safe vehicle for transporting people, supply goods and – with standard cabins – equipment.

The UNIMOG is a classic, all-terrain military vehicle and now – 60 years after it was first launched – it is available with semi-modular protection. The standard driver's cabin has been extended by 120 mm in both length and height to provide greater freedom of movement. It has also been modified with armoured steel floors and various reinforcements and fastening elements. Protection against IEDs and ballistic threats is provided by attaching modular protective plates and replacing doors and windows. An NBC protective ventilation system can be integrated.

ZETROS

The ZETROS has a low cab contour, allowing it to be easily transported by train or plane. The cab is comfortably located behind the front axle, giving it car-like steering and – together with the control elements and operating units that have been adopted from large-scale production – giving the driver fast and secure control. Vehicles in this series have a standard cabin which meets all applicable safety and ergonomic requirements. It can also seat up to three crew in full-sized seats, with ample storage for equipment such as radios, navigation systems or personal equipment including weapons.

The armoured cabin is outsourced, with completion of the interior and final assembly by Mercedes. The appearance of the ZETROS is only slightly altered by the armoured cabin. The instrument panel is identical to that in the non-armoured variant. The armoured 4x4 and 6x6 versions of the ZETROS can carry payloads of five and nine tonnes respectively. The 6x6 can also be used as a semi-trailer tractor unit for heavy trailers.

A removable cab system was developed for the ZETROS. When the basic vehicle is fitted with custom suspension and reinforced seats in the cabin, maintenance personnel can swap a non-armoured cabin for an armoured cabin in very little time.

ACTROS

The four-axle (8x8) Mercedes-Benz "Armoured ACTROS", which is extremely well-suited for off-road use, is based on the successful mass-produced ACTROS series, of which there are over 500,000 units in service around the world, including on the toughest construction sites. A heavily armoured cab was developed for the ACTROS series. The "Armoured ACTROS" has up to STANAG 4569 level 4/4b protection, and offers the highest level of crew protection currently available on a chassis from large-scale production.

With the ACTROS 8x8, Mercedes-Benz offers a family of protected cabs in different lengths – short, medium, long – and with varying degrees of protection against ballistic threats, mines and IEDs. All of these solutions come in a number of engine and transmission variants with optional equipment.

The ACTROS with armoured cab is configured for a payload of 15 tonnes. The ACTROS 8x8 also forms the basis of the heavily armoured BISON recovery vehicle, twelve of which were delivered to the German Bundeswehr in December 2011.

General Dynamics European Land Systems

EAGLE Family

General Dynamics European Land Systems (GDELS) has pressed ahead with development of a family concept for the EAGLE range. The EAGLE family with its modern armoured wheeled vehicles offers – in addition to the existing vehicle configurations – further potential to be adapted to specific tasks in the theatre of operations.

The broad scope of tasks involved in logistics, from support to the recovery and deployment of special forces in crisis zones, calls for a range of special

vehicle variants. Thanks to its all-terrain platform and its modularity, the EAGLE family is able to perform all these tasks. By extending the chassis with a third axle – which can be steerable – the payload increases to a maximum of six tonnes and a maximum permissible weight of 15 tonnes. This makes the EAGLE family suitable for carrying larger loads than in the 4x4 configuration. Existing special vehicle variants, which are either non-armoured or require a lot of effort to retroactively fit with armour, such as road tankers, towing and recovery vehicles or fire engines, can be created based on the EAGLE family and its concept of modular protection. Increasing the payload means that more than just cargo can be transported: the space provided by the 6x6 chassis can also be used for transporting squads of soldiers and their equipment. Armoured rear body sections for transporting crew can be combined with a two-man or four-man armoured steel cabin.

(Photo: GDELS)

EAGLE V 6x6 from GDELS

YAK / DURO

The YAK is a joint project between GDELS-Mowag and Rheinmetall Land Systems. The vehicle is based on the chassis of Mowag's DURO 3. It is a highly mobile, armoured, multi-purpose wheeled vehicle in the 12-tonne class, which fulfils the need (and increasing specifications) for armoured transportation. A variety of customised modules can be mounted on the standard chassis for a wide range of missions, e.g. transportation, logistics and repair. Around 3,500 vehicles in a wide range of variants are being successfully used by numerous armed forces around the world, and are replacing various non-armoured carrier vehicles.

Iveco Defence Vehicles

Iveco military vehicles are marketed by Iveco Defence Vehicles in Bolzano, Italy. The company develops solutions for protecting tactical and logistics vehicles and adapts standard Iveco trucks to military specifications.

The TRAKKER series is one range Iveco uses for logistics vehicles. It can be used in various configurations, with sub-assemblies from large-scale production to cover the required payload range. In addition, the TRAKKER is also a carrier vehicle for armoured special vehicles, like road tankers or the TEP 90, which the Bundeswehr uses for NBC defence. The vehicle is based around a stable, rigid ladder-type frame, which is good at absorbing torsional stress. Iveco military trucks are available with a solution to comply with Euro 6 exhaust emission standards and the Single-Fuel principle, even when the vehicle is operated without Ad-Blue, without any corresponding loss of power.

In order to permit soldiers on operations to drive their vehicles while wearing body armour Iveco and partner company König Komfort- und Rennsitze GmbH have developed a new seat. A height-adjustable backrest, together with a 5-point harness with central quick-release buckle, make the continued use of protective and other individual equipment possible. The seat is a standard feature in the GTF 15t, and can be retro-fitted to all TRAKKER vehicles.

The protected cabin is supplied by KMW. Made of armoured steel, it provides protection against ballistic threats and mines in accordance with STANAG 4569. It also offers protection against blasts and fragments of IED. The same cabin is used in all TRAKKER vehicles and can be replaced quickly with a non-armoured cabin (or vice versa) in the field. The cabin includes all the reinforcements and adaptations needed to safely attach the considerable extra weight of the armour to the connecting elements on the frame. The internal equipment is largely identical to that in the unprotected cabs and the instrument panel is exactly the same in both. This eliminates the need for training on different types of vehicle, at least for operating them when driving.

For the Italian and Belgian military markets, Iveco uses the brand ASTRA, which is largely identical to the TRAKKER series.

(Photo: Iveco)

For the TRAKKER Iveco uses a common chassis to produce a variety of logistics trucks: here the 15 ton payload variant.

(Photo: KMW)

The multirole variant of MUNGO can carry a 1.5 t payload and is air transportable by CH-53 helicopters.

Krauss-Maffei Wegmann

Amongst a number of combat and multi-purpose-vehicles Krauss-Maffei Wegmann (KMW) provides a small section of logistics vehicles.

ESK MUNGO

The ESK MUNGO armoured multi-role transport vehicle, developed by Krauss-Maffei Wegmann (KMW), is an armoured, agile, all-terrain, air-transportable, multi-purpose vehicle. An innovative chassis design helps it to achieve a high degree of mobility. All-wheel drive with differential locks, electronic traction control, creep gear facility and run-flat tyres ensure that it can handle steep gradients and difficult terrain.

Several hundred MUNGO vehicles in different variants have already been introduced into the Bundeswehr. The multi-purpose variant of MUNGO is used by specialist forces and their support forces to independently carry out mission-specific transportation operations in a short period of time, and for providing medical and logistics support during operations. The multi-purpose variant has a universal hydraulic transport system. Auxiliary equipment, e.g. engineering equipment, can be mounted to the front and quickly swapped over using the quick-change system. The vehicle has a payload capacity of up to 1.5 tonnes and can be used in a trailer formation to transport additional supply goods or equipment. Its armoured undercarriage, which is disconnected from the chassis, combined with an armoured frame, ensures maximum protection for the crew.

The transport platform is designed so that it can be incorporated into the multi-purpose MUNGO and locked in, but it can also be transported by air without needing any additional modifications. The multi-purpose variant of the MUNGO convinces with its universal hydraulic transport system, especially when it comes to the mission-specific transportation of ammunition, tanks, workshops or decontamination equipment.

DINGO 2 Protected Multirole Vehicle

In line with the concept of a protected transport vehicle, KMW has self-financed the development and certification of a pickup variant of the DINGO. It aims to develop other variants of the DINGO 2 to create a family of DINGO vehicles that will include existing models. The vehicle – like the patrol vehicles – is a protected vehicle for conducting logistics operations. With a payload of between one and two tonnes, the DINGO Pickup – based on variants that have already been tried and tested operationally – is a product that can be used as a universal systems platform to solve a variety of logistics tasks.

Renault Trucks Defense

Renault Trucks Defense is part of the Volvo Group and unites the major French vehicle manufacturers in one company. ACMAT and Renault cover the production of logistics trucks.

The SHERPA Medium family consists of air-transportable (by C-130) 4x4 and 6x6 vehicles, some with protected crew cabins. They can be fitted with remotely-controlled weapons stations for self-defence. The payload ranges from six to twelve tonnes.

The KERAX family is based on vehicles for the civilian market, which have been developed to meet military requirements. These vehicles benefit from the low life cycle costs of the civilian versions, and can be adapted efficiently for large cargo capacities and a variety of different assembly designs. For example, they can have improved off-road mobility, be air-transportable or be fitted with a protected cabin. The cargo variants are designed for payloads ranging from 10 to 24 tonnes, and some feature all-wheel drive.

Rheinmetall MAN Military Vehicles (RMMV)

RMMV – a joint venture between Rheinmetall and MAN – provides vehicles in the HX and SX series based on MAN's civilian

(Photo: KMW)

Adding a third axle increases the DINGO Pickup payload up to 2 tons.

trucks. The vehicles are developed and produced at RMMV Austria in Vienna, using MAN components and assembly lines.

The HX series

The HX (high mobility) series is based on the civilian TG series, with the reliability of tried and tested mass-produced components, complemented by innovative, modern technology for military vehicles. The range includes a 4x4 with six tonnes of military payload, a 6x6 (10 tonnes), 8x8 (16.5 tonnes) and a 10x10 with 28 tonnes of payload. Depending on the configuration, Euro 6 and Euro 5 motors are available with power between 240 kW and 400 kW and between 1250 Nm and 2500 Nm torque. All the vehicles can be fitted with armoured or non-armoured cabs. Medium protection is provided by the Modular Armoured Cabin (MAC); high protection is provided by the Integrated Armoured Cabin (IAC).

SX series

Vehicles in the SX series are renowned for their extremely good off-road performance, which is sometimes as good as that of tracked vehicles. A large number of components are mass-produced. A torsion-resistant box-type frame with hollow profile side members and welded tubular cross members has been developed for the SX. The progressive coil spring suspension – or optional hydro-pneumatic suspension – contributes to mobility and reduced torsion. These structures provide top driving stability even on difficult terrain and at high speed.

As in the HX, the crew of the SX is protected by an Integrated Armoured Cabin (IAC). Vehicles in the SX series come with 3 or 4 axles, making them suitable for missions requiring payloads of between nine and 15 tonnes on difficult terrain.

(Photo: Rheinmetall)

The SX series from Rheinmetall MAN Military Vehicles (RMMV) is in service with many armed forces.

Scania Defence

The Swedish manufacturer Scania, with its large number of modules, allows military users to design vehicles to suit their needs. Furthermore, the modular system reduces the overall weight of logistical support supplies, because the degree of compatibility and interchangeability means that fewer parts/components need to be carried.

In addition to tractor units for heavy goods transport and recovery / towing, other special logistics vehicles used to complement general transport vehicles for troops and logistics supplies include fuel tankers, carriers for containers, and Roll on Roll off containers. In order to protect the crew, vehicles can be fitted with protected cabins that comply with NATO standards. The overall appearance remains broadly the same, so the protected cabins cannot normally be detected.

The R480 and R500 are among the most widely used models, and are available in various designs and configurations. 368 kW motors offer sufficient power for off-road operations.

One such Scania vehicle is the CCP10 tanker. The CCP10 weighs 17 tonnes empty (18.5 tonnes with protected cabin) and can transport 10 m³ (11,000 litres) of fuel.

(Photo: Scania)

The Scania R500 is in use in some Nordic countries. Variants include cargo, PLS and tanker.

Fleet and Procurement Programmes

Although most armed forces are supplied by their own domestic manufacturers, it is common for international truck manufacturers to compete for procurement programmes for new logistics transport vehicles with the support of a national supplier / partner.

In Eastern Europe the former Czechoslovakia used mostly local designs of logistic vehicles, produced in their own factories, namely Praga trucks and special chassis. These continue in service in the newly-born independent states – the Czech Republic and Slovak Republic. All the designs can be taken to be obsolete and need replacement most urgently. This process theoretically started at the end of the Socialist era, but during regime changes in the late 1980s practically failed.

Czech Republic

The replacement process runs faster and on a bigger scale now in the Czech Re-

public. The most numerous is the Tatra T 815 family of trucks and chassis, amounting to nearly 2,700 vehicles. Today this number includes also the newest models of the TATRA T 815-7 family, with redesigned suspension, higher load capacity and with a new up-armoured cab. All new T 815-7 truck models are C-130 air transportable.

The TATRA T 810 family of three axle 6x6 cargo trucks and troop carriers started delivery in 2008. Today there are 586 TATRA T 810 vehicles in service.

The smallest of the T 815-7 family of vehicles is the two axle T 815-780R59 4x4 High Mobility Heavy Duty tactical truck. During Eurosatory 2014 the TATRA company presented the world première of the prototype of the T 815-780R59 19 270 4x4.1R vehicle with new STANAG 4569 Level 2 – 3a/3b (optionally with add-on armouring increasing to Level 3 – 3a/3b) Armoured Cab.

Another logistic vehicle of the T 815-7 family produced today by TATRA in Kopvnice is the four-axle T 815-790R99 8x8 High Mobility Heavy Duty Tactical Truck. This is today mostly produced with an integrated Load Handling System with container lifting frame (MULTILIFT) which is interfaced with NATO STANAG 2413 flat-racks, bodies and containers.

(Photo: Györösy)

The TATRA T 815-7 is designed for heavy duty tasks.

In mid-2013 TATRApublicly presented for the first time its newest COTS military truck design, named TATRA PHOENIX. This three axle 6x6 cargo/troop carrier uses the suspension system of the T 815-7 family of vehicles for a maximum payload capacity of 17.5t. Maximum GVW is 30t., maximum trailer weight is 24t.

Finland

The majority of Finnish logistics trucks are three and four-axle Scania trucks with two driven axles. The fleet is complemented by light and heavy trucks, tractor units and

towing vehicles from Mercedes-Benz, SISU (Finland), Tatra (Czech Republic) and DAF (Netherlands). Since mid-2014, the Finnish armed forces have been taking delivery of large numbers of the first Euro 6-compatible military trucks. Scania has agreed to deliver 184 trucks and tractor units by 2017, with the option of another 69 vehicles.

France

Renault trucks form the backbone of the logistics vehicle fleet. The GBC 180 is a highly sophisticated truck (Berliet GBC 8) with a payload of around five tonnes. Over 5,000 vehicles are in service. The Renault TRM series forms the largest part of the logistics fleet, with over 7,000 vehicles, including tractor units and trucks, for payloads of between three and 16 tonnes. The French military also owns KERAX and SHERPA vehicles with protected cabs.

The Scania CCP10 is the French choice for transporting fuel, and can carry ten cubic metres of fuel. Some of these vehicles were fitted with protected cabs for use in Afghanistan. Since mid-2013, Iveco and Soframe have delivered 2,400 multi-purpose logistics vehicles (Porteurs Polyvalents Terrestres, PPT), based on the Iveco ASTRA series. The 8x8 vehicles are supplied in two versions: Carrier vehicles – with loading hook – for logistics platforms, such as containers with a payload of up to 19 tonnes (Porteur polyvalent logistique, PPLOG) and a recovery vehicle with loading winch (Porteur polyvalent lourd de dépannage, PPLD). Some of the vehicles are equipped with protected cabs.

Germany

In the Bundeswehr, the need for future procurement of transport vehicles is guided by, among other things, available budgetary resources and limited numbers for the equipment. Decommissioned vehicles are to be replaced (e.g. when taken out of service after an accident or on reaching the end of their specified operating life).

Approval for realisation for each class of vehicle has been issued based on the Bundeswehr's "Final Functional Requirements" (FFR) document for armoured transport vehicles. This approval is based on the revised Customer Product Management (CPM) and is being transferred to follow-up documents. As the final selection has taken place, the focus is on procuring protected transport vehicles (GTF) in the 2t., 5t. and 15t. payload classes. The number of vehicles to be purchased will again depend on approved ministerial limits. At the moment, the plan is to supplement the MULTI (RMMV), ZETROS (Mercedes-Benz) and TRAKKER (Iveco) vehicles, which have already been introduced, with 15t. GTFs. These will be introduced from 2016, and vehicles in the additional payload classes will be acquired in subsequent years.

The requirements for communication and command capabilities and for protection against threats – including the option for self-defence – will be fully implemented in accordance with the FFR.

In terms of armoured special purpose vehicles, there is currently a procurement process underway for a Semi-Trailer Tractor 2 with a 70t. Payload. There are plans to renew all payload classes of non-armoured vehicles quite soon. A „permanent working group for mobility on land" at the Bundeswehr's Planning Department is currently determining, in detail, the future need for unprotected vehicles and equipment. The 5t. and 15t. payload classes of the future are a key focus in the renewal plans.

Italy

Many of the Italian army's logistics trucks are Autocarro tattico logistico (ACTL) class vehicles in 4x4, 6x6 and 8x8 configurations, with engine power of between 221 and 309 kW and payloads between 7 and 17t. Since 2002, the Italian fleet has been renewed with ASTRA series vehicles from Iveco Defence Vehicles.

This series of vehicles is manufactured by the Iveco subsidiary, Astra, in Piacenza, and is characterised by a modular design and high mobility. The series includes vehicles with two (M170), three (M250) and four (M320) permanently driven axles, which can be built with different wheelbases, and a non-protected basic cabin, which can take the new generation of add-on protection. Removable Protection Kits (RPK) have been developed in conjunction with IBD Deisenroth. These allow protection to be adjusted to the threat level. In addition to trucks with standard loading decks for transporting goods, ASTRA trucks with a range of special designs are also in use, including recovery and towing devices with mobile cranes, excavators and tank extensions.

The ASTRA from Iveco as it is in use in Italy

(Photo: Györösy)

JELZ is providing logistic trucks for the Polish Army. The new JELZ 442 has an MTU powerpack.

Poland

Among the newer NATO members, Poland has the biggest and most numerous Armed Forces and also critical need replacement of old types of logistic vehicles of all classes and categories. Poland always looks for local manufacture. Today the company producing most of the trucks and chassis for special applications procured by the Polish Armed Forces is the JELCZ company. The company makes

a range of military trucks and chassis from the two axle Model 442.32 4x4, through three -axle models P662D.35 6x6 and P662D.43 6x6 to the four-axle models P882D.43 and 882.53.
The JELCZ P882D.43 four axle truck used in Poland, like the chassis for some special applications, is powered by an IVECO FPT CURSOR 10 Euro III diesel engine with maximum output 316 kW at 2100 RPM, using a ZF 16S 221 gearbox.
On 29 November 2013 the Polish Ministry of Defence signed a contract with the then JELCZ-KOMPONENTY company for the delivery of 910 JELCZ 442.32 4x4 two axle military trucks. These vehicles will replace the older vehicles, and they are powered by MTU 6R106TD21 Euro III turbo charged diesel engines with maximum output power 240 kW at 2200 RPM.

(Photo: Györösy)

The locally-produced AKTIS by Tanax Trucks in Slovakia uses MAN components and has been fielded since 2010.

Serbia
After the fall of Yugoslavia the most potent automotive industry is located in modern Serbia. The Serbian industry continues to run military truck programmes through the FAP-KORPORACIJA company in Priboj. The actual military production program covers three basic models based on the Mercedes-Benz NG design – two axle FAP 1118, three axle FAP 2228 and four axle FAP 3240.
The two axle FAP 1118 BS/AV 4x4 may in future replace the TAM 110 two axle light vehicles, which together with the three axle TAM 150 is currently the most numerous logistic vehicle design in the Serbian armed forces. The FAP 1118 BS/AV 4x4 vehicle has 4 tonnes loading capacity while being able to tow a trailer, with total weight up to 4.8 tonnes. The vehicle is powered by a Mercedes Benz OM 904 LA EU3 turbo-charged diesel engine with 130 kW maximum output power at 2200 RPM. The basic version of the vehicle is fitted with a short cab, but for special applications there is a version with longer cab. Serial production of the vehicle started in 2010, still in small numbers.
The second current military model of FAP-KORPORACIJA is the three axle FAP 2228 BS/AV 6x6 truck which is intended to replace the earlier FAP 2026 6x6 vehicles. The new vehicle is powered by a Mercedes Benz OM 906 LA EU3 turbo-charged diesel engine with maximum output 205 kW using a ZF 9 S 109 gearbox.
The heaviest of the new truck designs in Serbia is the four axle FAP 3240 BS/AV 8x8. This newly-developed design is powered by a Mercedes Benz OM 457 LA EU3 turbo-charged diesel engine with a maximum output 295 kW. This powerpack design uses a ZF 16 S 221 gearbox. Maximum allowed payload weight reaches 10 tons.

Slovak Republic
The Armed Forces of the Slovak Republic procured TATRA ARMAX 8x8 vehicles. Starting in 2011, 20 MAN SX 32 8x8 PV1 trucks were delivered, in a combined dray vehicle/ISO container carrier version. From the end of the first decade of the 21st century also the Slovak armed forces started buying Czech Republic T 815-7 trucks with new suspension and a new, up-armoured cab in different modifications. This included two axle 4x4 and four axle 8x8 vehicles. In January 2015 the Armed Forces got a package of 52 new light, medium and heavy vehicles with T 815-780 4x4 and T815-790 8x8 in the MULTILIFT single- hook container lifting frame version.
To replace the Praga V3S Slovakia chose a locally built design of approximately 400 vehicles by 2025. This local design, named AKTIS, was originally developed in cooperation by the Slovak company TATRA – SIPOX and the Austrian company MAN – Österreich A.G., and it was accepted into service by the Armed Forces of the Slovak Republic on 5th October 2000. The situation is changed in MAN and also in Slovakia and from 2002 the new truck has been produced by TANAX TRUCKS, located in Banovce nad Bebravou. The first of the new trucks, designated AKTIS 4x4.1R, have the MAN L2000 cab. By 2010 139 vehicles and chassis in different modifications had been delivered to the Armed Forces of Slovak Republic.

(Photo: Györösy)

Series production of FAP trucks, based on the Mercedes-Benz NG design, started in 2010.

Production continues at a slow rate, and today the production line delivers the AKTIS 4x4.1R-08. This newest model has a new MAN TGM L32 cab and uses the MAN D 0836 LFL 50 turbo-charged diesel engine with maximum output 176 kW at 2300 RPM, which comply with the Euro IV emission standard.

Sweden / Norway

Scania is one of the biggest suppliers of logistics trucks to these two countries. The fleet mainly consists of all-terrain transport vehicles with medium and high payloads, and towing and recovery vehicles.

Norway and Sweden have formed a procurement association to purchase replacement logistics trucks. They require around 2,000 vehicles, which are to be procured in the period to 2026. Contracts concluded in March and May 2014 represent initial orders for a total of 335 RMMV vehicles – from light road trucks to heavy, protected all-terrain special designs. The main focus is on the HX Series, some of which will be delivered with protected cabs. The other HX vehicles are being prepared to take protected cabins and will have the option of equipping them with interchangeable cabins with optimum protection. The protection offered by the IACs in use will be enhanced with internal liners and modified geometry. Special military equipment onboard the vehicles includes infra-red illumination, night vision cameras, a system for creating smoke screens, the ability to take remote weapons systems and communication and reconnaissance equipment and jammers to protect against IEDs.

Turkey

Over the last decade, Turkey has been able to position its domestic defence industry well on the world market. There are currently three privately owned vehicle manufacturers in Turkey – Otokar, Nurol Makina and the joint venture company FNSS. BMC, which was recently rescued from trouble by the government and then sold on, will probably now establish itself as a fourth.

Nurol Makina (100 per cent) and the joint venture company FNSS (51 per cent) belong to Nurol Holding. Both companies manufacture tracked and wheeled tanks and containers, albeit in different locations.

The BMC 235-16 P is a 16-tonne class 4x4 (or 4x2) truck designed to transport cargo and personnel of up to 5-tonne payloads in NATO standards. In 2008 the Turkish Ministry of Defence decided to procure 2,000 tactical wheeled vehicles and mine-resistant armoured vehicles. In 2009, the Turkish Armed Forces and BMC signed a contract for the delivery of 2000 BMC 185-09 B, BMC235-16 P and BMC 380-26 P tactical vehicles. Other armoured vehicles to be delivered under this contract could include the BMC 250-10 Z multi-purpose armoured vehicle and the BMC 350-16 Z mine-resistant armoured vehicle. BMC is currently supplying the Turkish armed forces with MRAP vehicles (614 vehicles).

According to the Undersecretariat for Defence Industries, there are tendering and procurement processes underway for more armoured wheeled vehicles (472) and tankers (83), amongst others.

(Photo: BMC)

The BMC 380 is use with the Turkish armed forces.

Conclusion

Operational readiness of equipment is a key factor in achieving operational success for modern armed forces. Logistics is significant to maintaining operational readiness. The readiness of equipment is based on two key factors: on the one hand, it is important to purchase new equipment to have modern and efficient systems that comply with current safety and security standards, so that the equipment can be fully used across the complete spectrum of duties. On the other hand, these systems need to be kept operational and available. These factors are interdependent. Delaying procurement – for whatever reason – generally means that existing equipment has to remain operational for longer. This causes greater wear and tear and increases the demand for maintenance and repair work and, possibly, costly modernisation measures. It is important to get the timing right when procuring new logistics vehicles, so that financial and tactical requirements are combined in a way that makes sense. Industry can also make a significant contribution to relieving troops from logistical tasks that are not part of the core skills of military logistics forces.

Given that defence budgets are shrinking or stagnating in nearly every European country, ensuring the operational readiness of equipment requires new cost-saving solutions for procuring and taking delivery of vehicle fleets, or even looking for alternatives. Several defence industry companies in Europe offer a range of solutions that meet the demands of the armed forces and ensure their mobility on land, and that their logistic support remains readily available. Some vehicle families even offer significant advantages in achieving readiness of equipment. The issue of timing the introduction of new acquisitions remains a tricky one. ■

(Photo: PIZ SKB)

German Army logistics vehicles from Mercedes-Benz, RMMV and Iveco heading home post-deployment in Afghanistan

"If sequestration remains unchanged, the impact to the Army modernization will be dramatic."

Interview with Lieutenant General Michael E. Williamson, Principal Military Deputy to the Assistant Secretary of the Army (Acquisition, Logistics and Technology)

Photo: U.S. Army

Our Deputy Assistant Secretary for Acquisition Policy and Logistics brings a wealth of experience and leadership in this area.

ESD: Please would you explain how the fields of Acquisition, Logistics and Technology come to be grouped together, and also outline the benefits of such a grouping?
Williamson: Logistics is an essential enabler in military operations. When we added "Logistics" to our organization's name in 1999 [from Research, Development and Acquisition to Acquisition, Logistics and Technology], we made clear our desire to eliminate the artificial separation between acquisition and logistics. We know that unless we plan for the entire life-cycle in the early stages of development, we pay a heavy price in sustainment. Before adding "Logistics," our program managers were responsible for total life cycle costs, without sufficient resident expertise to manage up-front. Now, we recognize as common sense the importance of this in-house support.

ESD: Acquisition has been in the firing line in terms of the effects of sequestration and other budgetary maladies. What is being done to limit these effects: Are they as serious as they appear from abroad, or is this a simple case of over-capacity?

Williamson: We need consistent and predictable funding. Fiscal uncertainty in general – and sequestration in particular – significantly impact training, readiness and modernization. Not only have budget reductions and instability caused the cancellation and restructuring of needed programs, they have caused our programs to be stretched out, increasing unit costs and decreasing our buying power. If sequestration remains unchanged, the impact to the Army modernization will be dramatic. The situation is very serious. Major impacts include delays in equipping to support expeditionary forces, delays in combat vehicle and aviation modernization, increases in sustainment costs to fix older equipment, and increases in capability gaps.

ESD: What about the future: Are there opportunities to be seized here, for both US and foreign companies – and can you give any examples?
Williamson: International security cooperation has an important role in confronting and meeting global challenges. Strong alliances among nations promote shared values, strategic solidarity, and successful military and security operations worldwide. International cooperation significantly improves interoperability for coalition warfare, leverages limited program resources, and obtains the most advanced, state-of-the-art technologies for weapon systems and equipment from the global technology and industrial base. The benefits of cooperation among friendly nations are significant. As an example, our initial UH-72 LAKOTA helicopters were produced in Germany. After the production line matured, full production of the aircraft was transferred to the Airbus Helicopter-built facility in the United States. LAKOTA is now the Army's main rotary wing training aircraft and the primary aircraft used by the Army National Guard to conduct homeland security missions. Another example of this cooperation is the numerous foreign components integrated into the successful STRYKER vehicle program. A few examples are the Kongsberg Remote Weapon Station (Norway), Soltam 120mm mortar (Israel), Pearson Mine roller, hydraulics and

Photo: Airbus Group

After the production line matured, full production of the UH-72 LAKOTA was transferred to the Airbus Helicopter-built facility in the United States.

Photo: U.S. Army

The future Joint Light Tactical Vehicle (JLTV) will replace the HMMWVs currently in service.

blade (England) and MOWAG driveline components (Switzerland) to name a few.

ESD: People are always hyping bad news: are there any current examples of good, successful acquisition programmes within the US military?

Williamson: The U.S. Army has hundreds of successful acquisition programs. Two that come to mind immediately are the new Joint Light Tactical Vehicle (JLTV) with the U.S. Marine Corps and the established HELLFIRE Missile System.

(1) The JLTV Family of Vehicles (FoV) is a recent, significant, competitive down-select and production decision supporting our Soldiers and Marines in a wide-range of future operations. It will restore light tactical mobility and ensure that commanders no longer have to choose between payload, mobility performance, or protection. JLTV will also address challenges in maintainability, connectivity, and performance. It provides major operational improvements in protected mobility, network connectivity, fuel efficiency, and reliability, along with the growth potential to meet future mission requirements.

(2) The combat-proven HELLFIRE Missile System entered service in 1985 and has been used in every conflict since Operation Just Cause [Panama] in 1989. Today, the HELLFIRE II Missile is the primary air-to-ground precision weapon for rotary wing and Unmanned Aerial Systems for the entire U.S. armed forces, as well as 22 allied nations. The "Romeo" missile and the future "Romeo" Block 1 continue the long line of successful adaptations to the HELLFIRE family of missiles and ensure that Warfighters continue to have the overmatch capability necessary for mission success.

ESD: Technology has been a significant factor to providing capabilities to the U.S. military. How important is it for the Army to have better global insight into research and development, both public and private?

Williamson: It is the U.S. Army's responsibility to address both current and emerging threats to ensure every Soldier deployed is equipped to achieve decisive overmatch regardless of the situation. Our Army depends on its Science and Technology (S&T) program to help prepare for the future, mitigate the possibility of technical surprise, and ensure that we are able to remain dominant in any environment.

The technology playing field is changing, and important breakthroughs in many fields are now driven by commercial and international concerns. Therefore, it is critical that we both understand the global research and development environment and leverage breakthroughs when possible. By better understanding where both our potential enemies and our allies are focusing their research efforts, we are able to more accurately forecast future threats, as well as leverage areas where our allies may be more advanced than we are currently.

In a world where all have nearly equal access to open technology, innovation is a critical discriminator in assuring technology superiority. The Army seeks to identify and leverage the best and most cost-effective, state-of-the-art technology for Army applications. It leverages commercial development work within the U.S. Department of Defense (DoD) and with other government agencies and academic institutions here and internationally on areas of mutual interest. We also fund independent studies and assessments to address specific Army technology needs and share technology within the international S&T community. Innovation is a very important part of the strategy to provide the right capability to the Soldier at the right time, and we encourage industry to bring innovative technologies and solutions.

ESD: The US appears to be a very closed market: factors such as Buy American and even / especially ITAR are discouraging when viewed from abroad. What is the real situation, and is the US actually receptive to foreign technologies and foreign concepts of cost and quality?

Williamson: The U.S. Government purchases goods and services from both U.S. and non-U.S. companies. The Army's Program Executive Officers (PEOs) estimate purchasing nearly $900M from foreign sources. All our buys are requirements driven. We must have identified a need before we issue a request for proposal (RFP), which is the driving force for U.S. Army sales opportunities. Our business require-

Photo: U.S. Air Force

The HELLFIRE II missile is the primary air-to-ground precision weapon for rotary wing and unmanned aerial systems for the entire U.S. Armed Forces, as well as 22 allied nations.

ments and opportunities are identified at: https://www.fbo.gov/. Non-U.S. companies that want to offer their equipment and services to us have numerous opportunities to do so. In the first instance, the non-U.S. firm could establish a U.S. domestic business relationship to bid as a prime (i.e., through a wholly owned U.S. subsidiary established to represent its products in the U.S.). This can be done by purchasing an existing U.S. defense or commercial firm or establishing a new company. Your U.S. subsidiary can represent and offer your equipment as a U.S. prime contractor. This American entity, staffed by U.S. citizens or Green Card holders, may receive ITAR controlled technical data without a license and can apply for export licenses with the U.S. Department of State that may be needed to share this data with the foreign company or foreign persons. This subsidiary may also act as a repair and transportation hub for the repair and maintenance of equipment sold in the United States.
A second option is to team with a U.S. company that can offer non-U.S. products through a subcontractor arrangement or joint venture partnership. Non-U.S. companies can team with U.S. companies that will act as the interface with the U.S. Department of State and the Army to offer solutions that include technology, software, and hardware. While opportunities for foreign companies are complicated by laws that provide preference to U.S. suppliers, there are exceptions that allow foreign companies to compete directly for American defense contracts. This is true for those nations that have concluded Reciprocal Defense Procurement agreements with the U.S. Government. DoD has established Reciprocal Defense Procurement Memorandums of Understanding with 27 foreign partner nations. A list of those agreements, as well as copies of the actual text can be found at: http://www.acq.osd.mil/dpap/cpic/ic/reciprocal_procurement_memoranda_of_understanding.html.

ESD: How important is it for US companies to look abroad for partners/suppliers/markets? Do they know enough to be able to look successfully? Is there actually room in the US market to welcome foreign companies?
Williamson: The U.S. Government seeks the best technologies to fulfill our materiel requirements, regardless of source. Many U.S. companies actively seek to team with non-U.S. companies in order to increase their competitiveness when bidding on complex RFPs. DoD acknowledges that some of the best technologies are available from non-U.S. companies. For example, the Office of the Secretary of Defense (OSD) manages the Foreign Comparative Test program, to evaluate foreign developed products to determine if they can meet DoD requirements. This program provides some limited funding for program managers to purchase foreign products or processes to test and evaluate mature items for the purpose of acquisition.
The U.S. Government also seeks access to leading foreign technologies from non-U.S. companies through Cooperative Research and Development Agreements (CRADA). A CRADA is a written agreement between one or more U.S. Government organizations and one or more non-U.S. Government participants to provide personnel, facilities, equipment, or other resources to conduct specific research or development efforts that are consistent with the organization's mission. Non-U.S. Government participants can include foreign corporations, foreign nonprofit, or not-for profit institutions. These enduring DoD programs are evidence that the U.S. Government consistently looks abroad for partners and suppliers to meet our critical defense needs. ■

The question were asked by Stephen Barnard.

Federated Mission Network

Dorothee Frank

The necessity of information exchange between nations was recognised early on in the scope of the ISAF mission in Afghanistan. As a result, an intensive discussion took place at political levels between the NATO states for two years, addressing under which conditions and with which guidelines, standards, ratings, etc. this information exchange could take place – without any noteworthy result. Until 2010, when the then American commander decided on a joint information network– the Afghanistan Mission Network. Half a year later, it was implemented in Afghanistan.

One would be wrong to believe that the Afghanistan Mission Network was a shining, perfect example. Rather, it was a first attempt which worked, but also showed deficiencies. It was a significant improvement compared to the previous situation, but it also reached its limits towards the end of the mission. In other words, it could only have continued in its existing configuration for another year at the most. Accordingly, NATO refrained from continuing the Afghanistan Mission Network and set about drafting a new joint platform for future missions: the Federated Mission Network (FMN).

(Photos: Bundeswehr/Stollberg)

Instruction of Afghan logisticians in Kabul. Local forces need to be included in a mission network.

Lack of Specialists

The basic idea and principle remained the Afghanistan Mission Network, only it was primarily necessary to counteract the uncontrolled growth that brought the network to its limits. Ultimately, the administrators must master every programme and/or application implemented in a NATO network, at least the administrators of the framework nations. For Germany, for example, this meant that at the end, there were just enough experts available to take turns in Afghanistan. Thereby, it speaks for the sense of duty of the IT experts that they took this permanent mission in Afghanistan upon themselves at all over the years. Ultimately, there has been an active interest in such specialists in the industry, as the future orientation of the network stood out even from the beginning. So, for a future network, NATO had to ensure it was kept simple enough, and restrict the number of apps to a tolerable level, so that the provision of specialists, at least from the larger nations – and not just the USA – could remain affordable in the long term.

Skill Levels of the Federated Mission Network

The whole complex of the Federated Mission Networking consists of the three elements FMN Governance, FMN Framework and Mission Networks. The controlling (FMN Governance) lies with NATO, as well as the creation of the framework. The FMN affiliates, i.e. partners, are included in this process. Thereby, any nation or organisation can apply for partnership to bring their own thoughts, ideas, and technologies into the process. In the individual mission networks, however, it is about specific solutions created for each individual NATO mission, where individual framework nations take on the construction and basic operation.

Four skill levels for participation in and further development of the Federated Mission Network were thereby defined by NATO:

- **NCI Agency as superordinate regulation authority.**
- **Mission Network Element (MNE):** the basic network. This module includes the network infrastructure and all elements – such as servers, energy supply, etc. – which are necessary for the construction of a network. MNE should be provided and operated by the framework nations.
- **Mission Network eXtension (MNX):** Connections to the FMN. Those who have these skills can connect to the FMN and maintain and/or operate their own connected elements, but would not be in a position to set up their own MNE for the mission.
- **Hosted User:** These are participants, such as local armed forces or other partners, which are neither in a position to connect using their own means nor to operate them. According to the operation, the roles could change. So, it is possible that a country in mission A sets up the MNE, at the same time connects its forces in mission B as MNX, and at the same time uses a provided workplace as a Hosted User in mission C – because only a few soldiers are on site.

Requirements on the FMN

NATO set high targets for the FMN. The requirement was for interface-free communication for mission planning and implementation between all forces. The uniform situation report by the FMN is also planned so that all units have the same information available. As far as requirements on the infrastructure are concerned, a pool of quickly available and complete mission networks should be available with the MNE – apart from the pure construction including operation, maintenance and experts.

Software as a Service

The new idea for the Afghanistan Mission Network – and the resulting FMN – was to consider software as a service. There is no total package for this solution which is then available with a roll-out of all functions, but rather a basic structure which each individual element connects to.

The key to FMN hereby is the open architecture. This very simple programme structure only has a few of its own functionalities; its main purpose is to provide a platform which all actual functions can be placed on as apps. The principle – and also the programming – was taken on by developers from the Internet.

Therefore, the basic FMN in itself cannot offer more than a connection station.

A soundly usable system can only arise through the apps (or modules). With the Afghanistan Mission Network, however, through this structure, the need arose to make a contribution in every individual nation, with the most apps possible. Several chat apps, situation report apps and particularly logistics apps were used accordingly.
NATO tried to prevent this because according to policy no new app was approved the function of which corresponded to an already existing and integrated app. However, this was not sufficient, because small – sometimes unimportant in operational use – additional functions were present in the new apps, which is why their approval could be justified alongside the existing one. After several years of use, the result could no longer be overseen or controlled. For the FMN the approval should therefore be handled more restrictively.

Joint missions require shared situational awareness – a demand that might be fulfilled with comprehensive automatic information sharing.

Security of the FMN

One problem of the FMN remains security. With the continual growth of participants, end devices and the integration of local sites in missions, the risk of unauthorised and/or unwanted access increases. Each nation will accordingly always operate their own network in parallel to the FMN in the foreseeable future. Here, Germany already shone in the Afghanistan Mission Network with a solution that awakened the interest of all NATO forces – including the USA: the SINA Virtual Workstation. In this way, it became possible to switch between the Afghanistan Mission Network and your own IT at the individual workplace, without data "wandering" from one area to another. Further advantages are that the user does not need a networked workplace. The data can be processed offline and stored in protected environments. However, direct access to the network via wireless connections such as WLAN is also possible. Via virtualisation, the users are provided with several individually configured and strictly separated computers and/or workplaces. Logging on and authentication happens via Smartcard, which means that even in the case of unauthorised access, the saved data is not readable. The solution is already certified, and will probably be one of the important elements of securing the FMN – according to export restrictions. Apart from this protection of the connected forces IT and/or the FMN, the need also arose to divide individual areas within the FMN into various secret domains. This second milestone of the FMN is currently still being carried out, whereby the works to achieve a practicable solution will probably still take two to three years.

Perspective

The FMN will form the core of every future NATO mission. As the introduction of national solutions has been handled much more restrictively since the bad experiences with the Afghanistan Mission Network, the corset prescribed by NATO is also significantly tighter for the connected nations. In order to get involved, the role of a framework nation is not sufficient, rather the experts must already participate in the planning and particularly the work groups for the creation of standards to include their own thoughts and demands.
The construction of the Afghanistan Mission Network ultimately showed that national political sensitivities and considerations quickly fade into the background as soon as NATO provides a finished solution which offers significant added value to the armed forces in mission planning and the protection of their own units. A similar process is already emerging with the FMN. Many nations are still discussing, but NATO is already building. And the nations can then check how they integrate. ■

HOLLAND Class – Operational Record

Joris Janssen Lok

At the time this issue is published in early September, the Royal Netherlands Navy's (RNLN) innovative HOLLAND Class ocean-capable patrol vessel (OPV) is making its operational debut in the Indian Ocean theatre. HNLMS GRONINGEN (P 843) departed its home base Den Helder on 9 August and was scheduled to begin its anti-piracy mission as part of the EU's Operation ATALANTA three weeks later.

The HOLLAND Class' first deployment "East of Aden" is the latest highlight in the still very young operational career of the four ships. A career that started officially with the commissioning of the first-of-class, HNLMS HOLLAND (P 840) in July 2012. Named after the North Sea-bordering provinces of the Netherlands (Holland, Zeeland, Friesland and Groningen), the new patrol ships are the result of a review of the country's naval capability, performed in 2005. This concluded that maritime safety and security operations were taking on more importance, relative to the traditional naval warfare role. In order to be better prepared for these particular missions, characterised by the absence of high-end threats, four M-class frigates were to be sold and replaced by OPVs.

A coordinated study and design phase followed, led by the Defence Materiel Organisation, the Navy, Damen Schelde Naval Shipbuilding (DSNS) and Thales Nederland. Contracts for detailed design and construction of the four HOLLAND Class ships and their high-tech Integrated Sensor and Communications Suite (ISCS) were awarded to DSNS (shipbuilding) and Thales (ISCS) at the end of 2007.

I-MAST 400

The four ships were subsequently produced in a relatively short time with two (FRIESLAND and GRONINGEN) built at Damen's Galati shipyard in Romania; the two others (HOLLAND and ZEELAND) built in parallel at the DSNS naval shipbuilding facility in Flushing, the Netherlands. The ships were launched in February 2010, November 2010 (two) and April 2011 and then commissioned into RNLN service in July 2012, January 2013, August 2013 and November 2013, respectively.

Author

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Pictures: Netherlands MoD

HNLMS ZEELAND and GRONINGEN operating in the Caribbean

The integrated mast modules (steel construction and necessary infrastructure) containing the ISCS for the four ships – marketed by Thales as the I-MAST 400 – were manufactured at the RNLN's naval workshops in Den Helder. Subsequently, Thales at its naval combat systems facility in Hengelo integrated the many ISCS subsystems with each mast module: a meticulously designed mix of highly innovative non-rotating radars, electro-optics and communication equipment. Once completed, each mast – fully equipped, integrated and tested – was shipped to Flushing to be installed on board its designated HOLLAND Class unit.

For some ships, operations started even before the official commissioning ceremonies. This included a major search and rescue operation following a North Sea collision between two merchant ships in December 2012. For this, FRIESLAND acted as the on-scene commander, backed up by GRONINGEN.

Deployments to the Caribbean

Today, after some two-and-a-half years of operational service, most of the patrol experience is from the Caribbean theatre. The RNLN maintains at least one of its surface ships on station in that region, as part of the Netherlands' commitment to the security of the six Caribbean islands that form the Nation's overseas territories. The first HOLLAND Class OPV to deploy to the West Indies was FRIESLAND (January-May 2013), followed by HOLLAND (May-September 2013), ZEELAND (January-May 2014), GRONINGEN (May-September 2014) and again HOLLAND (September-December 2014) and ZEELAND (January-May 2015). FRIESLAND is departing this month (September 2015) for another four-month deployment in the Caribbean, relieving the M-class frigate HNLMS VAN AMSTEL (F 831).

Closer to home, another important chapter was the involvement of HOLLAND and FRIESLAND in the operation to provide sea-borne protection for the Nuclear Security Summit that was held at the coastal city of The Hague in March 2014. In this operation, the OPVs worked in an interagency context with Police, Coast Guard and other authorities.

With the deployment of GRONINGEN to the Indian Ocean, the operational learning curve for the HOLLAND Class ships is expected to be rising sharply over the next months, says GRONINGEN's Commanding Officer (CO), Commander Walter Hansen.

Commander Walter Hansen is the Commanding Officer of HNLMS GRONINGEN

In September 2013, GRONINGEN featured prominently at the DSEi exhibition in London. After commissioning, ship and crew became subject

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Photo: MST Ltd.

As their main effectors, the HOLLAND Class OPVs are each equipped with two speedboats designated Fast Raiding, Interception and Special Forces Insertion Craft (FRISC)

to an operational work-up phase that culminated in a four-week assessment at the UK-based Flag Officer Sea Training (FOST) programme in Devonport.

"All HOLLAND Class ships have by now been to FOST at least once," says CDR Hansen. "We are seeing that results are getting better every time. The most recent ship to take part, FRIESLAND in June, was the first to achieve a 'Very Satisfactory' score. This upward trend is because the crews are getting more experienced and also because the FOST organisation is starting to get used to the HOLLAND Class, which differs from the frigates and destroyers that normally go through FOST in many areas."

Thales Integrated Mast (ISCS) (I-MAST 400) Subsystems:

- SMILE (Thales: Sea Master 400) volume search radar (S-band)
- SEASTAR (Thales: Sea Watcher 100) surface search radar (X-band)
- Non-Rotating IFF
- GATEKEEPER panoramic 360deg electro-optical/infrared video camera suite
- ICAS integrated VHF/UHF communications antenna system
- SURFSAT SHF satcom terminal
- UHF satcom terminals

Cape Verde

"Our deployment to the Caribbean started with a detour via Cape Verde. There we worked closely with that country's Coast Guard in joint training operations. We also conducted counter-drugs patrols in coordination with MAOC (N), the Maritime Analysis and Operations Centre – Narcotics," says CDR Hansen. Based in Lisbon, MAOC (N) is an initiative by seven EU member countries (France, Ireland, Italy, The Netherlands, Portugal, Spain and the UK) to suppress drug trafficking.

Once in the Caribbean, GRONINGEN continued working in the counter-drugs mission, this time in conjunction with the U.S. Joint Interagency Task Force South in Key West, Florida. Like its sister ships, GRONINGEN took on board a U.S. law enforcement detachment (boarding team) in the Caribbean. Also embarked was a U.S. Coast Guard Airbus MH-65 DOLPHIN helicopter. The ship's primary effectors, two 45-knot Fast Raiding, Interception and Special Forces Insertion Craft (FRISC), manufactured by UK-based Marine Specialised Technology Ltd, were used to good effect to intercept drug-running 'go-fast' and other suspect craft.

In the Caribbean GRONINGEN's sister ship HOLLAND also worked with U.S. Customs and Border Protection MQ-9 GUARDIAN medium-altitude, long-endurance (MALE) unmanned aerial vehicles (UAVs) flying out of Naval Air Station Corpus Christi, Texas. Thanks to the Dutch OPV's elaborate sensor suite – an unusual equipment item among OPVs which typically have only low-cost 2D surveillance and/or navigation radar – HOLLAND was allowed to work with the GUARDIAN UAV on its own, without the presence of a U.S. naval ship. In one scenario, HOLLAND sent out its FRISCs to a position well beyond the horizon where the GUARDIAN UAV was monitoring a suspect 'go-fast'.

Relying on the potential of the ship's fixed-panel 3D S-band radar, non-rotating IFF and air control functionality, HOLLAND's command team was able to ensure air safety from its position dozens of miles away, by de-conflicting the UAV and other aircraft in the area. Using a temporary arrangement, the UAV's video imagery could be received and displayed in HOLLAND's operations room. SHF-band satellite communications was used to communicate via chat with the UAV's operators ashore in Texas. The UAV itself served as a radio relay to enable reach to the FRISC crews beyond the horizon.

Somalia

"Now we are ready for the next step which is to join the anti-piracy operations off Somalia," says CDR Hansen. "Our mission is to secure vulnerable shipping, including that run by the World Food Programme; to patrol the Internationally Recommended Transit Corridor in the Gulf of Aden; and to map all shipping and fishing activity in the wider region. Potentially we will also be tasked to support the EU mission in Somalia. The last would likely be in a capacity-building role for the fledgling Somali Coast Guard and other Coast Guards in the region."

The arrival of a HOLLAND Class OPV in the Indian Ocean is in fact a year late. In mid-2014, HNLMS HOLLAND was scheduled to deploy to the region. At a late stage, the choice was made to send the M-class frigate HNLMS VAN SPEIJK (F 828) instead. Tasking a full-blown frigate, equipped with self-defence capabilities against air, surface and sub-surface threats, was believed to be necessary. At the time the international security situation in the Black Sea region was worsening, not least because of the MH17 airliner shoot-down over Ukraine. Despite their elaborate above-water sensor suite and command & control features, the HOLLAND Class OPVs have no real capability to prevail in an environment dominated by potential high-end air threats such as anti-ship missiles, fighters or submarines.

"The OPVs are deliberately optimised for the maritime safety and security mission. They are patrol vessels. I am excited about our participation in Operation ATALANTA, because it will be a chance to test the ship up to the limits in the mission for which it has been designed," says CDR Hansen. "We will be far from home and far from logistic support bases in the region. We will operate in high air temperatures and in very warm water. And in terms of threat, the anti-piracy mission is at the upper limit of what we can handle. I have full confidence that we will succeed because this is ultimately what the ship was built for."

Stress Test

Another factor why this will be a maximum stress test is the number of people on board. Normally the HOLLAND Class OPVs operate

with a baseline crew of 55 (up to 70 in the Caribbean), but GRONINGEN has sailed for the Indian Ocean with a complement of 98.
CDR Hansen: "We have taken on board several extra operational modules: an aviation detachment with an NH Industries NH90 helicopter; a detachment of Royal Netherlands Marines; a medical detachment; and a number of individual specialists."
This is the first time that a HOLLAND Class ship has deployed with an NH90 embarked. The Netherlands has ordered 20 of the much-delayed but highly capable aircraft, and before this Summer GRONINGEN spent weeks working up with the aviation detachment. "The NH90 enhances my situational awareness significantly, thanks to its sensors and its ability to go far beyond the horizon."
Operating limits for NH90 launch and recovery are Sea State 5 and/or 8 Beaufort winds.

Main Effectors

"Apart from the helicopter, I regard the two eight-man FRISCs as my main effectors," says CDR Hansen. "How do I achieve effect? By projecting people to where they are needed. The FRISC is not just a rigid inflatable boat, I regard it as a complete weapon system. In terms of fuel and communications it can go as far as 100 nautical miles from the ship, although typically the maximum operating range is around 20 nautical miles, just beyond the horizon. Limiting factors are crew fatigue, weather (particularly sea state for launch and recovery) and other safety factors."
CDR Hansen is very pleased with the stern launch & recovery slipway that is a standard feature in the HOLLAND Class. The FRISC is lowered backwards into the water by winch. For recovery, the FRISC pilot drives the craft into the stern opening, pushing its bow up the slipway until a hook grabs the FRISC's bar after which the winch pulls the boat into the stowed position.

"The stern ramp enables me to launch a FRISC even in heavy sea states (up to Sea State 5 with 25-30-knot winds). For recovery the seas have to be just a little calmer but if needed the FRISC can either divert to the shore or stay in the water until the sea state has reduced. The system is reliable, fast and safe and requires just one crew member to operate," says CDR Hansen. The OPV's second FRISC is launched and recovered more traditionally via a davit on the port side. In addition to the two FRISCs, the HOLLAND Class OPVs also feature a smaller sea boat. "In little more than two years we have produced considerable operational results," concludes CDR Hansen. "You do not hear that often in a defence acquisition project of this size. The HOLLAND Class OPVs hold great promise for the future, as long as people realise that these ships are not designed for warfare, and take this into account when tasking us and when judging us." ■

HOLLAND Class Features

Builder:	Damen Schelde Naval Shipbuilding (DSNS)
Length:	108 m
Beam:	15 m
Displacement:	3,750 tons
Propulsion:	2x MAN 12V 28/33D Diesels
Speed:	22 knots
Accommodation:	55 standard + 35 add-on; + 96 extra in emergency
Mission Management System:	GUARDION (Netherlands MoD developed)
Integrated Sensor & Communications Suite (ISCS):	Thales I-MAST 400
Effectors:	1x NH90 helicopter 2x Fast Raiding, Interception and Special Forces Insertion Craft (FRISC) 1x Oto Melara 76 mm gun 1x Oto Melara MARLIN 30 mm gun 2x Oto Melara 12.7 mm HITROLE guns 6x FN Herstal 7.62 mm MAG machine guns 2x water cannons

A view of the HOLLAND Class' one-man integrated bridge

FOC HNLMS HOLLAND entering Willemstad, Curacao

QUEEN ELIZABETH Class Aircraft Carriers – A Status Report

Conrad Waters

Work on QUEEN ELIZABETH, first of the British Royal Navy's two new aircraft carriers, is now well advanced. Launched in July 2014, she will be delivered in 2017 and commence flight trials of the F-35B variant of the Joint Strike Fighter towards the end of the following year. It has been a long and complicated process to get this far. However, the wait will be worthwhile.

The two QUEEN ELIZABETH Class carriers trace their origins to design studies to replace the smaller INVINCIBLE class support carriers that took place in the early 1990s. The need for a new strike carrier capability was affirmed in the British Strategic Defence Review (SDR) of 1998. The process from this initial go-ahead to the start of construction was protracted. Difficult decisions relating to configuration and industrial strategy were only slowly resolved against a constrained financial backdrop. There was much discussion about the relative merits of Short Take-Off and Vertical Landing (STOVL), Catapult Assisted Take-Off But Arrested Recovery (CATOBAR) and even Short Take-Off But Arrested Recovery (STOBAR) options for the new carriers. In the end, a compromise was adopted under which the ships would be built for STOVL operation but could be adapted for other aircraft configurations later on. There was also a desire to use the project to consolidate a somewhat fragmented British warship building sector. This took time to agree.

Picture: BAE Systems

A graphic of QUEEN ELIZABETH in service. Trial operations of F-35B Joint Strike Fighters from her deck are scheduled to start in 2017.

The construction contract for the ships was finally placed in July 2008. In a new development for British shipbuilding, the contract was overseen by an Aircraft Carrier Alliance comprising Babcock International, BAE Systems, Thales UK and the UK Ministry of Defence. A noteworthy feature of the build-strategy was the fabrication of the ships' constituent blocks at shipyards around the UK. Final assembly was allocated to a specially enlarged dock at Babcock's facility at Rosyth, near Edinburgh. A formal first steel cutting ceremony for QUEEN ELIZABETH was held at BAE Systems' yard at Govan on the River Clyde in July 2009.

Even then, the programme's future was far from certain. The advent of a new coalition government in 2010 and the resulting Strategic Defence & Security Review (SDSR) looked closely at curtailing or cancelling the carrier project to achieve spending reductions. It was eventually decided to build both ships. One of these was to be completed to a revised CATOBAR configuration; the other held in reserve and possibly

Picture: BAE Systems

The two QUEEN ELIZABETH Class carriers have been built in sections at yards around the United Kingdom prior to transportation by barge to Rosyth in Scotland, where final assembly takes place.

Author

Conrad Waters, based in Surrey, UK, is Editor of Seaforth World Naval Review.

sold. However, the complexity and cost of the planned conversion proved to be much greater than envisaged. In 2012, the decision was reversed, leaving both ships to be completed as STOVL carriers. In September 2014 – in another change of plan – Prime Minister David Cameron announced both ships would be brought into operational service after all.

Design Requirements

The 1998 SDR placed carrier strike at the centre of the UK's expeditionary capabilities; consequently the new design was focused on this requirement from the outset. The designated aviation group fluctuated over time but eventually settled on thirty-six fast jets and four airborne surveillance and control aircraft. Another key design aim was an ability to achieve a high sortie generation rate, an ambition assisted by the adoption of a STOVL configuration. Contemporary reports suggest that each carrier was intended to generate 108 fast jet sorties (three per aircraft) in the first twenty-four hours of a strike mission, falling to seventy-two sorties (two per aircraft) on a more sustained basis, when the design was finalised.

These fundamental requirements were the major influencing factors on the ultimate QUEEN ELIZABETH Class design, determining size, configuration and important aspects of technology. For example, the space needed to house the selected air group was a major determiner of ship size, driving a full load displacement of c.65,000 tons. Similarly, the distinctive and innovative twin island configuration maximises flight deck area. The arrangement also positions navigation (forward island) and air control (aft island) in the most suitable locations and also introduces a degree of redundancy to assist survivability. The large aircraft lifts are each capable of handling two F-35B STOVL variants of the Joint Strike Fighter simultaneously, easing movement to and from the hangar. Overall flight deck length is c.280m, allowing extended take-off runs. This, together with the familiar ski-jump first introduced on the INVINCIBLE class, maximises aircraft take-off weight. However, vertically landing a fully-laden F-35B is still problematic. A new landing technique – Shipborne Rolling Vertical Landing (SRVL) – is being developed to resolve this problem.

Less obvious design choices have included the incorporation of 'pit stop' arming and refuelling points similar to those pioneered in the US Navy's GERALD R. FORD (CVN-78) Class to reduce aircraft turnaround times. These are supported by an automated munitions and cargo handling system derived from commercial warehouse technology to accelerate the flow of munitions and minimise overall crew size.

The last-mentioned point reflects the other major driver of the QUEEN ELIZABETH Class design, namely a desire to minimise crew and other through-life costs such as support and maintenance. The core crew size of the new ships is around 680 personnel. This is approximately the same as that of the previous INVINCIBLE Class despite a significant uplift in both size and capability. The carriers also use significant amounts of equipment from previous Royal Navy projects to reduce risk and spread development and support costs. These include the S1850M (Thales Nederland SMART-L derivative) long range surveillance system found in the Type 45 destroyers and the BAE Systems Type 977 ARTISAN radar that forms a key part of the midlife upgrades being implemented in the Type 23 frigates. The integrated electrical propulsion system also has some similarities with that installed in the Type 45 class, as well as with the US Navy's DDG-1000 ZUMWALT design. The power plant comprises two Rolls-Royce MT-30 gas turbines and four Wärtsilä diesel generators that can supply up to 110MW of electricity to a distribution network that fulfils both propulsion and shipboard 'hotel' needs. Propulsion is provided by four GE Power Conversion (formerly Converteam) advanced induction motors, each paired with one of two shafts. Maximum speed is in excess of 25 knots.

Operational requirements have changed since the class was first designed. An evolving Carrier Enabled Power Projection (CEPP) concept involves the embarkation of tailored air groups for roles ranging from the original strike focus to amphibious assault. Work is underway to increase the number of helicopter landing spots from six to ten for the latter role and troop accommodation may be extended in due course.

Programme Costs

The cost of the carrier programme has been a source of controversy since it was first launched. This has not only focused on the ships themselves but the associated additional expense of the fast jets, surveillance helicopters and supporting ships needed to provide an operational carrier group. Looking just at the ships themselves, unrealistic cost estimates of around £2 billion for the pair that were floated when the 1998 SDR was being considered had increased to a targeted maximum cost of around £3.9 billion when approval to negotiate contracts was obtained in 2007. Subsequent decisions to extend construction times to generate short-term savings, as well as other changes, resulted in the announcement of an agreement with industry that lifted total programme cost to £6.2 billion (c.US$9.5 billion) in November 2013. The deal included a provision that any further escalation in costs would be shared equally with industry. Whilst undoubtedly expensive, the revised budget

QUEEN ELIZABETH Class Statistics

Ships:	QUEEN ELIZABETH (R08) PRINCE OF WALES (R09)
Displacement (Full Load):	65,000 tons
Principal Dimensions:	263m (284m o.a.) x 39m x 10m Flight deck: 284m x 73m
Propulsion:	Integrated Electrical Propulsion (IEP) 2 x Rolls Royce MT-30 gas turbines 2 x Wärtsilä 16V 38 Diesel generators 2 x Wärtsilä 12V 38 Diesel generators c. 110MW of total generating capacity 4 x GE Power Conversion advanced induction motors 2 x shafts; 25+ knots maximum speed
Aircraft Capability:	STOVL (including ski-jump) 2 x aircraft lifts 10 x helicopter landing spots Designed capacity for 36 fast jets and 4 helicopters Potential for various combinations of STOVL aircraft & helicopters
Armament:	3 x Phalanx CIWS 4 x 30mm guns
Crew:	c. 680 plus tailored air group.

QUEEN ELIZABETH was floated-out from her assembly dock on 17 July 2014, some two weeks after being launched.

Image: Crown Copyright 2014

is not unreasonable when compared with the current estimate of c.US$13.5 billion to complete the first of the US Navy's FORD Class.

The Path towards Initial Operating Capability

The increase in QUEEN ELIZABETH Class programme budget has been accompanied by a slippage in planned entry into operational service. At the time of the 1998 SDR, it was anticipated that the first new aircraft carrier would be available by 2012. This had slipped to July 2015 when contracts were placed. Further delays mean that acceptance of the first ship of the class is not now scheduled until 2017, which will be followed by the start of F-35B flying trials in late 2018. These will take place off the United States' eastern coast to benefit from infrastructure developed to bring American Joint Strike Fighters into service. All-in-all, three separate stages of fast jet trials are planned, leading to the declaration of a Carrier Strike Initial Operating Capability towards the end of 2020. The construction and trials programme for the second ship, PRINCE OF WALES, is running between two and three years behind QUEEN ELIZABETH and she will not be operational until 2023.

The naming ceremony for QUEEN ELIZABETH on 4 July 2014 – followed by a successful float out nearly two weeks later – was a substantial step towards ensuring this revised timeline becomes a reality. Nevertheless, considerable work remains outstanding to commission the carrier's propulsion and other systems to be ready for sea trials by the fourth quarter of 2016. A particular challenge will be integrating the electrical propulsion system, which is being implemented by a Power & Propulsion Sub Alliance comprising GE, L3 Marine Systems UK and Rolls-Royce. A start on this process was made on 25 June 2015 when one of the Wärtsilä generators was powered-up for the first time. On completion of integration testing, the brake blades temporarily fitted for trials will be swapped for the ship's actual propellers. As PRINCE OF WALES now occupies the dock used to assemble QUEEN ELIZABETH, this will be carried out in a complex underwater operation. Current plans envisage QUEEN ELIZABETH sailing directly to her home base at Portsmouth in the south of England once an initial series of builders' trials are completed. Substantial dredging and infrastructure improvements are already underway to prepare the dockyard for the class.

Assembly of PRINCE OF WALES is already well-advanced, having commenced in September 2014 in the dock vacated by QUEEN ELIZABETH. Experience with the first carrier's construction is being incorporated into the second ship. This includes a revised assembly sequence under which additional work – such as installation of the navigation island – will be completed at the forward end of the ship before the aft sections are integrated.

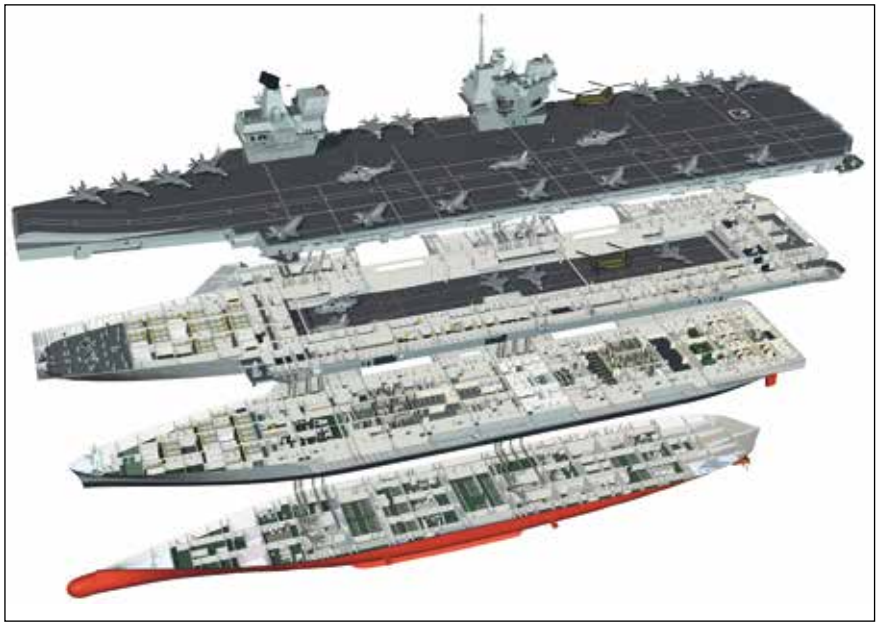


Image: Crown Copyright 2014

A cutaway drawing of QUEEN ELIZABETH showing the layout of flight deck, hangar and propulsion systems.

Conclusions

The QUEEN ELIZABETH Class carrier programme has suffered from a protracted and complicated gestation period. The ships have proved considerably more expensive to construct than originally envisaged. Entry into operational service has also been delayed. Coupled with the SDSR 2010 decision to retire the previous INVINCIBLE Class, this has created a significant gap in Royal Navy capacity that will only be filled when QUEEN ELIZABETH becomes operational. However, the future looks much brighter. The developing concept of CEPP will provide the United Kingdom with a flexible and potent maritime aviation capability which, with two carriers in service, will be available for use on a 365-day per year basis. The QUEEN ELIZABETH Class will therefore provide a naval competency that is, arguably, unmatched in Europe and only exceeded by the United States globally.

The extent to which this potential will be realised in practice is largely contingent on the next British defence review, SDSR 2015. This will report before the end of the year. Although the 2014 decision to operate both carriers removes some uncertainty, important questions remain unanswered with respect to the state of readiness under which each carrier will be maintained. Equally important choices will be taken on the numbers and timing of Joint Strike Fighter orders, as well as on acquisitions of support shipping, particularly replenishment vessels. However, with many major obstacles already overcome, the way forward for the QUEEN ELIZABETH programme now looks clearer than at any time since concept studies commenced over two decades ago. ■

M4: Another Recompete?

Jan-Phillipp Weisswange

The search for a new US standard assault rifle is a never-ending story. The U.S. Army still uses the M4 carbine, yet the multi-year controversy over the reliability of the weapon continues. Is a recompete in the offing?

For more than five decades, different variants of the M16 "black rifle" have served as the standard weapon of the U.S. armed forces. All five branches of the military – the Army, Air Force, Navy, Marine Corps and Coast Guard – use the AR-15 system developed by Eugene Stoner in a broad range of variants. Meanwhile, the short version – the M4 – has continued to establish itself. Originally intended only for specialists or soldiers in leadership positions, the U.S. Army issues the carbine, with its 14.5-inch barrel, as the new standard weapon to infantry, Rangers and Special Forces. Significantly more compact than the M16A2, it is designed to be more ergonomic when used for urban warfare and in mounted operations. For the same reasons, the U.S. Marine Corps is also discussing replacing the M16A4 with its 20-inch barrel with the compact M4, at least in the infantry.

Inconclusive Competition

There were times when the future of M4 carbines looked to be anything but rosy, mainly because of the weapon's tendency to malfunction (see box). In 2008 the U.S. Army initiated the Individual Carbine Competition (ICC). Several manufacturers competed with their designs in the tender process for a new standard-issue assault rifle. Eight made the final cut: Adcor Defense with the Brown Enhanced Assault Rifle (BEAR) Elite, Beretta with the ARX-160, Colt with the improved M4, FN with an improved SCAR-light,

(Photos: U.S. Army)

The U.S. Army's Universal Camouflage Pattern will soon be a thing of the past – does a similar fate await the carbine?

Malfunctions breed scepticism

In a range of tests, the M4 carbine has proven far less reliable than the M16, as demonstrated by a Marine Corps study conducted at the outset of the Global War on Terror in 2002. The M16A4 malfunctioned 61 times in 69,000 shots. The M4 had more than three times that rate, at 189 malfunctions. Even four years later, in December 2006, the complaints kept rolling in. In a survey of Afghanistan veterans, 19 per cent of respondents reported that their weapon had malfunctioned. Some 20 per cent complained of a lack of effectiveness, primarily due to the calibre and the shorter barrel length. Even today, the fatal result of the "extreme dust test" conducted in late 2007 is legendary. In the trial, ten heavily dusted test weapons of a single model had to fire 60,000 rounds each. The Heckler & Koch XM8 series, a G36 derivative that in the first decade of the new millennium was a candidate to replace the M16 in the U.S. Army, produced 127 malfunctions in 60,000 shots. Close behind were the FN SCAR Light (226) and the Heckler & Koch HK416 AR-15 derivative (233). The M4 finished in last place with 882 malfunctions.

Heckler & Koch with its HK416, Lewis Machine&Tool (LMT), Remington with the Adaptive Combat Rifle, which has its roots in the Magpul Masada, and Troy. But by the end of May 2013 the Army had discontinued the ICC, ostensibly because a competitor had outperformed the M4, raising concerns over the high conversion costs. But officially, the Army said, "None of the vendors were able to meet the requirements to pass into phase three (of the ICC)." Also, none of the candidates had shown a level of improvement in operational safety that would justify a new procurement. One reason for the inconclusive end to the ICC, according to the Army, was its new ammunition. The test weapons underwent their trials with the new M855A1 Enhanced Performance Round (EPR) instead of the conventional M855. The high expectations with regard to reliability were disappointed. Nevertheless, the Army was quick to clarify that no conclusions about the operational capability of the M855A1 ammunition when used with M4 could be drawn from the test results.

Product Enhancements Instead of a New Weapon

Parallel to the ICC, the U.S. Army pursued the M4 Carbine Product Improvement Program (PIP) to improve the combat effectiveness of the carbine. The improved M4A1 replaced the M4 and the M16 – in all combat units, at least. The M4A1 features a heavier barrel and can shoot either in semi- or automatic fire mode, while the M4 has only semi-automatic and three-round burst modes. The rapid-fire trigger module offers a smoother trigger pull designed to improve precision. The weapon itself is not new: US Special Forces have been using the M4A1 for several years.

Meanwhile, the Army plans to upgrade the M4A1 to M4A1+ to improve its combat effectiveness. Among the new features are new hand guards, including improved non-black rail systems, new charging handles, iron sights, trigger module and flash suppressor/muzzle brake.

Assuming Design Ownership

Colt still owns the rights to the M16/M4 technical data packages (TDP). In order not to become too dependent on a small number of manufacturers, the U.S. Army assumed ownership of the M4 Carbine in 2009. Now the service can commission other manufacturers to supply the weapon. Currently, it has 483,000 M4s and M4A1s in its arsenals, and the approved upper limit is 503,000 units. In April 2012, the Army announced an order of 120,000 M4A1 carbines to replace worn-out weapons. The 77-million-dollar contract was awarded to FN Herstal USA. The order was by no means uncharted territory for FNH USA. Along with Colt, the company was one of the largest licensed operations supplying the U.S. armed forces with M16s.

Despite its on-going bankruptcy proceedings, Colt of course wants to continue to stay in business.

The company offers a complete weapons family based on its M4. These include a version with a heavy barrel (HBAR = heavy barrelled rifle), a personal defence weapon (PDW), an infantry automatic rifle (IAR) and a 40mm grenade launcher. Added to those are improved M4 variants, such as the Advanced Colt Carbine Monolithic (ACC-M) and the Advanced Piston Carbine (APC) with a better barrel and Colt-developed gas piston system with a flexible connection, which the company calls its "articulating link piston." In addition, Colt has extended its portfolio to include the LE901 modular multi-calibre system. It consists of a range of lower and upper receivers with various barrel lengths and calibres.

M4A1 with attached Aimpoint M68 Close Combat Optics

Many Competitors

As controversial as the reliability of the M16 and M4 is in military use, there is still a broad consensus about its ergonomic architecture. Consequently, a number of other providers offer mil-spec AR-15 derivatives. Examples include Barrett, Colt Canada, Daniel Defense, Knights Armament, LaRue, Lewis Machine & Tool Company, Nemo, POF, SWORD and Troy. But even outside the United States small arms manufacturers see good market opportunities for AR clones.

Heckler & Koch developed its HK416 between 2002 and 2005 for mass production. The weapon combines the AR-15 architecture with the reliable short-stroke gas piston system of the G36. The HK416 is now among the most widely used military AR-15 clones. Starting in 2007, Norway began replacing its AG-3 (also known as the G3) with the HK416. And the U.S. Marine Corps also placed an order for 6,500 units in 2010. The Leathernecks introduced it as the M27 Infantry Automatic Rifle. Other traditional European manufacturers presented their own military AR-15 clones, among them Oberland Arms (Oberland Defence), Schmeisser (Solid series), SIG Sauer (SIG516), Steyr-Mannlicher (STM556) and Haenel (CAR816; the military version of the Haenel CR223 is manufactured in Suhl for Caracal/Tawazun). The latter three designs also use the short stroke gas piston system rather than the original direct impingement principle. A further innovative SIG construction, the MCX multi-calibre system, has reportedly been successful in the USSOCOM Low Visibility Weapon System. The FN-15 Series by FN Herstal, another traditional European company and Parent of FNH USA, is a further AR-15 clone. As mentioned, this is nothing new for FN. The landscape of the M4 and all its variants is nothing if not exciting, and competition is good for business. ■

CZUB Ballistic Vests

On 10 February 2015 the Czech Ministry of Defence signed a contract with Ceska zbrojovka Uhersky Brod a.s. (CZUB) to supply 2,291 ballistic vests for the Czech Army.The contract, worth CZK 68,078 million, confirmed the rapid expansion of the company's product portfolio.

The ballistic and tactical vests have been included in the product portfolio on the basis of positive experience with tactical weapon accessories, such as tactical backpacks, bags and magazine accessories. As part of several projects concerning the rearmament of the army and special forces, CZUB has been regularly approached to bid for a comprehensive rearmament of soldiers and police officers with tactical equipment, including accessories for weapons, consisting of optical and laser sights and tactical gear – the aforementioned vests.

Initially, CZUB worked with numerous producers of ballistic materials, which was crucial for the quality of the vest. CZUB now cooperates with partners who can maintain the production quality and specifications. The main partner for finalising and integration is 4M company. Its specialists have experience from real combat situations, development and production. Both companies benefit from this cooperation, especially when working on challenging projects.

Vests for Various Conditions

The portfolio of vests offered by CZUB is extensive. Technical requirements for larger tenders usually differ considerably and often it is not possible to succeed with a "standard" solution. Large projects almost always involve modifications or additional development to comply with the customer's specific requirements. The company can now offer vests with various levels of protection, says CZUB's Head of the Military Equipment Department, Petr Vávra.

Also, the company focuses on vests for Special Forces, requiring higher standards of comfort and mobility and the lowest possible weight. As Vávra says: "It is already known that vests manufactured by CZUB are among the lightest in the world". This is illustrated by the CZ 4M VIP vest in protection class IIIA, designed for concealed wear, weighing just1.5 kg (size L). According to Vávra, CZUB "can lower the weight even further."

Another CZUB vest protects against AK-47 assault rifle 7.62x39 mm ammunition. Weighing less than 5 kg while also protecting against shrapnel, this vest is more than a mere plate carrier – although such a solution is often many times more expensive than standard.

The CZUB ballistic vest portfolio ranges from small vests for concealed wear, to light combat vests, and heavy combat vests for situations involving high risk of improvised explosive devices, since these vests provide maximum body protection. There are also light plate carriers for special and airborne forces.

Current Situation and Plans for the Future

CZUB is currently working on 21 projects concerning the rearmament of the Czech army. CZUB has a great advantage here, offering a full range of products. Customers today prefer compatibility, so they will buy weapons and accessories from the same supplier.

All these accessories, including medical equipment, communication devices, pyro devices, etc. need to be incorporated on the ballistic vest. Moreover, soldiers and police officers operate in various environments and perform a variety of tasks. CZUB specialists thus evaluate the needs of each soldier or police officer and propose the optimal combination of weapon/accessories/ballistic vest.

This avoids the situation where individual components do not match eachother, often restricting shooting or effective movement. In this regard, new accessories from CZUB merit consideration. For example, a tactical backpack designed for use with a ballistic vest; many armed forces find it impossible to use existing backpacks with new vests.

CZUB is working on several other exciting Individual Protection innovations, including a new riot control suit and a new vest that protects against 7.62 mm AK-47 ammunition without the use of ballistic plates. Also in the wings: a model range designed for naval and special forces, providing protection that floats … ■

The CZ 4M VIP vest offers protection against .44 Mag SJHP bullets (semi-jacketed hollow point) weighing 15.6g and muzzle velocity of 436 m/s, or 9x19 mm FMJ RN (full metal jacket round nose) weighing 8.2 g and muzzle velocity of 436 m/s.The ballistic insert has a minimum width of 235 mm, minimum height of 300 mm and maximum thickness of 22 mm.

ALTAY – The Turkish MBT Programme

Korhan Özkilinc

The security policy orientation of Turkey and the dynamic situation in the region prompted the Turkish government-controlled Defence Industry Executive Committee to initiate a radical reform of the domestic industry to promote the build-up of key technology competence. The Committee achieved this objective by integrating domestic companies into internationally oriented projects. One relevant example is the ALTAY Main Battle Tank (MBT).

Development Process

After the planning for the national MBT project had started in 2005, the Defence Industry Executive Committee decided on 30 March 2007 to use the South Korean K2 BLACK PANTHER as MBT platform. In 2008, the contracts with Hyundai Rotem were signed. In the following year, Otokar AS was assigned as prime contractor to implement the design, development and construction of prototypes. In addition, Aselsan, Roketsan and MKEK were brought in as important subcontractors. Far more than 100 suppliers have been involved in the project, three dozen among them from abroad. As a lighthouse effort the ALTAY programme was backed up with a budget of $500 million to secure its successful completion.

In September 2010, the development phase or, more specifically, the conceptual design phase was completed, and on 15 November 2012 the first prototype was presented to the public in the presence of Recep Tayyip Erdogan, the then Prime Minister and current President of the Turkish Republic.
During the development phase (concept design, prototype development, qualification) the project reached different milestones with success: the Mobility Test Rig (MTR; more than 4,000 km by 2013) and the Firing Test Rig (FTR; more than 1,000 rounds).

Four prototypes have so far been developed; the most recent two PV1 and PV2 prototypes will enter the acceptance phase and undergo the qualification test in compliance with NATO standards. The first ALTAY will be delivered to the Turkish armed forces at the end of 2016 or early 2017, 250 more vehicles are scheduled to follow by 2021.
The new tank has been named after the commander of the 5th Cavalry Corps in the Turkish War of Independence and later politician General Fahrettin Altay.

Pictures: Author

Based on a licensing/coproduction agreement with Hyundai Rotem the Korean PANTHER MBT provides the technological basis for the Turkish armed forces' ALTAY weapon system.

Protection

Since 2008, Roketsan has been working in its in-house Ballistic Protection Centre on the development of innovative composite and reactive armour. Aselsan is examining at full speed solutions for an active protection system which is to be integrated at a later time. Moreover, Aselsan has successfully developed a laser warning system which not only generates optical and acoustic warning signals to the crew in case of threats but also supports their identification and categorisation (friend/foe) and the launching of appropriate countermeasures.
Most recent technologies protect the bottom of the hull against mines and booby traps. The vehicle can be equipped, if re-

The ALTAY's main weapon is the Rheinmetall L55 120 mm smoothbore gun manufactured under licence by MKEK. The gun can fire both APFSDS kinetic energy penetrators and HEAT-MP-T shaped charge warheads.

Author

Korhan Özkilinc is an industry consultant based in Witten (Germany) specialising in international cooperation between high-tech companies, especially SMEs.

With a weight of 65 tonnes the ALTAY reaches maximum speeds of 70 km/h on roads, 50 km/h travelling off roads and 30 km/h when reversing. Its operational range is 450 km.

quired, with additional protective systems and also features a CBRN defence system of the latest state-of-the-art. The interior of the ALTAY is protected by a smart fire and explosion suppression system from Kidde-Deugra.

Armament

The computer-assisted Battlefield Target Identification System with hunter-killer capability provides a high first hit probability on the move and can even engage low-flying helicopters. The full-sphere periscope provides the crew commander with an omnidirectional view over the battlefield. This fire control system is also capable of automatically detecting and tracking targets without intervention of the gunner.
The gunner has a periscope of his own so that he and the commander can act independently of each other to identify more than one target at short notice.
The main weapon of the ALTAY is the tried and tested L/55 120-mm smoothbore gun from MKEK. The gun fires any current NATO tank rounds (according to STANAG 4385) such as e.g. APFSDS kinetic energy penetrators and HEAT-MP-T shaped charge warheads.
The secondary armament consists of a coaxial 7.62 mm machine gun and a remote-controlled weapon station (RCWS) operable under protection that bears effect by an either 7.62 mm or 12.7 mm calibre machine gun. The integration of anti-tank guided missiles is also possible.

Drive

On 15 October 2010, Otokar decided to equip the ALTAY with an MTU engine and a transmission from RENK. The MTU MB-883 Ka-501 diesel fuel engine with common rail fuel injector provides a rated power of 1.103 kW (1.500 hp) with an engine speed of 2.700 rpm. The engine displacement of the 12-cylinder engine amounts to 27.35 litres. The RENK HSWL295TM Powershift Automatic Transmission features five forward and three reverse gears. An auxiliary 17-kW engine supplies energy to the electronic systems when the main engine is not running.

With a weight of 65 tonnes the ALTAY reaches maximum speeds of 70 km/h on roads, 50 km/h travelling off roads and 30 km/h when reversing. Its operational range is 450 km.
A domestically manufactured power pack is intended to be used in the later series production. To this end, an agreement was made between the Ministry of National Defence's Undersecretariat for Defence Industries (SSM) and TÜMOSAN AS on 17 March 2015. TÜMOSAN was engaged to develop an engine within 54 months while being allowed to involve foreign companies in the project, if need be. Whether or not a first engine prototype will be delivered by 2020 cannot yet be foreseen.

Powertrain

To ensure the best possible driving quality for the tank crew (commander, gunner, loader, driver), the ALTAY features seven road wheels with double rubber tyres and a hydro-pneumatic suspension that provide effective dampening and excellent off-road mobility.
With its foldable snorkel the ALTAY traverses waters up to a depth of 2.5 m; a longer snorkel enables a deep-wading depth of 4.1 m.
The ALTAY is 10.85 m long, 3.68 m wide and 3.32 m high. It manages grades of 60 % and lateral slopes of up to 30 %. It also easily climbs 1-m-high vertical steps and crosses 3-metre-wide trenches from a standing position.

Hardware/Software System

The ALTAY features a Battlefield Management and Communication System (BMCS) with smart C^2 functionalities that coordinates all processes in real time and translates decision finding processes effectively into different scenarios. The system configuration is based on a distributed system software architecture for which a new data exchange protocol was specifically developed. Each vehicle occupant uses a display unit of his own. The BMCS exchanges data with the vehicle control system. Both the Battlefield Target Identification System and the Battlefield Management System were developed by Aselsan. The Situation Awareness System of Otokar acts actively, detects any incidents in the environment via a variety of sensors and so decisively supports the decision makers.

Summary

Upon implementation of the ALTAY the Turkish armed forces will receive a latest state-of-the-art third generation MBT that is streets ahead of many modern tanks of today in terms of modularity, flexibility, networkability and weapon effectiveness. The project benefits very much from the abundancy of experience and knowledge Turkish officers have collected with most diverse tank types in the areas of battlefield surveillance and target acquisition.
The modular concept of the ALTAY facilitates the integration of technologies emerging in the future. Specific customer requests will also be easier to implement, a fact that will certainly pay off in terms of competitiveness on the markets. ■

The hull features protection against mines and booby traps and has a CBRN defence system. Additional protective features can be retrofitted, if required.

Securing EUROFIGHTER's Long-Term Future

A Call for Investing in Europe's Defence Industry

Alberto Gutiérrez

Europe's military aviation industry is in the middle of a fierce international competition. Three different combat aircraft (EUROFIGHTER, RAFALE, GRIPEN) and six manufacturers with six national final assembly lines are fighting for a global market which is limited in its size, strategic in its importance, and very much influenced by the geopolitical, military, industrial and technological interests of the respective governments.

On top of this, two large defence companies (Boeing, Lockheed Martin) in the United States enjoy strong political support by the U.S. administration and continue to try to gain major junks of this multi-billion dollar business for themselves.

At the same time, the defence budgets of most ministries of defence in Europe have been reduced in recent years. An increase in defence expenditures is not likely and they continue to be the focus of hot debates in domestic politics. As a consequence, the International Institute for Strategic Studies (IISS) stated: "Europe's combat aircraft industry faces an uncertain future."

Let us briefly remember, what Europe has achieved. Many years ago, when the EUROFIGHTER programme was born, a group of brave men and women had a vision. They took a risk and decided to launch a new combat aircraft called EUROFIGHTER TYPHOON – a political and industrial initiative to develop a joint European fighter which would enable Europe to be less dependent from US off-the-shelf solutions. In that moment, they created a defence programme that has sustained more than 100,000 jobs in around 400 companies. They developed a wide range of industrial capabilities, technological know-how and skill-sets which has given Europe a competitive edge for decades.

Author

Alberto Gutiérrez is the Chief Executive Officer of Eurofighter Jagdflugzeug GmbH

However, due to ongoing budget reductions, Europe's defence industry is at crossroads: either the European nations stick stronger together, consolidate their defence industry, continue to invest in their defence industry and keep this long-term industry alive, or Europe runs the risk of leaving the global market to its competitors losing employment, capabilities, technologies, skill-sets and the great talents in its highly-qualified workforce. Let's not forget: we all have a common responsibility to protect these high-value assets which we have developed throughout the last two decades. Therefore we all should sustain this great legacy.

Consequences

Military aircraft programmes such as the EUROFIGHTER and the A400M lie at the heart of the European defence industry which became the focus of a study commissioned by the European Defence Agency (EDA). This study was apparently one of the first which evaluated the impact of the European defence industry on Europe's economy as a whole. One of the key findings of this study was that the overall macro-economic benefit of investing in the defence sector may exceed that of investing in other domains. The study, for instance, confirmed that defence investments have a far greater impact on high-skilled employment and Research and Development (R&D), hence potentially leading to a long-term Gross Domestic Product (GDP) growth rate. The study estimated that the impact is 12 to 20 times greater than that generated by other forms of public spending.

(Photos: Eurofighter GmbH)

Another interesting result was that the macro-economic impact of investments in defence is greater at EU level than that at national levels due to the inherent "Europeanised" nature of the defence industry.

So where are we today? EUROFIGHTER is acknowledged as the backbone of the European airpower – not only as of today but for many decades to come thanks to its inherent growth potential designed within the aircraft from the very beginning. Since entry-into-service in 2003, we have won seven customers, delivered more than 430 aircraft and accumulated almost 300,000 flying hours with an unprecedented safety record. Thanks to its EJ200 engines, EUROFIGHTER is known as an extremely powerful combat aircraft which is considered as an effective, proven and trusted weapon system by

air forces around the world including the U.S. Air Force.
Within industry we are working hard to improve our future performance in two major areas:

- Firstly, we are acting to increase the international competitiveness of EUROFIGHTER by delivering additional efficiencies, reducing lead times, enhancing operational capabilities, and improving the overall performance of this quadro-national weapon system.
- In order to achieve these goals, we launched an internal improvement project called LIFT OFF for Eurofighter Jagdflugzeug GmbH. The project was set up to improve our company in all areas making it leaner, meaner and more effective.
- To support these efforts we participate in the improvements led by an external ministerial task force which serves as a high-level platform to brainstorm with our core customers and implement necessary improvements in the forthcoming years.

Second, we have focussed our sales campaigns on regions which promise a significant growth potential. These regions are mainly the Middle East (Saudi Arabia, Bahrain, Kuwait), the Asia-Pacific region (Malaysia, Indonesia) and Europe (Denmark, Belgium, Poland, Finland). Our campaigns and prospects are making good progress and we have reasons to believe that we will find new customers amongst these countries. Just one example: Belgium. We launched a campaign for Belgium and I am sure we have excellent arguments and assets which justify the procurement of our product. We will offer EUROFIGHTER as the European solution to a European customer in the heart of the EU and NATO. Of course, we would be pleased if Belgium could join the "NATO Club" of proven EUROFIGHTER operators such as the United Kingdom, Germany, Spain and Italy.
Looking at our continuous programme achievements so far, I am convinced that we have a world-class swing-role combat aircraft on offer. This personal opinion has been supported by a new research report prepared by the Royal United Services Institute (RUSI) in London. The report summarises: "The EUROFIGHTER's combination of high thrust-to-weight ratio, manoeuvrability at all speeds, 65.000-foot service ceiling, supercruise capability, powerful radar and large missile load ensures that it outclasses any currently operational fighter aircraft in the world with the exception of the U.S. F-22 Raptor."

Refueling of EUROFIGHTER TYPHOON aircraft in the air

This evaluation of an independent think tank should be encouraging and stimulating for all those in the EUROFIGHTER community who try to move this programme forward and who continue its success story despite the kind of setbacks which almost all major defence programmes seem to suffer during their lifetime.

Successful on the World Market

However, the performance and capabilities of an aircraft alone are not enough to be successful on the world market. There are at least three other factors which dictate the chances of success.
These are: the product, the price and the political support.

- First, the product: we as industry are obliged and fully committed to further enhance the performance and capabilities of the EUROFIGHTER TYPHOON programme. EUROFIGHTER is already the leading swing-role combat aircraft available on the world market today. With the ongoing capability enhancements such as the Meteor and Storm Shadow integration, e-scan radar, Brimstone, etc. which are part of our Capability Roadmap, the aircraft will become even more powerful and potent.
- Second, the price: we must do everything to offer our product for a competitive price to our challenging customers and thanks to the lowering Life-Cycle Costs (LCC) of our product, we are in a good position.
- Third, the political support: political support of our European governments is absolutely key! As a partnership of four core nations in Europe, political support of the founding nations needs to be further strengthened. A holistic offer should not only be focussed on the weapon system alone, but should be a comprehensive package offering political incentives, military aspects, industrial and technological opportunities and eventually other defence systems in service.

EUROFIGHTER TYPHOON aircraft of the German Air Force

Finally, EUROFIGHTER, the military aviation industry and the defence industry in general are pre-dominantly political and strategic industries. They are vital for the economic, industrial and technological development of nations. I therefore strongly recommend that both governments and industry keep on investing in Europe's defence industry in order to secure its long-term future and to maintain the defence and security of our nations. ■

Rolls-Royce Power Play

Jürgen Hensel

In the scope of the „Rolls-Royce Naval Media Day" at the end of June the British company gave a comprehensive presentation of products, capabilities and programmes to a group of selected journalists from the UK and abroad. The event took place at the Aerospace and Defence Centre in Filton (near Bristol), and the focus was on the company's capability spectrum in the area of maritime systems, of which the defence part represents a value of some 22% of the £1.7 billion revenue (excluding MTU), covering gas turbines, Diesel generators, platform automation and handling systems as well as electrical components. The briefings and presentations addressed the Series 4000 Diesel engines from MTU Friedrichshafen, the product spectrum of gas turbines for naval applications, the capabilities and capacities of the Rolls-Royce Hydrodynamic Research Centre in Sweden (formerly Kamewa), the Heavy RAS System of the Royal Navy for replenishment at sea (RAS) as well as the type MT30 new generation gas turbines including a tour of the test centre for maritime gas turbines at Filton.

Pictures: Rolls-Royce

The „Power & Propulsion Sub-Alliance" is a joint venture of Rolls-Royce, GE, Thales/Wärtsilä and L-3 (platform automation) and is under contract for the QUEEN ELIZABETH Class aircraft carriers' propulsion system.

Programmes

Thomas Leahy, Director Naval Programmes EMEA, briefed the media representatives on the participation of Rolls-Royce in the following programmes:

• QUEEN ELIZABETH CLass aircraft carriers (QEC, Royal Navy)
With regard to the current building programme for two units (65,600 tons displacement) to replace to INVINCIBLE Class the company is a member of the "Power and Propulsion Sub-Alliance" as a joint venture with Thales, GE and L3. For the propulsion system Rolls-Royce supplies two type MT30 gas turbines with a performance of 72,000 kW, the electrical installation, steering gear and rudders, adjustable bolted propellers and shaft lines, stabilisers and elements for the RAS system. Integration work has been completed on the First-of-Class HMS QUEEN ELIZABETH and all equipment items for HMS PRINCE OF WALES have been delivered.

• Global Combat Ship Type 26 (Royal Navy)
For the first batch of three units of these new frigates Rolls-Royce has been subcontracted by BAE Systems for the gas turbine system based on the type MT30, and the Series 4000 Diesel generators from MTU. Additional supplies covering the steering and control unit, stabilisers, the mission bay handling system and propellers are subject to current negotiations with final decisions to be announced by BAE Systems before the end of the year.

• Type T-45 destroyers and Type 23 frigates (Royal Navy)
All six T-45 units have been introduced and have already accomplished a number of missions in the Gulf region and the South Atlantic. Rolls-Royce is under contract for the logistic support of the type WR21 gas turbines, for which they use, among others, a new test bed which was established in Bristol in January 2015 as well as the installations of RWG, a joint venture of Siemens and Wood based in Aberdeen, Scotland. The same applies for the logistic support of the British Type 23 frigates' SPEY gas turbines.

• Heavy RAS
In light of a 5-ton RAS requirement (5 hours at sea stage 5) which was formulated in the scope of the QEC programme, the company has assumed prime contractor status for the development of the Heavy RAS system including shore-based elements and a training facility. The Royal Navy started training in January 2015, and the U.S. Navy has also indicated an interest in this capability.

• U.S. Navy
The U.S. Navy is the largest customer for maritime gas turbines. Among others, Rolls-Royce supplies MT30s for the Littoral Combat Ships of the FREEDOM Class (12 units, 2 MT30 each) as well as the DDG1000 destroyers of the ZUMWALT Class, the smaller MT7 gas turbines for the SES units of the Ship-to-Shore Connector programme (SSC), MTU Diesel engines for LCS INDEPENDENCE, the Joint High-Speed Vessels (JHSV) of the SPEARHEAD Class, the National Security Cutter and the Fast Response Cutter of the U.S. Coast Guard. A gas turbine propulsion system (AG9160) is under development for the Flight III variant of the DDG51 ARLEIGH-BURKE Class destroyers.

• Japan
The Japanese Maritime Self-Defence Force (JMSDF) is the second-largest operator of Rolls-Royce gas turbines; the partnership between Rolls-Royce and Kawasaki Heavy Industries (KHI) has been in existence for 40 years. More than 200

Type MT30 gas turbine from Rolls-Royce

type OLYMPUS, TYNE, SPEY and 501 gas turbines have been delivered with KHI as a licensee for component production, integration and testing. Rolls-Royce waterjets and MTU Diesels are dominating the Japanese Coast Guard market.

• Republic of Korea (RoK)
Type MT30 gas turbines and controllable pitch propellers are under contract for the FFX-II frigate programme, and the same applies for Type 4000 Diesel generators from MTU. The first MT30 system has been delivered to Hyunday Heavy Industries for further integration. For the KDX-III destroyers the company supplies Type AG9140 gas turbine generators. Rolls-Royce CPPs are standard in programmes of the Republic of Korea Navy (RoKN) and Coast Guard.

Products

Christoph Fenske, Director Application Centre Government Naval, introduced the product portfolio of MTU Friedrichshafen GmbH (Rolls-Royce Power Systems) as the youngest member of the Rolls-Royce group. An emphasis of his presentation was on the capabilities that the company can offer in the area of propulsion system integration as well as the Series 4000 Diesel engines. The 20V variant of this propulsion system featuring a performance of 2850 kWe at 40,000 kg has been selected for the British Type 26 frigates (according to IMO Tier 3 standard, as a first) and the German Class F125 frigates. The French FREMM frigates, for which MTU has also developed the exhaust gas cooling control system in support of signature reduction, have the 16V variant of the Series 4000. Furthermore, the F125 also has the CALLOSUM platform automation system from MTU for logistic intelligence and support with online IETD and guided instructions for fault analysis and repair. Starting 2016 propulsion units of the Series 4000 will also power the submarines of a customer nation.
Dave Pearson, Director Engineering Technology, briefed the party on the product portfolio of gas turbines for maritime applications, all of which have been developed based on aero engine technology which, to an extent, can be identified by the respective designations (MT = Marine TRENT). As a rule, the number in the type designation indicates the performance in MW. At present, the WR21 (Westinghouse Rolls-Royce, derivative of the RB211 and TRENT aero engines) powers the T45 destroyers, and the MT30 has been selected for the FREEDOM Class LCS and DDG 1000 of the U.S. Navy and the QEC carriers. Moreover, DDG 1000 has the type RR4500 (4.4 MW) as an auxiliary turbine generator. Apart from the SSC programme of the U.S. Navy, the MT 7 gas turbine (4 – 5 MW) is used as an aero engine for the type V22 OSPREY tilt-rotor systems of the U.S. Marine Corps.

The Rolls-Royce product portfolio for naval surface ships

The series of product presentations was rounded off by a briefing from Richard Partridge, Chief of Naval Systems, who presented a survey of the product spectrum and an outlook to future developments with objectives such as:

- More flexible propulsion systems;
- Fewer space requirements;
- Higher efficiency at lower life cycle costs;;
- Increased use of electric energy;
- Reduced share of mechanical elements;
- Fewer engines;
- Increased performance.

Perspectives

The JMSDF's requirement for 30+ new units over the next 25 years, the €5.4 billion fleet renovation programme of the Italian Navy calling for replenishment ships, OPVs, a helicopter carrier and ocean-going minehunters as well as the Turkish Navy's planned procurement programme for fast patrol boats, supply ships and type TF 2000 frigates constitute significant future perspectives for Rolls-Royce.

Conclusion

The Rolls-Royce Naval Media Day 2015 offered a wealth of valuable information and was perfectly organised by Rolls-Royce's Director of Communication Craig Taylor and his team.
The briefings, which in part were highly technical such as the one by Göran Grunditz, the Director of of the Hydrodynamic Research Centre in Sweden, could even respond to the information requirements at engineer level but never lost the direct link to current applications and requirements, thus constituting a very valuable mix of information suited for both specialist and consumer media. ■

Rolls-Royce's participation in the DDG 1000 programme of the U.S. Navy comprises two type MT30 gas turbines, two auxiliary generators, two fixed propellers as well as the handling system for the towed array sonar.

TAI – an International Player

Interview with Muharrem Dörtkaşlı, President & CEO of Turkish Aerspace Industries Inc. (TAI)

ESD: Over the last decade we have seen TAI grow in so many ways. Please tell us about the milestones and successes throughout these years.

Dörtkaşlı: TAI was established in 1984 as a joint venture, only for one project, the co-production of F-16 aircraft in Turkey. Until 2005, the joint venture tried to survive with several fixed and rotary wing co-production and aero-structure build-to-print projects for major aerospace companies.

In 2005 TAI underwent major structural changes in shareholder status and became a 100% Turkish shareholding company. During the last decade TAI was turned from a subcontractor company into a company that generates intellectual property (IP) and products. In the coming years, with the power of our indigenous products and international partnerships, we are paving the way to create one of the most valuable global brands of Turkey.

TAI invested in developing its own IP as well as increasing value-added services, initiated product design and development and made sure it remained competitive in the aero-structures side to maintain its business volume in order to ensure sustainability. As a result of these measures, business volume rapidly increased, driving an increase in the numbers of employees and revenues. TAI's annual revenue increased 10 times to US$ 1Bn, and the number of employees doubled, to 4,500 in the past 10 years.

More than the growth achieved, I would like to mention our steps towards OEM status which were taken in recent years with the ANKA and HÜRKUŞ programmes. In 2013, after the qualification of the ANKA Block-A Medium Altitude Long Endurance (MALE) UAV, the system became operational, and we have signed the serial production contract for 10 additional ANKA systems in 2013 with the Turkish Undersecretariat for Defense Industries; conferring OEM status on TAI for our development programme. Additionally, following the contract of the HÜRKUŞ New Generation Trainer Aircraft and the successful flight test campaign for EASA CS23 certification, we have signed a serial production contract for 15 aircraft. This is another successful development programme that brings TAI OEM status. However, there is more to come: Turkey will be celebrating the 100th anniversary of the Republic in 2023, and Vision 2023 includes a number of pioneer projects, like the indigenous Fighter Aircraft and Light Utility Helicopter.

We have already started our studies on these two programmes. We are currently working on the design of a fighter aircraft and we aim to see the first prototype by 2023. Similarly on the indigenous helicopter programme, we are developing a unique model to make the first flight in 2018.

Our ambitions extend into space, with development of communications, observation and intelligence satellites. I expect that you will hear more from TAI in the coming years!

ESD: What is the outlook on the future of TAI? Where do you see TAI in terms of upcoming European development programmes?

Dörtkaşlı: As I mentioned before our aim is to keep our growing performance stable through new development projects and to take TAI higher in the global rankings in aerospace. Like the past decade, we know that the future holds more work, challenges and – we hope – success.

Regarding European development programmes, culturally and historically we feel ourselves as part of Europe, and are always willing to get involved in aerospace-related activities to enhance already-existing ties. The good news is that there are already success stories between Europe and Turkey, like A400M Transport Aircraft programme, the risk-sharing partnership for A350 XWB, or the initial work for the TALARION UAV programme which was cancelled a couple of years ago.

We know that Europe is looking to further its presence in UAV systems to use in joint operations for sustaining security or for humanitarian needs. Discussions are continuing on using UAVs in European civil air space.

It was also in the press that, France, Germany and Italy have initiated a study to develop a European MALE (Medium Altitude Long Endurance) drone by 2025. There are discussions around future UCAV systems between different nations in Europe. I believe TAI will add value to European UAV studies and the ANKA MALE UAV can be used as a development platform for Europe's future MALE programmes. I can clearly state that we would be ready to get together and discuss collaboration areas for MALE, strategic UAVs or UCAVs for European needs. There is a successful collaboration heritage and our aim is to take this partnership further! ■

The interview was conducted by Korhan Özkilinc.

Lockheed Martin to Acquire Sikorsky

Sidney E. Dean

On 20 July 2015 Lockheed Martin Corporation (LM) announced that it will acquire Sikorsky Aircraft from United Technologies Corporation (UTC), further consolidating the US military aviation industrial base.

With annual revenues of US$ 45Bn, Lockheed Martin is already the leading defence industry conglomerate in the United States. The LM aviation line-up includes the legacy F-16 fighter aircraft and the state-of-the art Joint Strike Fighter / F-35, as well as the C-130 transport aircraft, all of which are also sold overseas. The firm also produces military satellites, warships, and ground combat systems.

Sikorsky is a global leader in vertical lift aircraft production, with US$ 7.5Bn in 2014 sales. Sikorsky's market is approximately 75 percent military and 25 percent civilian; half of sales are to US customers, with the rest divided among 40 foreign nations. By acquiring Sikorsky, LM will expand its portfolio to include several successful helicopter families including the H-53 and H-60 lines; Sikorsky (in partnership with Boeing) is also competing for the US military's lucrative Joint Vertical Lift programme.

Lockheed Martin is paying US$ 9 billion for Sikorsky, although tax benefits related to the sale will reduce the actual cost to US$ 7.1 billion. Earlier this year industry analysts had valued Sikorsky between 5 and 6 billion Dollars, but a bidding war between LM and Textron, which had also wished to purchase the firm, drove the price up.

Still, most experts see the transaction as a win-win for Lockheed Martin. It will diversify the company's portfolio into a new, high demand product area with a well-established product line and customer base (domestic and foreign). Given the current state of defence-industry consolidation and the spectre of further US and global defence spending cuts, very few companies of Sikorsky's stature are available for takeover. "They're paying a lot for it, but it is a very good property. Traditional defence platforms look really good right now," said Teal Group aerospace analyst Richard Aboulafia in a Bloomberg interview. Currently Sikorsky's prime competitors in the United States are Boeing (CH-47 Chinook) and Bell-Textron, although there is significant cooperation between these three firms as well.

Consolidation and Concentration

Sikorsky's profitability has faltered lately, due largely to decreased demand from the offshore oil and gas industry, but also to delays in military procurement decisions. In 2014 Sikorsky accounted for US$ 7.5Bn in sales (a 19 percent increase over 2013), but only US$ 219M in profit, making it the least profitable branch of UTC's portfolio. UTC's Chief Executive Officer Gregory Hayes announced that the sale is part of a broader corporate strategy to focus more on non-defence sector products and services as well as on aircraft engine and component production.

According to Lockheed Martin CEO Marillin Hewson, her firm is taking a longer term approach, expecting Sikorsky's profitability to rebound over time. "We believe these current pressures (on the civilian helicopter market) enabled us to make this acquisition at a low point in the economic cycle", Hewson stated. She called Sikorsky a "natural fit" which will enable LM to expand its "core business" into the US$ 30Bn global market for helicopters. Under Hewson, who assumed her position in 2013, LM is expected to divest up to five of its information technology and services ventures in the next few years and concentrate even more intensely on its core defence and aerospace sectors.

Transfer of Sikorsky ownership is expected to be completed in late 2015 or during the first quarter of 2016. The sale requires approval by the US Department of Defense, which wants to preserve defence industry competition and diversity of suppliers. Industry analysts are convinced that there will be no government objection, as LM does not currently build helicopters (although it does supply components and system integration services to Sikorsky and Bell-Textron).

Looking ahead, industry analysts speculate that Northrop Grumman Corporation might divest its aerospace division if it fails to win the upcoming contract for the new U.S. Air Force strategic bomber. Barring government intervention, Boeing would be the logical purchaser, leaving only two major US providers of military aircraft – Boeing and Lockheed Martin. ■

Photo: US SouthCom

25 nations depend on Sikorsky's BLACK HAWK helicopters for multi-mission support.

Author

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

Beauchamp Appointed Director at Raytheon

(Photo: Raytheon)

(df) Effective 24 July 2015 the Board of Directors of Raytheon Company elected Robert Beauchamp as a Director. Beauchamp is Chairman, President and CEO of BMC Software, a global provider of business service management software. He joined BMC in 1988 and has served as President and CEO since 2001. Beauchamp was named Board Chairman of BMC in 2008.

Beauchamp serves as an independent Director of National Oilwell Varco, a provider of drilling equipment, oilfield services and supply chain integration services for the oil and gas industry. He also serves on the Board of Regents of Baylor University. Beauchamp earned a Bachelor's degree in finance from the University of Texas at Austin and a Master's degree in management from the Houston Baptist University.

New Chairmen for the EDA Steering Boards

(df) Federica Mogherini, Head of the European Defence Agency (EDA), has appointed three new chairmen for the National Armaments Directors, Capability Directors and R&T Directors EDA Steering Boards.

The EDA only employs 130 staff, but through various networks of national experts the Agency currently involves around 4,000 defence specialists, so the Steering Boards at the level of National Armaments Directors, R&T Directors and Capability Directors provide important decision-making forums.

Following consultations, the three new chairs are:

- National Armaments Directors: Deputy Minister Daniel Koštoval (Czech Republik), with effect from 1 September 2015;
- Capability Directors: Lt Gen Erhard Bühler (Germany), with effect from 1 January 2016;
- R&T Directors: Dr Bryan Wells (United Kingdom), also from 1 January 2016.

GDELS Wins Top 100 Award

(df) General Dynamics European Land Systems-Germany GmbH was honoured as one of Germany's most innovative SMEs at the SME Summit in Essen. The company joins an exclusive group of prizewinners stretching back over more than 20 years as Top 100 mentor Ranga Yogeshwar awards it the highly renowned Top 100 Seal of Approval.

The award is the outcome of a two-stage analytical procedure. One of the factors leading to this success was the annually held "ideas competition" where the company's 390 employees had the opportunity to contribute their ideas. Bonuses constitute additional incentives.

KMW and Nexter Merger

(df) Rumours started almost a year ago, but now two of Europe's leading manufacturers of military land defence systems, the German Krauss-Maffei Wegmann (KMW) and the French Nexter Systems, have signed an agreement in Paris. The alliance of the two groups under the umbrella of a joint holding company creates a Franco-German defence

(Photo: Nexter)

technology group with a current annual turnover nearing €2 billion, an order book of around €9 billion and more than 6,000 employees.

Nexter S. A. had been in the sole ownership of the French State holding company GIAT Industries S. A.; KMW had been in the sole ownership of Wegmann GmbH & Co. For the unification the sole owners are contributing their shares into a newly incorporated joint holding company based in the Netherlands. They will each receive 50 per cent of the shares of this holding company, which will become the sole shareholder of KMW and Nexter. The governance of the holding company will reflect the equal balance between the two shareholders.

The alliance project will be subject to legal and customary regulation approvals. As part of the French law for "activity, growth and equality of economic opportunities", article 47 allows for the transfer of the majority of the capital of GIAT Industries SA and its subsidiaries. The association of KMW and Nexter should enter into effect at the end of the year.

Biwer Vice-President AirBridgeCargo

(df) AirBridgeCargo (ABC) has announced appointment of Georges Biwer as its Vice-President, EMEA, effective from July 1. Biwer has more than 24 years of experience in air cargo industry.

(Photo: Volga Dnepr)

As Vice President for scheduled business operations, EMEA, Biwer will focus on growing ABC scheduled cargo operations inside and beyond Europe with ABC going online in Middle East and within African continent to provide broader variety of export destination for European customers.

"EMEA is one of key markets for the scheduled business operations. Mr. Biwer's appointment is in line with our further expansion plans and our determination to build the best air cargo team in the industry for the benefits of our customers," said Denis Ilin, ABC Executive President..

Lavaste Head of CyberSecurity at Airbus DS

(df) François Lavaste, currently Head of Arkoon Netasq, has been appointed as the new Head of CyberSecurity at Airbus Defence and Space effective 1 August 2015.

François Lavaste brings in over 20 years of experience in the IT security business after occupying different positions in corresponding technology companies. He will replace Jean-Michel Orozco, who will assume a new position within the Airbus Group.

(Photo: Airbus DS)

The CyberSecurity branch is a growing subsidiary of Airbus Defence and Space focusing on modern challenges to the communication and data exchange infrastructure.

Airbus Defence and Space CyberSecurity's portfolio is built upon three pillars: Cyber Defence and Professional Services, Trusted Infrastructure, and Secure Mobility.

Lockheed Martin Acquires Sikorsky Aircraft

(gwh) Lockheed Martin has entered into a definitive agreement to acquire Sikorsky Aircraft for €8.1 billion. The Corporation plans to align Sikorsky under the Lockheed Martin Mission Systems and Training (MST) business segment.

MST and Sikorsky currently partner on a number of critical programmes, including the VH-92 Presidential Helicopter, Combat

(Photo: Sikorsky)

Rescue Helicopter and the Naval MH-60 Helicopter. With this acquisition Lockheed Martin's annual revenue will exceed €45 billion.

The acquisition is subject to customary conditions, including securing regulatory approvals, and is expected to close by late fourth quarter 2015 or early first quarter 2016.

140th Anniversary of Lürssen

(df) The Lürssen Group celebrated its 140th anniversary with the Lürßen family having run the Lürssen shipyards for four generations.

On 27 June 1875 the founder Friedrich Lürßen set up his own boatbuilding workshop in Aumund, near Bremen, in northern Germany. The 24-year-old grew up with close ties to shipbuilding and the sea – in a region shaped by inland and maritime seafaring since medieval times. The trained boatbuilder demonstrated his trademarks with his first vessels: originality and high-quality craftsmanship. These two qualities laid the foundation for the future success of the Lürssen Company. Lürssen initially only built racing rowboats for Bremen oarsmen, but orders increasingly came from all over Germany. In 1886 Lürssen built the world's first motorboat. The 6-metre REMS was commissioned by the inventor and engine manufacturer Gottlieb Daimler, who needed a boat to put his new engine through its paces. Friedrich Lürssen, always open to new ideas, designed and built it.

(Photos: Lürssen)

In 1917 the first military vessel was successfully delivered – and even though remotely operated systems appear to be a contemporary idea, that order was already for remotely controlled boats. To minimise risk when entering occupied ports or attacking heavily armoured ships, the Kaiser's navy relied on these remotely controlled boats, co-developed and built by Lürssen.

Today, the company designs and builds ships of the highest quality for demanding customers all over the world.

As a traditional owner-operated company in family hands, Lürssen is entirely free of obligation to external stakeholders, and able to concentrate exclusively on the quality of its products.

Marketing Report: Bren-Tronics, Inc.

Portable Power for Today's Soldier

There are many things that are taken for granted in the so called civilised world today: food, water, air, and power top the list. Power when you need it, at the flip of a switch, without question. The instant availability in the civilised world ends on the battlefield and the demands of the soldiers' world begin. Whether it is a training event or a hostile conflict, soldiers today require more and more power to not only survive, but to sustain their missions. Food, water and air demands have remained relatively constant over time. Power demands, on the other hand, have done nothing but grow for critical tools including radios and surveillance equipment. Radios provide the connection to teammates, connection to leadership, connection to support. Today's radios, like the smartphone of today versus the bag-phone of yesteryear, continue to do more with less. More functions, more communication modes, more encryption, and more throughput. Everyone wants a high-speed data connection; no one wants dial-up. Additionally, surveillance at the personal and squad level, from night vision goggles to thermal imaging systems allow the soldier to see the enemy without being seen. Having superior situational awareness up and down the chain of command is critical to success in the field.

At Bren-Tronics, Inc. we recognise the value of power and energy for the soldier and have spent the full 43 years of our history striving to meet the power and energy needs of the soldier community.

Food, water and air resources have improved in terms of variation, density, and portability. The same can be said for power and energy. From the small primary "lipstick" battery that started Bren-Tronics, to a broad array of battery chemistry types, form-factors, and charging solutions that use the sun, wind, fuel cells, and of course "repurposed" electricity to keep today's modern rechargeables ready to power today's soldier.

Rechargeables, along with lightweight, efficient charging solutions enable the soldier to stay powered up, without piling on extra pounds of "throw away batteries" previously needed for multi-day missions.

At Bren-Tronics we design and manufacture fuel cells, individual and group universal battery chargers and over 300 battery types. Batteries include 3Ah handheld soldier portable batteries, as well as our industry leading BT-70791CK (BB-2590/U) that has almost twice the energy today than when we first created it in 2004 with little or no weight gain, as well as our Lithium-Ion 6T form factor (> 100Ah, 24V battery) that provides a full depth of discharge and many 1,000's of discharge/charge cycles, providing a superior option for silent watch mounted or static applications.

When you need mission critical power and energy to operate in the field, think Bren-Tronics, we provide power when failing is not an option.

Israeli – European Defence Cooperation

Tamir Eshel

European nations maintain very low tolerance to Israel's policies toward minorities in Israel and obviously in the occupied territories in Gaza and the West Bank, but value the military experience Israel has gathered through years of conflict. This experience has proven highly valuable to maintain and bolster the security of European nations, particularly in the Balkans, Southern Mediterranean and eastern borders with Russia and Belarus.

Concern over casualties and the value of human life is a common value shared by both Israel and all European countries. Developments that Israel pioneered, in the field of ballistic and blast protection, personal protection, NBC protection, air conditioning and medical treatment, are therefore all relevant and important for NATO and European nations. These, and water purification and renewable energy are critical for the protection of their own forces, securing personnel and equipment and providing a safe and comfortable operating environment on contingency operations abroad.

(Photo: crownphoto)

British Royal Scots Dragoon Guards CHALLENGER II in the area of Basra, Iraq. European nations – specifically NATO members – have been repeatedly engaged in asymmetric conflicts since 2001.

Author

Tamir Eshel is a security and defence commentators, based in Israel.

The Basis for Cooperation

Since 2001 European nations and specifically NATO members have been repeatedly engaged in asymmetric conflicts – in Iraq, Afghanistan, Libya, Central Africa and Ukraine, Syria, Iraq and the Horn of Africa. Growing domestic pressures exacerbated by illegal immigration expose these nations to terror attacks and internal unrest, a situation similar to that encountered by Israel since it gained its independence in 1948.

Israel's Expertise and Advantages

As NATO allies continuously reduce their military forces, due to the escalating costs of personnel, material and sustainment, the remaining systems must maintain a level of operational capability by increasing efficiency, flexibility and combat power capability of the remaining – and new – elements. Command and control (C2) represents a major driver in this trend and as a 'High-tech Nation' characterized by IT innovation, Israel has a lot to contribute in this area.

In fact, Israel's defence forces have relied on advanced technology as a force multiplier since the early 1960s, with the development of major combat systems under cooperation with several European nations. During those years, Israel joined France's efforts to develop a multi-role strike fighter jet, negotiated license manufacturing of British CHIEFTAIN main battle tanks, and constructed German-designed missile boats in a French shipyard. All this cooperation ceased in 1967 after the Six Day War, as France and the UK rejected the Israeli decision to wage war against Egypt, Syria and Jordan without consultation with its European allies.

In the years that followed, as relations with most of its European friends soured, Israeli-US relations soared. Israel responded to US generosity by sharing many of the lessons learned during that conflict, sending Russian-made weapons captured during the war for inspection in the US. These included main battle tanks, missiles, combat aircraft, radar, and communications equipment. Within a few years Israel switched almost entirely from French- and British-made military hardware to US-made hardware. The contribution of know-how was critical during those years, as the US was deeply involved in the Vietnam War, facing the same armour, air defence and fighter jets.

US-Israeli cooperation reached its peak during the Yom Kippur war in 1973, as the US sent military hardware directly from its storage to replenish Israeli losses during this war. Lessons learned during the 1973 war were also shared with the US, providing essential know-how on the advantages and vulnerabilities of Russian-made weapon systems such as missiles, aircraft, armoured vehicles and naval combat systems, the ef-

fectiveness of electronic warfare systems and more. Nine years later, during the 'First Lebanon War' of 1982 Israel again shared the lessons learned in the successful destruction of Russian-made Syrian air-defence systems in the Beka'a Valley in Lebanon, and the dramatic victory the Israel Air Force won against the Syrian Air Force during this battle. In the years that followed the US acquired a number of Israeli combat systems, including unmanned aerial systems, decoys and precision guided missiles.

The technology and lessons shared with the USA provided the American defence industry with a decisive vantage point to mature its own weapon systems – the most notable were the PREDATOR and SHADOW Unmanned Aerial Systems (UAS) that replaced the Israeli PIONEER and HUNTER UAS.

In contrast, European industries that did not have access to Israeli UAS technology and operational insight lagged behind the USA and, in fact, have never gained enough experience and momentum to cope with Israeli or US systems. As NATO members required to field UAS to support the coalition operations in Iraq and Afghanistan, they turned to Israel to obtain such systems. It was IAI that provided Germany, France and Spain with HERON and SEARCHER UAS, while Elbit Systems provided its HERMES 450 to support British forces in combat. IAI and Elbit Systems are currently cooperating with Europe's major aerospace companies, and are well positioned to contribute to current European UAS programmes. Israel is also represented on European research committees charting the way for UAS integration in civil airspace (SESAR – Single European Sky ATM Research), which is one of the major challenges hindering the deployment of UAS in Europe.

Similar support was required to combat IEDs in theatre – Israeli manufacturers were often called to supply RF jammers, provide specially designed armour kits and protected cabs for armoured vehicles and protected trucks. Israeli reconnaissance pods were deployed to provide early warning on suspected IED placements along the roads, and aerostats carrying electro-optical and radar sensors soared over forward outposts to increase force protection.

Despite the widescale, life-saving contribution these technologies provided, European nations rarely credited Israel, and often played down their Israeli origin, fearing Moslem retaliation. For the Israelis, equipping European combat forces meant working through proxies, and local prime contractors or Joint Ventures (JVs), to maintain a low profile.

The European need for secrecy meant they were mostly buyers, rather than sellers, since left-wing parties and anti-Israeli public opinion often forbade the transfer of European military hardware to Israel.

Defending with Technology

The export of Israeli technology to Europe is now facing new challenges, following NATO's withdrawal from Iraq and Afghanistan, and minimised involvement in the Libyan and Middle-Eastern conflicts.

The principle of engaging numerically superior military formations with sophisticated smart weapons is not new. In fact, it was employed in the 1980s, as NATO faced the Warsaw Pact along the inner-German and Czech borders. Today, this scenario could become a new reality, with the increasing threat of escalation in Ukraine spilling into Eastern Europe and the Baltics. While these countries rely on the support of alliance members, they also need to be able to stand on their own until such support is deployed.

Israel had to face such realities for decades, standing against numerically superior forces that could launch a major attack in hours. In its quest to crush such threats before they reach its heartland, Israel went through a dramatic technological and conceptual change, implemented in the 1990s. That change relied on significant investment in command, control and communications (C3) and intelligence, surveillance, targeting and reconnaissance (ISTAR), that enabled Israeli forces to defeat numerically superior forces from stand-off ranges. The goal was to eliminate the need for a 'Yom Kippur War style' of casualty-intensive close-range combat.

This concept implemented several levels of technology – intelligence gathering, target acquisition, command, control and communications and stand-off precision attack capability. All the elements of this strategy were developed and produced in Israel; the operational concept was also developed here. Some of these elements were put to use for the first time in the 2006 Second Lebanon War, although the type of enemy engaged and inconclusive results of that conflict left most of these capabilities unnoticed at best.

The technologies that provide Israel it's credible defence against numerically superior odds, practically precluded its enemies from even considering an attack. These technologies are as valid today as they were 20 years ago. Today, these capabilities are better prepared to engage asymmetric threats, including terror activities and non-state organisations, that pose a significant challenge to regular military forces.

European military forces and government agencies often use such capabilities, provided directly by Israeli companies or via Israeli-European JVs. These include intelligence gathering, surveillance and reconnaissance systems and radar sensors used on aircraft, naval vessels, underwater, coastal and land surveillance. Israeli communications and signals intelligence (SIGINT) is also widely used, given Israeli leadership in these areas. Following the trend to reset combat systems returning from Afghanistan, European armies are also exploring Israeli technologies to improve the detection of IEDs and protection of armoured vehicles against IEDs and other threats. These solutions employ various blast, IED, and RPG protective technologies in which Israel is considered a world leader.

(Photo: Elbit)

HERMES 450 UAS of Elbit; IAI and Elbit Systems are well-positioned to contribute to current European UAS programmes.

(Photo: Wagner)

The TROPHY active protection system was developed by Rafael Advanced Defense Systems and Elta Group, a subsidiary of IAI.

Air and missile defence has also become a major concern for NATO members, particularly on the 'Eastern Belt' bordering on Russia. Israeli-developed missile technology is likely to become a substantial part of the Polish future air defence network, based on the future PATRIOT PAC4 system to be supplied by Raytheon. These systems, including Israeli-developed Stunner missiles, are 'likely' to become the successor to PATRIOT PAC-2 GEM systems deployed by a number of NATO nations.

The SPIKE family of Multi-Purpose Guided Missiles is also becoming a major element of NATO defences, deployed by a number of alliance members, including Germany, Italy, Spain, Poland, and the Netherlands, among others. Many of these missiles are produced in-country under licensing agreements with the developer, Israel's RAFAEL Advanced Defense Systems. The introduction of new versions, including SPIKE NLOS and MINI-SPIKE, provides new opportunities to expand the use of these weapons by the European military community.

Israeli countermeasures such as the MUSIC Directional Infra-Red Countermeasures (DIRCM) are now integrated on several NATO aircraft and helicopters, operating with Italian forces. These systems are also slated for protection of the A-400M European military transport aircraft operated by the German Air Force.

Virtual Systems Offer Realistic Training

Training is another area of cooperation that is clearly measured in savings gained as 'return on investment' in new training technologies. In this field Israel leads in the implementation of virtual-constructive training and 'virtual avionics', integrated in advanced trainers to simulate the avionics of modern or future fighter jets. The Israeli EHUD range-less air-combat training system has been accepted as the de-facto standard enabling air forces throughout the world to train together and against each other.

Elbit Systems, among other Israeli companies, is now developing future capabilities that will enable military forces to conduct joint training using real and simulated systems, promoting cooperation and joint operational capabilities among allied forces. Elbit Systems is co-operating with Italian aerospace manufacturer AleniaAermacchi to integrate such virtual avionics in the M346, selected as the advanced trainer by several NATO air forces and the Israeli Air Force.

Israel has already launched several air exercises, hosting air force units from Greece, Poland, Spain and Italy, while Israeli air force and naval units are participating in joint exercises with NATO members in Italy, Greece, Romania, the Eastern Mediterranean and the Black Sea.

Finally, areas of quiet but extensive cooperation between Europe and Israel are homeland security, counter terrorism and cyber security – in all of which Israel has claimed a leading position in intelligence, preventative and offensive action. As part of its ongoing cooperation with many nations, Israel is sharing information, security agreements and know-how, including training and joint exercises.

The same countries that impose embargoes on selling components to Israel or its defence industry often embrace Israeli technologies for defence modernisation, countering terror or providing lifesaving medical treatment using Israeli technology.

Overwhelmed with anti-Israeli activism, most EU nations seem to have limited tolerance toward Israel, but this trend is not reflected in the close cooperation between governments, the military and industries on both sides, as EU nations have benefitted from intelligence cooperation, homeland security and counter-terrorism relationships between Israel, the EU and particularly NATO. After all, when it comes to national security, you can always appreciate a trustworthy friend. ■

(Photo: IDF)

Launch of the SPIKE ER anti-tank guided weapon

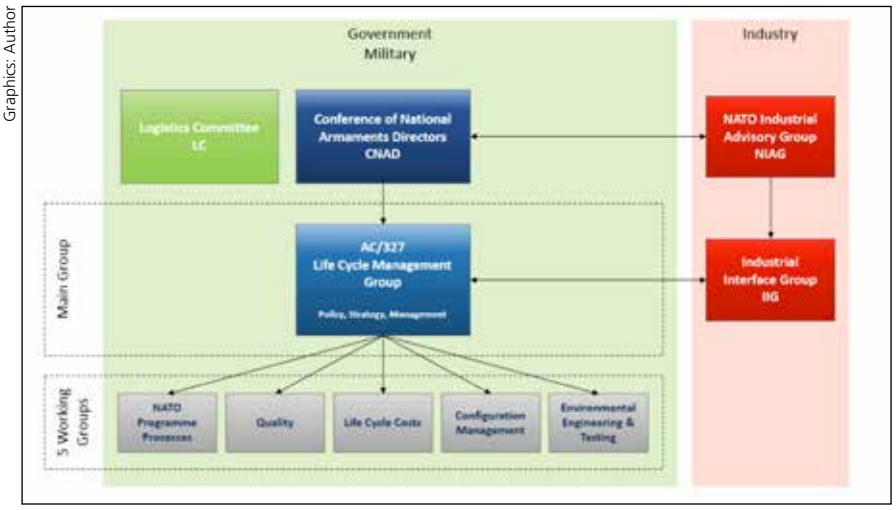
NIAG IIG – the Link Between NATO Logistics and Industry

Peter Janatschek

The NATO Industrial Advisory Group (NIAG) is charged with providing advice from industry to the Conference of National Armaments Directors (CNAD) on how to foster government-to-industry and industry-to-industry armaments co-operation within the Alliance.

One such avenue for the provision of advice has been the former NIAG Industrial Interface Group to AC/313, the CNAD Group on Acquisition Practices. In July 2003, AC/313 was closed and its activities subsumed in a new CNAD Group, AC/327, the Life Cycle Management Group (LCMG).

Graphics: Author



NATO Logistics and Life Cycle Management Meeting Structure

At the October 2005 NIAG plenary meeting NIAG agreed to the re-forming of the NIAG Industrial Interface Group to enable the provision of industrial advice to the LCMG.

NATO Logistics Committee (LC)

The Logistics Committee (LC) is the senior advisory body on logistics in NATO. Its overall mandate is two-fold: to address consumer logistics matters with a view to enhancing the performance, efficiency, sustainability and combat effectiveness of Alliance forces; and to exercise, on behalf of the North Atlantic Council, an overarching coordinating authority across the whole spectrum of logistics functions within NATO.

Its work is carried out through subordinate bodies: the Logistic Staff Meeting, the Movement and Transportation Group, and the Petroleum Committee.

The LC reports jointly to both the Military Committee and the North Atlantic Council, reflecting the dependence of logistics on both civil and military factors.

The LC is responsible for harmonising and coordinating the development of policy recommendations and coordinated advice on civil and military logistic matters, Alliance logistic interoperability, and cooperation in logistics.

The LC is a joint civil/ military body where all member countries are represented. Membership is drawn from senior national civil and military representatives of ministries of defence or equivalent bodies with responsibility for consumer aspects of logistics in member countries. Representatives of the Strategic Commands, the NATO Maintenance and Supply Agency, the NATO Standardization Agency, the Committee of the Chiefs of Military Medical Services in NATO and other sectors of the NATO Headquarters Staff also participate in the work of the LC.

Under the chairmanship of the NATO Secretary General the LC meets twice a year in joint civil and military sessions. It has two permanent co-chairmen: the Assistant Secretary General of the division responsible for defence policy and planning issues and the Deputy Chairman of the Military Committee.

The LC is supported jointly by dedicated staff in the International Secretariat (IS) and the International Military Staff (IMS).

It carries out its work through six subordinate bodies, of which the first two play the principal role:

- the Logistic Staff Meeting;
- the Movement and Transportation Group;
- the Standing Group of Partner Logistic Experts;
- the Logistic Information Management Group;
- the Petroleum Committee; and
- the Ammunition Transport Safety Group.

Conference of National Armament Directors (CNAD)

Most of the efforts aimed at identifying opportunities for collaboration in the research, development and production of military equipment and weapon systems take place under the aegis of the CNAD. The CNAD, which meets in full session twice a year, is chaired by the Secretary General. The permanent Chairman is the Assistant Secretary General (ASG) for Defence Investment.

It brings together the National Armament Directors of member nations, representatives from the Military Committee (MC) and Strategic Commands (SCs), the chairmen of its main groups and other civil and military authorities with an interest in production logistics. The CNAD is directly responsible for the following four key elements for cooperation:

- Harmonisation of military requirements on an Alliance-wide basis;

Author

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- Promotion of essential battlefield interoperability;
- Pursuit of cooperative opportunities identified by the CNAD and the promotion of improved transatlantic co-operation, and
- Development of critical technologies, including expanded technology sharing.

The mission of the CNAD is to enable multinational co-operation on delivery of interoperable military capabilities to improve NATO forces' effectiveness over the whole spectrum of current and future operations.

To achieve these aims, the CNAD provides the following guidance for their subordinate organisations:

Facilitating multinational cooperation and interoperability are at the core of the CNAD's work, as articulated in the CNAD mission. These CNAD deliveries are harmonised with initiatives such as Smart Defence and Connected Forces. The focus of this work will be guided by the outputs of NATO processes and political objectives such as the NATO Defence Planning Process (NDPP).

When urgent operational requirements occur, the CNAD and its sub-structures will rapidly mobilise resources to address them. At the same time, to ensure that NATO has modern technologies at its disposal in support of its security objectives and at an affordable cost at all times, they will continue to stay abreast of the latest technological developments in the mid- to long-term.

In permanent session the CNAD has identified specific focus areas that support NATO capability delivery. In support of the short term (0-6 years), the CNAD substructure's activities will prioritise against NATO short term capability shortfalls.

Image: ESD archive

As an annual event organised by the NIAG, the NATO Industry Forum addresses a recognised need for an elevated strategic dialogue between NATO and industry to ensure that the Alliance benefits from the best solutions to military requirements.

NATO Industrial Advisory Group (NIAG)

The NATO Industrial Advisory Group (NIAG) provides industry advice to the CNAD on industrial, technical, economic, management and other relevant aspects of research, development and production of armaments within the Alliance. The primary focus is the conduct of NIAG studies to provide technology advice for programme development efforts under the CNAD.

The mission of NIAG is acting as a high level consultative and advisory body of senior industrialists of NATO member countries, acting under the Conference of National Armaments Directors (CNAD), with the aims of:

- Providing a forum for an open exchange of views on industrial, technical, economic, management and other relevant aspects of research, development and production of systems and defence equipment within the Alliance based on current and updated information provided by relevant NATO bodies;
- Providing advice from industry to the CNAD and other NATO bodies as appropriate, on how to foster government-to-industry and industry-to-industry armaments cooperation within the Alliance;
- Providing optimal use of NIAG resources to assist the Main Armaments Groups (MAGs) and their subordinate bodies, and other NATO bodies as appropriate, in exploring opportunities for international collaboration, and seeking timely and efficient ways to satisfy NATO military capability requirements.

The traditional and evolutionary strategic goals of NIAG are:

- To work for CNAD and other NATO organisations, where NIAG can offer support;
- To provide "high level consultancy advice";
- To contribute technical advice to the development of NATO capabilities and interoperability;
- To foster and support the links and communication between NATO and NATO nations' industries;
- To encourage companies to take part in NIAG activities;
- To support and assist nations to align their industrial interests with those of NATO;
- To contribute to the NATO planning processes, where relevant for industry;
- To play an active role in the actual NATO initiatives e.g. Smart Defence Initiative, Connected Forces Initiative and Multinational Cooperation

AC/327 Life Cycle Management Group (AC/327 LCMG)

On behalf of the CNAD the Life Cycle Management Group – AC/327 – is responsible for NATO policies, methods, use and support of armaments systems to meet NATO life cycle, quality and interoperability requirements. The mission of the LCMG is to provide the means to optimise the defence and security capabilities of NATO, member nations and Partnership for Peace (PFP) nations, 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.

At present, AC/327 consists of the Main Group and 5 Working Groups. The basic missions of the Working Groups are:

WG 1 on NATO Programme Processes

To provide guidance and templates to be utilised on NATO armaments systems, services and equipment, and multi-national and cooperative programmes and projects.

WG 2 on Quality

To provide the means for quality and reliability processes to be applied to NATO armaments systems, services and equipment, in multinational and cooperative programmes and projects.

WG 3 on Life Cycle Costs
To capture new NATO and national sources of expertise in the area of Life Cycle Costs.

WG 6 on Environmental Engineering & Testing
To define operational environments likely to be encountered during NATO operations and to establish test and verification procedures to apply during life cycle processes, to ensure defence materiel will satisfactorily operate and survive such environments and maintain technical interoperability.

WG 7 on Configuration Management
To provide the basis for configuration management processes to be applied to NATO nations' and organisations' defence and security systems (hardware, software, services and equipment) and in multinational and cooperative programmes and projects.

NIAG Industrial Interface Group (NIAG IIG)

IIG members are industrial representatives from NIAG delegations. Potential IIG members who want to support the work of the LCMG have to inform their national Heads of Delegation of the NIAG.

The task and mission of the NIAG Industrial Interface Group is to liaise with the CNAD AC/327 Life Cycle Management Group in with the aim of providing industrial advice and viewpoints, as required, in the areas of:
Industrial methodologies in support of standards, e.g. ISO/IEC 15288, Systems Engineering – System Life Cycle Processes;
Industrial implications of NATO system life cycle policy and processes, methods, procedures and agreements developed by LCMG (for example contractual, financial, and management implications);
Use of "best practice" concepts, methodologies and applications.
The group may also propose to AC/327 areas of work related to life cycle management that would contribute to the furtherance of timely armaments procurement in support of NATO capabilities.
At present the group consists of 13 members from 11 companies based in Europe and the United States. They support the NATO life cycle management activities by formulating the LCM programme and processes, life cycle cost and configuration management by participating in the meetings of the Main Group and the respective Working Groups.
By doing this NIAG IIG plays an important role in fulfilling the aims of the NIAG Charter providing at the expert level a forum for free exchange of views on industrial, technical, economic, management and other relevant aspects of research, development and production of defence equipment within the Alliance.
This close cooperation at expert level represents a true win-win situation, where both sides learn from each other what is required and what is feasible, to optimise the management of multinational systems and programmes over their life cycle both in industry and in the Alliance. ■


Photo: NATO

Patrick Auroy is the NATO Assistant Secretary General for Defence Investment and permanent Chairman of the Conference of National Armament Directors (CNAD).

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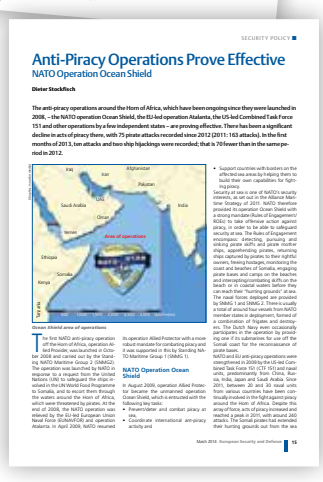

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"The Ankara Aerospace Industrial Centre is in the middle of all these targets."

As an armament organisation in the subordinate structure of the Ministry of National Defence the Turkish Undersecretariat for Defense Industries (SSM) is investing major efforts to strengthen the Turkish defence industrial base including the small and medium-sized enterprises (SMEs). ESD spoke with the Head of SSM's Industrialisation Department, Bilal Aktas.

Pictures: SSM

Bilal Aktaş, born in Ankara in 1973, holds a Master's degree in Mechanical Engineering from the Department of Science and Technology Institute, Gazi University. As the Head of the Industrialisation Department of SSM he is responsible for industrialisation and offset issues of the agency's procurement and development projects. Besides, he is Vice President of the Ankara Aerospace Industrial Centre.

ESD: The Turkish defence industry generates a total turnover of more than $4.5 billion, of which almost $1.3 billion are in exports. How important is the Turkish defence industry for Turkey's overall economy? Which are the most important export markets for the Turkish defence industry?

Aktaş: In recent years Turkey's defence industry has been subject to significant momentum. Dedicated initiatives to establish, maintain and improve the infrastructure of the national defence industry started in the late 80s with the establishment of the Turkish Armed Forces Foundation (TAFF). And Turkey could achieve significant growth in supplying "domestic design and production" to the Turkish Armed Forces in the last 10 years. As a result, our defence industry started to also design and manufacture high-tech defence systems.

Within the context of SSM's Strategic Plan, the turnover of the defence industry is anticipated to be around $8 billion for 2016 with an export share of $2 billion. In my opinion, these figures can be smoothly doubled in the 2020s based on the assumption that the activities envisaged under the Strategic Plan are efficiently implemented and that maximum effort is invested in the stimulation of the defence sector.

At the same time we are aware that the defence industry is not an independent branch, there has to be a link between the defence industry and the other related sectors. Therefore, we are coordinating the necessary studies for the integration of the defence industry and other sectors.

On the other hand, to maintain and develop the high-tech design and manufacturing infrastructure currently supporting our defence industry, it appears that there is a need to significantly increase exports apart from the satisfaction of the domestic demand. Our objective is to increase exports with priority in the Middle East, North Africa and the Far East markets.

ESD: SMEs are a critical component of a competitive defence export industry. What is your assessment of the current challenges for SMEs in the defence sector? To what extent do you believe should the Turkish Government give priority to SMEs in the tendering process of large projects?

Aktaş: As has been outlined by the 2012-2016 SSM Strategy Document objectives, the Undersecretariat for Defense Industries will focus on the endeavours to ensure the profundity of the defence sector. Moreover, SSM will guide the defence industry SME's and suppliers with regard to developing their capabilities to include programme management and expertise at technology level. As it has been acknowledged offset arrangements have been implemented and executed by SSM's defence industry projects for many years. According to the Industrial Participation/Offset (IP/O) Directive published in 2011, foreign contractors in defence programmes are obliged to commit to an IP/O obligation amounting to at least 70% of the main contract value. To emphasise the SMEs' importance, companies contracted under the 2011 IP/O Category-A (Industrial Participation) Directive have to comply with a share of at least 30% industrial participation, of which at least 15% have to be SMEs. With bids submitted in response to this directive stronger involvement of the national industry, especially SMEs and suppliers, is promoted primarily to strengthen the domestic defence industry.

ESD: To consolidate and develop the SME sector, SSM has already founded two industrial zones. We know that the Ankara Aerospace Industrial Centre is to be founded near TAI. Can you elaborate on the subject?

Aktaş: SSM is developing the Aerospace Industrial Centre in Ankara which covers an area of 750 hectares. On 16 May 2011, the Prime Minister of the Turkish Republic approved the establishment of up such a zone. The site adjacent to Turkish Aerospace Industries, Inc. (TAI), Turkey's centre of technology for aerospace

Aerial view of the planned Ankara Aerospace Industrial Centre

platforms, is dedicated for the aerospace industry. It aims to establish a leading global aerospace centre with a skilled workforce where specialised suppliers and SMEs can produce mostly high-end and cutting-edge technology products. It also wants to encourage high-tech and high-value added investments with the objective to strengthen Turkey's international competitiveness in the aerospace sector.

On 21 January 2015, the Ministry of Science, Industry and Technology announced this centre officially and the management staff for the facility is provided by SSM (60%), the Ankara Chamber of Industry (ASO, 20%) and the Defense and Aerospace Industry Manufacturers Association (20%). With the help of a new incentive system introduced in 2015, it is intended that major investments be made in short time. In the meantime, more facilities will be established on properties procured from the Government. Afterwards, the master plan will be finished in 2015 and the parcels are to be for sale at the end of 2015 latest. For further information you can visit our website at www.hab.org.tr, or you can reach me in my position as the Ankara Aerospace Industrial Centre Board of Directors' Vice President at baktas@ssm.gov.tr.

ESD: What are the aerospace projects that the firms & SMEs who invest in the Ankara Aerospace Industrial Centre can take advantage of?

Aktaş: If we look at the SSM efforts up to 2023, there are major projects such as Light Utility Helicopter Development Project and the National Combat Aircraft (FX-TX). In the long term these projects will require many subcontractors since they are all new designs. And also when we consider the Regional Jet project, we can soon expect increased industrialisation. Hundreds of subcontractors will produce thousands of parts and there are a few countries who succeeded achieving such a goal in the world. One of the critical points in achieving this goal is building up a cluster culture and guiding the sector successfully. The Ankara Aerospace Industrial Centre is in the middle of all these targets. That does not mean that every part or component will be produced in Ankara but this structure should necessarily be integrated with all other clusters around the world. The main reason for SSM to be represented in the management of this industrial facility is to support those who are going to invest in our high tech aerospace industry. For the long term it is not our objective to be part of the management of the Aerospace Centre. Our mission will be completed when we will have attracted the right investments to this centre and made it an attraction competence facility. ■

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