

A Question of Survival

Dorothee Frank

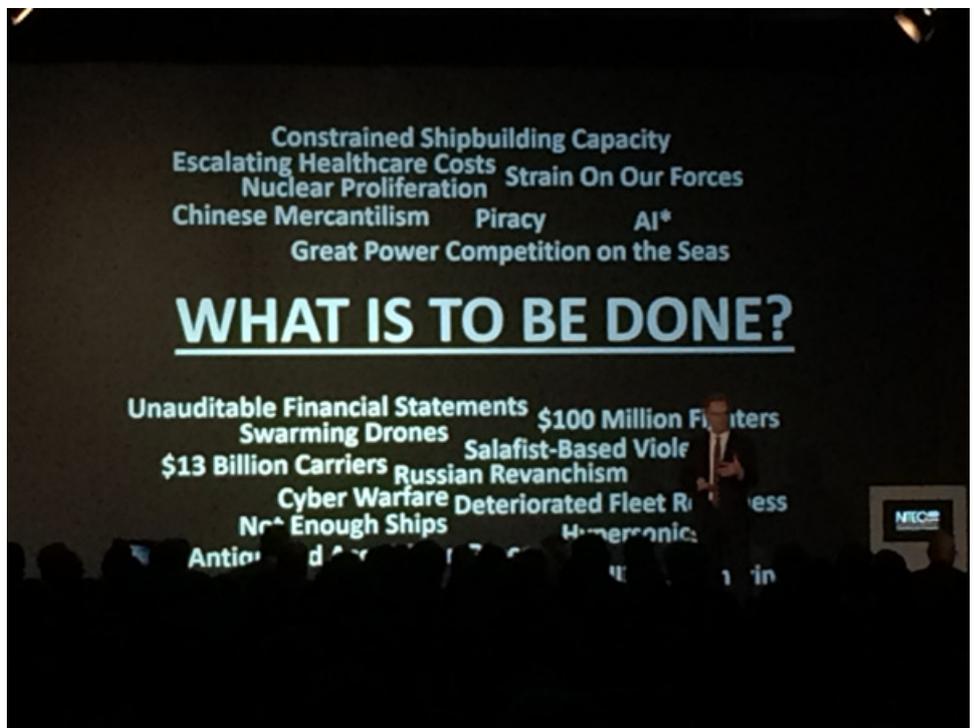
Necessary changes in the armed forces were the central theme during the NITEC congress that took place in Berlin from May 22 - 24, and was organised by the NATO Communications and Information Agency (NCI Agency) in cooperation with AFCEA Europe.

Kevin J. Scheid, Director General of the NCI Agency, summarised the need for digitisation with the following facts: “Six to eight minutes. This is the time we have between a warning and the destruction of the attacker. In these six to eight minutes, our missile defence system must prove itself.”

“The speed in which weapons can engage today is dramatic,” the Honourable Thomas B. Modly, Undersecretary of the U.S. Navy, also addressed the issue. “This completely changes our view on response and decision-making.”

In addition to known threats to global security – such as Salafist violence, nuclear proliferation, Chinese mercantilism, Russian revanchism, etc. – Modly also named the exorbitant costs of modern weapon systems as one of the current main problems of the American armed forces. “We will have \$100 million fighters. The F-35 will have outstanding capabilities, but it is \$100 million each piece and with the U.S. procuring 240 this is a huge block in our budget,” Modly pointed out. “Then there are \$13 billion aircraft carriers. When I started it was \$2 billion each carrier, this added and added up and currently we have to ask ourselves whether the strategic benefits really correspond to these costs. We can not afford \$13 billion aircraft carriers. In addition, there are \$12 billion submarines. And all this during a time of escalating healthcare costs.”

Accordingly, the U.S. would analyse precisely the strategic benefits of individual weapon systems in the future, but the procurement process would also have to



be adapted. Above all, speed, efficiency and cost factor must be improved.

According to Modly, this change will take place corresponding to the following seven points:

- 1) Velocity: “We have to be much faster in how we make decisions.”
- 2) Collaboration: “We need collaboration across and beyond the boundaries of DoD and even nations. That is why NATO is of such a critical importance.”
- 3) Visibility: “We need to share information across and we need to build a culture where people find it comfortable to share information.”
- 4) Adaptability: We need to think in complex, dynamic and unstable situations, just like companies behave in such markets.”

5) Humility: “We always need to question our decision.”

6) Scepticism: “We need to challenge new ideas.”

7) Trust: “Once you demonstrate that you can be sceptical you can get the people to share their point of view without fearing any negative reaction.”

Every new project, programme or reform has to be checked against these seven points, Modly described his way to challenge technology or new organisational structures. If all points are fulfilled, then it contributes to the improvement. Modly concluded: “As a result, these seven points lead to agility. And agility is going to be the thing that decides whether we are going to survive or not.”

Technology

Introducing the French Jaguar Prototype

(gwh) Nexter and its partners Renault Truck Defense and Thales presented a prototype of the Jaguar armoured reconnaissance vehicle to the trade press in the Satory workshops in the run-up to Eurosatory 2018. The 6x6 Jaguar is part of the Scorpion programme with which France is modernising its land forces. It will replace the light tanks AMX10RC and Sagaie and part of the VAB by 2025.

The Jaguar weighs 25 tons and is powered by a 370 kW Volvo diesel engine with an automatic ZF 6-speed transmission. With a maximum speed of 90 km/h it can travel up to 800 km. The front axle drive can be swit-



(Photo: Nexter)

ched off on the road. Steerable front and rear axles reduce the turning circle.

The main weapon of the turret is the new CTA 40 mm cannon with telescopic ammunition to engage targets at ranges up to 2,500 metres. A launcher for the MMP anti-tank guided missile provides a longer range. A remote-controlled weapon sta-

tion with 7.62 mm MG complements the weapon mix.

The Paseo panoramic vision system with day/night optics and range finders offers commanders and gunners all-round vision for target detection, assignment and engagement. For communication and command, SICS (Système d'information du combat de Scorpion) is installed in conjunction with the Contact radio system.

Protection against ballistic and mine threats is not specified. The required protection level can be set with add-on armouring. The Jaguar is prepared for the installation of an active protection system. The two prototypes will be shown at Eurosatory.

www.nexter-group.fr

Self-Maintaining Machines

(df) Indra is envisioning a new way for the logistical management of system and platform life cycles. A new way that Indra's Director of Defense and Air Vehicles Logistics, José Manuel Sánchez Serrano, said to become a revolution. "The revolution in logistical processes is rapidly and inexorably leading to Support 4.0 through the application of the Industry 4.0 concept, or the fourth industrial revolution in the field of defence."

This will not only enable aircraft to monitor their own state of health, they will also be able to gather information about the mission environment in which they are going

to operate and take it into account, so they are ready to take off at the scheduled time. According to Sánchez Serrano maintenance will become more predictive due to artificial intelligence systems processing huge volumes of information to determine the remaining life of each of their components. This will enable armies to avoid excessive maintenance and the high costs which that entails, to launch maintenance actions before failures occur, and to prevent the malfunctions that reduce their availability and operability.

Supply processes will also be smart, using proactive organisation to anticipate needs. All the actors involved will be integrated

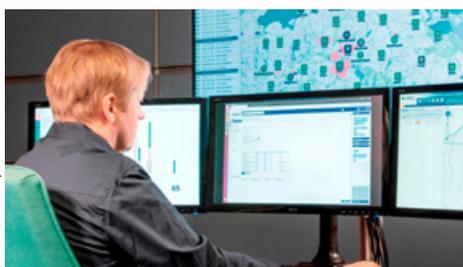
and the system will offer end-to-end traceability and logistics intelligence throughout the whole supply chain. Achieving all of these capabilities will demand enormous research and coordination efforts as well as the use of the most innovative technologies such as big data and data analytics, machine learning, cyber-physical systems, smart logistics, integration and new communications, Sánchez Serrano pointed out.

Indra is also implementing a new operating concept in which systems behave practically like humans, capable of feeling, understanding, acting and learning.

www.indracompany.com

Monitoring of Secure Tetra and Broadband Networks

(gwh) Airbus introduces the new version of the Viewcor application, which not only checks Tetra systems but also ensures the quality of service of broadband networks. This solution helps user organizations to control their group communication - both voice and multimedia communication. Network operators can monitor network



(Photo: Airbus)

coverage, capacity and base station status at any time with a single glance at the screen. In this way, commanders at the

police or fire brigade can display two different networks simultaneously on a single screen. Viewcor enables real-time monitoring and visualisation of the systems on one card - either simultaneously or separately. Service reports and analyses are also available after an operation. Airbus will present the new Viewcor to the public at Critical Communications World.

www.airbus.com

C-130J Transport Aircraft released

(gwh) The U.S. State Department has approved the German Government's request to purchase three C-130J-30 transport aircraft and three KC-130J tankers as a Foreign Military Sale (FMS).

This means that the government negotiations to purchase these six aircraft, including extensive peripheral equipment and services, can begin. The programme's volume is estimated at €1.2 billion.

In addition to four spare engines, the scope

of services includes warning sensors, electronic defence measures, communication and navigation devices, a mission planning system, night vision devices, documentation and training as well as technical and logistical support.

The aircraft will be stationed in Evreux/France together with French aircraft of the same type for air transport, air-to-air refuelling and air-landing operations.

The extended version of the C-130 Hercules can carry up to 20 tons. The range with



75% payload is 10,000 km. The maximum speed is 660 km/h. The service ceiling is 8,000 metres when fully loaded.

www.dsca.mil

Communication for H-47 Chinook

(gwh) Boeing and Rohde & Schwarz have agreed to offer the next generation

of the Rohde & Schwarz Software Defined Airborne Radio (R&S SDAR) as part of the H-47 Chinook helicopter's flight system. The R&S SDAR will provide key com-



munication capabilities for operators of Chinooks.

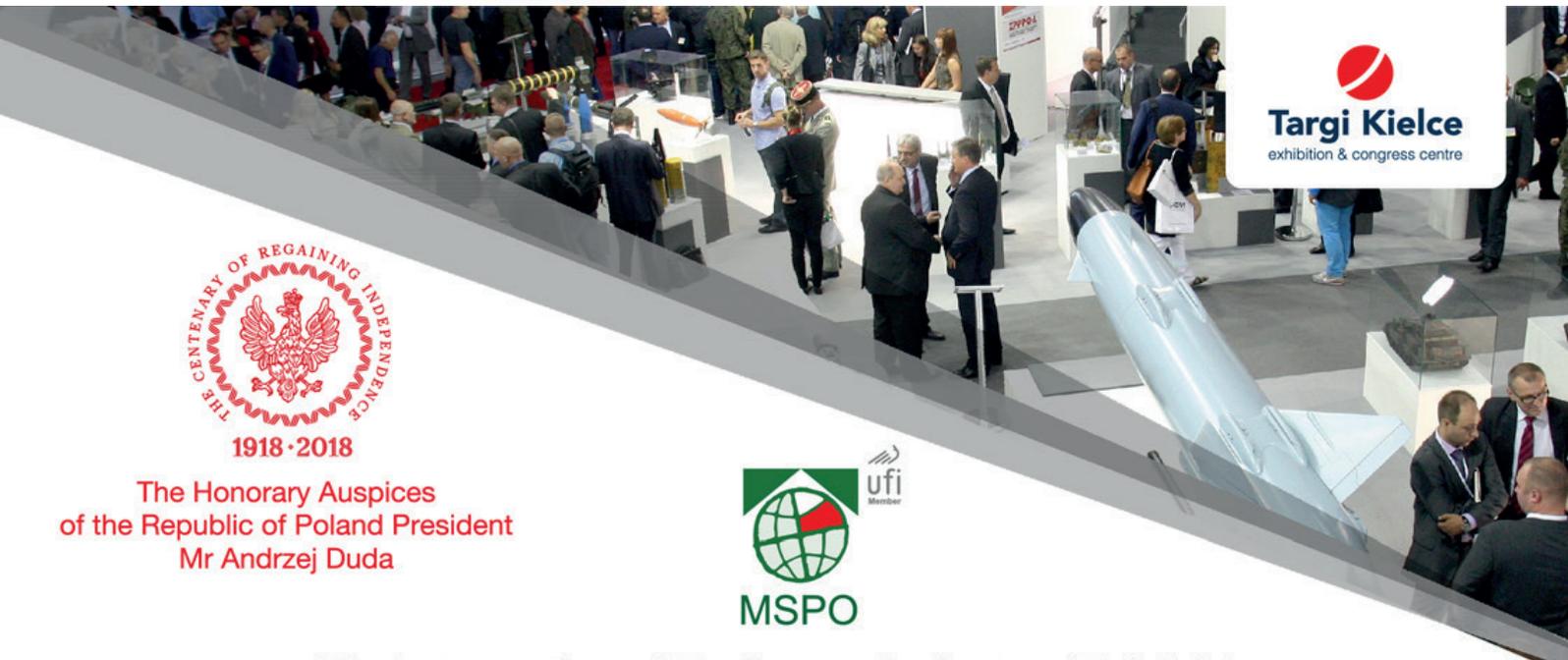
For the first time, Rohde & Schwarz radios will be available for the H-47 Chinook. The cooperation with Rohde & Schwarz will further expand Boeing's supplier network in Germany, which comprises around 100 suppliers and an annual order

volume of €1.2 billion. Rohde & Schwarz has been a supplier to Boeing in the USA since 2006.

Used in 20 countries, including eight NATO states, the H-47 is a candidate for the heavy transport helicopter, which Germany intends to introduce from 2023.

www.boeing.com

www.rohde-schwarz.com



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www.mspo.pl

NATO's Blueprints for Simulation

(df) The NATO Modelling and Simulation Group (NMSG) left their footprint during ITEC. ESD Spotlight spoke with Cdr. Sp Navy Federico Santiago Perez Dueñas, Chief of NMSG, about the role of his group for developing a modern and effective training throughout the Alliance. "We develop standards for simulation systems, create interoperability of these systems and develop a common framework. Adding to this we offer training, education and decision support," Perez Dueñas said. To reach these goals NMSG has several subgroups concentrating on special tasks.

One of them is the Military Operational Requirements Subgroup (MORS), that was established to identify, collect and analyse national and NATO military requirements in order to determine, validate and prioritise

NATO's Modelling & Simulation (M&S) requirements, with the results used by the Programmes and Planning Committee (PPC) and NMSG for the development of future programmes. The M&S requirements are provided by the users, the national armed forces. After analysing the requirements, MORS initiates activities to reach these objectives. These proposals are submitted to NMSG to be analysed by PPC, and then approved by the Plenary. MORS is also the administrator of the results and provides solutions to the user.

Another highly interesting programme Perez Dueñas highlighted are the Data Farming Services (DFS) for analysis and simulation-based decision support. Data Farming combines the rapid prototyping of simulation models with the exploratory power of high performance computing to rapidly ge-



nerate insight into different what-if questions. The MSG-155 DFS programme of work is structured to produce means to improve decision support through the integration of data farming services developed by the task group. The specific progress will be determined as work continues, but the work has been planned to achieve a technical architecture for DFS and results from demonstration use cases.

www.sto.nato.int

Assessing Communication

(df) Learning how to communicate can become essential, since a strict, accurate wording is critical in stress situations. But since modern communication is easy and offers a high quality of voice transmission, even military talks have a lot of so-called filling words or useless descriptions. Especially when a team is under pressure – and not trained properly to perform these tasks – the level of stress rises and this is perfectly reflected by the way that persons communicate.



At ITEC Vocavio presented a solution to measure communication performance. "Our software measures how people are speaking to each other," Conor McKenna, CEO & Co-founder of Vocavio said. "We map

the communication during tasks and this points us to where the team is under pressure. This leads us to a roadmap where the training needs to be intensified."

But the solution not only offers a training control, it might also be used for strategic reasons. "Due to analysing communication we now understand the behavior of leadership," McKenna pointed out. "We can even see the social hierarchy of a team and the military will be able to use this new understanding in their leadership training."

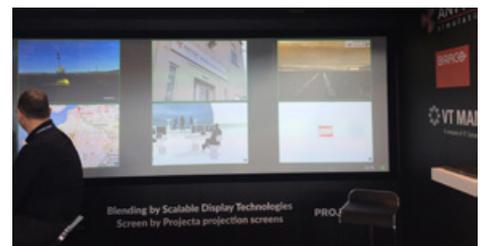
www.vocavio.com

Modular Simulation Solutions

(df) Antycip presented their modular approach at ITEC. Antycip Simulation has an established track record in understanding the hardware and software requirements needed to meet customer's simulation solution needs at the price required.

Since military necessities and therefore trainings are different, simulation comes in all shapes, sizes and complexities, to meet a wide range of objectives. From the training of individual ground troops to jet pilots.

www.antycipsimulation.com



Train As You Fight

(df) Diehl Defence presented their simulation solutions for nearly all existing vehicles in armed forces, from a main battle tank to armoured vehicles or less protected systems. Diehl's ATlan-AS is an appended training system that enables fully operational land combat systems to perform as simulators. So the crews not only train on tanks similar to real ones, but on their very own tank using adapted simulator technology. Of course, ATlan-AS needs a certain technology level of the connecting system, but then it might be adapted in very short time, leading to realistic training of crews on their own weapon with all the capabili-



ties and challenges these vehicles might have.

The overall system weighs less than 150 kg, is air, land and sea transportable and therefore offers a flexible affordable system ready for procurement. The simulators offer procedural training, doctrine training,

precision gunnery training, crew training, squad training and even combat manoeuvre training by connecting several simulators. In connection with tabletop training systems complex cross-branch and command post exercises up to brigade level can be conducted. All systems come with standard ethernet connectors and can be connected using COTS hardware. Even the connection via Internet or another dedicated network using tunneling software is possible.

According to the company implementation time of new weapon systems is less than 12 months.

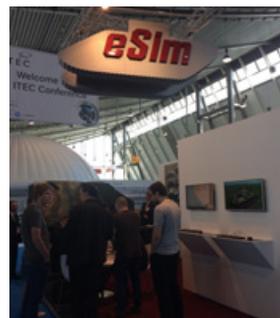
www.diehl-defence.com

Shareware Simulation Software

(df) Battle tank simulation was the core element of eSim's presentation at ITEC. eSim offers the software that Diehl Defence integrates into their simulators. The solution – at least the software – is able to portray simulations up to battalion level, from gunnery to driver, including infantry close combat.

The first version of this software was released in 2000 and has been in use in military training since 2003. "We wanted to crea-

te a performance and experience close to reality," Nils Hinrichsen, Director of eSim said. The solution to gain this goal derived from the gaming industry. Also the shareware approach is a legacy of this origin, but eSim has gone far beyond this point. Hinrichsen: "We have been able to create a high professional military training simulation software for under



€10,000. All you need is a Windows computer and some entering devices, which might be mouse, keyboard, joystick or even military devices like a control handle."

The first customer has been Denmark, but since then the software has widely spread with the armed forces of the Netherlands or Austria as users.

www.esimgames.com

Static and Mobile Infantry Targets



(gwh) For combat shooting with combat ammunition, targets must be presented variably to shooters to make quick tactical decisions.

At ITEC RUAG Defence presented the SCOPUS target carrier in a static and a mobile version. The target drive gets its energy from a 24 V battery, which is sufficient for one shooting day. The metal or plastic targets can be 1.5 mm or 10 mm thick and are suitable for firing 5.56 mm and 7.62 mm ammunition. The motion of the targets can be folded up/down, scissor or swivel. With the latter, the target type can be changed to practice friend/enemy reactions. Depending on the type of movement, the target is

reached after 0.5 to two seconds. If required, the target can also be equipped with add-ons for various combat conditions at night.

The static SCOPUS 100 weighs approx. 25 kg. The mobile version SCOPUS 200 weighs 160 kg (incl. drive protection). Four driven wheels allow movements on fixed paths, sand, snow and gravel in all directions at up to 25 km/h. Gradients of up to five percent can be mastered.

www.ruag.com/defence

Huge Simulation Scenarios with OSIRIS

(df) OSIRIS is a training solution shown by Rheinmetall at ITEC. The Artificial Intelligence (AI) implemented has been designed by the company especially for OSIRIS – taking in account the lessons learned from Rheinmetall's TAXI AI – and therefore completely meets the demands of military user.

With OSIRIS military personnel can be trained from platoon to brigade level. Every single entity is simulated. The setup

at ITEC included seven divisions, but during different tests even up to three million entities were simulated in one single scenario.

OSIRIS also allows to give different doctrines and rules of engagement for each single party. So every “country” or team might get a personal set of preferred actions.

User also take advantage from the gunnery skills trainer the company has fielded together with KMW, since data on most capabilities of armoured vehicles and



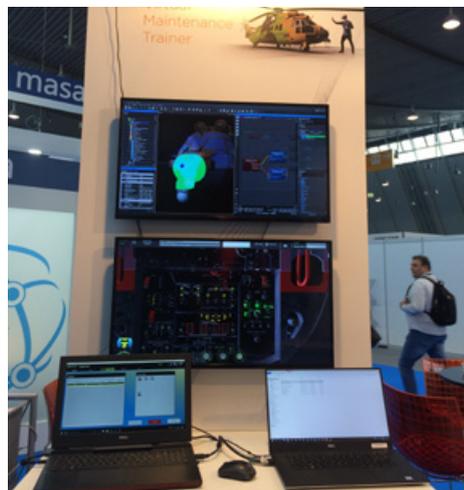
their weapons exist in integrable formats.

www.rheinmetall-defence.com

Virtual Maintenance Trainer

(df) Diginext presented their solution for military aircraft and helicopters. These virtual maintenance trainer significantly accelerates the transformation of new recruits into high-performing mechanics while avoiding real equipment to be damaged due to a lack of proper handling. Interactive 3D views offer direct access to tools, servicing or spare parts.

The instructor can train multiple students through the trainee workstation management with real time



monitoring of each trainee's session progress.

The possible solutions range from off-the-shelf with realistic rendering to high-level architecture and offer modules with an 3D cockpit workstation.

Diginext delivered the first system – for Cougar helicopters – to the French Army in 2015. But even though the company has a footprint in helicopters, the virtual maintenance trainer might be adapted to any aircraft, whether military or not.

www.diginext.fr

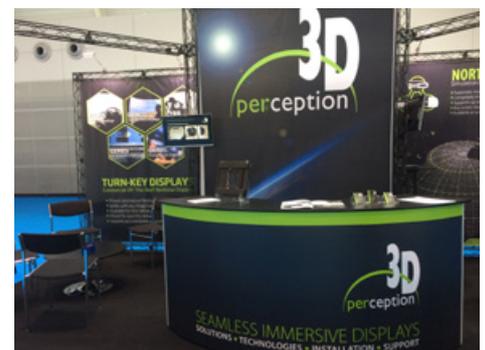
Displays for Simulators

(df) 3D perception presented their capabilities in the area of displays for simulation during ITEC. The company designs and supplies immersive visual display systems and technologies for simulation applications providing display solution design and integration services at any point in the procurement process.

A very interesting feature of 3D perception's solution is the nDesigner, a toolset for developing visual display system designs to meet complex requirements. This software allows 3D perception to design,

analyse and previsualise any type of projection display system, while adhering to performance requirements and incorporating room layouts, cockpits and other obstructions. Within these scenarios nDesigner accounts for a multitude of variables such as projector model, lens selection, eyepoints, screen size, shape and surface gain.

Apart from special requirements 3D perception also offers a range of turn-key systems with preconfigured Northstar display systems designed and priced for quantity delivery. These systems are adaptable to accommodate trainer cabins or other



cabins. Design variants are also available to support differing programme requirements.

www.3D-perception.com

Electronic Sand Table

(gwh) Virtual Rock Drill is the name Airbus Defence and Space gave to the 3rd generation electronic sand table presented at ITEC in Stuttgart. The latest generation is more compact and faster than its predecessors.

Virtual Rock Drill is the modern alternative to the sand table for tactical training, mainly at group, train and company level. The tactical situations are quickly sketched on the screen. If required, the teacher can access saved/prefabricated layers. Up to twelve trainees can interactively present their tactical behaviour to everyone using game consoles. This allows simple and complex tactical situations and missions to be practiced.

In the classroom version, 16 LED projectors generate the situation picture on a 95" display for training groups of up to twelve people. The hardened outdoor version uses a 55" LED screen for a maximum of eight people. Details such as Mil connectors provide protection against moisture and dust up to IP65.

The German Bundeswehr for example has tested the Virtual Rock Drill in various training situations. Airbus can start delivery within 12 weeks from the date of order, the company stated.

Many NATO countries such as the USA, Canada, France and the Netherlands are also interested in this training device. With delivery to these and other countries, Virtual



Rock Drill could become the NATO standard.

www.airbusdefenceandspace.com

Projection on a Small Dome

(df) Canon presented at ITEC a simulator with four 4K projectors on a five metre dome screen. Just like almost any modern projector the Canon systems use laser technology for projection, so maintenance is not necessary. The lens was designed dedicated for 4K panel use and therefore supports the appropriate amount of pixels. The set up on display was installed at the German Aerospace Center (DLR) this year.

The newest projector presented by Canon at ITEC was the XEED 4K601STZ. It is a compact laser installation projector delivering native 4K LCOS images, 6,000-lumen output, a 4,000:1 native contrast ratio and HDR while only weighing 26 kg. The solid-state laser light source provides 20,000 hours of use (at normal brightness), and – according to the company – even 40,000 hours in ultra-long life mode. A special feature is the Premium 4K Canon 1.3x zoom



lens with motorised lens shift and constant f-no projection.

www.canon-europe.com

Launch of Sony's Projector

(df) Sony launched their new projector at ITEC. For any simulation close to reality – and especially the domes for flight training – projectors are a critical asset. Like almost every modern projector the VPL-GTZ240 uses a dust sealed laser light source, so no maintenance is required during the lifetime that according to the company is 20,000 hours. Due to a very high lens quality the new projector also has a native re-



solution of 4K. It also offers 16,000:1 native contrast with an excellent colour repro-

duction, both deriving from the advanced 3 SXDR technology used. The VPL-GTZ240 has two types of black frame insertion modes to reduce motion blur and smear. It is particularly suitable for demanding multi-projection applications in 2D or 3D, with consistently homogeneous brightness. According to the company the VPL-GTZ240 projector will be available for sale in July this year.

www.pro.sony.eu

Industry & Trade

UTC Takes Over Rockwell Collins

(gwh) Now that the EU Commission has given its unconditional approval, the US technology group United Technologies Corporation (UTC) can complete the acquisition of the aircraft supplier Rockwell Collins spending around €25 billion.

In 2016, UTC achieved annual sales of just under €400 billion, including €47 billion (12 percent) in the defence sector and is ranked 12th among the top 100 defence companies. Following the integra-

tion of Rockwell Collins, UTC will be able to equip civil and military aircraft almost completely. Customers – e.g. for engines and cabin equipment – include the major aircraft manufacturers Boeing and Airbus. Rockwell Collins, with sales of almost €11 billion, including €4.4 billion military, ranks 40th on the top 100 list. The globally operating group has, among other things, an operating site in Germany, which primarily manufactures avionics for combat and training aircraft, electronics for land

Rockwell Collins

Building trust every day

vehicles and products for space equipment.

In 2016 UTC had streamlined its portfolio and sold the helicopter manufacturer Sikorsky to Lockheed Martin.

www.rockwellcollins.com

www.utc.com

Multinational Simulation Centre for a Gulf State

(gwh) CAE has been mandated by a State of the Gulf Cooperation Council (GCC), which includes Bahrain, Kuwait, Oman, Qatar,

Saudi Arabia and the United Arab Emirates, to develop a joint multinational simulation centre.

The constructive simulation system GlobalSim will be used, in which CAE and Rolands & Associates (R&A) have combined the Joint Theater Level Simulation (JTLS) of R&A with GESI of CAE as an integrated constructive simulation for management and employee training. CAE's GESI (Combat Simulation System) is a constructive simulation system for complex and comprehensive exercises from the enterprise to the divisional level, both in a computer-aided exercise environment (CAX) and in the classroom. At the joint multinational simulation centre, commanders and leaders from the



(Photo: CAE)

army, air force, navy and the staff academy of the allied nations will be trained with GlobalSim from the tactical to the strategic level of operations.

GESI is a standard simulation system for leadership training in the Bundeswehr and is used from battalion level upwards.

www.cae.com

www.rolands.com

MASTHEAD

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Skyshield air defence systems to Asia

(gwh) Rheinmetall supplies Skyshield systems of the latest generation worth over €100 million to an Asian customer. Work



on the delivery of the systems has already begun and will take around three years.

In addition to the corresponding reconnaissance sensors, 35mm fire units and the associated command and control equipment, Rheinmetall will also provide a comprehensive logistics package and other services. This includes complete operator and repair training, technical assistance and shooting in the customer country. Local companies are involved in the construction of buildings or the procurement of vehicles, among other things.

www.rheinmetall-defence.com

Undersea Defence Technology 2018

Undersea Defence Technology (UDT) strives towards and continues to deliver a platform for the subsea community to gather and discuss the industry's most pressing questions, prominent technologies and innovative solutions. UDT will see international companies encompassing prime contractors, systems integrators, service providers and small & medium enterprises meet and network with over 1,400 industry influencers, government decision makers and senior military officials.

26 - 28 June, Glasgow, UK

**SEDEC**

It is aimed to bring together both national and international authorities and buyers from both the state and the private sector showcasing latest technology in border security, homeland security, secure city sectors. In addition, medium and small businesses in the defence industry supply chain will have the opportunity to demonstrate their products and capabilities to manufacturers of defence main industry platforms.

3 - 5 July, Ankara, Turkey

**NCT Europe 2018**

The three-day event will feature live CBRNe capability demonstrations, one conference stream, multiple workshops, training sessions for civil and military responders, a large indoor and outdoor industry exhibition and the famous NCT BBQ Party. The official partnership with the Dutch Ministry of Defence guarantees the presence of the most high-level CBRNe stakeholders from all over Europe.

3 - 5 July, Vught, The Netherlands

**Future Forces Forum**

International exhibition and expert events on the latest trends and technologies in defence and security. All events are focused on the presentation of needs of armed and security forces, state-of-the-art technologies, R&D programmes, and business opportunities, with interactions between all participants due to the interconnected topics. Government, international organisations, industry, R&D institutions meet at one place. NATO and the European Defence Agency are involved in shaping the programme.

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17 - 19 October, Prague, Czech Republik

**MS&D – International Conference on Maritime Security and Defence**

In its 10th year of existence, MS&D – the international conference on maritime security and defence – will attract more attention than ever. During the extended two-day conference, speakers and lecturers will address pressing topics – including cybersecurity, climate change and naval technology. Be part of it and seize the opportunity to get together with high ranking global delegations.

6 - 7 September, Hamburg, Germany

**EDEX – Egypt Defence Expo 2018**

Held under the patronage of His Excellency, President Abdel Fattah El Sisi, President of The Arab Republic of Egypt, The Supreme Commander of The Egyptian Armed Forces, Clarion Events is proud to present EDEX – Egypt Defence Expo 2018. The inaugural EDEX is fully supported by the Egyptian Armed Forces and presents a brand new opportunity for exhibitors to showcase the latest military technology, equipment and systems across land, sea & air.

3 - 5 December, 2018, New Cairo, Egypt

