More high-tech headsets for Aussie SOTG and others

Earlier this year Danish firm Invisio Communications received an additional order from Australian Defence, arranged through Defcon Technologies, for INVISIO M3 headsets. Thanks to the company’s bone conduction technology the headsets enable clear and interference-free communication in extreme conditions. These headsets are now being delivered.

In regular military units and Special Forces, extreme noise from helicopters, heavy vehicles explosions and gunfire are part of everyday life – for these groups, communication can mean the difference between mission success and failure. For missions to be conducted effectively, strict demands are placed on advanced communications equipment that can also be integrated with new and existing systems. Special Forces may also need to communicate in whispers. Protecting hearing is also important, both in short term to prevent hearing loss and deafness from gunfire and explosions, and to counter long term problems and disorders.

... and what better than a personal radar as well?

The modern soldier is now being fitted with communications and sensing systems that can improve their mobility and their awareness of the environment. Millimeter radar presents a number of advantages for situation awareness in land environments including inherent stealth properties, their small size, ability to see through dust and their low power requirements.

The paper, Radar on a Chip (ROACH): A New Paradigm in Tactical Soldier and Vehicular Surveillance Systems, presented to LWC 2012 (author details below), described the development of very small, light, and extremely low powered radar suit-
able to be mounted on and integrated into the helmets of soldiers.

It provides 360-degree vision out to a distance of 150 metres. It has the ability to see through fog, rain and smoke and in darkness. With full Doppler processing and sophisticated tracking capability it provides detection and tracking of several moving objects with audible alarms for new movements and changes in movements.

It will be useful when soldiers are in surveillance and patrolling mode. It is designed to minimize interference between multiple such systems in close proximity. In addition to the helmet mounted application, it is suitable for mounting on a range of platforms for threat detection, night vision for special forces, perimeter and area surveillance, micro-UAVs and UGVs, and other vehicles. In particular, it is straightforward to adapt this technology to provide all round surveillance from a land vehicle.

The proposed multichannel single chip radar operates at 76 GHz-77 GHz frequency band with a maximum detection range around 200 meters — Authors: Mei Li, Robin J. Evans, Efstratios Skafidas, Bill Moran, Len Sciacca, Gordana Felic, Hoa Thai Duong and Hoang Viet Le

FMS: CAE wins US contract for RAN flight trainers

CAE has won a contract from the US Navy to develop two MH-60R tactical operational flight trainers (TOFTs) for the RAN under a foreign military sale program and a contract from the ADF to provide King Air 350 simulator services.

CAE USA will be the prime contractor responsible for the design and manufacture of two MH-60R TOFTs that will be delivered in 2015 to HMAS Albatross.

The MH-60R TOFTs include both a full-motion operational flight trainer (OFT) that will be used to train RAN MH-60R pilots and co-pilots as well as a weapons tactics trainer (WTT) to be used for training rear-crew sensor operators in the MH-60R Seahawk helicopter. The MH-60R operational flight trainers for the RAN will include the CAE True electric motion system, motion seats, 220-degree by 60-degree Barco visual display, and the CAE Medallion-6000 image generator.

The MH-60R OFT and WTT can be operated as standalone training devices, or networked to become an MH-60R tactical operational flight trainer to provide a total aircrew mission training system. The MH-60R TOFTs for the RAN are based on the MH-60R TOFTs that CAE is delivering to the U.S. Navy.

CAE has also signed a contract with the ADF to provide Hawker Beechcraft King Air 350 training until 2018. CAE will deploy a CAE 5000 Series full-flight simulator (FFS) representing the King Air 350 with Proline II configuration to a training facility in Sale, Victoria. Under the terms of the contract, CAE will provide simulator services for Royal Australian Air Force (RAAF) and RAN King Air 350 aircrew who train on the aircraft for a range of missions, including tactical support, maritime surveillance and light transport.

The CAE 5000 Series King Air 350 FFS will be qualified to Level D, the highest certification for flight simulators, by Australia’s Civil Aviation Safety Authority (CASA). The King Air 350 simulator services will support the RAAF’s No. 32 Squadron at RAAF Base East Sale, as well as the School of Aviation Warfare (SAW).
This will be the second King Air 350 FFS that CAE has deployed in Australia, following the inauguration in July this year of a King Air 350 ProLine 21 FFS in Melbourne. CAE has commenced delivery of training services to the RAAF’s No. 38 Squadron using this simulator.

Northrop Grumman delivers Biometric Information System Trial Proof of Concept

Northrop Grumman Corporation has successfully delivered the trial proof of concept for an automated biometric information system (ABIS) for the Australian Department of Defence. The system will be operated for a trial period to enable testing and refinement of analytical techniques for producing biometrically enabled intelligence and to help determine the requirements for a future biometrics information management solution.

“This delivery is a key step in the development of a multimodal biometric data repository for the Australian Department of Defence,” said Samuel Abbate, vice president of defense enterprise solutions for Northrop Grumman’s Information Systems sector.

“It marks the start of a six-month trial during which biometric data will be collected, stored, matched and processed in accordance with existing legislative frameworks. ABIS will be an important element in Australian Defence Force’s capability to ensure identity dominance and assurance in the theatre.”

The proof of concept was delivered to the Chief Information Officer Group, under a one-year contract. The Australian system, which is modelled after the US Department of Defense Automated Biometric Identification System (DOD ABIS), will be used to produce biometrically enabled intelligence and demonstrate the feasibility of a biometric analytic capability in the ADF.

Northrop Grumman is the prime contractor for the DOD ABIS system, the central repository and authoritative source for the US Defense Department multimodal (face, fingerprint, iris and palm) biometric identity records for persons of interest. The network-centric system is accessible worldwide and interfaces with other US government agency data systems.

Deakin Uni’s counter-IED work

In a preface to their paper presented at the Land Warfare Conference this year, Deakin University’s Centre for Intelligent Systems Research (CISR) say they have been working on next-generation technology to combat the threat. In 2006 CISR was awarded funding through the Capability and Technology Demonstrator (CTD) Program managed by the Australian Defence Force.

The objective was to investigate the use of haptics or force feedback technology for Counter-IED (CIED) tasks. Over the past six years, engineers from CISR have worked alongside Defence stakeholders to develop a series of robotic platforms designed to immerse a soldier in the remote environment. Utilising a natural user interface, haptic force feedback and stereovision, the technology has undergone initial trials in
Sydney, Canberra, Woomera and at the CISR testing facility in Geelong, Australia.

The technology has proved popular among operators allowing them increased fidelity and manipulation speed while significantly reducing required training. The OzBot™ series of robots developed in conjunction with the Victorian Police is currently in service and used extensively for hostage negotiation and first responder roles.

The CISR robotics group works on technologies that reduce operator fatigue, minimise training liability and maintenance. Over 55 engineers develop simulation environments for increased training availability and continuous improvement to the current range of mobile platforms, including communications range, payload, manipulator reach and capability.

The paper presented describes a number of the technologies, methods and systems developed by CISR for IED neutralisation, with the aim to increasing military awareness of Australian capability.

For more on the program, keep your eye out for the Dec 2012/January 2013 edition of ADM which has our full LWC wrapup.

The ADF’s cunning anti-armour rounds

Anti-armour shells are set to return to the Australian gun-line after a successful test firing of new artillery rounds. The new top-attack anti-armour rounds, known as SMArt 155, deploy two sub-munitions in flight that independently target and attack heavy or light armoured vehicles in an area up to 35sq km.

Once fired, the German-designed round releases sub-munitions at heights up to 1500m, which descend under parachute and use infrared sensors and radar to scan for targets. When a target is located the sub-munition fires an explosively formed projectile at the softer armour on top of the vehicle.

Gunners from 102 ‘Coral’ Bty assisted in the firing of nine of the new rounds from M777A2 155mm Howitzers at the Proof and Experimental Establishment, at Port Wakefield near Adelaide from August 27-31.

DMO personnel collected data on barrel pressure, muzzle velocity, flight trajectory and submunition performance. The trial also included ammunition inspection and fitment of electronic time M762A1 fusing. The data collected will allow the new rounds to be introduced into service early next year.

Establishment OC MAJ Mike Hartas said it was one of the more complex trials the unit had completed this year.

“The data collection requirements and ensuring that all the questions that needed to be answered could be answered from the one trial has meant my staff have worked hard for a number of months,” he said. “A trial such as this one needs to be done right the first time due to complexity and cost.”

Once a fire mission is called with the SMArt 155, the gun-line only needs
targeting information and to set the fuse before firing.

“SMArt 155 will add to the capability offered by gunners through a highly advanced munition,” he said. “The ammunition is simple to employ but intelligent enough to know which targets are not operational or have been hit through previous fire missions, and therefore keep scanning for a new target” — Andrew Shipton/ArmyNews

ASLAV surveillance variants boost Beersheba capability

With the delivery of 14 ASLAV surveillance variants (ASLAV-S) scheduled for next year (2013), surveillance operations under Plan Beersheba will have more eyes and ears with armoured cavalry regiments in each multi-role combat brigade, being equipped with a surveillance troop comprising two ASLAV 25s, four ASLAV surveillance variants and 20 trained surveillance operators.

Combat Development Officer LTCOL Collingburn said the primary mission of the ASLAV-S was to provide the reconnaissance commander with a surveillance capability.

“The commander may use the surveillance information to move other reconnaissance force assets towards enemy targets,” he said. “A secondary mission of ASLAV-S is to call, observe and correct indirect fire support onto enemy targets.”

This new capability could be deployed as part of a reconnaissance squadron conducting screening or covering force operations in support of a larger land force. The reconnaissance commander would likely deploy his surveillance assets in a line to provide early detection and warning of enemy activity. The ASLAV-S capability will perform surveillance operations while stationary and they will usually be employed in pairs.

Surveillance capability

The vehicles will be fitted with the Multi-Spectral Surveillance Suite (MSSS) and comprise surveillance, navigation, targeting and communications subsystems that will provide the ground manoeuvre commander with better situational awareness.

The combination of sensor array and data fusion has proved to be a uniquely Australian Army requirement. Attempts to obtain an ASLAV surveillance capability between 1997 and 2005 were unsuccessful, none of the capabilities under consideration were assessed to be viable, mature technological solutions and therefore they carried significant engineering risk.”

The MSSS can accept a wide variety of modern sensors tailored to the warfighter’s specific requirements. The sensors are mounted on a heavy-duty stabilised support on a telescopic mast. It can also be mounted on a tripod if required. The multiple sensors that make up the MSSS include day/night electro optic, laser and RF/radar-based systems with integral “slew-to-cue” target hand-off functionality.

These sensors combine to enable the commander to locate and track threats at extended ranges, under any condition and provide the means necessary for timely and effective targeting by direct and indirect fire assets — ArmyNews
Spartan gun-bus for ADF?

Alenia Aermacchi and ATK are to shortly begin airborne trials of the Mk44 Bushmaster 30 mm automatic cannon aboard the concept MC-27J Spartan gunship, industry officials disclosed on 28 November. With ground trials of the gun having already concluded, airborne tests would commence in January 2013.

The main feature of the Spartan gunship option is the ATK GAU-23 30mm precision weapon kit, a variant of the Mk44 Bushmaster Automatic Cannon, employed in the existing AC-130s.

“Due to its versatility and ease of modification and optimization, the GAU-23 is uniquely positioned as a proven solution for aircraft to perform armed overwatch missions,” ATK’s Mike Kahn, says. “Combined with our 30mm PGU-46/B ammunition, the GAU-23 cannon provides unequalled range and accuracy for integration on airborne platforms.”

The MC-27J provides outstanding offensive capability utilising a palletised weapon system specifically designed for the ATK 30mm GAU-23 cannon and other precision guided weapon systems, resulting in a highly effective system that minimizes collateral damages. The palletised system is designed for easy embarkation and disembarkation via the aircraft’s rear ramp; permitting flexibility in the use of the unaltered aircraft. The primary configuration requires minimal integration on the aircraft’s frame to significantly reduce acquisition costs and development times, while retaining the C-27J’s robust airlift capabilities.

It can fire numerous types of NATO 30mm x 173 rounds, including the PGU-46/B High Explosive Incendiary (HEI) ammunition, the new Super 40 ammo, even precision guided munitions like Hellfire missiles, and it can unleash 200 rounds a minute, from an altitude of up to 12,000 feet, over the course of about four hours. Rumour has it that the gunship versions have found buyers in the UK and Australia — ATK

New cyber business for BAE in Detica

Incorporating BAE Systems Australia past acquisitions including Stratsec and Norkom, Detica’s cyber security, financial crime and intelligence businesses will now operate as one organisation across Australia and Asia Pacific - forming part of one global cyber-security company.

The existing Stratsec business will be merged into BAE Systems Detica. BAE Systems Detica is already well-established in Europe and the Americas.

BAE Systems Detica employs over 2,500 employees worldwide with regional hubs in Europe, the Americas, Asia Pacific and the Middle East. BAE Systems Detica has offices in Sydney, Canberra, Melbourne, Brisbane, Perth, Singapore and Kuala Lumpur and employs more than 200 consultants in Asia Pacific with plans to hire over 50 more in 2013.

Interestingly, the Australian branch of the Detica business will not report to BAE Systems Australia but the Detica branch in Europe.
Christie Digital completes acquisition of VR Solutions

Christie Digital Systems USA, Inc. has completed its acquisition of VR Solutions Pty Ltd (Australia) and VR Solutions (India) Private Limited. The acquisitions provide Christie with subsidiaries and offices in Australia and India – markets that are witnessing increased demand for Christie’s products and solutions.

“VR Solutions is a natural fit with Christie, having been a valued partner and integrator of Christie products for several years,” Jack Kline, president and chief operating officer, Christie Digital Systems USA, Inc said.

The new Australian subsidiary of Christie is the main sales and support entity in Australia and New Zealand and the new Indian subsidiary of Christie is being integrated with Christie’s existing Indian operations.

Reminder: ADM2013 early bird

As the end of 2012 nears, the organisation of your calendar for 2013 is no doubt well underway already. Just a quick reminder that early bird registrations for ADM2013 close at the end of the month. Go to www.admevents.com.au

International

Major UK electronic surveillance research program

A research program entitled Communications and Cross-Cutting Electronic Surveillance (CCCES) will investigate novel technologies and techniques in support of future UK MOD Electronic Surveillance procurements.

Following a competitive procurement, the CREST consortium (Collaborative Research in Electronic Surveillance Technology) was chosen to deliver the CCCES program, in close collaboration with Dstl. CREST is led jointly by QinetiQ and Roke Manor Research with QinetiQ also providing the overall program management.

The program has a primary focus on communications and electronic surveillance but with elements encompassing radar transmissions. A key feature of the research will be to undertake field demonstrations to assist in the de-risking of advanced signal processing techniques.

Dr Giles Bond, CREST consortium co-lead and manager of QinetiQ’s electronic warfare and radar business said: “CREST will deliver outputs across a range of technology readiness levels, spanning innovative research and technology demonstrator systems. The focus will be on using advanced signal processing hosted on software-reconfigurable hardware architectures to prove how future UK Electronic Surveillance requirements can be met more rapidly with reduced risk and at lower cost than is currently possible.”

The CREST consortium will also bring together the wider electronic sur-
veillance community in the UK to gain access to a wide supplier base to deliver a research programme that satisfies the MoD’s requirements. This will include small and medium-sized enterprises and a selection of universities.

**Instant sniper technology**

US firm TrackingPoint Inc says their tracking scopes will allow unskilled snipers to accurately hit long-range targets. Initially, the view through a tracking scope is simply a magnified view of the target along an axis parallel to the rifle barrel.

The shooter first ‘tags’ a target by choosing a desired impact point on the target’s surface. An electronic display adds a red dot that indicates the desired impact point, which remains fixed on the target as the direction of the rifle changes.

If the shooter fired the gun at this point, the result would be a clean miss. Between gravity, atmospheric drag, parallax, and cross-winds, bullets don’t follow a straight path. What the shooter needs is a firing solution telling him where to point the rifle barrel so the bullet will hit the desired impact point when fired.

Now the riflescope computer displaces the aiming cross-hairs so that they indicate the bullet’s impact point as predicted by the firing solution. If the trigger is now squeezed, the rifle will not fire until the desired impact point and the predicted impact point are sufficiently close together. At 1,000 yards (914 m), most shots should hit within the width of a single hand — *Gizmag*

**UK report slams Army Hermes 450 training regime**

A UK Ministry of Defence service inquiry into the crash of an Elbit Systems Hermes 450 medium altitude long endurance unmanned aerial vehicle exposes some serious shortcomings in the British Army’s training regime.

The report into the loss of aircraft ZK515 at Bastion Airfield, Afghanistan, on 2 October 2011 is critical of every aspect of UAV pilot training; from personnel selection through to the vehicle operation and the roulement model adopted for deployment — *Janes*

**Catapult launch for UCAS demonstrator**

The X-47B Unmanned Combat Air System (UCAS) demonstrator has taken yet another step towards unmanned aircraft operating amongst piloted aircraft on a carrier deck with its first ever catapult launch. While the inaugural launch was conducted on land at a
shore-based catapult facility at Naval Air Station Patuxent River, Maryland, it gives the team confidence as it progresses towards a planned launch from a carrier next year.

The launch proved the Northrop Grumman-built X-47B was structurally up to the task of withstanding the rigours of such a launch in a carrier environment. It also gave the team another opportunity to demonstrate the precision of the Control Display Unit (CDU), which was used to manoeuvre the pilotless aircraft into the catapult.

After launch, the X-47B demonstrator flew over Chesapeake Bay, performing a number of manoeuvres that simulated tasks it will need to perform when landing on a carrier. These included flying in a typical ship holding pattern, and carrying out a carrier approach flight profile.

Further shore-based catapult launches are planned over the next few weeks, but an X-47B has already been hoisted aboard the USS Harry S. Truman at Naval Air Station in Norfolk, Virginia, in readiness for a series of deck handling trials that will evaluate the performance of the CDU in a carrier environment. These trials are expected to run until mid December, with the first carrier-based launch, recovery and air traffic control operation demonstrations planned for 2013 – Gizmag

European stealth UCAV demonstrator takes off

The European designed nEUROn Unmanned Combat Aerial Vehicle (UCAV) demonstrator successfully completed its maiden flight on 1 December. The flight took place at Dassault Aviation’s flight test base in Istres in southern France and marks a milestone for the program that was launched in 2005 by the French Defense Procurement Agency (DGA) and involves the collaboration of six European countries.

More than nine metres long and with a 12.5 metre wingspan, the stealth technology demonstrator is the first large size stealth platform designed in Europe. It has an empty weight of 4.5 tonnes and a maximum weight of 6.3 tonnes. Powered by a Rolls-Royce Turbomeca Adour engine, the nEUROn can fly for three hours and reach a maximum speed of Mach 0.8.

The aim of the program is to develop expertise in advanced aeronautics amongst the participating countries and industries, the aircraft itself not intended for serial production, but will be used to test various technologies for future UAVs and UCAVs, including Saab’s next-generation Gripen.

France’s Dassault Aviation is serving as the nEUROn program’s prime contractor, with involvement from Alenia Aermacchi (Italy), Saab (Sweden), EADS-CASA (Spain), Hellenic Aerospace Industry (Greece), RUAG (Switzerland), and Thales (France).

Testing in France will continue until 2014, when it will be transferred to Vidsel in Sweden for a series of operational trials. It will then move onto Italy’s Perdadesfogu range for further testing focused on firing and stealth capabilities.
Predeployment training for pilots and forward air controllers

QinetiQ have been awarded an 18-month extension to its Distributed Synthetic Air Land Training (DSALT) contract by the UK Ministry of Defence. The initial contract was awarded in May 2009 for 4 years and allows for RAF pilots training alongside British Army forward air controllers and artillery personnel prior to deployment to the front line.

The contract covers the provision and running of a bespoke multi-million pound training facility at RAF Waddington.

The DSALT contract, when awarded was worth £26 million over four years. Under the contract sponsored by the RAF, QinetiQ as the project lead, and Boeing provided around 44 weeks access to specialist synthetic training facilities every year.

The primary users remain HQ level fire planning cells and fire support teams, who act as the eyes and ears on the front line for artillery batteries plus the RAF pilots that will be operating alongside them in the region and engaged in ground attack missions. By working together they experience the complexities of controlling aircraft, artillery and other assets, all in fast-moving situations.

QinetiQ remain responsible for ensuring the facility meets technical specification and delivering the ongoing customer requirements. Initially that involved ruggedising a capability demonstrator that had already successfully proven the concept to the MOD into a robust training system. Boeing are responsible for the day-to-day operation of the training systems used for planning and for delivery of the post-exercise review, whilst the RAF supported by Inzpire, (acting as consultants to the UK military), provide the personnel with recent in-theatre experience to take on various key roles within the exercises.

Malaysian Air Force takes delivery of first EC725 helicopters

The initial two Eurocopter EC725 helicopters for the Royal Malaysian Air Force were formally presented on December 4 during a ceremony in Kuala Lumpur, with the first unit being delivered on time and the second unit coming three months ahead of schedule.

Malaysia is to receive a total of 12 EC725s through 2014, creating a capable fleet of rotorcraft for search & rescue and utility missions.
ADM2013: 10th Annual ADM Defence/Industry Congress

12 – 13 February 2013, Hyatt Hotel, Canberra

The annual ADM Congress has evolved into a pivotal event in the Defence calendar, attracting senior officials from all areas of the Defence Force and Defence Industry.

It is a critical forum for any organisation operating within the defence business sector.

Also do not miss the ADM Awards Dinner. The dinner is the perfect opportunity for you to continue networking with colleagues and new contacts made at the Congress.

Further Information: ADM Events - Jamie Burrage, Ph: 02 9080 4321
Email: Jamie.burrage@informa.com.au Web: www.admevents.com.au

Avalon 2013: Australian International Airshow and Aerospace & Defence Exposition

26 February - 03 March 2013, Avalon Airport, Geelong

The Australian International Airshow and Aerospace & Defence Exposition is the essential aviation, aerospace and defence event for the Asia Pacific. Industry-only trade sessions will be held Tuesday to Thursday (all day) and Friday will be both a trade and public day. The exposition will open each day from 9am until 5pm. Associated industry and technology conferences, seminars and symposia will be held at Avalon and in Melbourne and Geelong during show week.

Further Information: Aerospace Maritime Defence Association Ph 03 5282 0500; Email: airshow@amda.com.au; Web: http://www.airshow.net.au

International Maritime Security Conference

14-16 May 2013, Changi, Singapore

IMSC 2013 will bring together Navy Chiefs, Coast Guard Directors-General and academia around the world to discuss threats to maritime security and safety, as well as develop frameworks and solutions to deal with the security challenges that threaten and disrupt sea lines of communication. More details to be released closer to the date.


ADM Cyber Security Summit

12-13 June, 2013, Hotel Realm, Canberra *** DATE CHANGE***

ADM’s 3rd Cyber Security Summit will see stakeholders from Australia’s Defence and National Security agencies address the current and emerging cyber threats to Australia’s security. More details to be released closer to the date

Further Information: ADM Events - Jamie Burrage, Ph: 02 9080 4321,
Email: Jamie.burrage@informa.com.au Web: www.admevents.com.au