users along with simultaneous data throughput is secured via AES 128 and is guided to the recipient via a masterless ad hoc network. Data is sent via three methods; SA data with anti-collision moving around the battlefield in a separate network, low speed data for small data files over a voice channels and broadcast data used for larger data and is sent at a higher speed.

The core Selex Elsag Personal Role Radio (PRR) remains a universally usable 2.4GHz radio with a power output of 50mW and secured using spread spectrum technology putting its voice communications into a bramble bush of noise that protects it from enemy eavesdroppers. While the basic radio has found over 30 users worldwide and 350,000 radios produced to date, a number of improvements have still been provided. These include encryption and the unblocking of its inherent data capability.

With MAINGATE, Raytheon and DARPA are developing a new radio and MANET capability that has adaptive data rates of 300kbps to 10Mbp. Here, GATEWAY translates local network data to IP for interoperability. The network is designed to be fault tolerant with the radio dropping in and out of the network with outage of up to 300 seconds. The network can also support over 20 video streams, as well as voice data and chat network in the field.

To meet the requirement of the imminent RIFLEMAN Radio competition in the US, an open competition is expected to see General Dynamics and Thales compete against each other as well as offerings from Exelis and Harris.

Aselsan’s Soldier Radio operates in the 480-400MHz band with output power of 100mW and weighs just 360g with a throughput of 19.2kmps. It is in operation with Turkey, Northern Cyprus and Azerbaijan and was tested by Pakistan.

Aselsan’s SDNR Family (Handheld, MAN-PACK, Vehicular and Base Station) is able to provide seamless communications among tactical users through secure voice, data and video. The SDNR ensures increased survivability against Electronic Warfare (EW) threats by providing alternative communication means over a wideband ranging from 2-30 MHz HF to 30-512 MHz V/UHF. Software configurable architecture enables various tactical radio waveforms and advanced EPM techniques on the same platform.

Aselsan’s new HF radio equipment has been developed as a part of the SDNR development programme. The radios cover the HF band of the frequency spectrum and provide digital

Aselsan’s digital intercom system. (Photo: Mönch / DPM)

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**DSEi FOCUS**

**Persistent Systems’ WAVE RELAY – A True Lifesaver in Operations**

WAVE RELAY is an advanced mobile ad hoc networking (MANET) solution that goes beyond the standard “self-forming” and “self-healing” mesh network. Instead, WAVE RELAY quickly and continuously adapts to fluctuations in terrain and other difficult environmental conditions to maximise connectivity and communication performance. The WAVE RELAY proprietary routing algorithm allows users to incorporate vast numbers of meshed devices into the network in which the devices themselves form the communication infrastructure.

**Persistent Systems’ WAVE RELAY is a MANET designed to maintain connectivity on the move. It is a scalable, peer-to-peer network which provides data, video, and voice even in the most challenging applications.**

With user throughput of 37Mbps UDP and 27Mbps TCP, WAVE RELAY provides a dynamic, reliable, and secure wireless networking solution beyond mesh.

The Gen4 (MPL4) is a compact radio designed for installation or user-worn applications. Seamless Layer-2 Ethernet connectivity facilitates plug-and-play operation of cameras, video encoders, IP sensors, and other devices. The device is easily integrated into avionics bays, vehicles, machinery, and other third party systems.

A MANET is a collection of mobile devices (often referred to as „nodes“) that form a self-configuring, self-healing network. The devices communicate wirelessly by relaying data across the network through a sequence of transmissions. In a true MANET, such as WAVE RELAY, every node can communicate with every other node enabling true peer-to-peer connectivity. This is in marked contrast to the far more common mesh network design, in which a series of stationary access points connect end users only to the Internet. The WAVE RELAY MANET is designed to maintain both peer-to-peer routes and connectivity to an Internet gateway while under mobility. The system detects changes in connectivity and, using a revolutionary routing protocol, elegantly adjusts the pathways in order to maintain the most efficient route between them.

WAVE RELAY Gen3 and Gen4 Man Portable Units (MPUs) are available with an optional 2W S-Band Radio Module that greatly extends range and provides great performance. In dismount applications where small antennas must be employed and body masking degrades performance, the increased transmission power fundamentally increases system performance.

Real-world testing has demonstrated that Persistent Systems’ 2W module delivers up to twice the range of standard 600mW radios.

WAVE RELAY radios offer a fully integrated Push-to-Talk (PTT) Voice capability. Unlike traditional voice radios, the WAVE RELAY system enables voice communication to traverse the entire MANET, greatly extending range and improving robustness. The PTT Voice capability enables the user to monitor up to 16 talk groups (channels).

secure voice and data communication capability to the military users in land, naval and airborne platforms.

The development in digital technology has enabled the use of complex digital modulation techniques, where advanced coding and error correction algorithms have been applied to overcome HF channel difficulties such as fading, multipath and interference inherent with the analog HF radios. Use of SDR architecture in the HF radios has enabled interoperability with all forces by the use of the new digital SDR HF waveform.

**Headsets**

Most military communication is on some of the most severe battle environment, thereby straining the hearing of soldiers. One can find a lot of vendors for quality, state-of-the-art military rugged noise-cancelling handsets and headsets, and compiling them all would definitely go beyond this article. Here are some of the most recent innovations in this field.

Invisio has, through its US distribution partner TEA Headsets, received an order from the US Army for the INVISIO V60 communication system. The total order value is approximately SEK7.1 million. The products will be delivered during the second half of 2013.

“We have through our partnership with TEA Headset built a strong position in the U.S. during the last ten years and are well established among the very demanding users within the various parts of the US Army. The new order illustrates this well as it includes several EOD units within the US Army. The US market is very important to us and it is pleasing that we continue to strengthen our position there,” said Lars Høgård Hansen, CEO of INVISIO to MT.

The INVISIO V80 Communication System is an advanced tactical communication and hearing protection system for modern military forces. With INVISIO V60 the user gets a very light, compact and flexible communication system with built-in hearing protection and full 360° situational awareness. The system provides crystal-clear communication even in the most extreme and noisy conditions.

Esterline Racal Acoustics products are specially tailored to military, paramilitary and first responder markets. While these defined market segments share many fundamental requirements, they each also have unique operational issues. Racal Acoustics addresses these needs through product features tailored specifically to meet the exact end-user application.

Racal Acoustics products supplied to the military give the operator systems designed specifically to protect hearing and enhance communications in very high ambient noise environments such as armoured vehicles and aircraft, as well as for dismounted troops. This includes headsets; in-the-ear, lightweight, medium and high noise handsets and microphones; press-to-talk systems; avionics; and field communications.

At DSEi 2013, Esterline Racal Acoustics will be fielding the Binaural RAPTOR 25, improving on the massively successful RAPTOR headset. Innovations here include, binaural capable to work with the most advanced intercoms; EMC exceeding MIL-STD-461F for use with the most pervasive RF systems; full immersion protection increasing its operation in the harshest of wet climates; and all component parts redesigned to increase robustness and performance.