

Interoperable secure new communications solutions for the modern warfighter

Soldier Modernisation talks to Tactical Lead for Rapid Mobile, Karel Koster

The US Army is geared up for Project Convergence where it has fielded a number of new modernized tactical communications technologies. Network modernization is one of the top priorities being spearheaded by Army Futures Command. The new capabilities are intended to improve the capacity and resiliency of the service in order to compete in high-end fights against near-peer adversaries. To achieve its network goals, the Army is pursuing a series of

two-year capability sets. Each set has a number of design objectives including: unified network; common operating environment; joint interoperability/coalition accessible; and command post mobility/survivability, according to the service.

For the financially rich the ability to bring in new technology and new abilities is not a problem. But where does the ability to financially implement new technology and to be able to combine different suppliers' technology leave the programmes trying to advance soldier technology?

Well we may have found the answer with South African based company Rapid Mobile.

Q: RapidM might not be a name our readers would be aware of, could you explain your long history and strength in tactical communications?

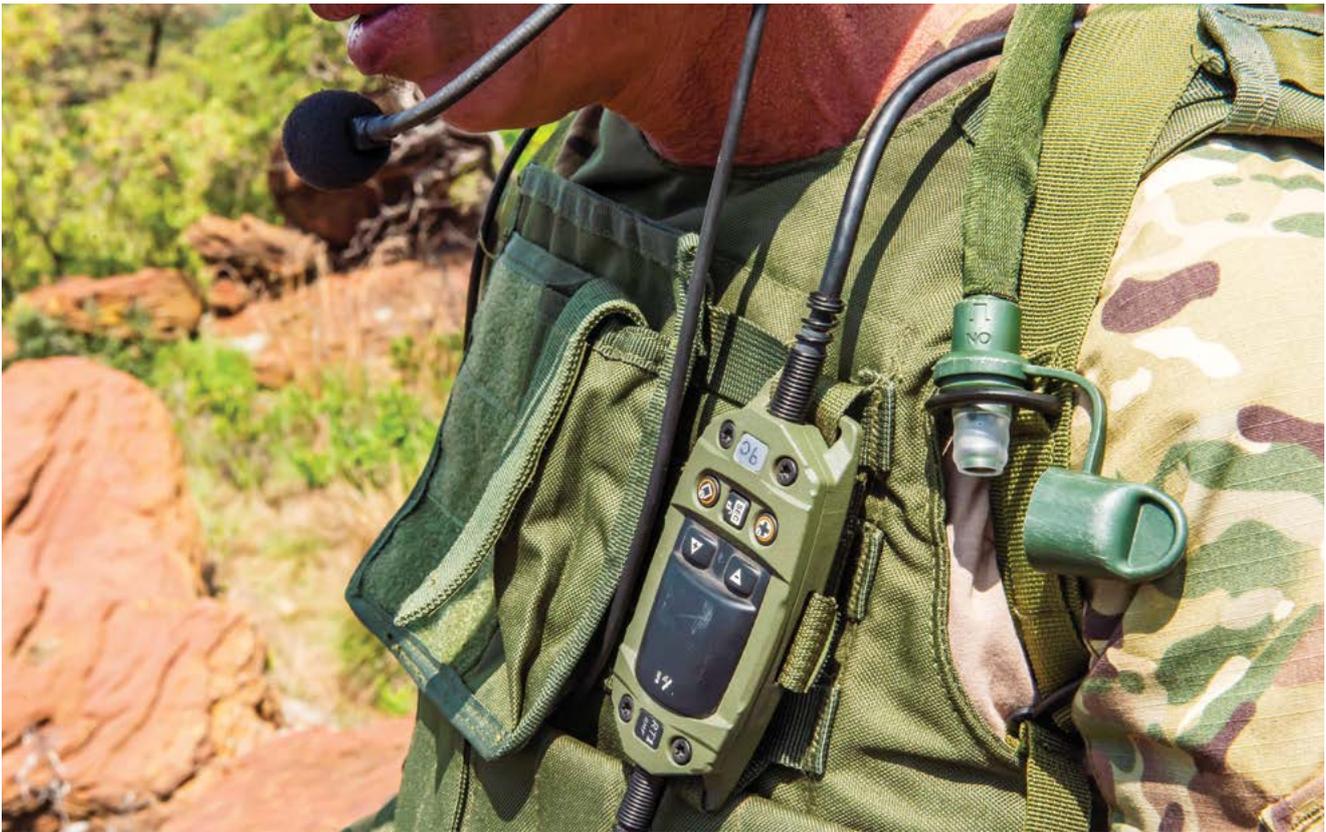
A: RapidM has been supplying military data modem equipment for more than 20 years. From our initial roots with NATO naval customers, we started the Tactical product division in 2006 with the focus on providing legacy analogue HF and VHF radios with a data entry capability. That is where the RT5 tactical terminal was born. From there the capabilities of the RapidM tactical family evolved to the 3rd generation HF data and secure digital voice functions that we have today in the RT suite of products and software packages. We currently have tactical product customers on 6 continents, from Special Forces users to navies who are using our tactical Situational Awareness and data applications.

Q: RapidM has some unique cost effective solutions for modernisation programmes in the area of developing new radio and data communications, could you expand on this?

A: We have yet to meet a customer who has deployed radios from only a single manufacturer. Often pure analogue radios from the 1990's are used alongside newer radios



RT5 in secure voice usage, interfaced to a tactical radio.



MOLLE mounted RT1 used with tactical headset.

that perhaps have basic data capabilities. Typically the annual budgets and practical roll-out schedules don't allow replacement of entire radio inventories. This is where the RapidM RT products can be added by enabling radios from diverse manufacturers and capabilities to interoperate securely. Existing inventory radio equipment can thus be upgraded to the latest data capabilities and security standards by using affordable add-on RT devices. In some cases these upgraded radios can be made to interoperate with current digital transceivers that have the RapidM technology embedded. In this way there is a bridge to modernization of the radio inventory itself.

Q: As you mentioned interoperability is a huge draw back on programmes not buying certain equipment and also being stuck with the same supplier, how can you help with this?

A: Few standards exist in the secure tactical domain which means that cross-vendor interoperability is all but impossible. By using the existing radios for their RF capability only, the RapidM RT equipment family provides a digital upgrade blanketing across the radio network. The RT products therefore ensure secure data interoperability between diverse vendor radio equipment. Furthermore, by externally controlling radios to change frequency, the RT equipment can provide not only 3rd generation Automatic Link Establishment (STANAG4538 ALE) interoperability, but also the automated scanning of a number of frequencies in a so-called scan list. This is a huge advantage to the signaler in the field, because in short wave radio systems finding the correct frequency to use can be tedious!

Q: Your company, RapidM, is well represented in the HF modem space. Are these tactical products also relevant in the VHF and UHF radio space?

A: Yes, the RapidM RT products can also provide a data capability to VHF and UHF radios. Typically V/UHF radios are used in lower echelons of the armed forces and HF used in higher levels for longer range strategic communications. We even provide software, through our CommandPoint Situational Awareness suite designed for rugged laptops and tablets, that allows routing data communications between these "lower" and "upper" networks.

Q: Tell us about the typical services or applications that your tactical equipment provides.

A: In heated tactical scenarios, voice communications remain critical. But in the modern digital battlespace, it is imperative that all communications, including voice, are secure and therefore encrypted. So first and foremost we provide a Secure Digital Voice (SDV) capability.

The next practical tactical question would be "where are you now?" All RT devices are fitted with position tracking GNSS technology. Blue Force Tracking (BFT) information can be pushed periodically or can be pulled on request.

The RT units also feature messaging and file transfer applications for robust (and auditable) data communications which is critical for command and control and logistic support in the military.

Q: Can you elaborate on the security aspects?

A: Most of our customers are attracted to the RT equipment because of its military grade security capabilities. Security

for RT tactical communications entail several aspects such as tamper detection, access control, encryption of stored data, encryption of over-the-air data and the managing of cryptographic keys. The RT family of devices use AES-256 (256-bit key length) to secure both data-at-rest as well as all transmitted data. This is a strong and trusted encryption algorithm. Users can create a list of 256 keys, program this table into the device and select a current key. Additionally to the COMSEC encryption, all link establishment transmissions are also protected (LINKSEC), meaning address information is authenticated and secure. Point-to-point communications are encrypted with unique session keys meaning these one-on-one conversations are private to the recipients. In case of emergency, or for storage purposes, the RT devices provide an easy mechanism to erase all cryptographic keys and sensitive user data through a Zeroize key sequence.

Q: What solutions do you offer for foot soldiers?

A: Our dismounted soldier secure digital communication solution is the wearable RT1 device. Depending on the variant, the RT1 can replace the handset on HF or V/UHF manpack radio or be used in-line with a standard handset. The device typically mounts onto the soldier's MOLLE system or backpack shoulder strap. Voice prompts from the RT1 makes it really easy to use. The RT1 instantly gives a soldier secure digital voice (PTT button) and has two dedicated buttons for transmitting emergency messages: Attack Alert and Medical Evac. For Situational Awareness the RT1 can be set up to broadcast the soldier's position periodically or the location can be requested by the commander.

Alternatively, for users who require additional messaging and navigation features such as Special Operations Forces, the RT5 can be mounted in a pouch on the chest webbing. This unit provides a full QWERTY keyboard and colour display for composing messages, sending and receiving files and photos (via USB) and for basic relative position orientation and navigation. Internal to the RT1 and RT5 are RapidM's powerful modems that perform excellently even over degraded skywave radio links.

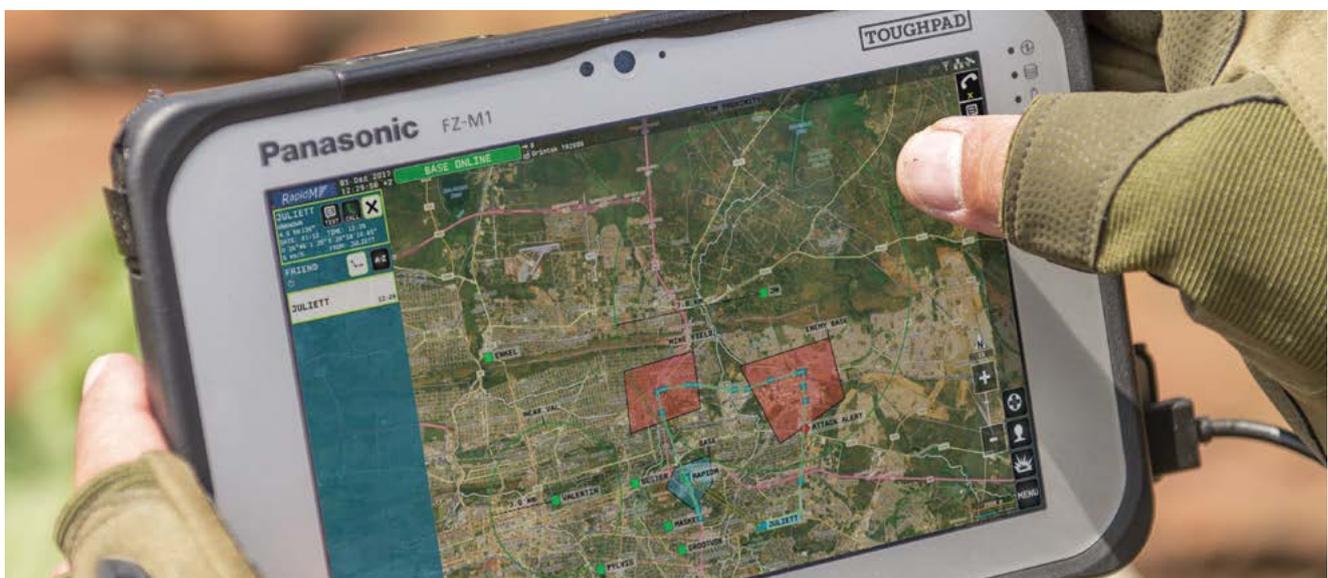
Q: How does the commander pull the soldier position information; and where is it displayed?

A: By using the RT CommandPoint software, the commander, typically a platoon or company commander, can select the individual unit that he wants a position update from. This position, together with the unit callsign and MIL-STD-2525 symbology, is displayed on an electronic map display which uses satellite images overlaid by vector maps. The CommandPoint software is designed to be operated from a touch-screen interface on a tablets running either Windows or Linux. The user interface is really intuitive and easy to use. So the commander is easily able to visualize the positions of all his forces and to then perform his command and control as required. For example, by selecting a callsign on the screen and then the chat application will bring up the most recent message thread to that unit.

Q: Why should soldier modernisation programmes look towards the RapidM tactical solutions?

A: Security, interoperability and affordability. For a fraction of the cost, soldier communication systems can be upgraded to the latest generation digital capability. This also includes the upgrading of important beyond line-of-sight (BLOS) radio infrastructure. And RapidM has tailormade solutions for dismounted soldiers, vehicles, vessels, Tac HQs and SOF users, all providing secure interoperability of data and voice communications. The RT range offers an easy and affordable interoperability solution when operating with partner forces as the RT equipment provides this layer on top of the diverse existing radios. Upgraded radios will also interoperate with new digital radios which are using the RapidM technology. In this way there is a bridge to modernization of the radio inventory itself. ■

For more information visit: www.rapidm.com or email us at: info@rapidm.com email



CommandPoint software running on a touch-screen tablet.