

## COMMUNICATION SYSTEMS

**T**oday, the boundaries of war and battles are no longer as clearly defined as they once were. But one thing is clear – warfare in the 21st century will be dominated by the need to win the information battle. Winning this battle is fundamentally dependent on developing and maintaining secure and reliable communications.

In this future battlespace, the ultimate success of commanders will depend on real-time, real-world access to information about all of their forces, assets and the conditions of engagement. For commanders to achieve victory, the capability to send and receive increased volumes and complexity of voice information and data messages with higher reliability, and at a faster rate, will be an essential component of military command and control systems.

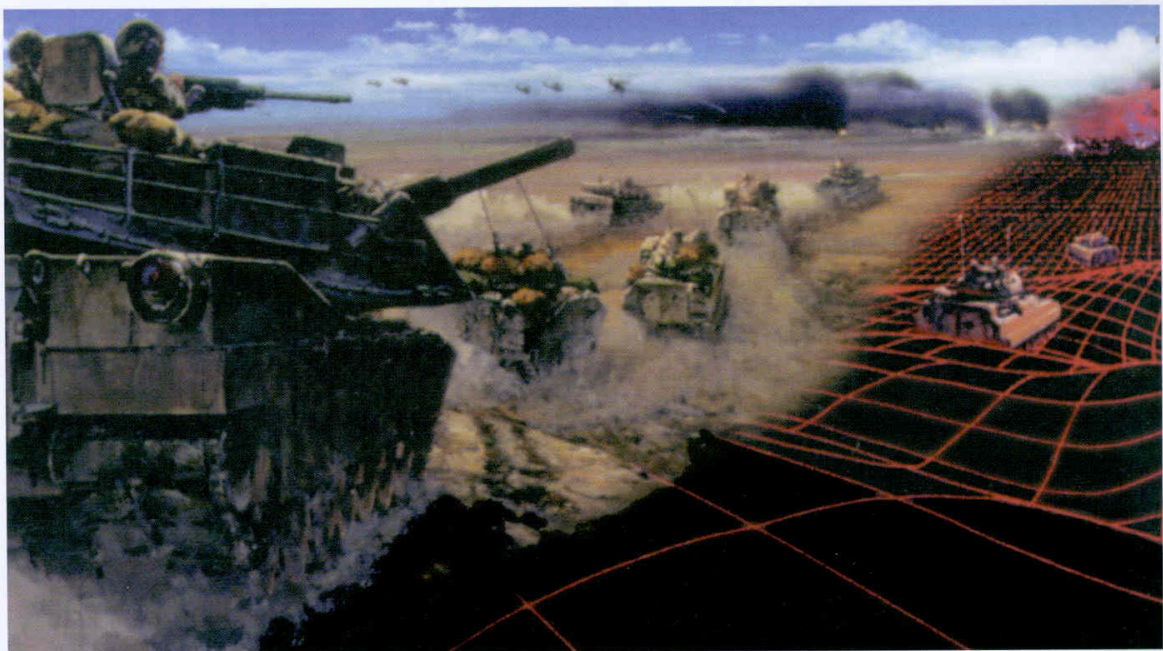
TRW is the prime contractor for the US Army's

Neil Siegel  
VP, TRW,  
communicates  
the good news  
for his  
company and  
for those  
commanders  
seeking to  
win the  
information  
battle.

force XXI battle command – brigade and below (FBCB2) – programme that integrates secure voice radio networks, secure data-radio networks, and provides a tactical internet for battlefield digitisation. TRW has developed and delivered systems that create the future digital force, providing US Army commanders with the leading-edge technology essential for victory on the battlefield of the future at all levels of conflict.

Applying its communications systems skills and utilising a 10,000-person UK presence, TRW is now competing on the MoD's BOWMAN battlefield communications programme that will provide tactical secure voice and secure data communications, and enable the future digitisation system for all three military services in support of land and littoral operations. BOWMAN will replace the Clansman combat net radio and other existing equipment. TRW is the only company in

# TRW gets the message across





the world that has successfully fielded a system like BOWMAN.

TRW is engaged in a BOWMAN risk-reduction programme to focus on critical issues and risks in an overall system context for BOWMAN. TRW's solution for BOWMAN uses the lowest risk, secure technologies available in the world today and TRW is applying its experience in dealing with major challenges of large-scale complex programmes to respond to the specific demands of BOWMAN requirements. TRW has already learned substantial lessons through major field exercises about the specific characteristics for enabling efficient voice and data services. This experience lowers the company's risk for BOWMAN.

Today, thanks to TRW, the US Army has a solid foundation of secure voice communications integrated with a cohesive, reliable set of data services on all platforms. The tactical internet wireless data communications system provides the ability to move critical data such as friendly and enemy locations, operations orders, and other time-sensitive battlefield information, between all levels of the deployed force from mobile headquarters down to individual fighting vehicles.

This architecture has been proven in rotation exercises at the US National Training Centre during tests at Fort Hood, Texas, warfighting experiments at Fort Polk, Louisiana, and in actual operations in Bosnia.

TRW is now completing the fielding of FBCB2 to the army's first digitised division – over 1,500 vehicles in this division already have been converted with production radios, computers and the relevant software.

Today, the FBCB2 system allows each soldier and commander to know the answers to: Where am I? Where are my buddies? and Where is the enemy? It does this by providing position and

**TRW has already provided the US Army with a solid foundation of secure voice communications integrated with reliable and cohesive data services on all platforms. With this experience it aims to win the UK's Bowman battlefield communications contract**

situation awareness for every friendly platform, as well as timely and accurate dissemination of all relevant information concerning enemy units, as well as other battlefield situation awareness, such as the location of minefields, obstacles, contaminated areas, etc. More importantly, it allows a commander to build on the clear, shared, current understanding to provide real-time command and control. This is done with orders, status reports, and operational graphics (overlays). The communication infrastructure and basic services provided by FBCB2 have enabled an effective digital capability – and information dominance.

#### Communications presence

With more than 10,000 personnel working in the United Kingdom, TRW brings nearly 50 years of innovation and experience in developing, engineering, and integrating military command, control and communications systems, and in integrating large, complex communications

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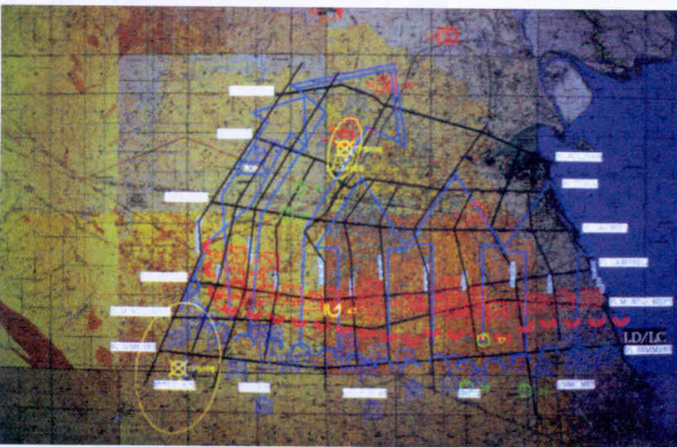
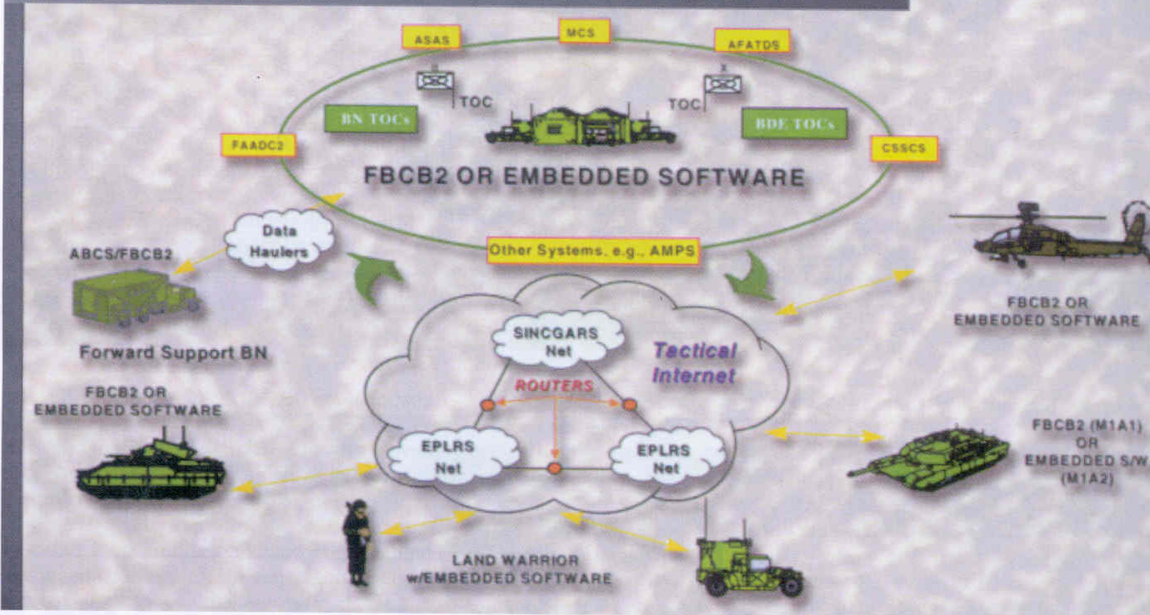
networks. TRW has had over 35 years' experience of delivery of technology-based systems in the UK.

For British Telecom's airwave service, (formerly known as the public safety radio communications project (PSRCP)), TRW is a member of the team that will deliver an all-new public safety communications service for the emergency services in England, Wales and Scotland, including police, fire, ambulance and other public safety services.

The Airwave service will use advanced digital information technologies in voice, data, image ➤

## COMMUNICATION SYSTEMS

- Accurate and timely situation awareness
- Shortened yet improved decision cycle
- Synchronisation of combat power
- Reduced fratricide



- communications, and information processing to help emergency services respond rapidly and reliably to emergency calls.

Police, fire, ambulance and other public safety officers using the system will be able to gain access to computerised databases and, ultimately, to receive and transmit photographs, maps and other documents from handheld, portable radios and public-safety vehicles.

As part of its overall systems engineering and

**TRW's systems provide the ability to move critical data, including friendly and enemy locations, operations orders and other time-sensitive information, between all levels of a deployed force**

integration responsibility, TRW is developing the network that integrates PSRCP's components and links it with existing and future information technology systems. These forces and other agencies nationwide will be able to operate seamlessly, staying in contact with each other from any location in Britain.

#### Technology: a forcing function

The world regularly observes that speed and agility give advantages over legacy, experience and mass. This applies both in the business world and in battlespace. Potential military/political adversaries can crack codes, exploit commercial wireless technology, and have access to sophisticated (open-source) intelligence products. Robust digitisation activities that exploit the same technologies but avoid and escape its vulnerabilities, are the key to readiness, and are now a necessary deterrent.

Among the technologies that are most critical is dynamic robust wireless communication. It must provide bandwidth. However, even more challenging than this is the provision of bandwidth in potentially chaotic, physically demanding environments.

Hard won lessons on how to configure, manage and adapt a network are at the heart of the TRW achievement. ♦



# proven

Innovation, experience, and proven performance - these are the qualities that TRW brings to the communications challenges facing Britain today.

Where there is the need for solutions in the public or defence arenas, TRW will be there to provide the answers.

**TRW – Where Performance Counts**

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