

NETWORK-ENABLED CAPABILITY

Following up our examination of whether digitisation is dead, Colonel Iain Standen puts the MoD view, laying out the UK concept and pulling out lessons for the future. If there is some disquiet in UK about whether NEC has advanced fast enough, the situation in Germany would seem to be worse as Ina Weisner makes clear in her investigation into German network-centric operations. It seems that implementation there is as much of a problem as it is in some areas of UK acquisition.

Network Enabled Capability: A UK Perspective

by *Colonel Iain Standen*

Iain Standen is Deputy Head of the Network Enabled Capability programme office in MoD UK. In this article he lays out the UK concept of network-enabled capability (NEC), and discusses what has to be done in the immediate future, the medium term and the longer term. It would be instructive to read this article in conjunction with other NEC/digitisation articles in the previous two editions of RUSI Defence Systems, and compare then and now.

*The **Right** Information, at the **Right** Place, at the **Right** Time, to enable the **Right** Decision, in order to deliver the **Right** Effect and achieve the **Right** Outcome for Defence.*

In the early years of this century a number of visionaries in the UK saw the work being undertaken in the United States to develop a concept called 'Network Centric Warfare'¹ and realised that the benefits such an approach offered could significantly enhance the UK's military capability. To pursue this aim the UK set off to develop its own vision called 'Network Enabled Capability' (NEC), envisaging a future where, for example, soldiers on the battlefield would have easy access to a wide-range of intelligence feeds, allowing them to quickly analyse any given situation and take effective action. In contact with the enemy, they would be able to communicate their need for indirect fire or close air support instantaneously. Their requests would be met, be it by ground-based artillery, attack helicopters or close air support, with agility and accuracy as these assets would themselves be connected by high quality and timely ISTAR.² And of course, such support might be provided as easily by any Service or indeed any one of the Allied forces with whom we may be working.

To many this seemed a fantasy, yet anyone who has seen UK forces on operations today will realise that this vision of NEC is, in large part, a reality now. It would be fair to say that it is not as 'all pervading' as the original advocates might have wished, and those not on Defence's current Main Effort³ may be finding that resources to expand the NEC vision are understandably limited.

Aim

The aim of this short article is to outline the key elements of the UK approach to NEC, how it is being delivered today and what the future might hold.

What is NEC?

Current UK defence doctrine for NEC⁴ states that:

*"NEC offers decisive advantage through the **timely provision and exploitation of information and intelligence** to enable effective **decision-making** and agile actions. NEC will be implemented through the coherent and progressive development of Defence equipments, software, processes, structures and individual and collective training, underpinned by the development of secure, robust and extensive network of networks."*

In other words, Information Superiority delivered by a combination of effective command and control and intelligence usually wins wars!

The Defence Plan 2009 further picks out two important characteristics. Firstly, that NEC is an all-encompassing enterprise that will deliver:

"...benefit by enabling decision superiority across both the battle space and the business space."

And secondly, and more fundamentally, that:

"...it (NEC) is cultural with implications for doctrine, organisation, structure, training, tactics and procedures."

NEC is viewed as the cumulative result of three interlocking areas of activities or dimensions (Networks, Information and People) which work together to enable Joint Action – the means to deliver effect. Over time these elements are designed to work together to deliver an ever stronger NEC. Initially, we are seeing an increasing interconnection

between new and existing systems. As the concept develops this would move towards greater integration by design and, ultimately, a mature NEC state characterised by synchronisation between the various elements, allowing:

“...the optimal exploitation of information...”⁵

Joint Action

The overarching element of the UK’s approach to NEC is Joint Action, which is defined as the deliberate orchestrated use of the full range of military capability and activities in order to achieve our aims. In an NEC context this is the end result that the Network, Information and People dimensions are aiming for. The delivery of NEC with its improvements to situational awareness, collaborative planning and a greater mutual understanding of the operational picture, will lead, via Information Superiority, to more effective UK Defence forces.

Networks

The underpinning element of Defence’s NEC vision is the provision of a robust and secure ‘network of networks’ that will allow the sharing and exploiting of data across both the business space and the battlespace, both within UK Defence and, through interoperability, with our Allies. Progress in this area is a continual journey, often subject to the vagaries of

the planning round, but nonetheless progress continues to be made. On the battlefield Bowman is fielded at the tactical level with Falcon just around the corner, while in the business space the Defence Information Infrastructure (DII) continues to roll out, giving for the first time personnel across Defence access to the same information and common tools.

Information

Complementing a robust network is the development of the necessary command and control, information management and exploitation procedures to be implemented on the network. These procedures are being developed under the auspices of the newly created Chief Information Officer (CIO) and are being rolled out across Defence through an expanding network of trained Senior Information Officers and Information Managers who are gradually being sent out across Defence to ‘spread the word’ and ensure best practice.

People

Without people who understand the concepts and practise the behaviours necessary to exploit the networks and information, there is no effect. Defence needs motivated and capable personnel who can exploit the benefits offered by NEC. Such individuals will be competent and confident with the operation of IT and comfortable working in an



NEC in action in Afghanistan [UK MoD]

environment where collaborative working and information-sharing are the norm. In a recent speech, the Chief of the General Staff, General Sir David Richards, neatly summed up the demands that modern operations in the Information Age put on our people, particularly in Afghanistan:

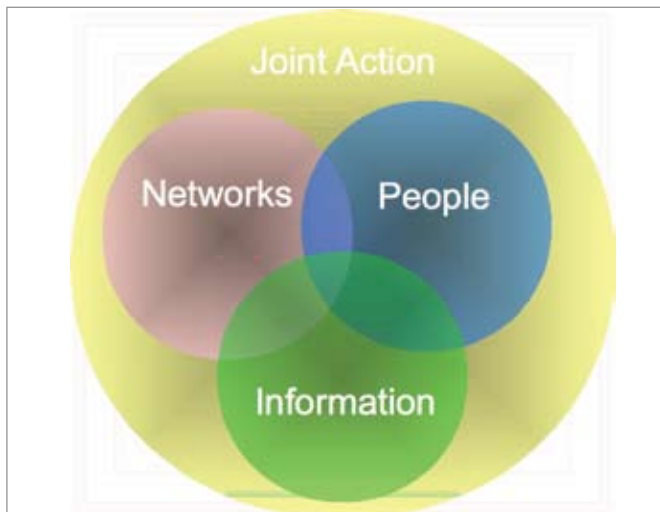
“We are looking for soldier / diplomats of the old school but with a modern understanding of the ideas and technology that allow us to take the fight to the enemy both among the people on the ground and in cyberspace.”⁶

NEC on Current Operations and the Lessons for the Future

The UK’s current operational commitments have demanded a quantifiable increase in the UK’s NEC capability. The roll-out of the Project Overtask capability⁷ in Afghanistan has, working in conjunction with the Joint Automated Deep Operations Coordination System (JADOCS) application set and Chat facilities, provided vital interoperability with our NATO and coalition allies in theatre. Coupled with significant advances in ISTAR capability, this has led to a genuine and demonstrable increase in UK’s ability to achieve Information Superiority. It has reduced decision cycle times, improved decision-making and is ultimately enabling UK success on operations.

Urgent Operational Requirements (UOR) funding has been crucial to the fielding of these capabilities in a different manner to that assumed in the core equipment programme, either due to advances in technology or because the need cannot be met by normal acquisition means. It also highlights the need for an acquisition process that is sufficiently agile to be able to adapt to the pace of technological change, as well as changes in operation posture and requirements, whilst at the same time remaining in step with our partners.

Experience on current operations is also changing the rules. For example, broadband services are being delivered to company forward operating bases (FOB) today, and troops are



The relationship between the four NEC dimensions: Joint Action – the deliverable – with the three interconnected supporting dimensions of Networks, Information and People

becoming accustomed to using them. It is difficult to see how pre-Afghanistan assumptions that such services will only be available at component level and above can remain in this fast-moving environment.

Immediate Future

The immediate future for NEC (and indeed Defence as a whole) will be inextricably linked to the forthcoming Strategic Defence Review (SDR). The Defence Green Paper, published recently in preparation for the SDR, acknowledges the importance of NEC to military capability:

“Networking our forces – by integrating sensors, decision-makers and weapons systems – has multiplied their effect. It has improved situational awareness and increased the tempo of operations, particularly at the tactical level.”⁸

However, recognition of the value of such capability is not necessarily a guarantee of future investment. Indeed, the ability to demonstrate the value of NEC in the empirical manner that the acquisition process likes to use to justify investment is very hard. The future of NEC needs some well-placed champions who appreciate the vital contribution this capability makes to achieving operational success. Fortunately, there are indications that such champions do exist as is evidenced in a recent speech by the Chief of the General Staff:

“We need to right the balance in favour of unglamorous technology: protected transport, communications and intelligence; technology that allows the Armed Forces to get closer to the people and that gets an understanding of the battlefield directly to commanders.”⁹

Medium Term

Beyond the SDR there are already some heavy-hitting and network-demanding capabilities such as the Carrier Strike and Typhoon on which the UK’s military future will be anchored well into the 2020s. These give a good indication of the future demands that will be placed on network infrastructure and the corresponding need for the UK to keep up with the latest technology, a fact that is acknowledged in the recent Defence Green Paper:

“A key challenge for Defence will be to monitor and respond to the increasing breadth and pace of technological change. We will need to develop a greater understanding of the requirement for technological edge in our systems and of the risks associated with losing it. We will need to be more agile in exploiting new technologies in our own capabilities.”¹⁰

One example of the direction that new technologies may be leading us is the US Army’s adoption of an ‘app store’¹¹ approach to the use and dissemination of applications.¹² Although only rolling out to the ‘business space’ at the moment, their aspiration remains to empower personnel to use

the applications they need and see the system as self-regulating with unused applications being removed from circulation.

Long Term

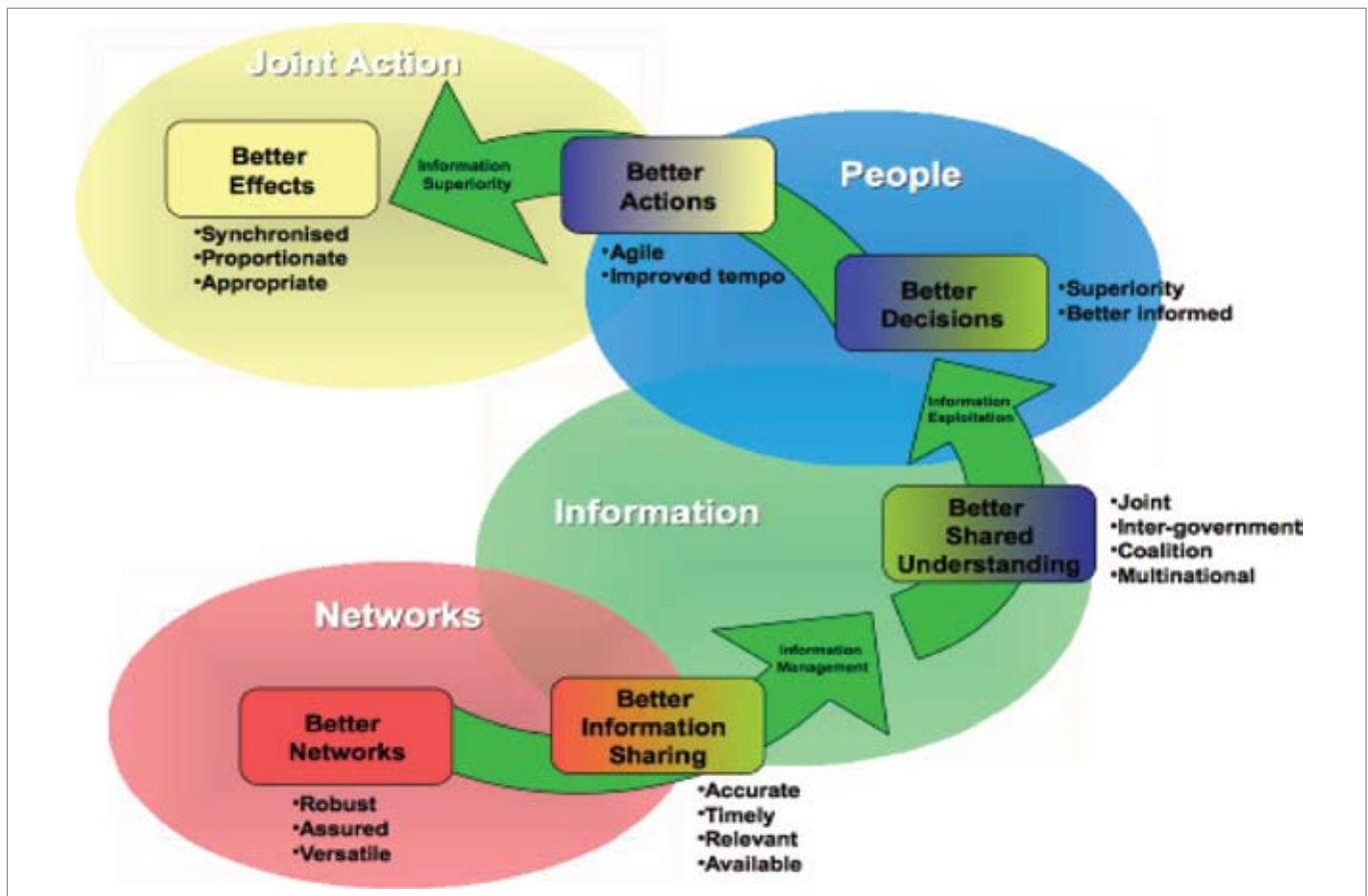
Finally, what of the long-term future of NEC? Tempting though it might be for sceptics to deride the NEC dream, we are both in, and part of, the Information Age where information management, assurance, exploitation and, ultimately, superiority will be needed to ensure success in the battlespace and efficiency in the business space. NEC, the military embodiment of the Information Age, is here to stay and is delivering decisive advantage on operations now. What is needed is a re-defining of ‘where do we go from here?’ Is the future the swarming, synchronised, agile task-organised organisations envisaged by the founding fathers of NCW or just the continuing automation of processes?

The SDR provides the ideal opportunity for the UK to re-examine its NEC vision, to define what it aspires to achieve and, most importantly, what it can afford in terms of technology, information and its people. ■

NOTES

¹ The original concept was largely championed in the US by Vice Admiral Arthur K. Cebrowski and John Garstka. A more detailed exposition of what the US had envisaged can be found in the seminal

document on this subject, *Network Centric Warfare* by David S. Alberts, John J. Garstka and Frederick P. Stein first published in 1999
² Intelligence, Surveillance, Target Acquisition and Reconnaissance
³ Defined as operations in Afghanistan, in a note by the Secretary of State for Defence, the Chief of the Defence Staff and the Permanent Under Secretary, October 2009
⁴ Joint Service Publication (JSP 777), 01/05 C100, Network Enabled Capability, MoD
⁵ JSP 777
⁶ General Sir David Richards, Chief of the General Staff, in a speech to the Institute of Strategic Studies (ISS), 18 January 2010
⁷ Project OVERTASK provides UK forces with the ability to operate on the, currently ‘43 Eyes’, coalition in-theatre network
⁸ MoD, *Adaptability and Partnership: Issues for the Strategic Defence Review*, February 2010, page 18
⁹ General Sir David Richards, Chief of the General Staff, in a speech to the Institute of Strategic Studies (ISS), 18 January 2010
¹⁰ MoD, *Adaptability and Partnership: Issues for the Strategic Defence Review*, February 2010, page 23
¹¹ The applications store is a concept developed by Apple to support its highly successful iPhone and iPod products. Applications are produced by software developers who then submit them to Apple for validation before being posted for download through the Apple website. Users download the applications as they need them with the confidence that they will work on their platform and the market place quickly delineates which are ‘valuable’ to customers and which are not
¹² US Army Software Transformation Program



The NEC Benefits Chain. This diagram shows the synergistic relationship between the NEC dimensions as they work together to deliver Better Effects