



Future? Rapid? Effects? Searching for Meaning in a World of NEC

by Christopher Dabrowski

Christopher Dabrowski is a consultant with Frost & Sullivan's Aerospace & Defence Practice, specialising in European defence markets. In this article, he questions whether the UK's Future Rapid Effect System will deliver the capabilities that the UK MoD requires and suggests that valuable investment capital may be wasted.

Since the end of the Cold War, asymmetric operational environments and peace-support operations have caused a reassessment of the capabilities required of 'next generation' vehicles. The lessons learned from two wars in the Gulf, operations in the former Yugoslavia and the drive towards integrating the IT revolution into the warfighter's repertory have similarly advanced the agility, lethality and co-ordination of military forces. The UK's Future Rapid Effect Systems (FRES) a next-generation family

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of modular common-chassis multi-role armoured vehicles is the core element of the UK's effort to tackle these challenges.¹ However, a number of questions remain – principally:

- Are the objective conditions on deployment such that they require investment in an entirely new family of armoured fighting vehicles (AFV)?
- Are FRES and network-enabled capability (NEC) about sophisticated

platforms? Or, rather, about command, control, communications and intelligence (C3I) systems?

- Further, is NEC more about communications architectures and algorithms than electric armour, future directed energy weapons and electronic drive?

The changing nature of military doctrine and extra-territorial deployment from warfighting and territorial defence to peace-support operations has been reflected in a substantial shift in the military capability required by combat systems, specifically in the shift from a platform-centric concept of operations to a 'capabilities' and 'effects-based' approach.² This article will place FRES in the context of operational, doctrinal and industry trends and ask whether the investment required to develop an entirely novel vehicle family practically from scratch is in fact justified, or whether there is a better use of investment capital in the context of the network-enabled battle.

In attempting to be 'all things to all men', FRES is unlikely to deliver the capabilities that MoD desires and will waste valuable investment capital that could instead be diverted to battlefield information systems. MoD should look at developing its communications and ISTAR concept instead of investing in costly bespoke AFVs in the 25–35 tonne range.

Contextualising the Future Force's Capability Requirements

Since 1991, AFV procurements across NATO have reflected a strong commitment on the part of procuring nations to enhancing vehicle mobility, survivability and crew protection. During the 1960s, 1970s and 1980s, the development of combat vehicles served a requirement for 14–22 tonne tracked infantry carriers to support heavy armoured formations. Current platform

design has tended towards accommodating deployability, mobility and survivability requirements within the 19–24 tonne envelope.

Through the late 1990s, thinking on crew protection also affected the configuration of short-range, direct-engagement systems, with a strong emerging preference for remote overhead weapon stations in place of turrets or traditional gun-rings as a personnel loss-reduction measure. Changes to dismount compartment design are manifested in the inclusion of dedicated mine-blast protection plates capable of cushioning anti-armour mine blasts of 5–7kg. The US Army's Stryker and UK Warrior have been fitted with slat or bar armour in Iraq to provide a higher level of protection against attack from Rocket Propelled Grenades (RPG) and improvised explosive devices (IEDs). This successful adaptation illustrates how current tactical protection needs are being met by

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systems designed with vastly different operational environments in mind.

The political impetus to generate a rapid reaction capability to facilitate effects-based operations has affected AFV procurement strongly (for both expeditionary and peace support operations). While states capable of acting as 'framework nations' may need to develop rapidly deployable battle groups, the late 1990s saw tendering states identifying C-130 portability as a key requirement. If C-130 portability (i.e. vehicle dimensions not exceeding 2.3m height over hull or 2.9m

width, with an upper weight limit at some 19 tonnes) is the NATO benchmark for vehicle deployability, then one is forced to question MoD's decision to adopt the much larger A-400M heavy-lift aircraft as its new standard. If rapid deployment requirement for peace support operations is a doctrinal driver, then certainly the desire to project forces to hard-to-access areas with questionable airfield infrastructure should be a strong influence in concept development.

Experience on Operations is Revolutionising the Concept of Armoured Mobility

Currently, rapidly changing operational conditions require that vehicle systems remain highly adaptive to evolving threats. In as much as the US DOD's Office of Force Transformation (OFT) maintains that networked forces fight better and thus that commanders can apply lighter forces to certain taskings, policy-makers' aversion to casualties favours the argument for heavier (presumably better protected) units. Even though bolted-on 'bar' armour changes the vehicle profile significantly, it has acted as an exceptional counter to the threat posed by RPGs. Although bar-armour offers an unorthodox example of modular armour kits, the German PUMA programme takes on this modularity concept in the form of add-on armour kits for warfighting. While this offers some solution to the threat posed by anti-armour weapons, it does not offer a risk-free solution to deploying 'our boys' in zones of combat.

Up-armouring Warriors and other AFVs has been reasonably successful in Iraq. However, this has not provided UK forces with an interim weight/mobility solution between the Land Rover (soon CLV) and the FV432. The US-derived idea that 'heavier is better' for stabilisation missions is based on a false premise: it is not that heavier forces are indispensable, but rather that adaptable armour kits and better ISTAR capability to locate and track the enemy will allow for lighter, more easily deployable and adaptable systems without significantly raising the risk profile of a deployed force. Leveraging such information superiority will provide greater force protection as battlefield commanders will be better positioned to dictate terms of engagement to opposing forces, mitigating the effects of lighter armour configurations.

This is very much the case of operational analysis coming from Stryker Brigade Combat Team operations involving the 21 tonne Strykers – the effective networking of forces has proved how indispensable C3I systems are in augmenting the capabilities of 'light medium' forces. This reinforces the view that MoD should look to developing its communications and new ISTAR concept instead of investing in costly bespoke AFVs in the 25–30 tonne range.

To a certain extent, UK MoD has recognised the need to balance cost, lessons learned and the need to leverage cutting-edge technologies into combat systems development with product development cycles. While a capability gap is emerging, MoD is rolling both Warrior- and Challenger-Lethality Improvement Programmes into a Capability Sustainment Programme. With vehicles such as the FV 432, Saracen and CVR(T) being refitted for extended service lives and the Challenger 2 expected to be the mainstay of the UK's 'heavy' direct fire capability through to 2025, there is plenty of time to breathe. Nevertheless, as MoD begins a raft of technology demonstrator programmes, it is important not to allow technological 'potential' to make the Defence Procurement Agency (DPA) lose its focus.

The UK needs to step back from the operational assumption of large-scale manoeuvre warfare on the one hand and LIC on the other, to configure any new vehicle system concept around detection, mobility, and fire capabilities to leverage the benefits of enhanced ISTAR capability to create a sufficiently flexible concept to deliver rapid effects in the future battlespace. In this context, the elaboration of a fourth-generation platform such as the Piranha IV, Patria AMV, or BAE Land Systems SEP with advanced electronics subsystems and information technologies would deliver greater value-for-money and allow allocations to stream to advanced electronics and C3I.

Balancing Mobility with Efficacy and Cost

This article has attempted to address two key issues plaguing the FRES concept development and design:

- Compatibility with current and expected operational environments.

- The place of FRES within the UK's developing ISTAR systems constellation.

To conclude, instead of investing in a versatile, rapidly deployable network- and ISTAR-enabled series of ground combat systems, MoD is designing a vehicle family with too broad a capabilities expectation out of fear of 'fighting the last war', while including operational analysis from current conflicts. The proposition that FRES will consist of three streams of vehicles in the 25–40 tonne range suggests that MoD's mobility concept is based on an awkward compromise between the need for a networked force for large-scale armoured manoeuvre warfare and the imperative for asset survivability in the context of low-intensity conflicts.

To begin with, this is at odds with the UK Defence White Paper and successive governments' statements that do not envision engaging in major, high-intensity warfighting operations outside of the context of coalition operations. Further, it undermines the core premise of the Rapid Effect System – i.e. its ability to support the UK's security and defence policy through the speedy deployment of a robust, articulated and network-enabled intervention force.

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NOTES

- 1 Director of Equipment Capability – Ground Manoeuvre (DEC-GM) is currently suggesting that FRES will consist of three streams of vehicles (utility, reconnaissance, direct fire) in some 16 configurations in the 25–40 tonne range. The original FRES concept called for a family of C-130 portable, common-chassis vehicles in the 19-tonne range.
- 2 Effects-based operations will be defined via RAND as 'operations conceived and planned in a systems framework that considers the full range of direct, indirect and cascading effects – effects that may, with different degrees of probability, be achieved by the application of military, diplomatic, psychological and economic instruments'. In this context, rapidly deployable military capability is seen as a critical enabler.