



# UK's Future Soldier System gets defined?

The UK reaches the mid way point in key research project, designed to inform improvement roadmap, with a focus on lethality

**The procurement of the UK's Future Integrated Soldier Technology (FIST) programme is well underway. In parallel, the UK is mapping out its future technology development path across the Dismounted Close Combat (DCC) arena, in order to inform future procurement options for DCC.**

Currently in its second year of its assessment phase, the Future Dismounted Close Combat project is a research effort funded by the Defence Technology and Innovation Centre (DTIC), the organisation responsible for a lot of the research programmes in the UK. Stakeholders in the programme include; Director Equipment Capability (Ground Manoeuvre), the Dismounted Soldier Systems (DSS) Integrated Project Team (IPT), the Defence Clothing (DC) IPT, the Defence Science and Technology Laboratories (Dstl) and the Infantry Trials and Development Unit.

A three year initiative that began in April 2007, the project is currently at the half way stage and FDCC will conclude in May 2010.

## NATO DOMAINS

A consortium was tasked to undertake the work on FDCC and is being led by consultancy firm, SEA. Andrew Arlow, the lead for the project at the company explained, "SEA is the prime contractor for management as well as elements within the research effort, principally sustain inability and systems engineering."

The project takes its lead from LCG/1 in terms of domains. Arlow said, "The overall structure is focused on the NATO domains of Lethality, C4ISTAR, Survivability, mobility and sustainability".

"We also have other, 'Overarching Themes'", Arlow explained, "This is principally systems engineering. We

don't want to end up with if you like a 'research contest', with the requirement focussed just on the domains. The whole systems needs to work together and that is something being addressed in the Overarching Themes."

Within the domains, individual firms in the consortium have the lead. For example within FDCC, Roke Manor Research responsible for C4ISTAR. In addition there a number of related research programmes. These include the DCC Survivability project being run by Dstl and ABSL's Portable Power project.

Clearly the infantry are central to FDCC's content, but Arlow said, "We do actually need to consider the impact on other units and other roles that may need equipment." He cited Engineers as one key battlefield user that is being borne in mind by FDCC.

While research, self evidently infers long term goals, the demands of ongoing operations has resulted in the FDCC project developing a focus on near term solutions to address pressing challenges. Arlow commented, "In common with a lot of projects in the research programme at the moment, the customer is

## FDCC Industry Team Includes

SEA  
 Cranfield University  
 Roke Manor Research  
 Lockheed Martin UK INSYS  
 SVGC  
 Defence Business Group  
 IBM  
 ABSL Power Solutions  
 Kings College London  
 Persides  
 Ordnance Test Solutions

keen for opportunities for Quick Wins, capabilities that can be brought quickly to bear."

In regards to its long term work Arlow said, "We are looking at a range of Epochs, some of which cover existing programmes because we need to be aware of what those programmes are generating. We are also looking at the current time at beyond 2025. However our

## Programmes Relating to FDCC

<b>Lethality</b>	Munitions Acquisition the Supply Solution (MASS)
<b>C4ISTAR</b>	Future Integrated Soldier Technology NEC for Close Combat Sensor Systems for Close Combat Survivability DCC Survivability Personal Equipment and Common Operational Clothing (PECOC)
<b>Mobility</b>	PECOC
<b>Sustainability</b>	PECOC Portable Power
<b>Overarching</b>	Operational Analysis for Dismounted Close Combat

main focus is probably the 2015-2020 time frame.” The UK has arranged its thinking about future capabilities in a series of four Epochs: Current to 2015, 2015-20, 2020-2025 and from 2025 onwards.

### FDCC GOALS

Arlow identified the broad goals of the project. FDCC will provide a Soldier Systems Roadmap, addressing the path of capability evolution, technology development and interaction with other programmes. Potential Quick Wins would be included in the overall technology database. Modelling and analysis capabilities would also be developed through a Soldier Systems Capability Model or CapTER and Operational Analysis capability. A final project output would also outline topics for future research.

At the core of FDCC is a detailed Integrated Soldier System (ISS) definition which addresses a ‘balance of capabilities’, incorporating differentials in roles and specific missions. Arlow said, “We are looking to that balance of various capabilities they deliver. We are looking at the roles and missions that our soldiers will accomplish. We are also looking at that definition against the backdrop of a variety of restraints” Arlow picks out load carriage as a key example, adding, “That drives a number of the decisions that we have to make.”

The ISS definition will be expressed as a series of Key User Requirements (KUR). Those requirements will be underpinned by research projects. Arlow said, “The report documents the analysis that we do, primarily modelling and simulation using modelling assets owned by both the UK MoD and the consortium. We are also supported by experimentation at various ranges and demonstrations, depending on whether we can identify

technologies that would be representative of the capability we are looking at.”

“The KUR tell us where we want to get to and the timeframe. That won’t necessarily tell us whether, what we are looking at is feasible. In parallel we are developing Soldier System Roadmap. That will document the way capability will evolve and technology will develop in the timeframes and the sorts of capabilities being generated by other programmes. We need to take account of what is out there. One of the byproducts of the programme is that we are also developing a technology database which details potential Quick Wins and will also help us understand timeframes.”

### LETHALITY

“A particular focus for us is the replacement of current small arms,” explained Arlow.

“The Lethality programme is in essence about identifying fire team requirements for effects. The work itself is looking primarily at the section-level but it does go beyond that as well. However, we are looking to develop KURs, not detailed design outputs.”

Arlow explained that a key Lethality requirement had been to understand from the user, exactly what targets he wanted to engage and the effects required to be delivered. “We needed to understand what we mean by the various effects. What do we mean by suppression? We’ve done that now. We are now into substantive work on what our long term ammunition requirements are regarding calibres and our projectile structure. In addition we need to look at various weapon technologies.”

Included in the work are requirements for bursting and fragmentation rounds including fuzing and guidance

technologies as well as improved existing capabilities such as improved mountings, firing signatures and recoil mitigation.

In the area of C4ISTAR Arlow said, “Fundamentally we are looking at what is the best way to get different types of information to flow around these levels.” While FDCC’s remit for C4ISTAR takes into account Bowman and FIST it will not directly support either programme.

In terms of survivability, personal protection research is being led by the Dst-led DCC Survivability programme. FDCC is looking both at reducing vulnerability to enemy fires by improved effects protection as well as reducing susceptibility to attack by research on reducing visible, near infra-red and other signatures.

FDCC’s work on Sustainability addresses a portion of the NATO concept of this domain. It addresses technologies and application to reduce and regulate soldier temperatures, power generations and distribution and bio-medical monitoring. This is a comprehensive list of tasks but within its remit FDCC, deliberately does not address battlegroup logistics, hydration, nutrition, water harvesting and storage and other clothing related work.

Much technology is proprietary. As a consequence of having a government funded but industry led consortium, this generates reticence on behalf of some technology partners outside the consortium to share detailed information. The FDCC is being considered as a route for this information with necessary firewalls being put in place to so that information can be submitted into the technology database, while meeting industry concerns. ■

*Andrew Arlow was speaking at NATO’s Future Soldier event. He has since moved positions.*



FDCC has a major focus on Lethality © AJB