

# Tech Recon

FCS Update

## FCS Program Makes Advances on Several Fronts

Much work lies ahead, but the computing and software elements of the Army's Future Combat Systems program are beginning to fall into place.

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Editor-in-Chief

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The past six months have seen numerous successes and advances in the life of the Army's Future Combat Systems (FCS) program. As expected, the program did suffer some budget cuts in the 2008 budget proposal, but the cuts were less severe than many expected. Ranked among the military's most expensive programs, the expected overall lifetime cost is expected to exceed \$110 billion, although estimates vary. Funding cuts in the 2008 budget for the FCS program included two of the program's classes of UAVs and one of its unmanned ground systems, and the Intelligent Munition System. Boeing and Science Applications International Corp. (SAIC) are the Lead Systems Integrators for the FCS program.

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Figure 1

The lead system for the FCS Manned Ground Vehicle program will be the Non-Line-of-Sight Cannon (NLOS-Cannon), which is scheduled to be delivered for developmental testing beginning in 2008. The NLOS-Cannon early prototypes are 155 mm, self-propelled cannon systems developed for the program. Each system will be equipped with four Barco display workstations configured in a two-man crew station.

opmental testing beginning in 2008. The NLOS-Cannon early prototypes are 155 mm, self-propelled cannon systems developed for the U.S. Army's Future Combat Systems program. Each system will be equipped with four display workstations configured in a two-man crew station. For its part, display vendor Barco was chosen by BAE Sys-

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tems Land & Armaments Division to provide rugged display workstations for the system. Barco's 17-inch rugged displays incorporate the latest back-light solution using LED technology, while the computers integrate the latest in desktop graphics boards within a small and sealed package. The displays and computers are then mounted together to form a small, easy-to-install workstation core.

### Eight Month Field Test a Success

Among the most significant milestones this year for FCS was the successful completion of an eight-month field experiment said to be the cornerstone of soldier evaluation activities and an important step toward the early

infusion of key FCS capabilities to the current force. Experiment 1.1, spanning July 2006 through February 2007, is a three-phase effort that combines laboratory, field and demonstration activities with soldier testing of early FCS prototypes.

The experiment was designed to help reduce program risk and provide early feedback into the development, integration and verification process of the program. It also helped to enable the early spin out of key capabilities to the current force in 2008. In one phase

of the experiment, the FCS team, which included more than a dozen U.S. Army soldiers as observers, demonstrated Non-Line-of-Sight Launch System networking, Distributed Fusion Management capabilities, Unattended Ground Sensors capabilities, Joint Tactical Radio System Ground Mobile Radio performance, and interoperability with current Army and Marine Corps systems.

The final demonstration phase of Experiment 1.1, which was conducted from January 2007 to February 2007 at

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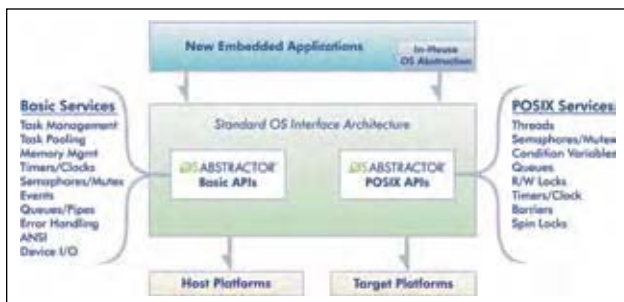
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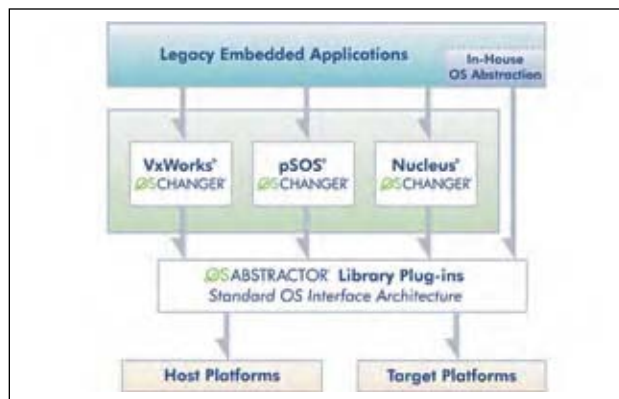
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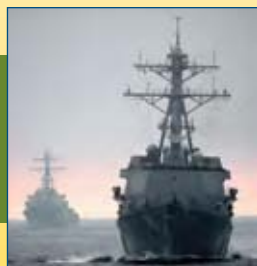
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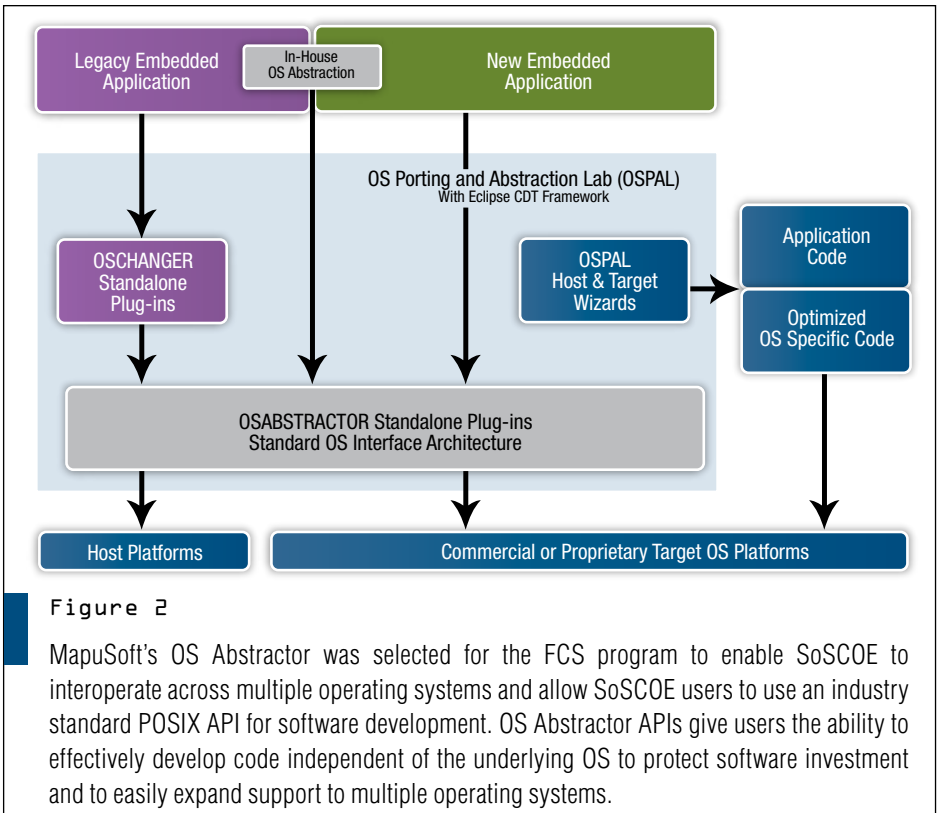


Figure 2

MapuSoft's OS Abtractor was selected for the FCS program to enable SoSCOE to interoperate across multiple operating systems and allow SoSCOE users to use an industry standard POSIX API for software development. OS Abtractor APIs give users the ability to effectively develop code independent of the underlying OS to protect software investment and to easily expand support to multiple operating systems.

the White Sands Missile Range and Ft. Bliss test complex, included 36 soldier participants who provided “hands-on” feedback of early FCS prototypes, while exercising initial doctrinal concepts for employing these new capabilities. Phase 3 represented the first time soldiers collectively employed FCS systems in a live training environment and used an FCS computer-based training support package.

**FCS's Integrated Computer System**

More FCS advances were revealed at the Association of the U.S. Army (AUSA) show in early March. At the show General Dynamics C4 Systems and Rockwell Collins were showing off at their booths the first FCS ICS. The week of the show, the firms announced the delivery (on schedule) of the first ICS to the U.S. Army's FCS program. ICS is the common computing environment for most of the platforms in the FCS program family of systems, which comprises sensors, UAVs and manned and unmanned ground platforms.

Called the Large Networking Processor, this first ICS provides computing, networking and information assurance resources to enable U.S. Army current force vehicles to be a part of the FCS network. Based on 3U CompactPCI cards with Pentium M computing and 10-port Gbit Ethernet switching, the ICS is scheduled to be installed— as part of the first spin-out of FCS future force technologies in 2008—on Bradley fighting vehicles, Abrams main battle tanks and Command-Variant Humvees.

Also at AUSA, BAE Systems showed off FCS gear, including its Bradley Technology Demonstrator (TD). The Bradley TD is BAE Systems' look at managing the Bradley Combat Systems into the future. Among the Demonstrator's features were Remote Turret operation, Panoramic Vision, Embedded Diagnostics, Embedded Training system and an FCS Spin Out One mock-up.

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## SoSCOE Software Moving Forward

On the software side, the major RTOS and embedded tool vendors are well represented in the FCS program. LynuxWorks is working to craft the operating systems for the FCS ICS. Also, Wind River's Workbench was selected as the foundation of the FCS Software Development Environment. Smaller software vendors are getting involved as well. Last summer Boeing selected MapuSoft's OS Abstractor (Figure 2) solution for integration in the current build of their System of Systems Common Operating Environment (SoSCOE) architecture. MapuSoft's OS Abstractor will enable SoSCOE to interoperate across multiple operating systems and allow SoSCOE users to use an industry standard POSIX API for software development. MapuSoft's OS Abstractor is useful because it provides many OS back-ends, which is key for architectures like SoSCOE that run in a variety of environments.

OS Abstractor APIs give users the ability to effectively develop code independent of the underlying OS to protect software investment and to easily expand support to multiple operating systems. OS Abstractor allows developers to use a standard API interface across multiple OS platforms and greatly reduces the costs associated with code maintenance and learning multiple operating systems. ■■

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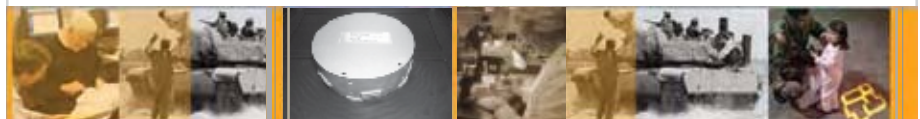
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