CWID COTS equipment: battle management in a box

CWID 2010 provided industry with a realistic opportunity to demonstrate their COTS/MOTS solutions

Each year the MOD holds a technology demonstration and field trial to review new technology which could shape the future of defence. The Coalition Warrior Interoperability Demonstrator gives senior military personnel an opportunity to see how COTS and MOTS technology can meet operational requirements, while allowing industry to test technologies in realistic environments. Lee Randell, Communications Manager (Defence), Systematic Software Engineering, tells MOD DCB more.

Since the end of the Cold War, it has become increasingly common for military operations to comprise multinational forces. As a result, successful communication between coalition partners has become paramount to operational success. Effective sharing of battlespace information is essential, regardless of its origin and regardless of equipment.

Connecting disparate systems, which often use different data standards, is no small task. But with increasing pressure on today's defence budgets, and the need for agile procurement, smarter solutions are needed to keep project costs in check. This is the very reason the MOD places greater emphasis on Commercial Off-The-Shelf (COTS) and Modified Off-The-Shelf (MOTS) solutions.

Coalition Warfighter Interoperability Demonstration (CWID) 2010, held at Dstl Porton Down near Salisbury from 7 to 25 June, provided industry with a realistic opportunity to demonstrate how their COTS/MOTS solutions could help to solve the complicated issues surrounding interoperability, based on current coalition operations in Afghanistan.

Fortunately, multilateral interoperability data standards have been evolving for several decades. The MIP (Multilateral Interoperability Programme) data model is now the most widely accepted command and control information exchange standard currently available. Ratified by 27 nations and organisations, it is aimed at supporting the spectrum of joint military operations. Of course, data standards continue to evolve as requirements change, and as MIP Block 2 has evolved into MIP Block 3 it is vital that interoperability is maintained between nations in a potentially mixed environment.

The first of two Systematic UK CWID trials provided a unique opportunity for Systematic to demonstrate interoperability with allies including the United States, Netherlands, Finland, France, Germany, Italy, Poland and Estonia.

Both MIP Block 2 and MIP Block 3 interoperability were successfully shown, enabling the live, dynamically updated UK tactical situational awareness picture to be easily exchanged between the UK and coalition partners' C2 systems.

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This was made possible by using the COTS MIP replication software, and MIP Block 2 and new MIP Block 3 version of Systematics's SitaWare Headquarters C2 suite to convert UK tactical track data into the MIP-compliant format and exchange it seamlessly with allied C2 systems.

SitaWare-based C2 solutions have been purchased for use in both national and multinational operations in almost 20 countries throughout the world, resulting in proven technology, reduced procurement risks and shared costs for future development.

The SitaWare C2 Server's open-platform, independent C2 data repository and intuitive web interfaces mean that Joint Operations Centres and other high-level commands can easily access a Common Operational Picture (COP) with a solution that works straight out of the box.

Based on Service Orientated Architecture principles, the SitaWare C2 Server supports many interoperability standards, including ADatP-3 (STANAG 5500), NATO Friendly Force Information (NFFI) (STANAG 5527), ▸

OTH-TGOLD (US), Link 16 (J-series) and Civilian Maritime AIS. This made it easy to integrate many different specialist systems, off-the-shelf products and legacy installations at CWID.

One particular highlight of this important trial was the opportunity to put both the UK and coalition C2 pictures into the Fujitsu OpenJOP portal, using Systematic's SitaWare Track Server.

This out-of-the-box capability also enabled the distribution of live tactical situational awareness tracks to NATO's ICC application using an NFFI data exchange. Testing was demonstrated both locally at Dstl Porton Down and federated with the C2 Battle Lab at Shrivenham.

This use of a COTS product to provide what is effectively a rebroadcasting and data transformation facility for common and operationally relevant messages such as NFFI demonstrates the power of using open standards to achieve interoperability at low cost and high efficiency. By using such a mechanism as a flexible lingua franca, the necessity of developing a large number of different, bespoke interfaces for the plethora of national C2 systems is vastly reduced, increasing accuracy and safety while driving down cost and implementation time.

The second trial demonstrated the benefits of the SitaWare C2 Server, which has been chosen by the MOD to provide an MIP-enabled Common Information Repository within the Joint Command and Control Support Programme (JC2SP). Systematic is now working alongside Hewlett Packard to incorporate this new technology into JC2SP, which will be hosted on the Defence Information Infrastructure (DII).

The Systematic trial demonstrated how the Common Information Repository and its associated open web services API could successfully provide warfighters with 'one-stop' access to C2 information from a variety of sources such as tactical and operational C2 applications and Link-16 air tracks.

Under test, the Common Information Repository collected data from several of the CWID trials, before aggregating relevant UK and Coalition C2 track information in near real-time and passing it via web services to SitaWare Track Server. User access to the Track Server was made available using nothing more than an ordinary web browser, allowing visualisation and information dissemination of the Common C2 picture to be simple and cost-effective.

The trial shows how different communities of interest can not only share a common C2 picture, but also potentially logistics, medical, targeting, IED information, plans, orders of battle and other operationally focused information.

The MIP-enabled Common Information Repository, enabled by the SitaWare C2 Server and provided by Systematic, is an example of an off-the-shelf, high-performance, scalable system that is ideal for use both by systems integrators and developers, as well as directly by military customers responsible for the C2 architectures of the future. Its use of an open data model, non-proprietary APIs and web services points the way to achieving true interoperability in a multi-platform, multi-national, high-performance environment. This type of loosely coupled, flexible mechanism based on COTS products has been shown to provide cost-effective interoperability in the operationally relevant context provided by CWID.

Further proof, if it were needed, of the benefits to defence of using COTS technologies, is that with minimal or no training, these solutions were successfully and enthusiastically used by the UK warfighters as their main Common Operational Picture viewer in the HQ operations tent, both on a large plasma display as well as on individual warfighter terminals.

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