

MilCAN matters

The deterministic protocol for CAN

Issue 4

1 June 2006

MilCAN Certification

The integration of the MilCAN protocol in military vehicles by numerous companies and consortiums has had as a result the increase of MilCAN-based devices both as COTS and customised systems (see <http://www.milcan.org/Projects/projects.html>). The choice of MilCAN for sub-systems integration in FRES TDPs has also spawned more development on MilCAN enabled systems and networks.

With MilCAN being primarily a software component its implementation is proprietary to the developer with each party operating their own MilCAN stack in their systems. The MilCAN Working Group (MWG) has appointed six members to form a Conformance sub-group and draft the requirements for compliance testing of MilCAN. The Conformance sub-group is composed by Thales Optronics, GD (UK), Ultra Electronics, Accutest, QinetiQ, and the Vetronics Research Centre (VRC).

The Conformance sub-group commenced work immediately and has made extensive progress. Initial documentation and

specification drafts have already been presented and approved by the MWG. These include the generation of a combined Compliance Matrix, and the compilation of the Conformance Test Procedures requirements. With the Conformance sub-group focused on the design of the compliance test requirements, the MWG has recommended that the VRC, with its expertise and impartiality, become Conformance Test House in respect of providing certification and advice for MilCAN A enabled devices. The MWG recommendation has been offered to the UK MoD for endorsement. The VRC will develop the appropriate test procedures based on the output of the Conformance sub-group and provide certification and advice for MilCAN-A devices.

The building of the conformance test facility is at its initial phase with final delivery target at Q3-2007.

www.milcan.com/conformance
Periklis Charchalakis
VRC, University of Sussex

22nd MilCAN Meeting @ Thales Optronics

The 22nd meeting of the now well established MilCAN Working Group was convened at Thales Optronics, Glasgow, Scotland, with a good balance of representation from a wide spectrum of businesses and organisations, from component manufacturers to prime contractors and academia.

The two day meeting had a comprehensive agenda with all attendees participating in both the technical and publicity activities.

As there were a number of actions from the previous meeting at BAE Systems Bofors, Karlskoga, Sweden, sub groups had been formed to review such items as MilCAN conformance test documentation. The sub groups had met and their conclusions were tabled for the full working group to comment on.

Considerable ground had been covered with the expectation that conformance documentation final review will take place before the next meeting to be held at

Deutsch Ltd and the Vetronics Research Centre at The University of Sussex in September.

Other technical items included updates on MilCAN A and MilCAN B specifications and the requirement for a Compliance matrix.

The publicity group also had a number of topics to consider.

A paper was presented on possible opportunities to promote the activities of the MilCAN working group to a wider audience. The website which continues to be the focal point for information dissemination, was reviewed with a number of upgrades to be made, that will enable easier access to a variety of information.

With a full two days, a shorten tour was possible at the end of the meeting to view the capabilities and work undertaken on the Thales Optronics site.

Andrew Watson
Mil/Aero Business Unit, Deutsch Ltd.

*“The choice of
MilCAN for sub-
systems
integration in
FRES TDPs...”*

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*ESTABLISH, MAINTAIN AND
BROADEN THE USE OF
MILCAN AS THE DEFINITIVE
INTEGRATION STANDARD
FOR MILITARY LAND
VEHICLE SUBSYSTEM
COMMUNICATIONS*

“conformance tests for MilCAN A presents a major milestone for the open standard...”

FRES Update

In March 2006 the FRES-EA Thales led TDP Vetronics package competition was won by a team composed of Thales Air Defence, QinetiQ, and Sussex University.

The team has provided a MilCAN node running under VxWorks to the Systems Integration Laboratory in Leicester where all sub-systems will be integrated using MilCAN as the primary deterministic protocol.

In the last newsletter it was reported that merging the MilCAN A & MilCAN B Physical Layer specifications had been completed. Similarly the merging of the MilCAN A & MilCAN B Data Link Layer specifications. These specifications were with the MilCAN group members for review. It was also reported that significant effort was to be directed towards developing the conformance tests for MilCAN and the merging of the specifications in this way would create complications with this process.

A decision was taken to abandon the merging of the MilCAN A and MilCAN B specifications at each level and pursue the merging of the three MilCAN A specifications into a single MilCAN A specification. This process allows a single traceability matrix to be created for MilCAN A conformance tests. This specification has now been created and will be available on the new MilCAN website soon to go live.

A similar process will be followed to issue a single MilCAN B specification.

Bob Connor

Thales Optronics

Barr & Stroud was conceived on May 26th 1888 by 2 professors who agreed to design an infantry rangefinder for an advert, within a magazine “Engineering” which requested designs to be tendered for the War Office. Their version of the Optical/mechanical Rangefinder was chosen as the most accurate and best quality, and the supply contract was awarded. Since then, the company has develop cutting edge laser and thermal imaging technology and has pioneered a superb new concept of a Non Hull Penetrating Mast for submarines. From 1977 the company has changed ownership from Pilkington Optronics, Thompson CSF and finally in December 2000, at the new site built at Linthouse in Glasgow, to the current Thales Optronics.

With many years of sustained investment in the development of optronic systems and equipment, Thales has emerged as the European market leader and one of the three largest optronics groups in the world. With 27 companies in 12 countries, the group can provide an extensive range of optronics products, from specialised components to turnkey systems. The group is involved in optronic, optical, laser and detector technologies used for defence applications such as, detection, reconnaissance, target identification, fire-control, and designation. In land-based optronic systems and high-technology optical components, Thales is the world market leader.

Ian James
Thales Optronics



Welcome to the fourth edition of MilCAN Matters.

Progress towards developing a set of conformance tests for MilCAN A presents a major milestone for the open standard and continues with the expectation of initial tests being conducted at the University of Sussex in September 2006.

MilCAN A has been selected for the Turret Upgrade TDP for Warrior being conducted by CTA International (a joint venture company owned by BAE Systems & Giat Industries).

MilCAN as implemented on TERRIER will be featured as part of the Land Systems and Vehicles, mobility, survivability and lethality conference organised by SMI at The Hatton, London on 8th & 9th November 2006

In addition it is hoped that MilCAN will again feature at the International CAN Conference to be held in Stockholm in September 2006.

The next MilCAN meeting will be held at Deutsch Ltd, St Leonards on Sea on 12th September followed by a demonstration of initial conformance testing. To be held at the University of Sussex on 13th September.

Bob Connor
VSI Technical Leader
QinetiQ Ltd



MWG members meeting at Thales Optronics, Glasgow.

Archer is a 155 mm howitzer mounted on an articulated hauler. The selection of a commercial chassis which is well-tested gives the system excellent cross-country capability and strategic mobility. Archer is equipped with positioning, C3, ballistic computer and automatic loading system for ammunition. Archer only requires target coordinates in order to operate entirely autonomously.

Archer is very fast in and out of action, it takes only 30 sec. to deploy or re-deploy the system.

The system has excellent firepower, with a fire-rate of 3 rounds in 15 sec and ability to fire MRSI (Multiple Rounds Simultaneously Impact).

The crew are located in the NBC protected and armoured cabin from where they can operate the system, only one crew member being required to achieve this. The cabin is equipped with workstations for the driver and 3 operators.

The Archer system architecture is, as far as is possible, designed as a distributed system.

The communication is based around one asynchronous and a synchronous data bus.

The asynchronous bus is implemented using Ethernet for communication and the synchronous data bus is implemented using CAN with MILCAN-B protocol. Data exchange between these data buses is handled by an Ethernet/CAN bridge.

The operators' HMI can be found on the asynchronous part, based on a Client-Server solution where the main computer contains a data base and map information and also handles external communication.

The synchronous part of the system takes care of functions such as controlling the gun, handling information sent to and from the control system, ammunition handling and the ammunition magazines.

The Archer system is designed to deal with changes in requirements and equipment, as specified by the customer. Upgrading and adaptation to new customers needs is relatively simple.

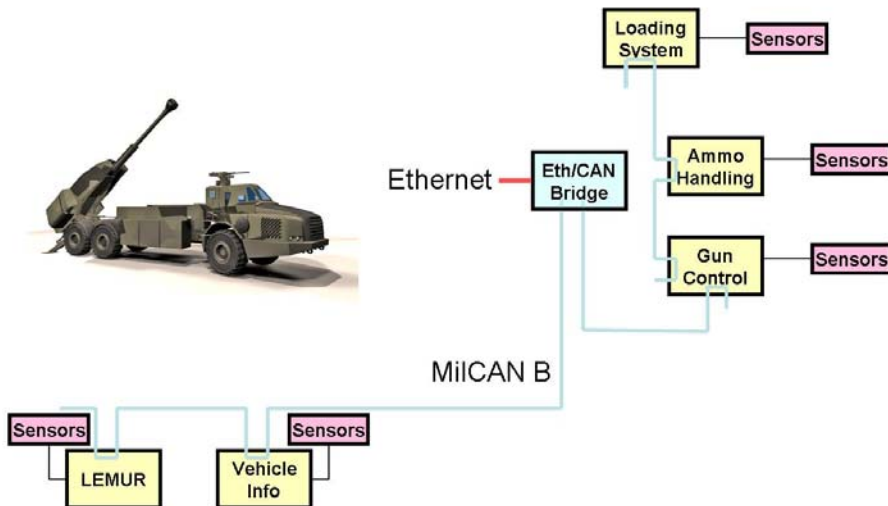
LEMUR W is used for measuring near crest and self protection of the Archer. LEMUR W is in the basic configuration a remotely operated stabilized weapon station with on-mount sensors for all weather conditions day or night. The functionality can be expanded to include optional Fire Control System (FCS), auto-tracker and search modes.

Leo Koikeroinen
BAE Systems Bofors

MilCAN Projects



“Archer is very fast in and out of action, it takes only 30 sec to deploy the system”



Archer MilCAN B Architecture
BAE Systems Bofors

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MilCAN Workgroup Members

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