

# MilCAN matters

The deterministic protocol for CAN

Issue 5

1 December 2006

## Wider Dissemination

During the past year MilCAN has seen increased interest from companies in defence and civilian market sectors. The increased interest has been a result of the significant dissemination of systems development based on MilCAN as the deterministic solution for CAN systems.

Various procurement programmes have contributed to this success with FRES (Future Rapid Effect System) being the biggest procurement programme for the British Army, as reported in previous issue of MilCAN Matters.

International events have also played a major part in the wider dissemination of MilCAN. Probably the most notable ones are the 11th International CAN Conference in Stockholm, Sweden, and the SMI 1st

Conference on Lands Systems for the Digitised Battlespace.

At the ICC conference the presentation by Graham Taylor, BAE Systems Land Systems, on "CANBus on Engineering Vehicles for the British Army", was received with enthusiasm resulting in further articles for the CIA CAN Newsletter. The SMI conference was a big success with participants from EU and NATO forces. Dr Elias Stipidis chaired the conference and Mr Bob Connor presented on both VSI and MilCAN.

More MilCAN activities are scheduled for 2007, which promises to be a very exciting year.

[www.milcan.org](http://www.milcan.org)

## 23rd MilCAN Meeting @ Deutsch UK

The 23<sup>rd</sup> meeting was truly a "county" event in that it was held in two different locations in Sussex, Deutsch UK located in St Leonards on Sea and The University of Sussex close to Brighton & Hove.

The first day concentrating on the agenda items at Deutsch UK with the following day to review the facilities and progress on conformance testing at The University of Sussex. Attendance was good with representatives from across Europe and Canada, and on the second day from the DEC (GM), UK MOD.

The first day's agenda was divided into three parts, presentations from two companies with a view of joining the working group, the publicity group and technical group items. All attendees were involved with each part of the agenda. The presentations were received with interest. With their knowledge of high integrity systems, the decision was taken to invite Wittenstein HIS to join the group.

A range of topics were covered by the publicity group which included, updates to the website which is used as the first source for MilCAN information, the next issue of MilCAN Matters and progress on publicity where there have been some early successes in promoting MilCAN activities.

During the afternoon members were given a tour of Deutsch UK comprehensive design, manufacturing and testing capabilities.

For the technical group, a number of change notes were reviewed and accepted this will move MilCAN B specification from issue 1 to 2.

Progress on conformance documentations was reviewed which provided a good lead into the next days meeting at the Vetronics Research Centre, University of Sussex.

The following morning a MilCAN "convoy" was organised and members made their way to the University where members that were unable to attend the first day were welcomed.

A detailed tour of the facilities and plans were given and discussions on various test requirements were considered. The day was concluded with a selection of demonstrations to illustrate the work currently undertaken with primary interest on MilCAN conformance testing.

The next meeting has been scheduled for 20<sup>th</sup> & 21<sup>st</sup> of March 2007 at BAE Systems, Leicester.

Andrew Watson  
Mil/Aero Business Unit, Deutsch UK.

*"During the past year MilCAN saw increased interest ..."*

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

**“The future focus of the MWG will be to examine possibilities of enhancing MilCAN to allow its use in High Integrity systems.”**

**VSI'07 open day and MILVA'07**

In 2007 the VSI standards and guidelines are scheduled for update. The updates will be presented in October 2007 at the Defence Procurement Agency at the VSI Open Day, an event sponsored by the DEC (GM).

Also in 2007, following the success of MILVA'05 symposium and exhibition, MILVA'07 will take place in September 2007 at Aachen, Germany.

Details of these events will appear on [www.milcan.org](http://www.milcan.org)

**MilCAN Conformance: Current Status**

Following the initial approval of the MilCAN Conformance Test Procedures draft document by the members of the MWG, the work for the design and development of the conformance system has commenced by the VRC, as scheduled. A setup demonstrator was presented to the MWG members during the 23<sup>rd</sup> MWG Meeting in September. The system was based on a set of monitoring equipment and a working MilCAN node, and a simulated faulty node. The tests conducted were focused on the generation and timing of the Sync Frame, and message triggering. The MWG members gave their approval and work is currently under way on the development of the initial test facility in time for the Q1 2007 target to commence preliminary testing of MilCAN nodes supplied by MWG members.

Periklis Charchalakis  
VRC, University of Sussex

**Deutsch UK, 40 years on!**

Deutsch UK has been in the business of making connectors for harsh environments since the early 1960's.

First as a joint venture with Bowthorpe Holdings, then as Hellerman Deutsch, establishing the first factory at East Grinstead. Connectors were produced for the Canberra, BAC1-11 and Harrier Jump Jet.

During the 1970's Deutsch continued to expand with the acquisition of Fellbridge engineering in St Leonards on Sea, launching the Patt 602 range, introducing Hermetic connectors and establishing a fibre optic group. Connectors were manufactured for Concorde, Jaguar and the DC10.

The 1980's was a turbulent time for Hellerman Deutsch with a major unplanned refurbishment of the main factory at St Leonards following an extensive fire from an arson attack. To enable the company to invest in new technologies and focus on connector manufacturing it was decided to de-merge from the Bowthorpe group and form Deutsch Ltd. A filter connector group was soon established. Connectors were produced for VC10-2, A310 & A320.

In the 1990's a new Autosport group started to supply dedicated connectors to Formula one racing teams, a new industrial products unit was created with a consolidation of all factories on the St Leonards on Sea site. Connectors were produced for Avro RJ70, A330 and A340.

With the consolidation of Deutsch companies worldwide, Deutsch Ltd becomes Deutsch UK continuing to supply interconnect solutions to most key defence, civil aerospace and autosport programmes both in the UK and overseas.

Andrew Watson  
Mil/Aero Business Unit, Deutsch UK.

**Chairman's Voice**

Welcome to the fifth issue of MilCAN Matters.

The MilCAN working group has elected Wittenstein High Integrity Systems as a new member. The future focus of the MWG will be to examine possibilities of enhancing MilCAN to allow its use in High Integrity systems. This strategy fits in well with the anticipated addition of Wittenstein HIS.

Considerable effort has been provided by the Conformance sub group over the past year, particularly by Sussex University, resulting in an early demonstration at the last meeting in September of the conformance set up and initial tests. The demonstration was well received by all parties.

MilCAN was once again represented at the iCC conference in Sweden in September with a paper on the use of MilCAN on TERRIER<sup>®</sup> presented by Graham Taylor of BAE Systems, Leicester. A MilCAN presentation was also provided at the recent SMI conference 'International Land Systems for the Digitized Battlespace' in London.

The next MilCAN meeting will be held at BAE Systems, Leicester on 20<sup>th</sup> & 21<sup>st</sup> March 2007.

Bob Connor  
VSI Technical Leader  
QinetiQ Ltd



**MWG members meeting at Deutsch UK, ST Leonards on Sea**

PANTHER is the British Army's new Command and Liaison Vehicle (CLV), due in service in 2007. Based on a chassis supplied by Iveco Defence Vehicles Division in Italy and assembled and integrated by BAE Systems in the UK, PANTHER is designed for strategic and tactical mobility with a high level of protection against both direct and indirect threats. It also provides operators with a lower vehicle profile while still giving a high level of crew protection.

PANTHER will be the first military vehicle to enter service with a Health and Usage Monitoring System (HUMS) specified from the onset. PANTHER also features a MilCAN A bus operating at 1Mbps. The Vehicle Monitoring Unit (VMU) from Syen Limited was selected to fulfil the HUMS requirement on PANTHER. The VMU acts as a data fusion point, using a variety of communications links to connect to each of the following major subsystems on the vehicle:

- Chassis automotive systems (J1939 CANbus)
- Overhead Weapon System (RS485)
- Fire Detection and Suppression System (MilCAN)
- Driver's Vision Equipment (Analogue)

The OWS, FDSS and automotive systems all have Built In Test (BIT) functionality, the results of which are transmitted to the VMU for logging. The VMU also logs usage data from the automotive systems, the DVE and the FDSS.

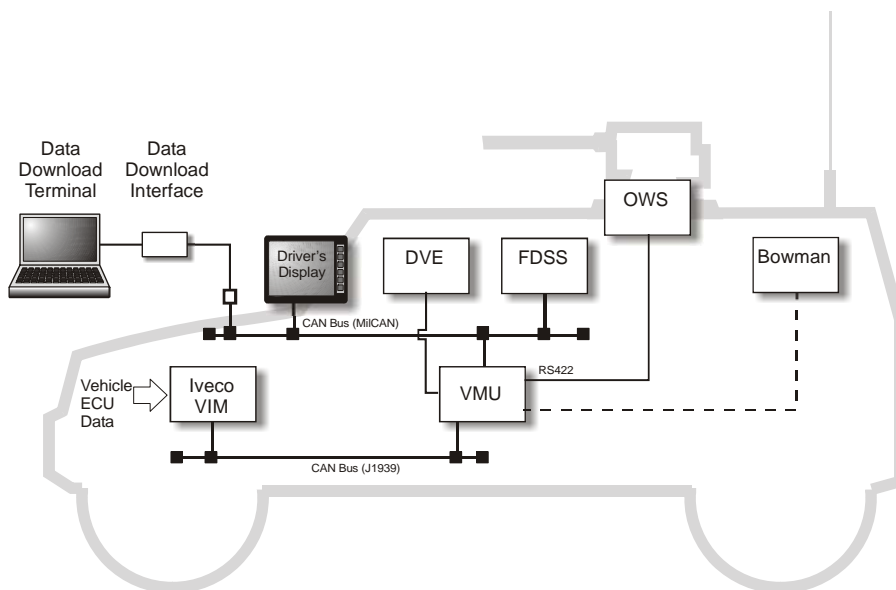
Fitted in front of the driver, and also connected to the MilCAN bus, is a daylight-readable Crew Information Screen (CIS). During normal operation the VMU displays pertinent automotive data on the CIS.

However if any subsystem BIT detects a mission-critical event, the crew are immediately alerted via the CIS. The crew can acknowledge these alerts via buttons on the CIS.

The use of MilCAN A for the main HUMS communications bus is a key enabler. It enables timely communication with the CIS, and minimises the HUMS data download time. The HUMS is not designated as a safety-critical system, so separately routed dual-redundant buses were not considered necessary.

The HUMS has been specified to store at least 14 days of health and usage data. It is envisaged that the front line maintainer will periodically download data from the VMU by connecting a rugged PC or tablet to a dedicated socket on the MilCAN bus. The HUMS data contains statistical usage data, elapsed time indicators for each subsystem, and a complete time stamped log of all BIT results. The data is available in both a compressed binary format for archival, and in Extensible Markup Language (XML) for use in desktop applications and transfer into existing and future military Management and Information Systems (MIS).

Iain Woolley  
Syen Limited, a Dytecnica group company



PANTHER CLV HUMS Architecture

MilCAN Projects



**“PANTHER will be the first military vehicle to enter service with a Health and Usage Monitoring System (HUMS) specified from the onset.”**



HUMS hardware, CIS (left), VMU (right)

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## MilCAN Workgroup Members

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