MilCAN matters

The deterministic protocol for CAN

Issue 3 **1 December 2005**

FRES on first gear

The Future Rapid Effect System (FRES) programme has taken a great leap forward within the last few months. Two 18-month Technology Demonstrator Programmes that are part of the Initial Assessment Phase are well on the way; the Chassis Concept TDP, and Electronics Architecture TDP.

'The Chassis Concept TDP requires to demonstrate readiness of in-hub electric drive and its ability to meet the FRES platform requirements as well as the integration of third party electronics into the chassis.'

'The Electronic Architecture TDP requires to demonstrate readiness of an open, scalable, network enabled architecture and its ability to support the current and future FRES electronic requirements as well as the integration of the architecture onto a third party Chassis Concept.'

The Chassis Concept TDP contract was placed by Atkins, the Systems House, with General Dynamics (UK) alongside the Capacity and Stowage TDP placed with DSTL and Hard Kill Defensive Aid Suites (HKDAS) placed with Akers Krutbruk.

The Electronics Architecture was awarded as two parallel TDPs to provide the best possible solutions. The first consortium is led by Lockheed Martin (UK) partnered with Ultra Electronics, SciSys, PA Consulting, and Cranfield. The second consortium is led by Thales partnered with BAE Systems, and QinetiQ.

Atkins has also launched the FRES Rainbow Teams considered to be the primary way for suppliers to support the Systems House throughout the Initial Assessment phase. The members of these teams have been carefully selected from industry, academia, stakeholders, and Systems House to provide expert advice to ensure that FRES Main Gate provides leading edge technology solutions. A number of MilCAN Group members have been selected to support the Vetronics Rainbow Team.

For more information and further development see

www.mod.uk/dpa/projects/fres/

Elias Stipidis
VRC, University of Sussex

21st MilCAN Meeting @ Bofors

Continuing the theme of international co operation for the development of MilCAN, the 21st meeting was held at BAE Systems Bofors, Karlskoga, Sweden.

Representatives ranging from prime contractors to component suppliers and education attended the meeting, which provided for a good spectrum of comments.

Before getting into a comprehensive agenda a short presentation was made on Bofors capabilities and latest projects utilising MilCAN by Dan Carlson and Christer Gordon.

Topics covered during the two day meeting ranged from items for the next newsletter to detailed discussions on conformance testing and implications of multi-instance addressing.

It was decided due to the complexity and urgency of conformance testing to form a sub group of representatives to move this forward from The University of Sussex, GD (UK), Accutest, Ultra Electronics and Thales Optronics.

The website continues to be enhanced so that interested parties can view updates on Change Requests and input via the forum on such subjects of multi-instance addressing.

During the meeting a Bofors demonstration vehicle was made available so that attendees could see some of the research and development work undertaken on site.

The meeting concluding with 20 new action points for attendees to follow up an extremely productive meeting!!

The next meeting will take place at Deutsch Ltd.

Andrew Watson
Mil/Aero Business Unit , Deutsch Ltd.

MilCAN group members at the demonstration of a MilCAN enabled combat vehicle, BAE Systems Bofors, Sweden.

Inside this issue:

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

"MilCAN was recently unveiled as the basis for the Vetronics system in TERRIER®"...

New User's Forum

The MilCAN User Forum was put online in June 2005 and is now available for the public to post questions and discuss about the MilCAN protocol specifications and its use in CANbus networks. The forum will serve as a central information exchange point for the expanding military and industrial community of MilCAN users, and also as an information point regarding the activities and events of the MilCAN Working Group. Along with the open public forums a number of internal private forums are also available and extensively used by the members of the MilCAN Working Group.

Access to the public forums is available to all visitors, while a user account is required to start a new topic or reply to an existing one. Individual private user accounts can be created through a free registration account, using a valid email address. Personal accounts allow author identification, tracking of read and unread post, and the automatic notification via email when a post reply is generated .

http://forum.milcan.org

MilCAN Spec Merger

What is the current state of play?

The MilCAN A & MilCAN B specifications for the Physical Layer have been merged into a single specification entitled the MilCAN Physical Layer specification. The specification clearly highlights where differences between the A and B protocols exist. Additionally, the Data Link Layer specs have been merged in a similar way. Both specifications are currently with the MilCAN group members for review.

What is the hold up?

At the last MilCAN meeting, it was decided that the group effort should focus on establishing Conformance to the current MilCAN specifications and a task group was set up to expedite this. Since establishing merged versions of the specifications would create complications with the conformance work, the decision was made to continue the merging process up to the point of issue, but not actually issue them, before reviewing their impact on conformance.

Bob Connor
QinetiQ Ltd

BAE Systems Bofors

BAE Systems Bofors is a Swedish company, founded in 1646 and has been in the defence business for the last 110 years, owned by BAE Systems Land & Armament.

From having previously been a manufacturing company with its own development department, Bofors has entered a new phase. After a period of restructuring it is now a company completely engaged in development and qualified assembly. More than 50% of the workforce is directly involved in R&D.

BAE Systems Bofors provides the international market with qualified products and services within advanced precision engagement primarily focused on:

- Long range artillery
- Combat vehicles
- Naval guns
- Intelligent ammunition
- C2 and rapid decision making

The company's end-to-end competence in precision engagement has made it a global leader in intelligent ammunition. BAE Systems Bofors research and development is recognized for being at the leading edge of what is technically possible in the development of course correcting ammunition. Two programs active in the U.S.; Excalibur, a GPS guided 155-mm high precision artillery projectile that can reach ranges beyond 50 km, and BONUS, the spin-stabilized artillery shell containing two sensor-fuzed, top-attack sub-munitions with explosively formed penetrator (EFP) warheads successfully completed readiness testing.

Leo Koikeroinen
BAE Systems Bofors

Chairman's Voice

Welcome to the third edition of MilCAN Matters.

The MilCAN group has recently accepted the resignation of HM Computing as a member. HM Computing no longer exists as a company hence their resignation from MilCAN was unavoidable. However, the MilCAN group would like to take this opportunity to thank HM Computing for their contribution to the MilCAN group and to wish the company partners every success in future ventures.

As a result of this resignation there currently exists a vacancy on the MilCAN group. This vacancy will be filled in accordance with the membership policy published in the last Newsletter and available on the website www.milcan.org

MilCAN was recently unveiled as the basis for the Vetronics system in TERRIER, the next generation air-transportable armoured combat engineer vehicle for the Royal Engineers. This edition of the newsletter contains an article about TERRIER.

The next meeting will be held at Deutsch Ltd, St Leonards on Sea in East Sussex on 22nd and 23rd March 2006

Bob Connor
VSI Technical Leader
QinetiQ Ltd

MilCAN group members meeting at Bofors Hotel, Sweden.

MilCAN on TERRIER®

TERRIER is the next generation air-transportable armoured combat engineer vehicle for the Royal Engineers. It has been developed by BAE Systems, Land Systems UK, for the UK MOD. TERRIER is a very versatile engineering vehicle and offers significant enhancements in capabilities over the existing Combat Engineering Tractor (CET). Faster, more mobile and with more effective armour and mine protection than CET, TERRIER will perform a variety of roles for the armed forces, from trench-digging and earth-moving to mine clearance. Additionally, TERRIER is capable of being operated remotely in particularly hazardous environments.

The Vetronics aboard TERRIER are a key enabler for Crew Safety, reduced operator fatigue with it's automated assisted digging, and for the operation for the whole vehicle and any of its functions under Remote Control.

Among the Vetronics elements integrated within TERRIER are:

- Driver & Commander Crewstations
- Bowman
- Intelligent Power Management System
- Crew hand-controller joysticks
- TV & IR sensors
- Special-to-Role & Drive-by-Wire Controllers
- Engine Management Unit

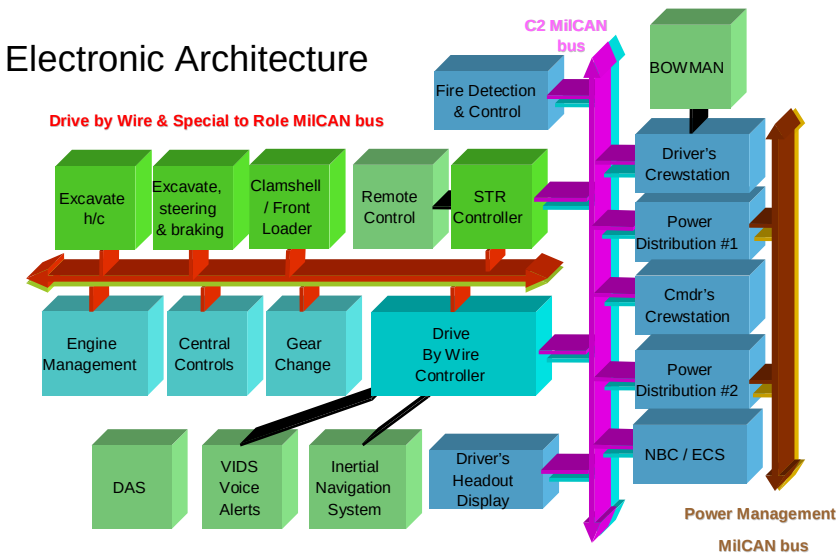
Where the latter elements enabling TERRIER's total vehicle Remote Control Operation.

The design of the Vetronics elements in TERRIER has followed the VSI Standards and Guidelines, in particular the CANBus. The protocol adopted for the TERRIER CANBus is MilCAN.

The vehicle has some specific safety requirements that are met by adopting the VSI functional segregation guidelines. The relatively high bus loading from real time Drive-by-Wire functions are segregated from high level Command & Control data by the use of separate but linked dual-redundant MilCAN buses. The use of multiple MilCAN dual redundant bus segments serves to minimise data loading, allowing a healthy margin for growth and to restrict fault propagation.

The Power Management System is also based on dual redundant MilCAN data busses, separately routed to minimise vulnerability. The Power Management System MilCAN architecture provides a robust intelligent power distribution network enhancing TERRIER's availability.

Manish Odedra
BAE Systems Land Systems



TERRIER®

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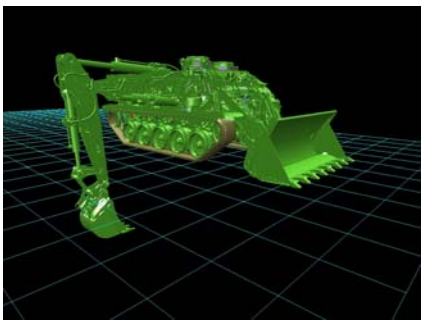
MilCAN Projects

"The protocol adopted for the TERRIER CANBus is MilCAN."



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MilCAN

Establish, maintain and broaden the use of MilCAN as the definitive Integration Standard for Military Land Vehicle subsystem communications

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