



WHAT TACTICAL DATA LINK COMPETENCY
 THROUGH **RESEARCH & DEVELOPMENT**
 BY MODELLING & SIMULATION

TACTICAL DATA LINK TECHNOLOGY & DEVELOPMENT

Saab Systems has over 30 years experience in Tactical Data Links (TDLs), using both proprietary and International standards.

Examples of tactical data include air/surface/sub-surface tracks and objects, status reports, command and control orders with associated responses, and free text messages.

Data Links in Sweden

The Swedish Armed Forces have used radio systems for transmitting bit-orientated data for nearly forty years. Developed during the 1960's, the Saab developed 'Styrdata' link was invented for the Draken aircraft to send simple commands to the airborne platforms. Commands were in the form of free text messages and typically included target and weapon system information and basic air intercept control instructions.

Today, examples of Swedish data links include the Air Force's 300-link for the JAS-39 Gripen fighter aircraft, the Navy's 8000 link and the Army's Lv Måds (GBAD) link. Different combinations of directional antennas, output power levels, frequency hopping and coding are used to gain robustness to interference and jamming.

Saab is working with the Swedish Defence Organisation to introduce NATO Standard TDL systems as part of the Network Based Defence (NBD) initiative. Work is expected to include Link 16 integration into the STRIC Air Defence System and the JAS-39 Gripen.

Other international TDLs are expected to be introduced into service as the Swedish Armed Forces begin to roll out the Interoperability requirements of the NBD program.

Link Competency Centre

During 2000, Saab formally established a Link Competency Centre under the management and direction of Saab Systems Pty Ltd, based in Adelaide, Australia. The primary reason for establishing such a group was founded in the Combat System support Saab Systems was providing to the ANZAC Ship program. The Link Competency Centre is now the nominated single point of contact in Saab for all International Standard TDLs.

Over the course of the ANZAC Ship program, Saab provided an integrated Link-11 solution that has now matured to MIL-STD 6011 compliance. This program continues to provide follow-on support, system maintenance and performance monitoring in a close working relationship with the Royal Australian Navy.



KEY SYSTEM FEATURES

- In-service
- Customer focussed solutions
- Fully integrated command & control
- Flexible architecture
- NATO STANAG interoperability
- US MIL-STD interoperability

From this initial work supporting the ANZAC Program, Saab's Link Competency Centre has rapidly expanded to include exports of Integrated Link packages to other programs such as the Tarif-45 Patrol Boat Program in the United Arab Emirates and the Standard Nordic Helicopter Project in Sweden. For Tarif-45, Saab tailored a NATO Standard Link-11 solution (STANAG 5511 Ed.5) to meet specific roles and tasks of the vessel, while preserving interoperability with other Link-11 platforms. In the Nordic Helo program, Saab Systems integrated a Data Link Processor into the aircraft Mission System. This solution provides both the Swedish National Link requirements as well as an interoperable Link-11 solution. The systems design, involving DLP technology, provides a growth path for future TDLs, including Link 16, Link 22 and Variable Message Formats (VMF).

On the back of significant research into Link 16 integration, the Saab Link Competency Centre will shortly supplement the existing Link 11 capability in the ANZAC Class with Link 16 and VMF. This program has resulted from close working relationships between Saab and the numerous Australian Defence Organisations responsible for implementing ADF interoperability requirements, so much so that Saab's solution will also be used on the Canberra Class Landing Helicopter Dock (LHD) ships.

Link 11 Simulator

In support of the programs outlined above, and also to support the ANZAC ASMD Upgrade, ANZAC Emulation Training Suites and the Australian Defence Science and Technology Organisation's (DSTO) Virtual Ship Project, Saab Systems has produced a

Link 11 Simulator, consisting of Data Terminal Set and Participating Unit simulators, to assist in software development, Man-Machine Interface requirements and pre-delivery system testing. This simulator can also be connected to real time hardware to provide system installation testing and troubleshoot integration issues.

Multi-Link Development and Test Site

The Saab Link Competency Centre is now looking to future TDL integration requirements and networks likely to be introduced for military Ships and Aircraft. Recently, Saab modified the baseline software resident in the SS2000 system (as used in ANZAC) to permit the use of multiple Links. By making these modifications, Saab can now cater to specific customer needs and configurations, eg. Link-11 and Link-16.

As part of that program, Saab has taken delivery of a Multi-Link system comprising dual Link 11, Link 16 and VMF modules housed in two representative DLP, DTS and MIDS configurations. The development site will be used to develop the user interfaces to the various TDLs required in the ANZAC Class Frigates and other projects.

Future TDL Provisions

In the work delivered to date and with associated research completed, Saab Systems has now developed a deep understanding of Generic TDL Architectures that provide flexible integration options for a range of TDLs including Link 11, Link 16, JREAP and VMF. Systems developed in line with this architecture opens the opportunity for the introduction of future Data Exchange modules such as Link 22, TCDL and WNW without the need to completely re-engineer existing physical configurations.