



## UNITED KINGDOM MINISTRY OF DEFENCE WHEELED TANKER IETP

In April 2003, Oshkosh Truck Company (OTC) received a contract to provide 348 Wheeled Tankers (trucks) for the UK Ministry of Defence (MoD). Due to O'Neil & Associates' long history of working with OTC to provide logistics support products, we again teamed with them to create an S1000D IETP in support of the contract. Content was derived from both legacy and newly authored data, and was then stored as XML data modules in a common source database. Contractual requirements mandated the use of the international standard S1000D.

The development team elected to use the latest version of the specification, Issue 2.0, as the baseline. Issue 2.0 of S1000D, for the first time, implemented XML support and provided the accompanying schemas, making the OTC Wheeled Tanker project the first of its kind.

This S1000D specification has been developed to establish standards for the documentation of any civil or military vehicle or equipment. It is based on international standards, such as SGML/XML and CGM, for production and use of electronic documentation. In addition, it defines a Common Source Database (CSDB) to store information as data modules. These data modules are available for compilation into the publications (paper or IETPs) and for use in electronic logistics information systems.

The specification attempts to harmonize both civil and military documentation standards, including many U.S. Mil-Specs and UK Ministry of Defence Standards. By establishing commonality among all of these specifications, the major advantages to using such an international standard are:

- > Cost savings on information generation and duplication avoidance
- > More economic support planning
- > More cost-effective publication deliverables
- > Uniformity of standards for participants in the project
- > Standard format for data exchange to exploit future developments
- > Enhanced interoperability
- > Improved opportunity for clarity by use of Simplified English (SE)
  - easier and cheaper translation costs



The specification adopts ISO, CALS, and W3C standards, in which information is generated in neutral formats. This means that it can be implemented on different, and often disparate, IT systems. This feature, along with the concept of modularization, makes the specification so acceptable to the wider international community. Information produced in accordance with S1000D is done so in a modular form, called a data module, which is defined as “the smallest self-contained information unit within a technical publication.”



The O'Neil process for designing the system began with a detailed analysis of the operational, maintenance, service, and parts data that would be developed. This was necessary to properly develop a data module coding strategy and to create the project business rules. It was imperative to correctly identify the DM coding strategy to avoid any rework. The Business Rules detailed which schemas were used and how all the XML elements and their attributes would be populated, thereby helping to ensure consistency across all data modules.

The Parts Manual provides easy-to-find replacement parts for all assemblies and piece parts. It contains the same content as the provisioning file, which was developed per UK DEF STD 00-60 (equivalent to U.S. MIL STD 1388). Storage and employment of "usable on codes" yield exactly which parts are applicable for each vehicle model. The Maintenance Manual provides well-illustrated and easy-to-follow instructions to service, troubleshoot, and repair the vehicles.

O'Neil authors and illustrators developed the thousands of data modules working with experts from OTC and their U.S. and European system subcontractors. The O'Neil Development team implemented our standards-based Content Management System (CMS) to efficiently support the authoring process and IETP output.

The contents for all of the operational and maintenance publications were stored as S1000D data modules in a common source database. Each publication was built through automation by assembling the necessary modules and publishing either as a printed manual or as an Interactive Electronic Technical Publication (IETP). The published IETP contained many of the traditional features of our Class IV interactive electronic technical manual, such as cross-document hyperlinking; flexible searching capabilities; data filtering by configuration or model series; and integrated update capability. Another unique feature of the IETP also enabled the maintainer to connect the laptop to the vehicle and to perform diagnostics by interacting with the vehicle on-board command module. The command module continuously collected the vehicle status and error codes from the various vehicle systems, including the control modules for the engine, transmission, Central Tire Inflation System (CTIS) and Antilock Brake System (ABS).

The diagnostic and troubleshooting module of the IETP extracts the data packets stored in the command module, translates them, and then associates them against a fault table. When an error code is found, the IETP displays the corresponding trouble shooting procedure, which guides the repair technician to quickly diagnose the root cause. The IETP then displays the corrective repair procedure, and corresponding information links to the service.

The IETP is supplied with no licensing fees. Internet Explorer 6 is the user interface, with which users are already familiar, adding to comfort and efficiency. It allows for easy upgrades as the technology moves forward. The IETP was delivered in the fall of 2004. Updates to content will continue in the years to come.