



**CEN/WS 010/EG 14**  
**Recommendations on best practice standards  
 for Life Cycle Technical Documentation**

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## RECORDS OF CHANGES

Date	Issue	Changes
08/04/17	Issue 1	EG 14 final report

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## List of Acronyms

<b>ADL</b>	Advanced Distributed Learning Initiative
<b>AIA</b>	Aerospace Industries Association of America
<b>AICC</b>	Aviation Industry CBT Committee
<b>API</b>	Application Programming Interface
<b>ARIADNE</b>	Alliance of Remote Instructional Authoring & Distribution Networks for Europe
<b>ASD</b>	AeroSpace and Defence Industries Association of Europe
<b>ATA</b>	Air Transport Association of America
<b>BR</b>	Business rules
<b>CAM</b>	Content Aggregation Model
<b>CGM</b>	Computer Graphics Metafile
<b>CMMS</b>	Computerized Maintenance Management Software
<b>CSDB</b>	Common Source DataBase
<b>DEX</b>	Data Exchange Set
<b>DM</b>	Data Modules
<b>DMC</b>	Data Module Code
<b>DoD</b>	Department of Defense
<b>EHDP</b>	European Handbook for Defence Procurement
<b>IEEE</b>	Institute of Electrical and Electronics Engineers
<b>IETP</b>	Interactive Electronic Technical Publications
<b>ILS</b>	Integrated Logistics Support
<b>LETSI</b>	Learning-Education-Training Systems Interoperability
<b>LMS</b>	Learning Management System
<b>LSAR</b>	Logistic Support Analysis Record
<b>LTSC</b>	Learning Technology Standards Committee
<b>MoD</b>	Ministry of Defense
<b>MTDIT</b>	Maintenance Task Data Task Team
<b>OASIS</b>	Organisation for Advancement of Structured Information Standards
<b>OSTP</b>	Office of Science and Technology Policy
<b>PDM</b>	Product Data Management
<b>PHS&amp;T</b>	Package, Handle, Storage and Transport
<b>PLCS</b>	Product Life-Cycle Support



<b>PM</b>	Publication Modules
<b>RTE</b>	Run Time Environment
<b>SCORM</b>	Sharable Content Object Reference Model
<b>SCOs</b>	Sharable Content Objects
<b>SN</b>	Sequencing and Navigation
<b>VRML</b>	Virtual Reality Modelling Language
<b>XML</b>	eXtensible Markup Language



## 1. Reference: CEN/WS 010 N0018 and main terminological references

N057: Table of EG14 selected standards.

N058: EG14 terminology.

## 2. Introduction

The European Commission requested the European Committee for Standardization to establish Workshop 10 to improve the efficiency and enhance the competitiveness of European Defence Industry. Eight Expert Groups have been set up in February 2007 with the objective to extend the applicability of the European Handbook for Defence Procurement, EHDP.

The EHDP has been prepared by Expert Groups reporting to CEN Workshop 10. This document is a guide designed as a tool for anyone involved in the European defence procurement contractual negotiations.

The primary target audiences for the EHDP are:

- The staff in the ministries of defence who are producing procurement specifications and invitations to tender
- The staff in defence companies who are responding to those requirements

EHDP is designed to provide Defence Procurement Agencies and Defence Industry companies with a preferential list of selected recommended standards qualified as best practice ones to be included in armament contracts together with concise recommendations for an optimum use of those standards in such a Defence Procurement context.

These selected standards should be used in the acquisition process by MoD and in the development process by Industry such that systems will be built faster, better and cheaper.

The aim of a recommendation is to develop good practices in the domain addressed by the Expert Group and to assist the final user in applying recommended best practice standards in a cost-effective way by:

- Increasing the controlled use of existing standardization, which is a necessity to harmonise European practices used by defence procurement stakeholders.
- Deploying a common approach through Nations Procurement agencies with regard to
  - An optimized utilization of civil and military standards
  - The possible limitations of civil standards with respect to military applications



- Provide a useful guide to all stakeholders involved in the defence procurement process
- Describing how to implement standards successfully in armament contracts with the Overall result of a better use of standards in those contracts

Recommendations are designed to provide EHDP final users - right information - to agree on standards clauses related to the selected material in armaments contracts. That's why the amount of recommendations will be accordingly fully compatible with respect to EHDP aims and purposes.

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EG14 has identified approximately 11 potential standards, which are used within the member states of the European Union. Amongst these potential standards, 8 are addressing the key area "Life-Cycle Technical Documentation". 3 of them have been selected as best practice standards. This document aims at providing recommendations on the best use of those best practice standards in armament contracts.

Those standards will be listed, presented (scope), commented as far as the reasons for their selection (reduction process) and the way of implementing them in contracts by a tailored approach (recommendation for best practices).

Furthermore, an additional feature will focus on possible findings resulting in recommendations that should impact the related standards to cover additional requirements.

General conclusions will sum up the main axis revealed by the investigations carried out by the experts during the recommendation drafting process.

### **3. Scope of the recommendation**

#### **3.1 Definition of Life Cycle Technical Documentation standards**

Life Cycle Technical Documentation standards are those that are used for developing, updating and disposing Technical documentation **focused on end user requirements**.

Therefore, engineering and manufacturing documentation standards are excluded from the definition.

The standards to be considered are related to the electronic (Interactive Electronic Technical Publication) and non-electronic publications that are necessary:

- To operate and maintain the system and its equipment
- To operate and maintain support and test equipment
- To train operators and maintainers of such systems and equipment
- To Package, Handle, Storage and Transport (PHS&T) the system and its equipment



- To operate and maintain the training devices

The definition also includes standards that could be used for Product information management throughout the Life Cycle of the system. This Product Information includes:

- The interfaces between industrial documentation (engineering, manufacturing) and Technical documentation and between the Life Cycle management disciplines (such as but not limited to Logistic Support Analysis, Support Engineering, Configuration Management, Obsolescence Management, Technical Events Management) and Technical Publication updates.
- The process for technical documentation updates including the handling of user feedback. These updates are due to proposed improvements of the technical documentation and/or proposed system / equipment hard- and software modifications
- Data exchanges for Technical documentation

**The key area “Life Cycle Technical Documentation” is divided into three perimeters:**

- Operation and maintenance documentation and related data exchanges
- Training documentation and related data exchanges
- Language used within Technical Documentation

### 3.2 Presentation of best standards (see excel file)

#### 3.2.1 Operation and maintenance documentation and related data exchanges

The standard selected in this perimeter is the **S1000D** specification (**trade mark of ASD with the register number 004780995, registered 2006-10-23**). S1000D is an international specification for the procurement and production of technical publications. S1000D covers technical publication activities in support of any civil or military air, sea and land vehicle or equipment ("the Product").

It is based on international standards that define neutral data formats for electronic publications such as the Extensible Markup Language (XML) for text, the Computer Graphics Metafile (CGM) for 2D illustrations, and the Virtual Reality Modelling Language (VRML) for 3D animations.

S1000D defines a Common Source DataBase (CSDB) to gather and manage technical information units that are generated on a workshare basis by several partners in a project.

These reusable, revisable and self-contained information units are called Data Modules (DM). They are identified by the Data Module Code (DMC), which follows the system and functional breakdown of the Product.



S1000D also defines the methods to assemble, compile and deliver the CSDB data modules as customized publications in electronic form (Interactive Electronic Technical Publications – IETP). The IETP building blocks are called Publication Modules (PM).

S1000D is freely available for download from [www.s1000d.org](http://www.s1000d.org).

### 3.2.2 Training documentation and related data exchanges

The standard selected in this perimeter is SCORM (Sharable Content Object Reference Model). It describes a technical framework by providing a harmonized set of guidelines, specifications and standards based on the work of several distinct e-learning specifications and standards bodies.

SCORM is often described as a set of books on a bookshelf:

- The SCORM Content Aggregation Model (CAM) book describes the components used in a learning experience, how to package those components for exchange from system to system, how to describe those components to enable search and discovery and how to define sequencing information for the components. The SCORM CAM promotes the consistent storage, labelling, packaging, exchange and discovery of learning content.
- The SCORM Run Time Environment (RTE) book describes the Learning Management System (LMS) requirements in managing the run-time environment, the requirements of Sharable Content Objects (SCOs) and their use of a common Application Programming Interface (API) and the SCORM Run-Time Environment Data Model.
- The SCORM Sequencing and Navigation (SN) book describes how SCORM conformant content may be sequenced to the learner through a set of learner or system-initiated navigation events. The branching and flow of that content may be described by a predefined set of activities.

The SCORM CAM and SCORM SN are within the scope of this perimeter

SCORM is freely available for download from [www.adlnet.gov/scorm/](http://www.adlnet.gov/scorm/).

### 3.2.3 Language used within Technical Documentation

The standard selected in this perimeter is ASD-STE100 (European Community Trade Mark No. 004901195). It is an international specification for the preparation of maintenance documentation in a controlled language. A controlled language is a form of language with special restrictions on grammar, style and vocabulary usage. The advantages of the use of a controlled language are the improved consistency, readability, and translatability of the information.



It was developed to help the users of English-language documentation to understand what they read. The ASD-STE100 provides a set of Writing Rules and a Dictionary of controlled vocabulary.

ASD-STE100 is not available for free. Information on the purchase of the standard can be found in [www.asd-ste100.org](http://www.asd-ste100.org).

#### 4. Content of S1000D

##### 4.1 Historical background

S1000D was initially developed by the AeroSpace and Defence Industries Association of Europe (ASD). Since release of Issue 2.3 on 28<sup>th</sup> of February 2007, it is commonly maintained by ASD, by the Aerospace Industries Association of America (AIA), and by the Air Transport Association of America (ATA). The actual release is Issue 3.0, which has been published on 31<sup>st</sup> of July 2007.

##### 4.2 Reduction process

Among the standards related to Technical Publication development, production, update and disposal, S1000D appears to be the basic specification for the end user documentation in all-multinational projects (such as A400M, TIGER, NH90, EUROFIGHTER, Counter Battery Radar COBRA, Family Surface to Air Missiles of the Future FSAF...). For national programmes, the use of S1000D is more and more required through MoD policy (GRIPEN, RAFALE, F125 etc).

Particularly the civil aviation specification iSpec2200 ("Information Standards for Aviation Maintenance") has not been selected for the following reasons:

- It is applicable only for civil aviation and it does not cover military air, land and sea systems
- ATA performed a gap analysis in data structure requirements and found that S1000D issue 2.2 (release 1<sup>st</sup> of May 2005) covered already 80% of these requirements. Therefore, civil aviation actively supports S1000D since release of issue 2.3 on 28<sup>th</sup> of February 2007. S1000D will be used in new civil aviation projects.
- Document centric as opposed to information centric approach of S1000D (data modules), more page-oriented, reusability of information units impossible

In addition, S1000D has many advantages listed below:

- **Cost savings:** It allows a homogeneous system for documentation development and production inside the industrial company, therefore this will avoid the setup of different documentation production systems. During the support stage, it reduces the information maintenance cost thanks to the support of easier collaborations
- **Collaboration work and interoperability:** The collaboration between customers and industry and between subcontractors and partners is facilitated during the life cycle of technical publications. As a matter of fact



the data module approach of the standard as well as the use of neutral data formats, such as XML facilitates data exchange from the development to the support stages.

- **Multi outputs:** S1000D is not only focused on Interactive Electronic Technical Publications although this is its initial intent. As a matter of fact the production of page-oriented/paper publications following this standard could also be performed without the need for re-authoring.

The table below sums up the stages in which advantages are seen for S1000D throughout the life cycle of technical documentation

		COST SAVINGS	COLLABORATION WORK AND INTEROPERABILITY	MULTI OUTPUTS
LIFE CYCLE STAGE	CONCEPT			
	DEVELOPMENT	Homogeneous system for publication development	Collaboration facilitated thanks to neutral data format exchanges	
	PRODUCTION	Homogeneous system for publication production and delivery	Collaboration facilitated thanks to neutral data format exchanges	Page-oriented/paper publications/ IETP
	UTILISATION AND SUPPORT	Information update cost savings	Collaboration facilitated thanks to neutral data format exchanges	Page-oriented/paper publications /IETP
	RETIREMENT			

#### 4.3 Recommendations for best practice

In order to use the S1000D in a cost effective way, some necessary prerequisites have to be fulfilled. Expert Group 14 has identified the following ones:

- Tailoring of S1000D to meet project/customer requirements by producing **business rules**. In the governmental side, it might be useful to establish national business rules such as the ones developed by the German Ministry of Defence (MoD) - Reference: "Guideline for generation of data modules". However, this tailoring **must not** change the scheme (eg: XML schema, data structures, CGM profile...) of S1000D otherwise the standard will not be applicable any more as the whole coherency will be disrupted.
- Training and Tools.



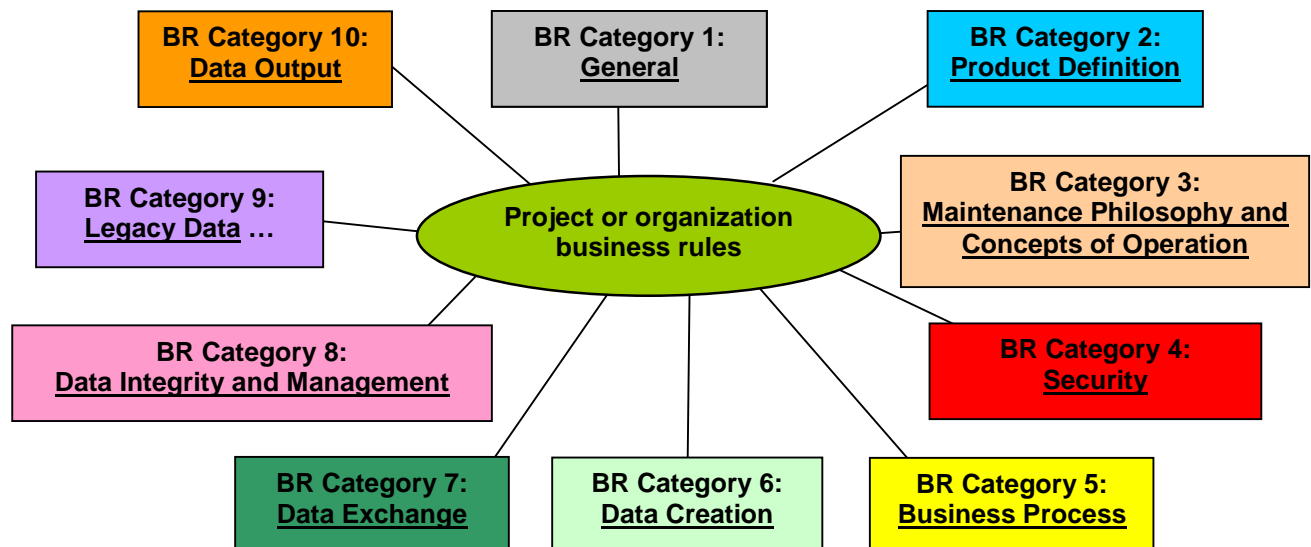
- Process to be followed during the life cycle.

#### 4.3.1 Business rules (BR)

Grouping Business Rules into categories will help projects and organisations to differ between and understand the relevance of various business rules as well as to be able to group them in certain classes. S1000D provides a classification. This classification is made to help standardize the Business Rules scope.

#### **Business Rules Category**

It is a unique grouping that describes rules applicable to product definition, maintenance philosophy, concepts of operation, security, business processes, data creation, data exchange, data integrity, data output and/or legacy data conversion, management, handling and other issues.



**General business rules:** Cover all decisions made by a project or an organization that are not covered by any of the BR categories below and that can serve as overall decisions showing direction for implementing S1000D.

**Product definition business rules:** Cover how the product is broken down, eg physical or functional.

**Maintenance philosophy and concepts of operation business rules:** Cover the types of information a project or an organization requires to create. They include, for example, a list or detailed specification of chosen Information Sets, an Information Codes specification which details the information codes, and information names that describe the data module types.

**Security business rules:** Cover all security issues. They include security classifications, copyright markings, use or disclosure, destruction instructions and any other data restrictions.

**Business process business rules:** Cover how technical publications development is coordinated with other disciplines within an organization or within a project-level at this organization or the project as a whole. For example, they describe the rules and relationships with Logistic Support Analysis, Initial provisioning (eg S2000M), engineering / design and training (eg SCORM-compliance).

**Data creation business rules:** Give information to aid data creation. They are mainly aimed for the creation of text, illustrations and multimedia.

**Data exchange business rules:** Rules for how data is to be exchanged between partners and customers are covered here. This includes, for example, the use of the Data Dispatch Note (DDN) and how the Data Module Requirements List (DMRL) as well as the CSDB Status List (CSL) is to be used.

**Data integrity and management business rules:** Enforce the referential integrity within the CSDB. Closely coupled with the data exchange business rules (BR Category 7). They cover how data are managed at the creator and at the customer side.

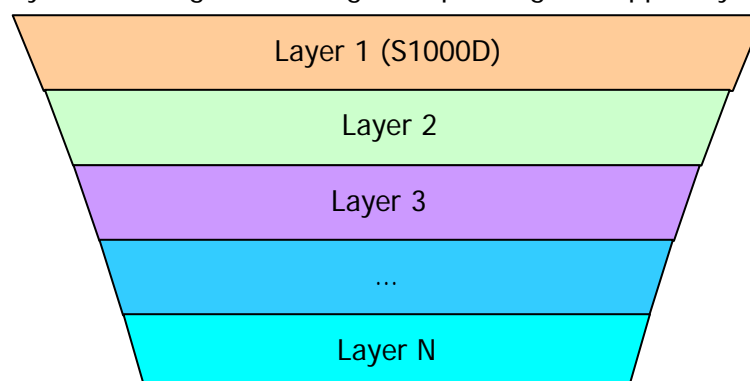
**Legacy data conversion, management and handling business rules:** Are quite separate from the other types outlined above and can be considered (to some extent) as being outside of the scope of S1000D.

**Data output business rules:** Specify the output formats for S1000D data. These formats may include page-oriented (eg paper) formats, IETP formats, multimedia and SCORM. The decision regarding which portion of the data will be published in required formats should be agreed and written within these business rules.

### **Business Rules layer**

A Business Rules Layer identifies for which level within the project or organization hierarchy business rules are written and authorized.

Business rules are layered. This can be shown as a layered model with each layer 'inheriting', 'extending' and 'profiling' the upper layer.



The figure shows the general view of the layered model. Layers 2 to N vary in dependence of organization and/or project structure. The core of the uppermost layer of the model is always represented by S1000D itself. On the way down to the "lower" layers, the number of BRs grows and the number of remaining decision points decreases. The reason for this is that an organization and/or project inherits all BRS from the upper layer and decides which of the remaining decision points should be decided at their level. The goal is to have all decisions made prior to reaching the author's level and at the very least to keep any decisions at the author's level to a minimum.

Organizations/Projects may add/define their own decision points at their layer.

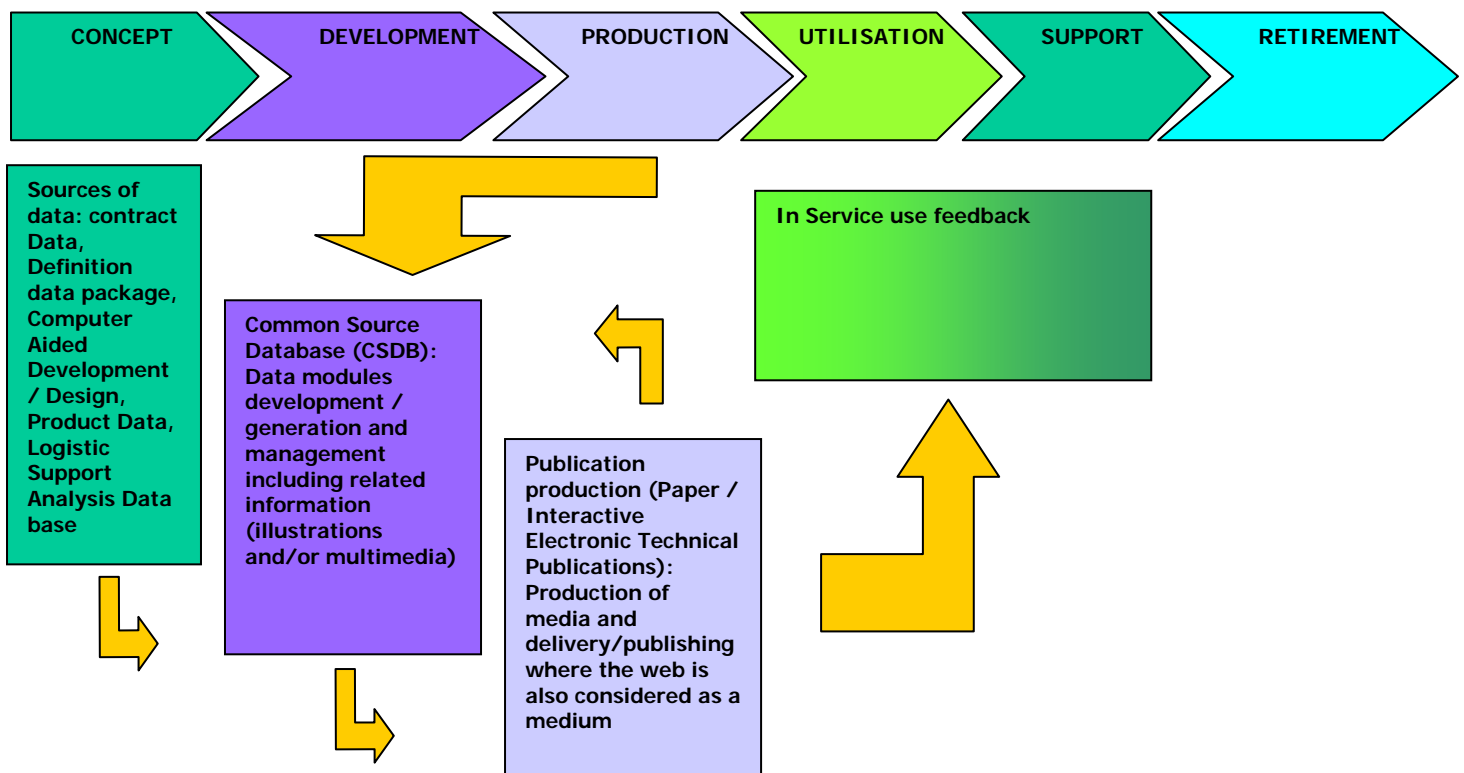
#### 4.3.2 Training and Tools

For both industry and governmental project managers and experts, it is worthwhile to get an adequate training in S1000D. This training will facilitate collaboration work and common understanding. Training courses are given by private companies or could be organized at a governmental level.

Many tools are available for the application of S1000D. However, detailed specifications are project dependent. The basic functionalities could be: Database sharing, collaboration workflow, viewer and handling of information in XML for text, CGM for 2D illustrations, VRML or equivalent formats for 3D animations and other multimedia such as video and audio.

#### 4.3.3 Process

The process to be followed during the life cycle is illustrated below:





#### 4.4 Recommendations for improvement of S1000D

##### 4.4.1 In Service use feedback

S1000D defines a data exchange mechanism for delivery of the technical documentation and handling of user comments in a given format, but this addresses solely the feedback on technical information as such. There is currently no standard that covers an Integrated Logistics Support (ILS) approach for user feedback on the Product itself such as proposals for hardware/software modifications. It is planned to develop such a feedback specification, S5000F, during the upcoming years.

In Service Technical Data are collected from customers using project specific reporting and follow-up for customer complaints, remarks and return material. Some Computerized Maintenance Management Software (CMMS) tools are used to plan and manage scheduled and corrective maintenance. Nevertheless, no standard are known and used to perform these activities.

##### 4.4.2 Interfaces

There is no standard process and data format for the interfaces between design office databases such as Product Data Management (PDM) and CAD systems. There are strong and urgent requirements for the definition of a standard process and data interface to other logistics databases such as Logistic Support Analysis Record (LSAR) for maintenance task and maintenance planning information, or to databases developed in the frame of other standards such as S2000M Volume 1 and Volume 3 chapter 6-1 (International specification for materiel management - integrated data processing for military equipment).

However, there are international activities to specify an Integrated Logistics Support (ILS) database that utilizes the ISO 10303-239 Product Life-Cycle Support (PLCS) standard including Organisation for Advancement of Structured Information Standards (OASIS) Data Exchange Specifications (DEX) for the various interfaces. The S1000D Maintenance Task Data Task Team (MTD TT) is currently defining data interfaces between S3000L, the upcoming LSA handbook, and S1000D for procedural and maintenance planning data modules. This includes the development of AeroSpace & Defence DEX1 (Product structure) and DEX3 (Maintenance task) exchange specifications.

##### 4.4.3 Tailoring for small projects

Because of its complexity, S1000D is today mostly used for large projects. Different levels of tailoring should be defined, allowing small projects to use S1000D without a high level of investment.



#### 4.4.4 Data dictionary

The description of S1000D schema elements and attributes currently lacks detailed guidance for their purpose in many cases. A comprehensive and exhaustive data dictionary in electronic form is missing.

#### 4.4.5 Standard numbering system and Information codes

In order to ease the tailoring of the Standard numbering system (SNS) and the set of Information codes (IC) for different projects it is advised to remove the corresponding chapters from S1000D and maintain them instead in electronic form, possibly in an associated database.

#### 4.4.6 Missing information types

There is no data structure for the support of the described interactive damage assessment functions. An information centric approach for schematics data (hydraulic and pneumatic data) in addition to wiring data is also missing. Standardised definition of operator/crew performance data and modules for eg take-off, landing and in-flight.

### 5. Content of SCORM

#### 5.1 Historical background

The United States Department of Defense (DoD) and the White House Office of Science and Technology Policy (OSTP) launched the Advanced Distributed Learning Initiative (ADL) in November 1997.

The vision of the ADL Initiative is to provide access to the highest quality learning and performance aiding, which can be tailored to individual needs, delivered cost-effectively anytime and anywhere. The ADL Initiative aims to accelerate large-scale development of dynamic and cost-effective learning software and systems and to stimulate the market for these products.

As a foundation for accomplishing those goals, ADL's Sharable Content Object Reference Model (SCORM) aims to foster the creation of reusable learning content as "instructional objects" within a common technical framework for computer-based and Web-based learning.

#### 5.2 Reduction process

There are no learning standards with regard to instructional design, science of learning, learning theory. There are too many practices, theories and approaches to cast into a standard. Training-based standards revolve around mechanisms that enable interoperability, content packaging and Meta data. These standards used by the training community are mostly De Jure standards. Standards bodies such as the Institute of Electrical and Electronics Engineers (IEEE) and the Learning Technology Standards Committee (LTSC) ([www.ltsc.ieee.org](http://www.ltsc.ieee.org)) accredit De Jure standards.

In addition, different e-learning specifications and standards bodies continue to work with Advanced Distributed Learning Initiative (ADL), developing and refining



their own e-learning specifications and standards, and helping to build and improve SCORM:

- Alliance of Remote Instructional Authoring & Distribution Networks for Europe (ARIADNE): [www.ariadne-eu.org](http://www.ariadne-eu.org)
- Aviation Industry CBT Committee (AICC) ([www.aicc.org](http://www.aicc.org))
- IMS Global Learning Consortium, Inc. ([www.imsglobal.org](http://www.imsglobal.org))

In the future, ADL will transfer the maintenance and growth of SCORM to the Federation for Learning-Education-Training Systems Interoperability (LETSI) [www.letsi.org](http://www.letsi.org).

### 5.3 Recommendations for best practice

The preparation of training material and solutions under SCORM standards provides following benefits:

- Reusability: Reuse of technical S1000D data and the flexibility to incorporate instructional components in multiple applications and contexts.
- Accessibility: The ability to locate and access instructional components from one remote location and deliver them to many other locations.
- Adaptability: The ability to tailor instruction to individual and organizational needs.
- Affordability: The ability to increase efficiency and productivity by reducing the time and costs involved in delivering instruction.
- Maintainability: The ability to withstand technology evolution and changes without costly redesign, reconfiguration or recoding.
- Interoperability: The ability to take instructional components developed in one location with one set of tools or platform and use them in another location with a different set of tools or platform.

### 5.4 Recommendation for standardisation process

SCORM is silent on content and format. It lacks a content markup component that has allowed highly technical learning content to be managed in media formats like Flash and HTML, which are devoid of life cycle and configuration Meta data. The idea of creation of a S1000D profile to SCORM would fill a gap in the definition of a Learning Content Structure.

In addition, it could enable links between Documents and Job Descriptions: the growing importance of identifying the right competencies for a particular position suggests a greater relationship between employee roles and the data supporting that role. There is no standard in place that can link the definition of a job position to all the technical data, learning or otherwise, used in that position. In other words, the generation of a position "syllabus" is valuable.



## **6. Content of ASD-STE100**

### **6.1 Historical background**

ASD-STE100 is an ASD specification, developed initially for the aerospace industry, but which is now used by many other industries.

Work on the specification began in the early 1980s, further to a request from the Association of European Airlines (AEA). The Aerospace Industries Association (AIA) of America was invited to assist in this project, and the initial Specification was the result of the combined efforts of both associations. Since then, other national associations have joined the project and contribute actively to the maintenance of the Specification.

The latest release is the ASD-STE100 Issue 4 from January 2007.

### **6.2 Reduction process**

The international language of many industries and of the aerospace industry in particular, is English, and English is the language most used for writing technical documentation. However, it is often not the native language of the readers (or even of the authors) of such documentation. Many readers have knowledge of English that is limited, and are easily confused by complex sentence structures and by the number of meanings and synonyms which English words can have.

The aim of ASD Simplified Technical English is therefore to make technical texts easy to understand by all readers. To do this, it specifies a set of Writing Rules and a Dictionary of controlled general vocabulary.

The Writing Rules cover aspects of grammar and style; the Dictionary specifies the general words that can be used. These words were chosen for their simplicity and ease of recognition. In general, there is only one word for one meaning, and one part of speech for one word. In addition to the specified general vocabulary, ASD-STE100 accepts the use of company-specific technical words, provided that they fit into one of the categories listed in the Specification. Control of company-specific vocabulary is, of course, the responsibility of the company itself.

That is One of the benefits of ASD-STE100 and it is strongly linked to and embedded in the frame of technical documentation specifications.

On civil applications, since 1986, ASD-STE100 has been a requirement of the ATA specification i2200. As a result, all the major "text" manuals and Service Bulletins for commercial aircraft are written in accordance with ASD-STE100.

On many military applications, ASD-STE100 is a requirement of the S1000D specification, which is the basic specification for the end user documentation in all multinational military projects.

### **6.3 Recommendations for best practice**

Restricting vocabulary and sentence constructions is not something that comes naturally to most technical authors, especially if English is their native language. Therefore, the first recommendation is that authors should be trained in the use of



ASD-STE100, in particular so that they become aware of how uncontrolled writing can be ambiguous and difficult for readers to understand.

The second recommendation relates to company-specific technical words. It is good practice for a company to standardize its technical vocabulary, especially if a computerized authoring aid is going to be used (all the vocabulary, both ASD-STE100 and company-specific, has to be entered in dictionaries). Tools exist that can help with this task.

#### 6.4 Recommendation for standardisation process

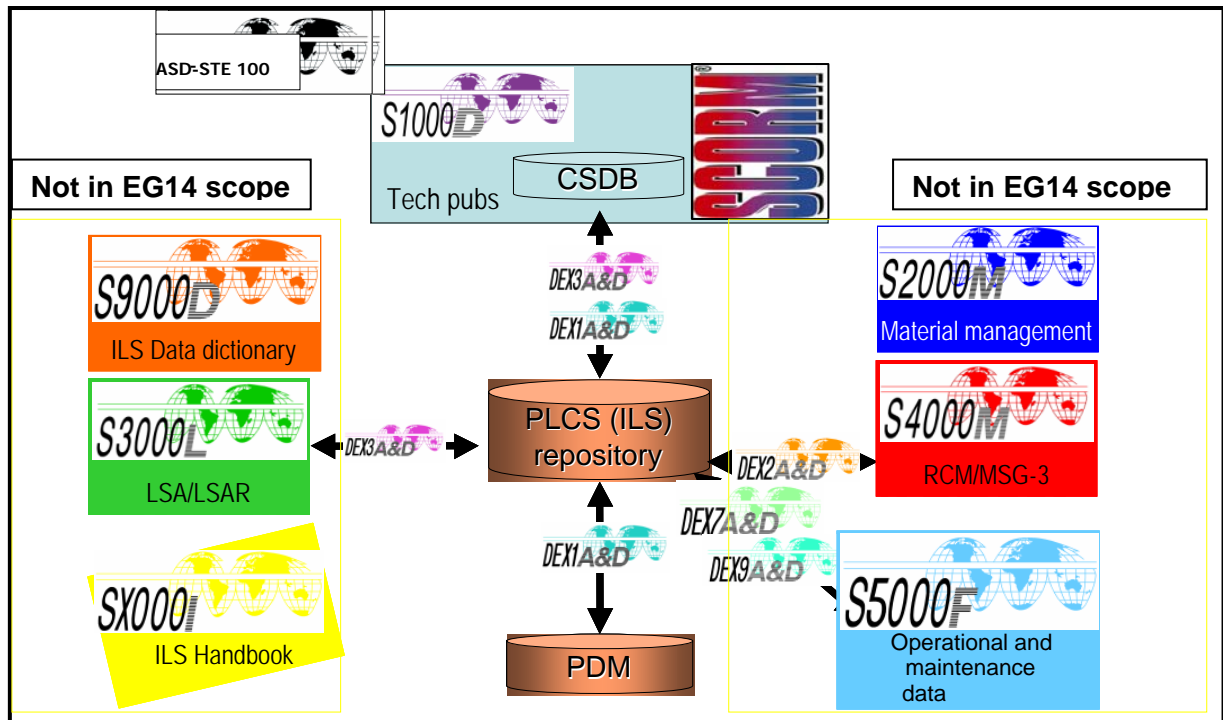
The Specification was developed and is maintained by a group of experts from various countries. The group reviews Change Forms (a template is included in the Specification for use by authors and other users), and generally endeavors to continually update and improve the Specification.

One recommendation proposed by EG14 is the definition of common terms for each type of system (air, sea, land, and missile) and support equipment. For example, three different terms are used for harnesses: harnesses, looms, bundles. A harmonization of these terms would allow interoperability and better understanding across projects.

## 7. Global conclusion

### 7.1 Integration of the standards

The selection of the best practice standards with the scope of EG14 Life Cycle Technical Documentation was also based on the “potential or already performed integration of the different standards”. The figure below shows this integration.



**General DEX definition:** A Data Exchange Set (DEX) is a subset of the overall PLCS information model. DEXs support a specific business process or purpose.

**PLCS DEX1 (D001) - Product Breakdown for Support:** Exchange of the relationship of the parts assembly structure, derived from a PDM system, to an ILS structure used to manage support, and the links to relevant documents

**DEX1 A&D:** An Aerospace and Defence business specific DEX for Product Breakdown for Support. It must contain all product related data required for the production of maintenance procedure data modules in S1000D and its related IETP. Essential is to cover also the data required for managing applicability in S1000D, and product related Service Bulletins.

**PLCS DEX3 (D003) - Task Set:** Exchange of a set of task descriptions, to support a work plan, or for use in multiple support solution definitions.

**DEX3 A&D:** An Aerospace and Defence business specific DEX for Task Specification. It must contain all task related data required for the production of maintenance procedure and maintenance planning data modules in S1000D.



## 7.2 Follow-up of standards development

EG14 highly recommends maintaining this report as part of the EHDP in order to keep it up-to-date and synchronized with future developments of the selected best practice standards for the life-cycle of technical documentation.