S1000D – International Specification for Technical Publications

What is S1000D?

S1000D is an international specification for the production of technical publications for any civil or military project. While the title restricts its use to technical publications, it has been found through application that the principles of the specification can be applied to non-technical publications.

S1000D covers the planning and management, production, exchange, distribution and use of technical documentation that support the life cycle of any civil or military project.

The concept of this specification was originated in the aerospace field within AeroSpace and Defence Industries Association of Europe (ASD) in early 1980s. At that time, most civil aviation projects were being documented in accordance with the ATA 100 specification. The multiplicity of existing military procedures and the continual introduction of new procedures were producing ever greater problems and increased costs for industry and its military customers. To ease the problems encountered ASD, the Aerospace Industries Association of America (AIA), and the Air Transport Association of America (ATA) and their customers formed the S1000D Council and the S1000D Steering Committee to establish standards for documentation agreed by the participating parties . S1000D Council is responsible for:

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- Coordinating the development of the specification.
- Administrative duties.
- Preparing for any Steering Committee meetings

S1000D is a specification which means that it is a detailed and exact statement of particulars. The specification adopts International Standards Organization (ISO), Continuous Acquisition and Life-cycle Support (CALS) and World Wide Web Consortium (W3C) standard. This means that it can be implemented on different and often disparate systems. Neutrality, added to the concept of modularization, makes the specification applicable to the wider international community. S1000D

delivers well formed, structured, **reusable standart** Electronic Technical Publication or Manual (IETP/IETM) having all the benefits written in this document
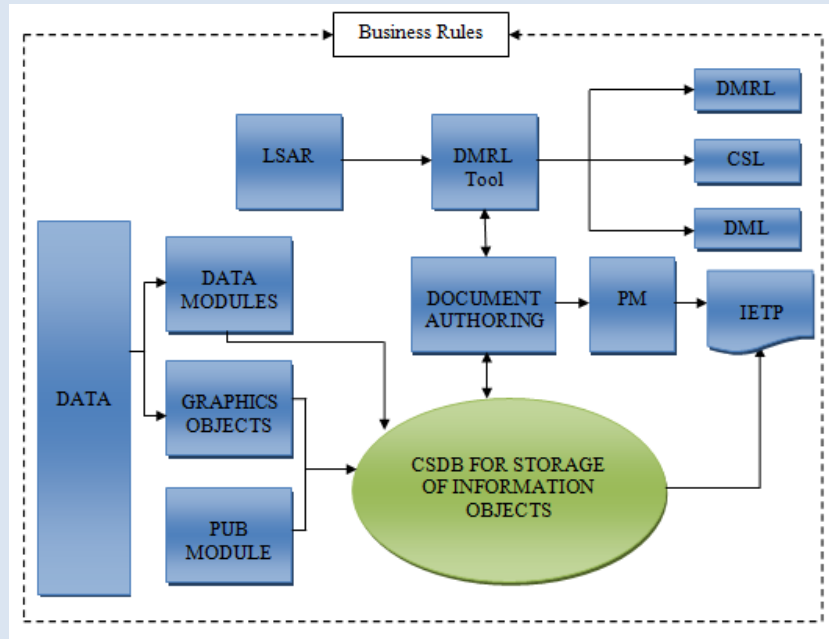
Structure Of S1000D

Diagram 1

The way an S1000D publication is "constructed" is by using separate modules to form the building blocks of the final publication. Diagram 1 shows the S1000D modules and interactions of them.

The term for these modules or building blocks is "Data Modules" . It is the smallest self-contained information unit within a technical publication. Data modules control and contain text, illustrations, multimedia, and data. They have defined neutral structures based on international standards. Illustrations, multimedia and other data are not directly stored inside the data modules, but referenced. Data Modules can be used in many different locations in a range of publications. You can use them in operations manuals and then reuse the same content in the maintenance publications.

Each Data Module normally contains just a small part of the overall required information as opposed to one large document containing all the information. By breaking the data down into small chunks, the ability to reuse data is significantly increased.

All data modules have a basic structure, which is comprised of two sections:

- Identification And Status Section
- Content Section

The identification and status section is the first part of a data module. It contains identification data (eg data module code, title, issue number, issue date, language) and status data (eg security classification, responsible partner company and originator, applicability, technical standard, QA (Quality Assurance) status, skill, reason for update).

Whatever authoring tool you use, all data modules are industry standart XML/SGML documents.And for a project to produce IETP or IETM these documents have to be published and read by customers and authors. So a Common Source Data Base(CSDB) is formed for these data modules and their interactions such as links, references forms illustrations. Information management is comprised of the addressing, storage and handling of information objects such as data modules, illustrations and publications that enables the production and use of common technical publications within a project. The major objectives for a CSDB are:

- Support the technical publication process
- Support the controlled authoring
- Support the QA process
- Support the data exchange with partners, suppliers and customers
- Support the delivery of technical publications on various media independent from the source storage format

A CSDB can contain an unlimited number of Data Modules for any number of separate projects – both past and present. This single repository of information facilitates data mining and ensures that even with past projects, only the most up-to-date content is available for reuse.

Producing cycle of a S1000D Project

This specification has been produced to cater for many different types of products. Therefore, to make it suitable for a given project or organization, some aspects of tailoring will be required. It is recommended that the tailored version of this specification is referred to in the project's contractual documentation. This tailoring must not affect the XML Schemas or its basic philosophies.

Project business rules must be agreed between parties to document the details of the agreed tailoring of this specification. These rules must cover the requirements for optional elements, their population from specific data sources, and the use of specific values.

Business rules are decisions that are made by a project or an organization on how to implement S1000D. Business rules cover all aspects of S1000D and are not limited to authoring or illustrating.

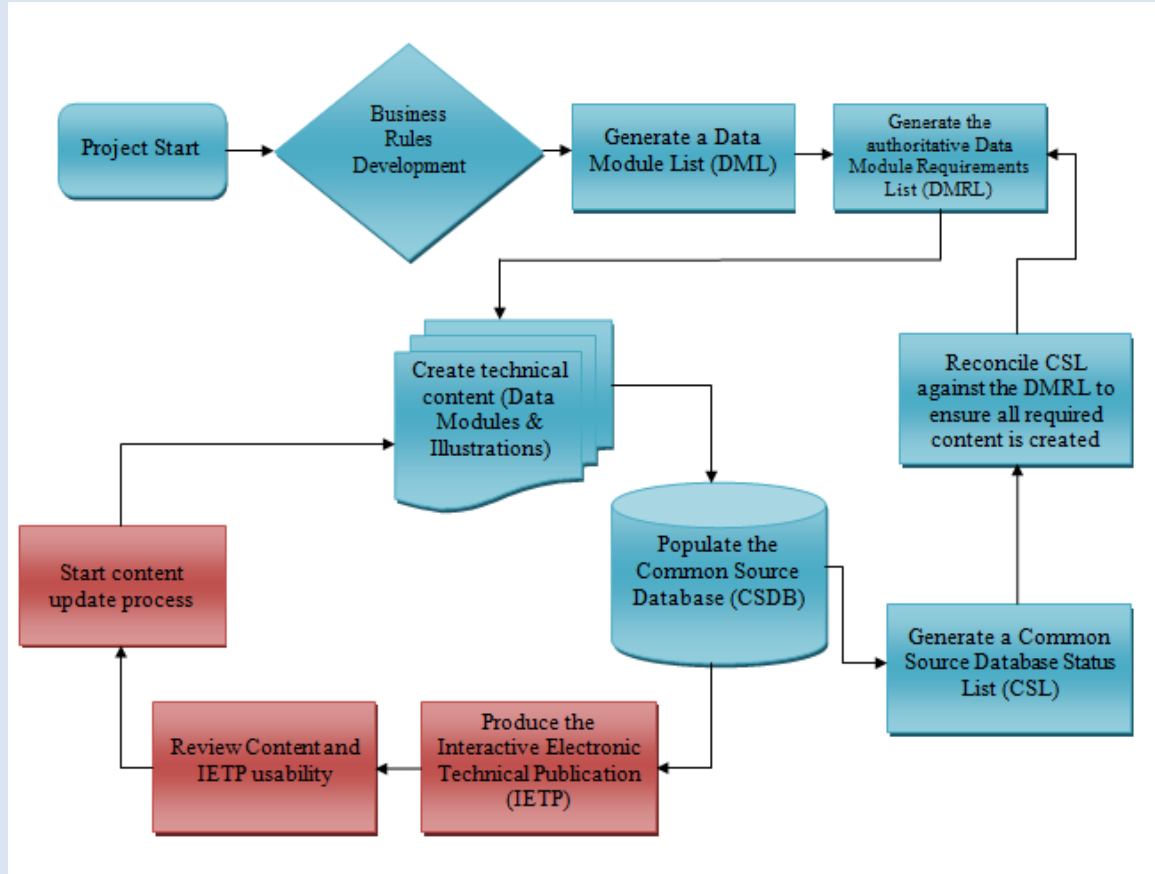As seen on Diagram-2 Business Rules are the starting point of a S1000D project.

Diagram-2

The Diagram-2 provides details on the content creation cycle.

Benefits of S1000D

There are many benefits of integrating S1000D into an organizations documentation process. These benefits can be summarized into the following major points:

- **Share Information**: The primary reasons to use S1000D are to have the ability to produce content that can be integrated into other vendors systems and projects and enhance technical information exchange among the many defense and commercial stakeholders.

  This data exchange will enable organizations to achieve the key goal of international interoperability and information reuse between civil and defense related projects.

- **Use Data More Effectively**: With more organizations authoring to the guidelines set out in S1000D, data mining will be a natural flow on benefit. Data mining allows relationships between content in different stores of data to be discovered and exploited.

  Without data mining, content that is common to different items is not captured.

  With data mining enabled however common information can be identified. By identifying this information across database, the documentation process can be streamlined because the same information can be reused.

- **Save Time**: The overall time needed to create new documents will decrease because organizations can reuse their content in other S1000D documents. This is particularly desirable for organizations that may produce almost identical products with minor physical or mechanical differences.

- **Reduce Errors**: Reusing data many times has a number of benefits but one that may not be as obvious is the potential reduction in errors. If you are referencing a certain document in a number of different locations within a publication and you discover that the document contains errors, there is no need to open every document that may contain this particular piece of information. Because the information is reused, the source document that contains the error can be easily corrected. Then the other documents that contained referenced information from the originally erroneous document can be updated automatically with the new information.

- **Save Money**: The costs for producing documentation will decrease since documentation will be written in a structured format (i.e. SGML or XML). This will result in a more streamlined publishing process, eliminating the need to have multiple computer programs and staff skill sets for generating the technical documentation.

  Using SGML and XML to author content for publications offers many cost-saving benefits for organizations. Some of the major benefits are:
  - The focus is taken off format and back to what's important => content.
  - Authors and writers will return to doing what they do best, namely creating and maintaining accurate information in their area of expertise.
  - The reuse of data will mean less redundancy and less time spent recreating standard data.

- **Increase Usability of Documents**: S1000D recommends that the use of Simplified English in technical documents should be incorporated into technical publications. By encouraging the use of Simplified English in an organizations writing style, the amount of ambiguity in technical publications will be substantially reduced. Ambiguity is a dangerous thing to have in technical documentation because it puts the onus on the reader to interpret instructions and make an educated guess in some cases.

- **<u>Use The Latest Technology In Your Publications</u>**: The S1000D specification is responsive to emerging technology. S1000D will never become irrelevant from a technology standpoint.

As more organizations and vendors become aware of S1000D and the benefits the specification can offer, the adoption of S1000D will become increasingly important.

Acronyms:

CSDB :   Common Source DataBase

CSL   :   CSDB Status List

DMRL :   Data Management Requirement List

DML   :   Data Management List

IETM :   Interactive Electronic Technical Manual

IETP   :   Interactive Electronic Technical Publications

LSAR :   Logistics Support Analysis Record

PM   :   Publication Module

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