Briefing on the Assessment of Documentation Standards

Researched and Presented by:
The Technical Advisory Board Standards Forum for Education

August 9, 2005
Review of Documentation Standards

Overview

On May 12, 2005, the PESC Steering Committee formally requested that the Technical Advisory Board (TAB) “review the most common documentation standards and provide strengths and weaknesses of each” as input toward determining if a documentation standard should be set for PESC. This document provides that review and assessment.

Approach

The request to review “common documentation standards” was a bit broad. As a result, the TAB decided to review and assess the formal and informal documentation standards of organizations similar to PESC as opposed to documentation standards in general. Specifically, the following organizations were considered:

- Health Level 7 (HL7);
- the Mortgage Industry Standards Maintenance Organization (MISMO);
- Human Resources XML (HR-XML);
- the IMS Global Learning Consortium (IMS);
- the OpenEAI Project.

To date standards of all five organizations have been reviewed.

Constraints

While standards documents and other publications are readily available from each of these organizations, published standards for documentation, if they exist, do not appear to be publicly available. Consequently the recommendations and reviews that follow are based solely on documentation that is available at the web site of each organization. This includes published specifications* as well as information about policies, procedures, and committee responsibilities.

These “end product” artifacts provide some insight into the documentation standards established by these organizations; however, they do not give a complete picture of the submission and review processes or any associated documentation that may be required throughout. This document will be updated with reviews of these work products when and if they become accessible.

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* Published HR-XML documents are referred to interchangeably as specifications and recommendations. The former is used on the hr-xml.org website and may refer solely to the XML Schema portion of publications. The latter term, recommendation, is used in the documents themselves, which are designated either “Recommendation” or “Candidate Recommendation”.

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Assessment and Recommendations

The review of standards organizations’ documentation practices reveals a number of commonalities:

- **Process Orientation** – published documentation normally focuses on one or more business processes that the standard is meant to address;

- **Logical Data Dictionary** – documentation includes a description of the data that is required for the business process, irrespective of implementation;

- **XML Implementation** – documentation includes a schema or schemas, annotated or not, that implements the logical data dictionary in the standard(s) embraced by the organization;

- **Implementation Guidance** – sample XML files, implementation considerations, etc. for organizations seeking to implement the established standard are also commonly included.

HL7, the HR-XML Consortium, and the IMS Global Learning Consortium, whether informally or by design, have established documentation standards that provide their specifications a striking degree of consistency and readability. The business process orientation that is employed by each focuses the reader on the domain needs and provides justification for the XML structures introduced. The fact that these organizations have all included these facets speaks to their importance and universality. Likewise, PESC documentation standards should incorporate such information.

Given PESC’s mission “to lead the establishment and adoption of data exchange standards in education”, the Technical Advisory Board believes that the adoption of common requirements for documentation – especially that published by PESC – would be invaluable. By governing the content and format of its own publications, PESC can gain credibility as a standards-setting body, bring a modicum of consistency to the disparate sub-domains that fall within its higher education scope, and encourage reuse among its workgroups.

Accordingly, the TAB recommends that:

1. Documentation standards be established for **submissions** that are made by workgroups for ratification by the PESC membership;

2. **Submissions** should include at a minimum
   - an explanation of the issues that exist within the target domain;
   - the business justification for the creation of the schema set forth in the submission;
   - constraints, if any, that bound the application of the schema;
   - an explanation of the business process(es) that the specification is intended to address (may include use case descriptions, diagrams, etc.).

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o roles and responsibilities of the trading partners within the context of the supported business process(es);

o XML Schema documentation, including diagrams and explanations of elements and complex types defined in the schema or included or imported from other schema files;

o issues – such as data privacy, id handling, timestamps, and other assumptions and dependencies – that need to be considered when implementing the schema or working with trading partners;

3. Documentation standards be established for **published standards**;

4. **Published specifications** should include at a minimum

   o the information included for submissions (listed above);

   o a standard set of information about the document – such as, title, file name, previous version, editors, contributors, copyright statement, abstract, and document status;

   o examples of successful and unsuccessful transactions including both sample data and explanatory text;

   o definitions of business and technical terms that are used in the specification;

   o relevant appendices – such as document version history, related documents, etc.

5. A working group, committee, or team be established to review, augment, and codify the recommendations set forth herein and to serve in a custodial, advisory, and watchdog capacity to ensure that the standards are current, understood, and adhered to.

These recommendations are based predominantly on the documentation standards of HR-XML. The TAB believes that, of the organizations whose documentation was reviewed, the HR-XML consortium most closely aligns with PESC in terms of organization, practices, XML standards and domain.

The remainder of this document provides a more thorough account of the assessment of standards organizations’ publications and practices that was conducted by the Technical Advisory Board.
Detailed Assessments of Standards Organizations’ Publications and Practices

Health Level Seven (HL7)

HL7 is, by far, the most comprehensive of the standards organizations in terms of providing a framework for XML development and documentation.

HL7 is one of several American National Standards Institute (ANSI)-accredited Standards Developing Organizations (SDOs) operating in the healthcare arena. Its mission is to develop specifications for interoperability between healthcare information systems.

As an ANSI-accredited SDO, HL7 adheres to a strict and well-defined set of operating procedures and standards. The “Level Seven” component of its name – which refers to the highest level of the ISO communications model for Open Systems Interconnection (OSI) – provides insight into the level of detail to which this organization adheres.

In evidence of this thoroughness, HL7 has 2 Technical Committees (at a minimum) which address documentation standards:

- the Modeling and Methodology Committee, which is responsible for creating and maintaining the HL7 message development methodology and facilitating its use, and maintaining a Reference Model that reflects the shared models that are developed and used by the HL7 Functional Committees;

- the Publishing Committee, which supports the HL7 mission to create and promote its standards by recommending the methodology, format and tools for publishing the HL7 standards according to the requirements of the HL7 board, ANSI accreditation and membership needs.

The former addresses standards for the introduction and development of specifications, while the latter addresses their formal publication.

HL7 appears to document entire standards. The following is their definition of an “Informative Document” as taken from the HL7 Policies and Procedures manual:

“An “Informative Document” is a work product of an HL7 task force, TC or SIG (the sponsoring committee) that is not normative, but nonetheless is intended for general publication, explains or supports the structure of the standard, or provides detailed recommendations about interpreting or implementing the standards. The Board of Directors must concur with the issuance of an informative document. Addendum A defines the ballot process. Electronic balloting as described in Addendum B is applicable to informative documents.”

HL7 does have a naming convention for documents. It sounds like the naming convention isn’t that rigid. However, the HL7 Executive Committee must approve new document names, as well as changes to existing document names. The actual text from the Policies and Procedures manual is as follows:
**POL 14.01.01 Publication Naming Convention**


The naming convention for Version 3 normative documents shall be: HL7 Version 3 Standard: [Name of Document], Release #; Date [month and year balloted]

**Normative and Informative Documents**

The TC or SIG proposing a new document title, or a change to an existing document title, shall obtain approval from the Executive Committee prior to the document moving to first ballot. In order to achieve a larger consensus group, the Executive Committee may refer specific matters to the complete Board.

**Other Documents**

The TC or SIG proposing a new document title or a change to an existing document title, for other documents published as official HL7 documents with the HL7 imprimatur shall obtain approval from the Executive Committee as early as possible, preferably before the document is circulated widely for review.

**Documents in Progress**

The Board of Directors may require a change to the title of documents already in progress, in ballot, or in technical editing after ballot for conformance with an established convention.

This text outlines a formal procedure for moving “Informative Documents” (standards documentation) to the position of being voted on by the full membership. Items 1 through 6 provide some insight on procedures PESC could possibly use to manage the creation and acceptance of standards documentation in a situation where there is no standard type of documentation. Changes would be required to match the PESC structure, of course.

**POL 15.01.02 Submission of Informative Documents to Full Membership Ballot**

The intent, focus, and/or content of an Informative Document, representing the consensus of the issuing Technical Committee (TC), may be incorporated into a full membership ballot versus submitted for technical committee ballot by the TC chair(s) with the approval of the TC and the concurrence of the Technical Chair. In lieu of the submission requirements stipulated in Bylaws Article 15.01.01, the TC chair(s) shall present the Technical Chair with documentation including: (1) the results of the Informative Document ballot indicating the publication date, which must be at least six months prior to this request; (2) a log of any post publication comments and subsequent resolution, if such occurred; and (3) the rationale for moving the contents to normative ballot. Subsequent to the successful completion of a full membership ballot, the TC chair(s) will issue a statement through Headquarters HL7 withdrawing the Informative Document with reference to the appropriate section of the accredited standard.

In summary, HL7 has an established framework for addressing documentation standards. There are 2 committees focused on documentation – one focused on maintaining conformity among work groups and one focused on external publication of standards; there are established guidelines for what should be included in work group work products; there is an established review process for work products; and there is an established naming convention for documents as well as a process for approving document names.

**MISMO**

MISMO is the Mortgage Industry Standards Maintenance Organization. It's mission “is to develop, promote, and maintain voluntary electronic commerce standards for the
mortgage industry.” Established in 1999 by the Mortgage Bankers Association, MISMO encourages participation from all sectors of the industry.

MISMO publishes an “Engineering Guidelines” document that addresses their XML architecture and guidelines as well as process-specific specifications and implementation guides. Specifications normally consist of a logical data dictionary and annotated schema (as a DTD). While these follow a similar format, no formal description of a standard for documentation was found.

MISMO also has published quite a few documents surrounding their eMortgage process, which builds on the existing MISMO data standards. These supplemental documents address various facets of the eMortgage process, like additional data requirements, data conversions, etc. Each of these supplemental documents is relatively short and may eventually be combined in a larger document.

As with HL7, most MISMO publications focus on a standard as a whole – “standard” meaning a defined set of data elements for a particular data exchange or transaction.

The following is an excerpt from their Policies and Procedures manual

"When a majority of a Work Group agrees to a proposal or new transaction, it shall submit a detailed description of the proposal or transaction for appropriate review, to the appropriate MISMO XML Architecture Work Group. Proposals will then be reviewed by the Governance Committee or the Commercial Steering Committee, as applicable."

Beyond this, no mention of any documentation requirements was found. They do, however, have a document that describes the entire process for which a standard is used. The format is relatively similar to what NHELP has put together for the CommonRecord:CommonLine process and includes explanations of:

? What XML is;
? What a DTD is;
? Instance document structure, including general process flow and how flow is affected by the state of the appropriate data elements;
? The relationships between the data elements used;
? The DTD;
? A sample instance document;
? A logical data dictionary (logical in that it explains the use of each data item within the standard/transaction, which is somewhat similar to the intent of the data element explanations provided earlier, but is definitely more appropriate for a business user as opposed to a technical user);
? References;
? Glossary.
In summary, while less formal than HL7, MISMO implements some similar practices. Standards are process-oriented; there are some general guidelines regarding their content; and they are reviewed for technical/architectural compliance and submitted for a review by the governance committee.

**IMS Global Learning Consortium**

IMS Global Learning Consortium (IMS) develops and promotes the adoption of open technical specifications for interoperable learning technology. Several IMS specifications have become worldwide de facto standards for delivering learning products and services.

Specifications are the core deliverable of IMS. Draft specification documents are listed on the IMS web site and are made available for public access once approved by the IMS Technical Board. Draft specifications are in the process of final refinements and/or interoperability trials, and are only available during the draft period.

Specifications normally include a base set of documentation:

- **Information Model** – provides the basis for the development of the XML Binding Specification and Best Practice & Implementation Guide documents. Includes a description of use cases involving the systems and sub-systems that are to be supported by this specification; the underlying information model of the specification; and a detailed description of the data objects that are the subject of the specification, including their elements, sub-elements and attributes.

- **XML Binding Specification** – provides the basis for the development of the Best Practice and Implementation Guide. Includes a brief description of the key basics of XML, a detailed description of the realization of the Information Model in XML; and examples of the defined XML structures.

- **Best Practice Guide** – contains “the accumulated wisdom on the best practices for using the . . . specification. Covers the relationship of the specification to other IMS and external specifications; a brief summary of the information model; examples of basic XML instances that are supported by the specification; examples of advanced XML instances that are supported by the specification; tips on how the distributed enterprise systems can make best usage of the specification; and other specification-specific topics.

Since its inception, IMS has released a number of interoperability specifications. While these have begun to converge with other non-IMS activities, there has been a recognition by the IMS that its current set of activities and processes need to evolve to tackle new technical issues. As a result, IMS has produced an Abstract Framework to guide its future direction.

The IMS Abstract Framework (IAF) will enable the IMS to describe the context within which it will continue to develop its eLearning technology specifications. This will be achieved by defining the set of services for which IMS may or may not produce interoperability specifications.

The IAF is documented in a number of closely related, “living” documents. One of these – The IMS Specification Development Methods and Best Practices document – identifies
the methods and best practices that must be used when developing and documenting IMS specifications. Unfortunately, this document was not available for review.

IMS is also in the process of moving more of its specifications to XML Schema and web services. Toward this end, the organization has published a General Web Services Base Profile.

The General Web Service Base Profile is derived from the Web Services Interoperability Base Profile v1.1. The IMS recommendations for the General Web Service Base Profile (Core) are to adopt:

- XML Schema V1.0 - all data models in IMS specifications will be defined in terms of XML Schema (XSD)
- HTTPv1.1 - the Hypertext Transfer Protocol (HTTP) is the mandated protocol binding for the SOAP messages
- SOAP V1.1 - SOAP is the mandated messaging protocol
- WSDL V1.1 - an instance of the service is defined using Web Services Description Language (WSDL) v1.1.

**OpenEAI**

The OpenEAI Project, guided by the OpenEAI Software Foundation, is an open source initiative focused on enterprise application integration. The Project presents findings in the form of the OpenEAI methodology and OpenEAI software for implementing integrations. The Project is comprised of six distinct, but closely-related departments that address OpenEAI Methodology, Application Foundation APIs, Message Object API, Message Definitions, Reference Implementations, and Deployment and Administration. In terms of documentation standards, the OpenEAI Methodology and Message Definition departments provide the most relevant examples for review.

The OpenEAI Methodology department has published a Methodology Document that provides a 16 step process for analyzing and implementing OpenEAI-based integrations. The document includes a template that can be used throughout the OpenEAI integration process. The template is also available as a standalone document that is separate and distinct from the OpenEAI methodology and can be used as the basis for developing an integration process.

The methodology can be grouped loosely into 3 main phases: analysis, project initiation, and construction & testing. During the analysis phase, existing integrations are described and analyzed to determine the data that needs to be exchanged. In addition, the flow of data between applications is defined.

One of the strengths of the OpenEAI approach is its focus on reuse as well as its enterprise messaging perspective. During the analysis phase, existing and new enterprise XML definitions required for the integration are identified. Messages associated with these structures are also defined and related to their respective application.
The information that is gleaned during the analysis phase is similar to that required by other standards organizations for documentation. The other phases of the OpenEAI process are of lesser relevance to the assessment and are, therefore, not covered here.

**HR-XML**

Published HR-XML recommendations (see note below) follow a fairly standard format with some slight variability of content. Whether or not this is mandated or just a best practice is currently unclear.

Content that is included in all specifications includes:

- Document Information – title, file name, previous version, editors, contributors, copyright statement, abstract, and document status;
- Domain Issues – needs that exist within the target domain;
- Business Reasons – the business justification for the creation of the schema;
- Scope – constraints that bound the application of the schema;
- Supported Business Processes – an explanation of the business process(es) which the specification is intended to address (may include use case descriptions, diagrams, etc.);
- Trading Partner Roles – roles and responsibilities of the trading partners within the context of the supported business process(es);
- Schema Design – XML Schema documentation, including diagrams and explanations of elements and complex types defined in the schema or included from other schema files (HR-XML employs a simple namespace structure);
- Implementation Considerations – issues – such as data privacy, id handling, timestamps, and other assumptions and dependencies – that need to be considered when implementing the schema or working with trading partners;
- Reference Examples (Appendix) – examples of successful and unsuccessful transactions including both sample data and explanatory text;
- Other Appendices – document version history, related documents

In addition to the standard content, many of the specifications include content that recurs in other specifications. Examples of this content includes:

- Terminology – definitions of business and technical terms that are used in the specification;