

The Standards Landscape in Education

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The Standards Conversation

The French Philosopher Voltaire stated, *“If you wish to converse with me, define your terms.”* Never has this truism been more relevant and needed than in the current climate of data standards discussion.

In numerous contexts and conversations the word standard is thrown around as a matter of common knowledge and understanding. This assumption, that all those engaged in the dialogue share a familiar definition of exactly what constitutes a standard, becomes even more complex as a particular product, organization or theory is attached.

According to Dictionary.com a standard is,

“something considered by an authority or by general consent as a basis of comparison; an approved model.”

For the purposes of this document, we will consider a standard to follow this definition, a major point being authority and consent. While anyone can claim something to be a standard, there must be appropriate levels of authority and general consensus among stakeholders.

How to Approach This “Problem”

Local, state and federal expenditures on managing the world of educational data has never been greater. Along with this great outflow of taxpayers' dollars is the expectation that these data systems will be able to provide greater insight to the effectiveness of educational policies and programs as well as depict the progress of students and teachers.

On several occasions I and others have attempted to create an overview of the standards landscape and differentiate the various standards from one another. To this point the outputs of those efforts have been considered unsatisfactory. As I thought through how to approach this one more time I started by listing all the standards I have heard people bring up to me or mention in conferences as having some bearing on the work that we are doing. There are many other standards of course, in many different fields and verticals.

I started a list of standards listing all the ones people mention or have mentioned and putting them into like categories. I only listed those that I have heard people compare to what the Common Data Standards (henceforth "CEDS") is doing.

As I did that I came upon an insight. Although authors of such comparisons (including myself) keep being pushed to simplify and accused of making it too difficult to understand I now see the opposite is the problem. It is a complicated issue. There are lots of fine distinctions and overlaps and semantic collisions. To oversimplify this landscape is to distort it and to misinform. Once you see how big the list is and even how big the category list is it is no surprise people are confused by this. At first I was thinking to myself that this is way too many and way too complicated but then I had the insight that the avoidance of that complexity is what is having this issue surface again and again. I think we have to drive up the complexity as accurately and still succinctly as possible and then let the communication folks guide us in driving that accuracy down into simple digestible chunks.

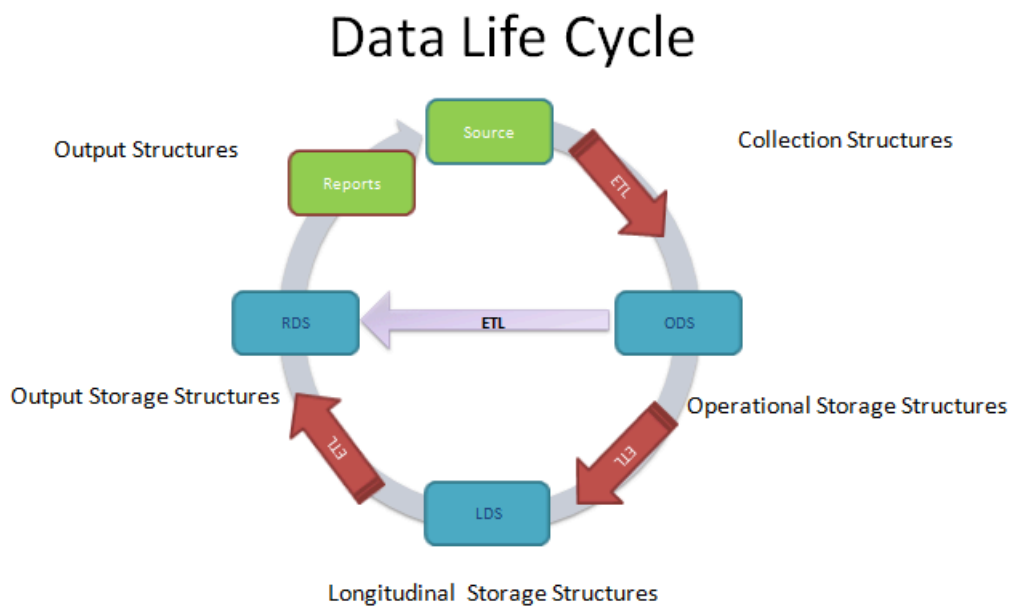
So that is the first proposition of this essay: **It is NOT simple.** Adventurers hiking into this dangerous and maze-like jungle need to know that and be prepared to think of it as a complex problem that can't be solved with a sound bite or two. If we treat this subject at

an appropriate level of complexity we may eventually come to sufficient insight to be able to generate concise and accurate answer to particular questions.

That leads to my second proposition for this essay: **Ask the right questions and build on the ones you asked before.**

This document will walk through each type of standard (not a standardized list or even one agreed upon by any group but one I logically derived out of my experience and conversations with people) and try to point out some of the differentiators and some examples of that type.

The Data Life Cycle



The Data Life Cycle represents the entire life cycle of educational data through systems. It is important to realize that all these structures and ETLs have standards that are relevant to them. It adds to the confusion about standards if you don't specify where in the lifecycle of some data you are- thus identifying which standards are appropriate.

The List of Standards

Here is the starting list with eleven (11) initial proposed categorizations:

Data Standard

Function: Describe the required content and format in which particular types of data are to be represented. A data standard may include a specific taxonomy, names, definitions, descriptions and code sets.

- [NCES](#) - National Center for Educational Statistics (henceforth "NCES") handbooks
- [CEDS](#) - Common Data Standard

- [SIF](#) - Schools/Systems Interoperability Framework (henceforth "SIF") data model
- [PESC](#) - Postsecondary Electronic Standards Council (henceforth "PESC") schemas
- [IMS GLC Enterprise specification](#)
- [Common Data Set](#)

Interoperability Standard

Function: Allow conforming or certified applications from multiple vendors to interoperate, ideally “out of the box”. This means that the transport used to convey the data must be specified as well as the format of the data actually being exchanged. Any Interoperability Standard can therefore be thought of as a combination of a Data Standard and one or more Transport standards.

- [SIF](#) – SIF Infrastructure
- [PESC](#) - PESC service schemas
- [NIEM](#) - National Information Exchange Model
- LETSI – Learning Education Training Systems Interoperability

Transport Standard

Function: Defines the “messaging infrastructure” used to convey messages sent between conforming applications, although it does not address the contents of such messages. The functionality provided to conformant applications by standards in this group can include automatic partner discovery, data security (encryption, authentication and authorization), guaranteed message delivery, content based routing and support for event publish and subscribe (one to many) connections.

- [HTTP](#) - Hypertext Transport Protocol
- [HTTPS](#) - Hypertext Transport Protocol Secure
- [SOAP](#) - Simple Object Access Protocol
- [EDI](#) - Electronic Data Interchange
- [FTP](#) - File Transfer Protocol
- [SMTP](#) - Simple Mail Transfer Protocol
- [IMAP](#) - Internet Message Access Protocol

Content Standard

Function: Define how content (usually multimedia) is packaged, described and accessed and is a type of Data Standard.

- [SCORM](#) - Sharable Content Object Reference Model
- IMS GLC [Common Cartridge](#)
- [SIF](#) – SIF content objects and containers
- [ISO LIP](#) - International Organization for Standards Learner Information Package
- IMS GLC [ePortfolio](#)

Academic Standard

Function: Defines the skills and knowledge that a student is expected to obtain around a specific subject and/or grade level.

- [State Specific Academic Standards](#)

- [Common Core](#) Academic Standards

Technical Standard

Function: Describes a class of data objects (entities, characters and character data) and partially describes the behavior of computer programs which process them. Focused upon message infrastructure or generic data types (ex: Country codes) and not vertical industry-specific content. The standards may be normative dependencies from either or both Data or Interoperability Standard.

- [XML](#) – Extensible Markup Language

Compliance Standards

Function: “Guidance” for U.S. Department of Education (ED) data file descriptions designed to collect and place state-reported K through higher education performance data at the center of policy, management and budget decisions. These centralized data repositories are populated by state education agencies (SEAs), higher education agencies (IHE), local education agencies (LEAs) and schools.

- [EDFacts](#)
- [IPEDS](#) – Integrated Postsecondary Education Data System
- [ARRA](#) – American Recovery and Reinvestment Act (Metrics)
- [FAFSA](#) – Free Application for Federal Student Aid

Cataloging Standards

Function: Rules defined to allow for consistent cataloging of various materials across several persons of a cataloging team and across time. Users can use them to clarify how to find an entry and how to interpret the data in an entry. Cataloging rules prescribe which information from a bibliographic item is included in the entry; how this information is presented on a catalog card or in a cataloging record; how the entries should be sorted in the catalog

- [GEM](#) – Gateway of Educational Materials
- [MARC](#) - Machine Readable Cataloging
- [DDC](#) - Dewey Decimal Classification

Metadata Standards

Function: Specifications/standards established in support of educational resource descriptions.

- [IEEE LOM](#)
- [DCMI](#) Specifications – Dublin Core Metadata Initiative
- [SIF](#) - SIF_Metadata

Federation/Connection Standard

Function: Used to ensure interoperability with respect to certain “aspects” of an application’s interface. One area addressed by the standards in this group is “trust”. If conformance to a standard means a remote client can successfully request and receive a service, additional conformance to a Federated / Connection standard could allow the

service to determine who that client represents and whether or not that entity is entitled (trusted) to receive such a service.

- [UDDI](#) – Universal Description Discovery and Integration
- [Liberty Alliance](#)
- [SAML](#)
- [OSID](#)
- [edUnify](#)

Standards Body/Organization

Function: Entity whose primary activities are developing, coordinating, promulgating, revising, amending, reissuing, interpreting, or otherwise maintaining standards that address the interests of a wide base of users outside the standards developing organization.

- [ANSI](#) - American National Standards Institute
- [CEDS](#) – Common Data Standards Initiative
- [IEEE](#) - Institute of Electrical and Electronics Engineers
- [IETF](#) – Internet Engineering Task Force
- [IMS](#) – IMS Global Learning Consortium
- [ISO](#) – International Organization for Standards
- [NCES](#) – National Center for Educational Statistics Forum
- [OASIS](#) - Organization for the Advancement of Structured Information Standards
- [PESC](#) – Postsecondary Electronic Standards Council
- [SIF](#) – Schools/Systems Interoperability Framework
- [W3C](#) – World Wide Web Consortium
- [DCMI](#) – Dublin Core Metadata Initiative

Appendix A: Standards Descriptions

ANSI – American National Standards Institute

Standards Group(s): Standards Body/Organization

URL: <http://www.ansi.org/>

Standards URL: <http://webstore.ansi.org/>

About: As the voice of the U.S. standards and conformity assessment system, the American National Standards Institute (ANSI) empowers its members and constituents to strengthen the U.S. marketplace position in the global economy while helping to assure the safety and health of consumers and the protection of the environment.

The Institute oversees the creation, promulgation and use of thousands of norms and guidelines that directly impact businesses in nearly every sector: from acoustical devices to construction equipment, from dairy and livestock production to energy distribution, and many more. ANSI is also actively engaged in accrediting programs that assess conformance to standards – including globally-recognized cross-sector programs such as the ISO 9000 (quality) and ISO 14000 (environmental) management systems.

ARRA – American Recovery and Reinvestment Act (Metrics)

Standards Group(s): Compliance Standard

URL: <http://www.recovery.gov/>

Standards URL:

About: On Feb. 13, 2009, Congress passed the American Recovery and Reinvestment Act of 2009 at the urging of President Obama, who signed it into law four days later. A direct response to the economic crisis, the Recovery Act has three immediate goals:

Create new jobs and save existing ones

Spur economic activity and invest in long-term growth

Foster unprecedented levels of accountability and transparency in government spending

IMS GLC Common Cartridge

Standards Group(s): Content Standards

URL: <http://www.imsglobal.org/>

Standards URL: <http://www.imsglobal.org/cc/index.html>

About: The Common Cartridge defines an open format for the distribution of rich, web-based content. It is designed to ensure the correct installation and operation of content across any Common Cartridge conformant platforms and tools.

Common Core Academic Standards

Standards Group(s): Academic Standards

URL: <http://www.corestandards.org/>

Standards URL: <http://www.corestandards.org/the-standards>

About: The Common Core State Standards Initiative is a state-led effort coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO). The standards were developed in collaboration with teachers, school administrators, and experts, to provide a clear and consistent framework to prepare our children for college and the workforce.

Common Data Set

Standards Group(s):

URL: <http://www.commondataset.org/>

Standards URL: http://www.commondataset.org/docs/0910/CEDS2009_2010.htm

About: The Common Data Set (CEDS) initiative is a collaborative effort among data providers in the higher education community and publishers as represented by the College Board, Peterson's, and U.S. News & World Report. The combined goal of this collaboration is to improve the quality and accuracy of information provided to all involved in a student's transition into higher education, as well as to reduce the reporting burden on data providers.

DDC - Dewey Decimal Classification

Standards Group(s): Cataloging Standards

URL: <http://www.oclc.org/dewey/default.htm>

Standards URL: <http://www.oclc.org/dewey/versions/webdewey/default.htm>

About: The Dewey Decimal Classification (DDC) system, devised by library pioneer Melvil Dewey in the 1870s and owned by OCLC since 1988, provides a dynamic structure for the organization of library collections. Now in its 22nd edition, and available in print and Web versions, the DDC is the world's most widely used library classification system.

DCMI - Dublin Core Metadata Initiative

Standards Group(s): Metadata Standards, Standards Body/Organization

URL: <http://dublincore.org/>

Standards URL: <http://dublincore.org/specifications/>

About: The Dublin Core Metadata Initiative (DCMI) is an open organization, incorporated in Singapore as a public, not-for-profit Company limited by Guarantee (registration number 200823602C), engaged in the development of interoperable metadata standards that support a broad range of purposes and business models.

EDFacts

Standards Group(s): Compliance Standards

URL: <http://www2.ed.gov/about/inits/ed/edfacts/index.html>

Standards URL: <http://www2.ed.gov/about/inits/ed/edfacts/file-specifications.html>

About: EDFacts is a U. S. Department of Education initiative to put performance data at the center of policy, management and budget decisions for all K-12 educational programs. EDFacts centralizes performance data supplied by K-12 state education agencies (SEAs) with other data assets, such as financial grant information, within the Department to enable better analysis and use in policy development, planning and management.

EDI

Standards Group(s): Transport Standards

URL: https://en.wikipedia.org/wiki/Electronic_data_interchange

Standards URL:

<https://www.edibasics.com/what-is-edi/what-comprises-an-edi-document/>

About: Electronic data interchange (EDI) is the structured transmission of data between organizations by electronic means. It is used to transfer electronic documents or business data from one computer system to another computer system, i.e. from one trading partner to another trading partner without human intervention. (Wikipedia)

edUnify

Standards Group(s): Federation/Connection Standards

URL: <https://demo.edunify.pesc.org/>

Standards URL:

About: EdUnify, a web service registry for higher education, will enable collaboration and reuse of integration analysis and implementation. Web service registries have been employed successfully in other endeavors such as cancer research and life sciences to accelerate data interchange and reuse of costly analytical resources. With EdUnify institutions of higher education, system vendors, and service providers will be able to integrate their systems more quickly and completely to offer new and improved services for course catalogues, course transfer, course articulation, degree audit, financial aid, career placement, reporting, and much more.

IMS ePortfolio

Standards Group(s): Digital Content Standards

URL: <http://www.imsglobal.org/ep/>

Standards URL: http://www.imsglobal.org/ep/epv1p0/imsep_infov1p0.html

About: The IMS ePortfolio specification was created to make ePortfolios interoperable across different systems and institutions.

FAFSA – Free Application for Federal Student Aid

Standards Group(s): Compliance Standards

URL: <http://www.fafsa.ed.gov/index.htm>

Standards URL:

About: Federal Student Aid, an office of the U.S. Department of Education, ensures that all eligible individuals can benefit from federally funded financial assistance for education beyond high school. We consistently champion the promise of postsecondary education to all Americans —and its value to our society.

Federal Student Aid plays a central and essential role in supporting postsecondary education by providing money for college to eligible students and families. We partner with postsecondary schools, financial institutions and others to deliver services that help students and families who are paying for college.

FTP – File Transfer Protocol

Standards Group(s):

URL: http://en.wikipedia.org/wiki/File_Transfer_Protocol

Standards URL: <http://tools.ietf.org/html/rfc959>

About: File Transfer Protocol (FTP) is a standard network protocol used to copy a file from one host to another over a TCP/IP-based network, such as the Internet. FTP is built on a client-server architecture and utilizes separate control and data connections between the client and server applications, which solves the problem of different end host configurations (i.e., Operating Systems, file names). FTP is used with user-based password authentication or with anonymous user access. (Wikipedia)

GEM – Gateway of Educational Materials

Standards Group(s): Cataloging Standards

URL: <http://www.learningcommons.org/educators/library/gem.php>

Standards URL:

About: GEM allows you to quickly and easily search for educational resources, such as lesson plans and curriculum units. GEM draws from some of the country's best museums, universities, and government programs, including NASA, the Smithsonian Institution in Washington DC, the National Science Foundation, and the Exploratorium in San Francisco.

GEM is sponsored by the National Education Association (NEA).

HTTP – Hypertext Transport Protocol

Standards Group(s): Transport Standards

URL: <http://www.w3.org/Protocols/>

Standards URL: <http://tools.ietf.org/wg/httpbis/>

About: The Hypertext Transfer Protocol (HTTP) is an application-level protocol for distributed, collaborative, hypermedia information systems. It is a generic, stateless, protocol which can be used for many tasks beyond its use for hypertext, such as name servers and distributed object management systems, through extension of its request methods, error codes and headers. A feature of HTTP is the typing and negotiation of data representation, allowing systems to be built independently of the data being transferred.

HTTP has been in use by the World-Wide Web global information initiative since 1990. This specification defines the protocol referred to as "HTTP/1.1", and is an update to RFC 2068.

IEEE – Institute of Electrical and Electronics Engineers

Standards Group(s): Standards Body/Organization

URL: <http://standards.ieee.org/>

Standards URL:

[https://sbwsweb.ieee.org/ecustomercme_enu/start.swe?SWECmd=GotoView&SWEView=Catalog+View+\(eSales\)_Standards_IEEE&mem_type=Customer&SWEHo=sbwsweb.ieee.org&SWETS=1192713657](https://sbwsweb.ieee.org/ecustomercme_enu/start.swe?SWECmd=GotoView&SWEView=Catalog+View+(eSales)_Standards_IEEE&mem_type=Customer&SWEHo=sbwsweb.ieee.org&SWETS=1192713657)

About: IEEE is the world's largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity. IEEE and its members inspire a global community through IEEE's highly cited publications, conferences, technology standards, and professional and educational activities.

IEEE LOM - Institute of Electrical and Electronics Engineers Learning Object Metadata

Standards Group(s): Metadata Standards

URL: <http://standards.ieee.org/>

Standards URL: http://ltsc.ieee.org/wg12/files/LOM_1484_12_1_v1_Final_Draft.pdf

About: This Standard is a multi-part standard that specifies Learning Object Metadata. This Part specifies a conceptual data schema that defines the structure of a metadata instance for a learning object. For this Standard, a learning object is defined as any entity -digital or non-digital- that may be used for learning, education or training. For this Standard, a metadata instance for a learning object describes relevant characteristics of the learning object to which it applies. Such characteristics may be grouped in general,

life cycle, meta-metadata, educational, technical, educational, rights, relation, annotation, and classification categories.

IETF – Internet Engineering Task Force

Standards Group(s): Standards Body/Organization

URL: <http://www.ietf.org/>

Standards URL: <http://www.ietf.org/rfc.html>

About: The Internet Engineering Task Force (IETF) is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. It is open to any interested individual.

IMAP – Internet Message Access Protocol

Standards Group(s): Transport Standards

URL: http://en.wikipedia.org/wiki/Internet_Message_Access_Protocol

Standards URL: <http://tools.ietf.org/html/rfc3501>

About: The Internet Message Access Protocol (commonly known as IMAP, and previously called *Internet Mail Access Protocol*, *Interactive Mail Access Protocol* (RFC 1064), and *Interim Mail Access Protocol*) is an Application Layer Internet protocol that allows an e-mail client to access e-mail on a remote mail server. The current version, IMAP version 4 revision 1 (IMAP4rev1), is defined by RFC 3501.

IMS GLC Enterprise

Standards Group(s): Data Standards

URL: <http://www.imsglobal.org/enterprise/>

Standards URL: <http://www.imsglobal.org/enterprise/eninfo03.html>

About: The objective of the IMS Enterprise specification documents is to define a standardized set of structures that can be used to exchange data between different systems. These structures provide the basis for standardized data bindings that allow software developers and implementers to create Instructional Management processes that interoperate across systems developed independently by various software developers.

IPEDS – Integrated Postsecondary Education Data System

Standards Group(s): Compliance Standards

URL: <http://nces.ed.gov/ipeds/>

Standards URL: <https://surveys.nces.ed.gov/ipeds/>

About: IPEDS is the Integrated Postsecondary Education Data System. It is a system of interrelated surveys conducted annually by the U.S. Department's National Center for Education Statistics (NCES). IPEDS gathers information from every college, university, and technical and vocational institution that participates in the federal student financial aid programs. The Higher Education Act of 1965, as amended, requires that institutions that participate in federal student aid programs report data on enrollments, program completions, graduation rates, faculty and staff, finances, institutional prices, and student financial aid. These data are made available to students and parents through the College Navigator college search Web site and to researchers and others through the IPEDS Data Center.

ISO – International Organization for Standardization

Standards Group(s): Standards Body/Organization

URL: <http://www.iso.org/iso/home.html>

Standards URL:

About: ISO (International Organization for Standardization) is the world's largest developer and publisher of International Standards. ISO is a network of the national standards institutes of 163 countries, one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the system. ISO is a non-governmental organization that forms a bridge between the public and private sectors. On the one hand, many of its member institutes are part of the governmental structure of their countries, or are mandated by their government. On the other hand, other members have their roots uniquely in the private sector, having been set up by national partnerships of industry associations.

Therefore, ISO enables a consensus to be reached on solutions that meet both the requirements of business and the broader needs of society.

ISO LIP

Standards Group(s):

Standards URL:

https://standards.iteh.ai/catalog/tc/iso/3fdd3de7-5d6e-429f-b1a7-625825a503e0/iso-iec-jtc-1-sc-36?srsId=AfmBOoowh8S9QDB27i4VhhQ4AKx_bVqreV_YE8m1w9PjbEU80nh1P1u2

About: ISO/IEC 24751 is intended to meet the needs of learners with disabilities and anyone in a disabling context. ISO/IEC 24751-1:2008 provides a common framework to describe and specify learner needs and preferences on the one hand and the corresponding description of the digital learning resources on the other hand, so that individual learner preferences and needs can be matched with the appropriate user interface tools and digital learning resources.

Liberty Alliance

Standards Group(s): Federation/Connection Standards

URL: <http://www.projectliberty.org/>

Standards URL: <http://www.projectliberty.org/>

About: The vision of Liberty Alliance is to enable a networked world based on open standards where consumers, citizens, businesses and governments can more easily conduct online transactions while protecting the privacy and security of identity information. This world, where devices and identities of all kinds are linked by federation and protected by universal strong authentication, is being built today with Liberty's open identity standards, business and deployment guidelines and best practices for managing privacy

MARC – Machine-Readable Cataloging

Standards Group(s): Cataloging Standards

URL: <http://www.loc.gov/marc/>

Standards URL: <http://www.loc.gov/marc/specifications/spechome.html>

About: The MARC 21 formats are standards for the representation and communication of bibliographic and related information in machine-readable form. The MARC 21 formats are maintained by the Library of Congress in consultation with various user communities.

NCES Forum Handbooks

Standards Group(s): Data Standard

URL: <http://nces.ed.gov/forum/>

Standards URL: <http://nces.ed.gov/programs/handbook/>

About: The NCES Data Handbooks provide guidance on consistency in data definitions and maintenance for education data, so that such data can be accurately aggregated and analyzed.

NIEM – National Information Exchange Model

Standards Group(s): Interoperability Standard

URL: <http://www.niem.gov/>

Standards URL: <http://www.niem.gov/TechnicalDocuments.php>

About: NIEM, the National Information Exchange Model, is a partnership of the U.S. Department of Justice and the Department of Homeland Security. It is designed to develop, disseminate and support enterprise-wide information exchange standards and processes that can enable jurisdictions to effectively share critical information in

emergency situations, as well as support the day-to-day operations of agencies throughout the nation.

OASIS - Organization for the Advancement of Structured Information Standards

Standards Group(s): Standards Body/Organization

URL: <http://www.oasis-open.org/home/index.php>

Standards URL: <http://www.oasis-open.org/specs/>

About: OASIS (Organization for the Advancement of Structured Information Standards) is a not-for-profit consortium that drives the development, convergence and adoption of open standards for the global information society. The consortium produces more Web services standards than any other organization along with standards for security, e-business, and standardization efforts in the public sector and for application-specific markets. Founded in 1993, OASIS has more than 5,000 participants representing over 600 organizations and individual members in 100 countries.

OSID – Open Service Interface Definitions

Standards Group(s): Federation/Connection Standards

URL:

Standards URL: <http://osid.org/>

About: The O.K.I. project has developed and published the Open Service Interface Definitions (OSID), whose design has been informed by a broad architectural view. The OSIDs define important components of a SOA as they provide general software contracts between service consumers and service providers. This enables applications to be constructed independently of any particular service environment, and eases integration. The OSIDs enable choice of end-user tools by providing plugin interoperability.

OSIDs are software contracts only and therefore are compatible with most other technologies and specifications, such as SOAP, WSDL. They can be used with existing technology, open source or vended solutions.

OSIDs are a local language service definition and bindings of them are provided in Java and PHP, and investigatory work has been done with bindings for Objective C and C#.

OKI – Open Knowledge Initiative

Standards Group(s): Standards Body/Organization

URL: <http://www.okiproject.org/>

Standards URL:

About: The Open Knowledge Initiative (O.K.I.) develops and promotes specifications that describe how the components of a software environment communicate with each other and with other enterprise systems. O.K.I. specifications enable sustainable interoperability and integration by defining standards for Service Oriented Architecture (SOA). Through this work O.K.I. seeks to open new market opportunities across a wide

range of software application domains.

The O.K.I. project was initially launched in 2001 through a generous grant from the Andrew W. Mellon Foundation, and in collaboration with a number of like minded organizations. Today the O.K.I. Phase II project is housed at the Office of Educational Innovation and Technology, a part of MIT's Dean of Undergraduate Education Office.

PESC – Postsecondary Electronic Standards Council

Standards Group(s): Data Standard, Interoperability Standard, Standards Body/Organization

URL: <http://www.pesc.org>

Standards URL: http://www.pesc.org/interior.php?page_id=147

About: Established in 1997 at the National Center for Higher Education and located in Washington, D.C., PESC - the Postsecondary Electronic Standards Council is a 501(c)(3) non-profit, community-based, umbrella association of colleges and universities; college and university systems; professional and commercial organizations; data, software and service providers; non-profit organizations and associations; and state and federal government agencies.

Through open and transparent community participation, PESC enables cost-effective connectivity between data systems to accelerate performance and service, to simplify data access and research, and to improve data quality along the higher education lifecycle.

SAML – Security Assertion Markup Language

Standards Group(s): Federation/Connection Standards

URL: <http://saml.xml.org/>

Standards URL:

<https://docs.oasis-open.org/security/saml/Post2.0/sstc-saml-tech-overview-2.0.html>

About: The Security Assertion Markup Language (SAML) is an XML-based framework for communicating user authentication, entitlement, and attribute information. It was developed and continues to be advanced by the Security Services Technical Committee of the open standards consortium, OASIS (Organization for the Advancement of Structured Information Standards).

SCORM – Sharable Content Object Reference Model

Standards Group(s): Digital Content Standards

URL: <http://www.adlnet.gov/Technologies/scorm/default.aspx>

Standard URL:

<http://www.adlnet.gov/Technologies/scorm/SCORMSDocuments/2004%204th%20Edition/Documentation.aspx>

About: The Sharable Content Object Reference Model (SCORM) integrates a set of related technical standards, specifications, and guidelines designed to meet SCORM's high-level requirements—accessible, interoperable, durable, and reusable content and systems. SCORM content can be delivered to your learners via any SCORM-compliant Learning Management System (LMS) using the same version of SCORM.

SIF – Schools/Systems Interoperability Framework Association

Standards Group(s): Data Standard, Interoperability Standard, Metadata Standard

URL: www.sifassociation.org

Standard URL: <http://www.sifassociation.org/us/sif-specification.asp>

About: Quality education relies, in large part, on professional educators and parents having access to the information, resources, and tools to serve learners of all ages. Seamless integration of a broad spectrum of instructional, administrative and communications tools is essential to effectively address the needs of all learners.

The SIF Association's vision within this context is that schools will be enabled to better utilize technology in a manner that leverages the promise and capabilities of interoperability between disparate applications. The SIF Association brings together the developers and vendors of school technology with the federal, state and local educators who use that technology. To define the rules for data movement between applications—efficiently, accurately and automatically—in the [SIF Specification](#).

SMTP

Standards Group(s): Transport Standards

URL: <http://tools.ietf.org/html/rfc5321>

Standards URL: <http://tools.ietf.org/html/rfc5321>

About: Simple Mail Transfer Protocol (SMTP) is an Internet standard for electronic mail (e-mail) transmission across Internet Protocol (IP) networks. SMTP was first defined in RFC 821 (STD 15) (1982),[1] and last updated by RFC 5321 (2008)[2] which includes the extended SMTP (ESMTP) additions, and is the protocol in widespread use today. SMTP is specified for outgoing mail transport and uses TCP port 25. (Wikipedia)

SOAP – Simple Object Access Protocol

Standards Group(s): Transport Standards

URL: <http://www.w3.org/TR/soap/>

Standards URL: <http://www.w3.org/TR/soap12-part1/>

About: SOAP Version 1.2 is a lightweight protocol intended for exchanging structured information in a decentralized, distributed environment. "Part 1: Messaging Framework"

defines, using XML technologies, an extensible messaging framework containing a message construct that can be exchanged over a variety of underlying protocols.

State Specific Academic Standards

Standards Group(s): Academic Standards

URL:

Standards URL: <http://www.educationworld.com/standards/state/toc/index.shtml> ,
<http://www.thinkfinity.org/state-standards-search> ,
<http://www.academicbenchmarks.org/home/> ,
<http://www.education.com/definition/academic-standards/>

About: Academic Standards are established by the State Education Agency of each state.

Common Data Standards

Standards Group(s): Data Standard, Standard Body/Organization

URL: <http://commondatastandards.org/>

Standards URL: <http://commondatastandards.org/technical/>

About: The Common Data Standards (CEDS) Initiative is a national, collaborative effort to develop voluntary, common data standards for a key subset of K-12 (e.g., demographics, program participation, course information) and K12-to-postsecondary education transition variables. Participants in the Initiative include representatives from states, districts, higher education organizations, and key non-profit organizations. The CEDS Initiative's goal is to identify a list of key K-12 and K12-to-postsecondary transition variables (expansion into PreK and the workforce will be considered in the future) and agree upon standard definitions, code sets, business rules, and technical specifications for those variables. This will increase data interoperability, portability, and comparability across states, districts, and higher education organizations.

The Education Science Reform Act of 2002 gave the National Center for Education Statistics (NCES) the authority to determine voluntary standards and guidelines to assist state educational agencies in developing statewide longitudinal data systems (SLDSs). To this end, NCES is working with key stakeholders to develop standards for a core set of data elements to ensure that states create P-20 data systems that meet the goals of the American Recovery and Reinvestment Act of 2009. Standard data definitions will help ensure that data shared across institutions are consistent and comparable. This, in turn, will make it easier to transfer student data from one school or level of education to another, and permit states to learn how students fare as they move across institutions, state lines, and school levels.

UDDI - Universal Description Discovery and Integration

Standards Group(s):

URL: <http://uddi.xml.org/>

Standards URL: <http://uddi.org/pubs/uddi-v3.0.2-20041019.htm>

About: Web services are meaningful only if potential users may find information sufficient to permit their execution. The focus of Universal Description Discovery & Integration (UDDI) is the definition of a set of services supporting the description and discovery of (1) businesses, organizations, and other Web services providers, (2) the Web services they make available, and (3) the technical interfaces which may be used to access those services. Based on a common set of industry standards, including HTTP, XML, XML Schema, and SOAP, UDDI provides an interoperable, foundational infrastructure for a Web services-based software environment for both publicly available services and services only exposed internally within an organization.

W3C

Standards Group(s): Standards Body/Organization

URL: <http://www.w3.org/>

Standards URL: <http://www.w3.org/standards/>

About: The World Wide Web Consortium (W3C) is an international community that develops standards to ensure the long-term growth of the Web.

XML – Extensible Markup Language

Standards Group(s): Technical Standards

URL: <http://www.w3.org/standards/xml/core>

Standards URL: http://www.w3.org/standards/techs/xml#w3c_all

About: The Extensible Markup Language (XML) is a simple text-based format for representing structured information: documents, data, configuration, books, transactions, invoices, and much more. It was derived from an older standard format called SGML (ISO 8879), in order to be more suitable for Web use.

Appendix B: Resources

The America Competes Act

URL:

http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=110_cong_public_laws&docid=f:publ069.110.pdf

Type: Federal Government regulation

The “America COMPETES Act” is a bipartisan legislative response to recommendations contained in the National Academies’ “Rising Above the Gathering Storm” report and the Council on Competitiveness’ “Innovate America” report. The bill is similar to the “National Competitiveness Investment Act” that Senators Frist, Reid, Stevens, Inouye, Domenici, Bingaman, Enzi, Kennedy, Ensign, Lieberman, Alexander, Mikulski, Hutchison, and others introduced in September 2006. Several sections of the bill are derived from proposals contained in the “American Innovation and Competitiveness Act of 2006” (S.2802), approved without opposition by the Senate Commerce Committee, and the “Protecting America’s Competitive Edge Through Energy Act of 2006” (S.2197) approved without opposition by the Senate Energy Committee last year. Accordingly, the America COMPETES Act focuses on three primary areas of importance to maintaining and improving United States’ innovation in the 21st Century: (1) increasing research investment, (2) strengthening educational opportunities in science, technology, engineering, and mathematics from elementary through graduate school, and (3) developing an innovation infrastructure.

CEDS

URL: <http://sheeo.org/cds/CDS-StatementofPurpose.pdf>

Type: Consortial Organizing Body around CEDS

The Council of Chief State School Officers (CCSSO) and the association of State Higher Education Executive Officers (SHEEO) are collaborating with their members, the U.S. Department of Education, and national educational entities toward the development of model data standards for K-12 and postsecondary education. The goal of this collaborative effort is to leverage and create model data standards that will attract widespread, voluntary adoption and ultimately enhance policy-making and student achievement. Initially, the project will focus on data related to the transition from high school to postsecondary education.

USED CEDS Technical Working Group (CEDS TWG- pronounced "TWIG")

URL: http://www.dataqualitycampaign.org/files/CDS_one-pager_v16.pdf

Type: USED Working Group building a content standard

The Technical Working Group (TWG), facilitated by NCES, will compile and refine a set of common data standards, including definitions, permitted values, and technical

specifications. The TWG will also solicit feedback on the standards from the NCES Forum, the broader postsecondary community and standards bodies as they are developed and before release of the final product.

Partners include representatives from several state and local education agencies, higher education organizations, the Council of Chief State School Officers (CCSSO), the State Higher Education Executive Officers (SHEEO), the Data Quality Campaign (DQC), the Postsecondary Electronic Standards Council (PESC), and the Schools Interoperability Framework (SIF) Association.

Data Quality Campaign (DQC)

URL: www.dataqualitycampaign.org

Type: *Advocacy Organization*

The Data Quality Campaign (DQC) is a national, collaborative effort to encourage and support state policymakers to improve the availability and use of high-quality education data to improve student achievement. The campaign will provide tools and resources that will help states implement and use longitudinal data systems, while providing a national forum for reducing duplication of effort and promoting greater coordination and consensus among the organizations focused on improving data quality, access and use.

National Education Data Model (NEDM)

URL: educationdatamodel.org

Type: standards aggregation site

The National Education Data Model is a conceptual but detailed representation of the education information domain. The Education Data Model strives to be a shared understanding among all education stakeholders as to what information needs to be collected and managed at the local level in order to enable effective instruction of students and superior leadership of schools.