
Part II – INFORMATION ARCHITECTURE

Chapter 5 – DATA STANDARDS



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Introduction

This section provides a discussion of the use of data standards by the Medicaid IT Architecture's (MITA) Information Architecture (IA). The lack of shared data standards is one of the most important issues facing Medicaid system and subsystem interoperability. This issue goes well beyond the Medicaid Enterprise to include the private sector and other government agencies. It adversely affects Medicaid systems in many ways:

- ❖ Creates the need for translators.
- ❖ Constrains automated processes.
- ❖ Reduces the potential of business processes that use shared data.
- ❖ Requires duplicate data, resulting in poor quality and wasted physical storage.
- ❖ Increases paperwork and data collection burdens.
- ❖ Reduces the analytic potential of health data.
- ❖ Reduces the analytic potential of program integrity data.
- ❖ Reduces the capability for data sharing, which in turn limits the usefulness of data used internally or externally (e.g., with trading partners, other State Medicaid Enterprises, other agencies, etc.).

The MITA initiative coordinates the identification and use of common data standards for the Medicaid Enterprise. It addresses the need for a consensus on common data vocabularies, assurances of privacy, and other issues surrounding electronic transmission of information.

The topics covered in this chapter include:

- ❖ Data Standards
- ❖ Benefits of Using Data Standards
- ❖ Scope of Data Standards
- ❖ Developing Data standards
- ❖ Business Scenarios Showing the Use of Standards
- ❖ Model-Based Standards
- ❖ Health Standard Development Organizations (SDOs) and Standards
- ❖ Using Data Standards

Purpose

Data standards are critical to the successful transformation and evolution of the Medicaid Enterprise. Data standards help ensure that implementations are interoperable and plug-and-play capable. With participation by States, partners, and other stakeholders, data standards become a tool to enable seamless interoperability and data sharing. State Medicaid Enterprises benefit with lower costs through elimination of redundant or unnecessary operations, improved outcomes, reduced errors through access to quality and outcome information, and improved stakeholder satisfaction through self-service. Data standards allow both a syntactic and semantic understanding of this information.

Scope

Reviewers should read this chapter in conjunction with the technology standards section found in Part III, Chapter 6, Technology Standards. The Framework uses data standards produced by Designated Standard Maintenance Organizations (DSMOs), whenever available. If such standards are not available, the Centers for Medicare & Medicaid Services (CMS) will support collaboration efforts with industry groups across standards organizations where appropriate. CMS continues to collaborate with other federal agencies and industry groups in harmonizing data standards across disparate groups. Because data standards are quite dynamic, States should conduct a periodic review of the available data standards and versions to keep the data standards current.

Data Standards

Data standards are necessary when two or more parties exchange information. Medicaid infrastructure and information system investments are made with the assurance that timely and reliable adoption of industry standards and productive use of those standards are part of the investments. Industry standards promote reuse, data exchange, and reduction of administrative burden on patients, providers, and applicants. CMS will communicate applicable standards to states. Standards are updated periodically to ensure conformance with changes in the industry. States will be required to update systems and practices to adhere to evolving industry standards in order to remain eligible for enhanced Federal Funding Participation (FFP) funding.

Exchange partners need to enable the sharing or exchange of information in a way that guarantees the mutual understanding of what is the representation within that information. States can use data standards for their automated or manual processes. The key elements of a data standard are data element names, definitions, qualifiers, data types, relationships, semantics, and contextual rules. From a business point of view, data standards represent agreements on the format and description of the shared data used by the Medicaid Enterprise. Data standards describe objects, features, or items collected, automated, or affected by the business processes of a State Medicaid Enterprise.

Data standards fall into two major categories – structure data standards and vocabulary data standards:

1. **Structure data standards** – Specify how to format or structure data. Because messages and data stores (e.g., flat files and databases) use structure data standards, this enables two or more computer applications to exchange data. Traditional data standards have focused on the structural aspect of data standards (e.g., Electronic Data Interchange (EDI) and Accredited Standards Committee (ASC X12).
2. **Vocabulary data standards** – Conversely, deal with the content of the data elements (i.e., the semantics of the data). Vocabulary data standards enable systems to understand the meaning of the data. An example of a vocabulary data standard is the International Classification of Diseases, Tenth Edition, Clinical Modification (ICD-10-CM).

The IA focuses on both structure and vocabulary data standards in order to enable the interoperability and distributed data-sharing objectives of the Medicaid Enterprise. To facilitate the transition to these standards in as minimally a disruptive manner to the States as possible, MITA defines the Medicaid Enterprise evolution across the MITA Maturity Model (MMM) capability matrices for each of the architectures. The final maturity levels will support seamless semantic operability of data and data sharing internally, as well as with external partners.

Benefits of Using Data Standards

Historically, Medicaid has not taken full advantage of the efficiencies that some other industries have achieved through EDI, the Internet, and process redesign and improvement. The complexity and stovepipe nature of the current implementation of State Medicaid Enterprises results in increased cost, lack of agility, and lack of interoperability. Although payers and providers have used data standards for reimbursement for quite some time, most of these standards differed depending on the parties with whom the State Medicaid Agency (SMA) exchanged data. This problem will grow exponentially as Medicaid begins to make use of Electronic Health Records (EHR) and shares data among State Medicaid Enterprises and other groups as part of normal business processes. Consistent data standards are an essential part of the Medicaid Enterprise realizing its vision of maturing into a comprehensive knowledge-based network of interoperable systems capable of providing information when and where necessary.

Some of the benefits of data standardization include the following:

- ❖ Improvement in data availability to external users (e.g., public health and bioterrorism detection) due to the seamless sharing of information.
- ❖ Improvement in data quality and consistency, facilitating improvements in automation and accuracy.
- ❖ Identification of performance standards and evaluation plans to interact with communities of interest for feedback of accessibility, ease of use, and appropriateness of decisions.
- ❖ Reduction of medical errors, improving care quality and eliminating redundant costs with standardized terminologies.
- ❖ Improvement in consistency and efficiency of data collection, with a seamless flow of information without the need for reformatting and transcription of the data.

- ❖ Reduction of data redundancy (i.e., store data once in the enterprise or not at all, as in the case of business processes that use data from an external enterprise).
- ❖ Increased data comprehension.

Scope of Data Standards

The MITA Framework discusses the data standards used by data models and messages. This chapter also addresses procedures for developing specific data standards, governance procedures for data standards, repository information, and business cases. The following list describes the scope of the data standards:

- ❖ The Framework identifies the primary data needed by the defined MITA business process and services. The data standards mapping includes the entities in the model.
- ❖ The data standards are compatible with EHR and “meaningful use” standards. The data standards are current with federal legislation and initiatives. Data standards do not map to information for state-specific data and messages. The States are responsible for supplementing the data standards with the information and interfaces required for unique data messages.
- ❖ Data standards associated with the physical data model, databases, and data files are not a part of the MITA Framework. Each state is responsible for mapping or developing data standards for its physical data model, databases, and files during implementation.

Developing Data Standards

The MITA team considers data standards using the following principles:

- ❖ Identification of standards already in use by current Medicaid systems.
- ❖ Alignment of data standards with data model entities/attributes and messages.
- ❖ Development of new standards only when no alternatives exist.

MITA adopts harmonized data and standards where appropriate as developed or adopted for use by the following entities:

- ❖ American National Standards Institute (ANSI) ASC X12
- ❖ Office of National Coordinator for Health Information Technology (ONC):
 - **State-Level Health Initiatives** – Initiatives designed to ensure that the efforts of States and regional agencies achieve Health Information Exchange (HIE) align with the national agenda.
 - **Nationwide Health Information Network (NwHIN)** – A collection of standards, protocols, legal agreements, specifications, and services to enable secure Health Information Exchange (HIE).
 - **Federal Health Architecture (FHA)** – An e-government line business initiative responsible for the Federal Health Information Model (FHIM) that increases efficiency

and effectiveness in all government operations. This includes the Veterans Health Information Model (VHIM) as the base.

- **Adoption** – An initiative supporting two national health IT adoption surveys: one of physician offices, and one of hospitals.
 - **Clinical Decision Support & the CDS Collaboratory** – An initiative to provide clinicians, staff, patients, or other individuals with knowledge and person-specific information, intelligently filtered or presented at appropriate times, to enhance health and health care.
- ❖ Federal, State, Local, and Tribal Interagencies
 - ❖ International Classification of Diseases (e.g. ICD-10)
 - ❖ Industry/health care agencies (e.g., CMS, Social Security Administration (SSA))
 - ❖ Individual SMA

MITA adopts minimum standards that are usable by the maximum number of State Medicaid Enterprises. Furthermore, MITA allows versioning of data standards and allocates the standard to MITA maturity levels, enabling the data standard, along with technology and business processes, to evolve over time as States progress along the MITA Maturity Model.

If the States determine there is a need for a new data standard, the MITA team will collaborate with federal, state, and vendor representatives to support coordination with the National Medicaid EDI Healthcare (NMEH) workgroups and Private Sector Technical Group Technical Architecture Committee (PSTG-TAC) in submitting all standards to a SDO, whenever possible.

MITA uses data standards in developing business scenarios and models. The following section describes these activities.

Business Scenarios Showing the Use of Standards

This section models the scenarios in which States exchange health care information. It illustrates the importance of data standards, how they fit together, why they are of concern for MITA, and how they contribute to the MITA distribution data-sharing infrastructure. Additional information about particular standards is in **Figure 5-1**.

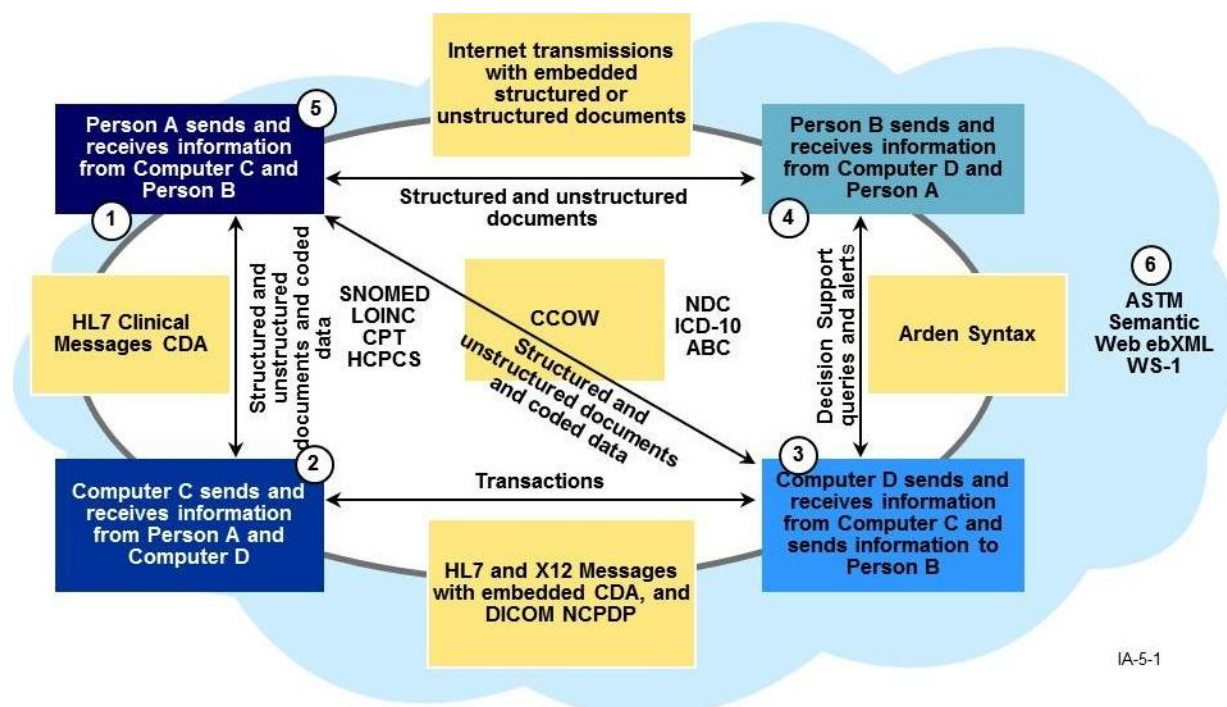


Figure 5-1. Scenarios Showing the Use of Data Standards

Figure 5-1 shows scenarios that illustrate how to use various standards. Note that each number in the figure corresponds to one of the following scenarios:

1. Person-to-Computer Exchange:

- Human-readable administrative transactions using ASC X12N, Health Level Seven International (HL7) Version 3, National Council for Prescription Drug Programs (NCPDP), Health Information Exchange (HIE), or nonstandard via a client/server network (for intra-enterprise) or Web browser (for inter-enterprise) exchange. Input screens enable users to enter data into online forms according to transaction rules.
- Structured and unstructured clinical documents and coded data. Hospitals, laboratories, and large professional organizations use HL7 clinical messages, templates, EHR, and Clinical Document Architecture (CDA) standards to communicate patient-centric information among various systems (e.g., emergency room, radiology, pharmacy, dictation, laboratory, and dietary) through a central hub called a Healthcare Information System (HIS).
- Web Portals create human readable versions of the ASC X12N transactions.
- CDA can carry structured messages (e.g., clinical observations coded in Logical Observation Identifiers, Names, and Codes (LOINC)) and unstructured messages (e.g., Digital Imaging and Communications in Medicine (DICOM) reports from patient-monitoring equipment, radiology images, and scanned consent forms). A

HIS acts as the admission system and holds the electronic medical records used by the billing system. This use case is the primary source of health care information.

The Medicaid Enterprise will be capable of processing the health care attachment transaction when ASC identifies and mandates it. These standards support prior authorization, clinical reviews of claims, and care management business processes.

2. Computer-to-Computer Exchange:

- Inter-enterprise exchange of administrative transactions and clinical information. States do not currently conduct many of these transactions in accordance with any industry-recognized standards, a situation that adds complexity to trading partner management. This is the area that the adoption of standards would most benefit MITA. Examples include Medicare Modernization Act (MMA) Report files, Beneficiary Data Exchange (BENDEX) and Buy-in files.
- Source data in HL7 may not map well to the data needed to populate an ASC X12N or NCPDP transaction. It is necessary to harmonize the data elements used in these different specifications.
- Intra-enterprise exchange of messages and information structures using message broker technologies. CMS will promote the adoption of data standards for these exchanges.

3. Person-to-Multiple Computers Exchange – The exchange of administrative and clinical information about a person from multiple sources. These exchanges – which use clinical context object management standards (e.g., Clinical Context Object Workgroup (CCOW)) to synchronize information – enable users to arrange views on a desktop and synchronize their input from one view with information in other views. For example, if a case manager authorizes more units of service for a Medicaid beneficiary receiving home health services, the beneficiary's eligibility file is immediately updateable in the view of that file. In addition, an authorized home health provider or case manager from another Medicaid Program would have immediate access to that updated information.

4. Computer-to-Person Exchange – Decision support and alert capabilities that permit queries and expert system notifications based on parameter-based review of automated data inputs. Arden Syntax is the best known of the clinical decision-support standards and could support the MITA Authorize Service and Case Management business processes. Other standards may have applicability to MITA for disease management (e.g., the syndromic-surveillance standard that the Centers for Disease Control and Prevention (CDC) has under development). Currently, the Medicaid Management Information Systems (MMIS) uses these capabilities for fraud and abuse detection.

5. Person-to-Person Exchange – E-mail and other online collaboration tools already in place for the SMA. These information exchanges will need to follow transport protocol and privacy and security standards. Integrating these information exchanges into the Medicaid Enterprise is an opportunity for MITA to define and bring them into the Framework when it applies to all States. Person-to-person information exchanges could replace Interactive Voice Response (IVR) and call centers for some of the more ad hoc

business processes or supplement the computer-to-computer transactions governed by HIPAA (e.g., claim status and eligibility inquiries).

6. **Information Exchange Standards** – These standards (e.g., American Society for Testing and Materials (ASTM), Semantic Web, Electronic Business Extensible Markup Language (ebXML), and WS-1) enable trading partners to use the Web to register information about their electronic exchange capabilities and to discover other trading partners that have similar capabilities. Trading partners use a Collaboration Protocol Agreement (CPA) to document the common elements in the Collaboration Protocol Profile and Agreement (CPPA). The state conducts the negotiation of the CPA and CPPA with its trading partners. Most States refer to the CPA as a Trading Partner Agreement (TPA) rather than the industry term of CPA. The Framework supports the adoption of Collaboration Protocol Profiles (CPPs) and CPAs by various stakeholder groups for internal and external information exchange.

Model-Based Standards

To ensure interoperability of their artifacts, many information standards organizations derive their emerging health care standards from models (or they are reverse engineering their standards to models) such as the FHIM Reference Information Model (RIM) using Unified Modeling Language (UML). This enables the SMA to create CPPs where it can describe its conformance to a standard, any customizations, or constraints it has applied to the base standard, and the effects of such customizations and constraints on interoperation with other standard users. Profile owners can register their CPPs in registries so that potential intra- or inter-enterprise trading partners can discover them and negotiate the CPAs necessary to set up an information-exchange interface. The optimal interoperability among interfaces require architecting data harmonization to a core model that supports refinements for business-line specifications.

One of the key objectives for the modeling team is to utilize industry modeling standards to assist with the sharing of knowledge while taking advantage of transformation technologies. The Object Management Group (OMG) created UML and adopted Business Process Model and Notation (BPMN) as modeling standards in the information technology industry.

The industry did not develop the ASC X12N and HL7 Version 3 message standards according to precise rules from any core model. As a result, a harmonization process needs to take place to synchronize structure and vocabulary data standards, along with data sets. FHIM team is writing rules to transform models to the National Information Exchange Model (NIEM), which is a national program supported by the Federal Government that provides a community of users, tools, common terminology, governance, methodologies, and support that enablers enterprise-wide information exchange. Once this is complete, it is the intent of CMS to design and develop an information exchange model and tools that are fully compliant with NIEM requirements as part of the Health Insurance Exchange (HIX), Medicaid and CHIP operations. MITA supports the use of the related FHIM development framework as the method that MITA users can demonstrate conformance to NIEM and develop interfaces.

Figure 5-2 illustrates a life cycle in the development of model-based standards.

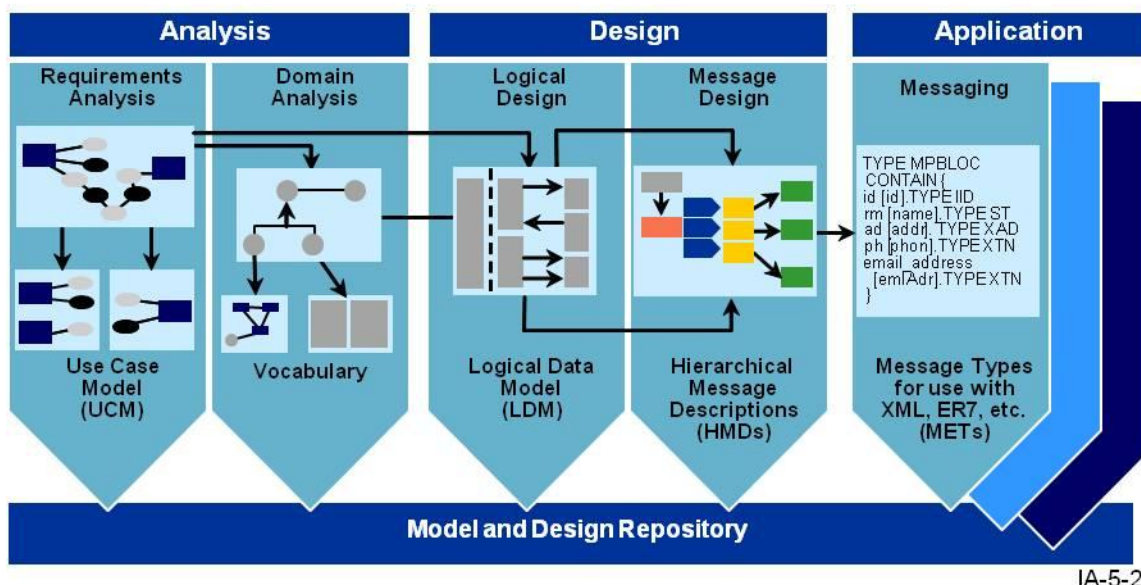


Figure 5-2. Model and Design Repository

Health SDOs and Standards

This section discusses the key current and emerging health data standards, DSMOs, SDOs, other standards including vocabulary domains and data sets, information structures for communication, infrastructure and protocols, and lists other federal projects or programs.

Key Current and Emerging Health Data Standards

Health SDOs and the standards that they develop and maintain have existed for decades, predating all electronic data exchange initiatives. Certain standards are so dominant that they have become accepted nationally, and even internationally (e.g., the ICD or the National Drug Codes (NDC)). Before HIPAA, the health care community adopted such standards voluntarily, and individual payers were always free to redefine or create new codes.

HIPAA changed this situation by mandating certain code sets. The legislation did not create standards; rather, the HIPAA Transactions and Code Sets Rule adopted existing health care standards. HIPAA mandates the data structure in that the transaction implementation guides define internal codes in the implementation guides; however, outside organizations maintain external code sets. In addition, the NwHIN has adopted clinical codes and information structures. MITA references all HIPAA-mandated standards, including those that exist currently as well as those that will exist in the near future.

Table 5-1 lists the DSMOs responsible for the major external medical codes required by HIPAA, as well as, some major medical code maintenance organizations and other standards development or advisory organizations that affect MITA.

Table 5-1. Development Standards and Maintenance Organizations

List of DSMOs	
<i>DSMO Organization</i>	<i>Purpose</i>
American Dental Association (ADA) (Statutory Advisory Group)	• Works with others to develop and maintain the Code on Dental Procedures and Nomenclature (CDT).
Accredited Standards Committee (ASC) X12N – Insurance Subcommittee (DSMO) (SDO)	• Develops and maintains ASC X12N EDI and XML standards, standards interpretations, and guidelines as they relate to all aspects of insurance and insurance-related business processes. • Chartered by ANSI as a consensus-building organization. • Open to the public for input, but only paid members can vote. • Representation from CMS and State Medicaid Enterprises is increasing. • A Medicaid caucus held in conjunction with all ASC X12N meetings.
Dental Content Committee of the ADA (DeCC) (DSMO) (DCC)	• Sets standards for dental claim data content and maintains the CDT. • A committee of the ADA.
Health Level 7 (HL7) (DSMO) (SDO)	• Develops and publishes standards for communicating clinical information. • ANSI accredited. • It is developing standards for clinical and administrative information attached to claims. • Like ASC X12N, HL7 operates on a consensus basis.
National Council for Prescription Drug Programs (NCPDP) (DSMO) (SDO)	• Develops national standards for pharmacy payers and providers. • Industry specific and ANSI accredited. • Sets the standards for pharmacy claim transactions, claim status requests, and prior authorization requests. The Food and Drug Administration (FDA) is the custodian of the drug codes.
National Committee on Vital and Health Statistics (NCVHS) (Statutory Advisory Group)	• Acts as the public advisory body to Department of Health and Human Services (HHS) for health data and statistics. • Provides advice and assistance to HHS and serves as a forum for interaction with the public. • Serves as a national forum to foster collaboration and consensus

List of DSMOs	
<i>DSMO Organization</i>	<i>Purpose</i>
	- on key data standards and privacy issues. - Named in HIPAA to advise the HHS Secretary on the adoption of transaction and privacy standards. - Conducts public hearings on HIPAA implementation and other health issues.
National Institute of Standards and Technology (NIST)	- Tasked with the explicit mission of assisting U.S. industry to advance its development and application of technology. - The federal government agency with leading expertise in technology standards and industry standardization issues. - Its staff is actively developing voluntary consensus standards (www.nist.gov).
National Uniform Billing Committee (NUBC) (DSMO) (DCC) (Statutory Advisory Group)	- Maintains the data set for the institutional claim. - Formed to develop a single billing form and standard data set for national use by institutional providers. - Hosted by the American Hospital Association (AHA) since 1975. - Membership includes CMS, the SMA, the National Association of State Medicaid Directors (NAMD), and public health representatives.
National Uniform Claim Committee (NUCC) (DSMO) (DCC) (Statutory Advisory Group)	- Maintain the data set for the professional claim. - Chaired by the American Medical Association (AMA) in partnership with CMS. - Membership includes state and national level representatives from Medicaid (including CMS and NAMD) and public health representatives.

DSMOs

Specific organizations named in the HIPAA Transactions and Code Sets Rule maintain external codes. There are two types of codes: medical and non-medical. **Figure 5-3** summarizes the roles of these DSMOs.

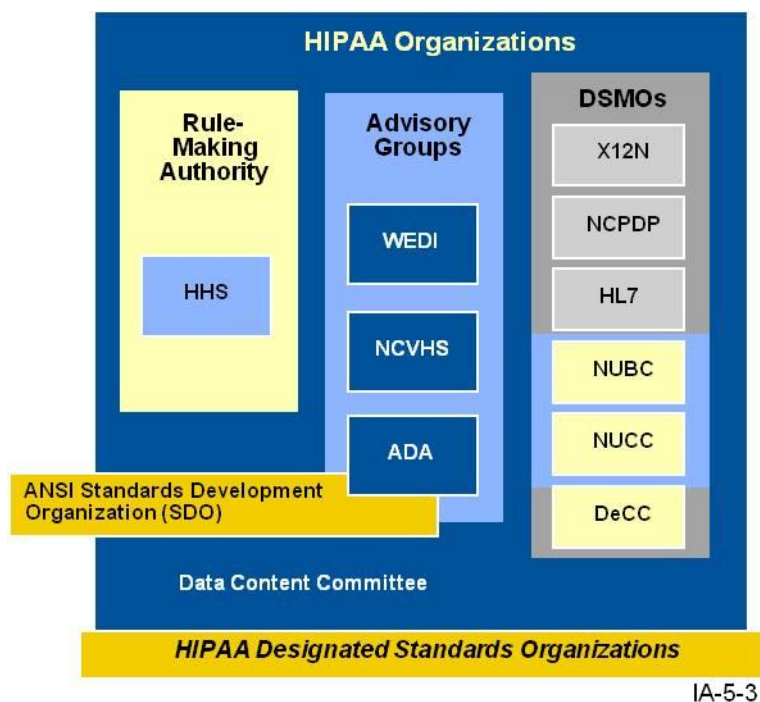


Figure 5-3. DSMO Roles

Table 5-2 lists most of the organizations (other than the HIPAA DSMOs listed above) that create or promote standards for health care data, information structure, and information exchange.

Table 5-2. Standards Consortia, Oversight, and Advisory Organizations

List of Standards Consortia, Oversight, and Advisory Organizations		
Acronym	Organization	Activities
ANSI	American National Standards Institute	- A not-for-profit, nongovernmental organization headquartered in Washington, D.C. - Serves as the U.S. member to the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), coordinating the U.S. position in the development of these standards. - Accredits SDOs according to their consensus processes and accredits standards developed by SDOs as American National Standards.

List of Standards Consortia, Oversight, and Advisory Organizations		
Acronym	Organization	Activities
ANSI HISB	ANSI Healthcare Informatics Standards Board	• Forum for voluntary coordination of health care informatics standards nationally. • All SDOs participate in the HISB. • The HISB supplied the HHS Secretary with an inventory of health care informatics standards. • Oversees the United States Health Information Knowledgebase (USHIK), the metadata registry project.
DISA	Data Interchange Standards Association	• Supports the development and use of electronic business interchange standards in electronic commerce. • Establishes cross-industry standards. • Works with ASC X12.
NAMD	National Association of Medicaid Directors	• Comments on future Notices of Proposed Rulemaking.
NMEH	National Medicaid EDI Healthcare	• Acts as coordinator for participating States and coordinates sub workgroups. • Appoints state representatives to the NUCC, NUBC, and Healthcare Common Procedure Coding System (HCPCS) committees.
NwHIN	Nationwide Health Information Network	• Is a “network of networks”. • Provides a secure, nationwide, interoperable health information infrastructure that will connect providers, consumers, and others involved in supporting health and healthcare. • Built upon a core set of capabilities to enable nationwide information exchange encompassing a diverse set of organizations, technologies, and approaches.
OASIS	Organization for the Advancement of Structured Information Standards	• Produces worldwide standards for security, Web services, XML conformance, business transactions, electronic publishing, topic maps, and interoperability within and between marketplaces. • Members set the OASIS technical agenda, using an open process designed to promote industry

List of Standards Consortia, Oversight, and Advisory Organizations		
Acronym	Organization	Activities
		consensus and unite disparate efforts.
ONC	Office of the National Coordinator for Health Information Technology	- HHS oversight. - Main federal entity responsible for the nationwide coordination efforts to implement and use state of the art health information technology. - Charged with responsibility to coordinate electronic exchange of health information.
PHDSC	Public Health Data Standards Consortium	- Advisory group and voice of public health interests in SDO meetings. - Part of the CDC's National Center for Health Statistics.
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business	- Works to improve the ability of business, trade, and administrative organizations from developed, developing, and transitional economies to exchange products and relevant services effectively. - Works to facilitate international transactions by simplifying and harmonizing procedures and information flows. - Collaborates with OASIS on ebXML and core components.

Other Standards - Vocabulary Domains and Data Sets

The following vocabulary domains and data code set standards have either current or emerging relevance to MITA. **Table 5-3** notes their contribution to interoperability and collaboration.

Table 5-3. Other Standards - Vocabulary Domains and Data Sets

Other Standards – List of Vocabulary Domains and Data Sets			
Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
CDT	Code on Dental Procedures &	American Dental Association (ADA).	Current – HIPAA

Other Standards – List of Vocabulary Domains and Data Sets			
Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
	Nomenclature		requires.
CPT-4	Current Procedural Terminology, Fourth Edition	- American Medical Association (AMA). - Covers physician services, physical therapy, occupational therapy, radiology, medical diagnostic procedures, hearing, vision, and medical transportation.	Current – HIPAA requires.
DRG	Diagnosis Related Group	The 3M Corporation contracts with CMS to maintain the DRGs.	Current – HIPAA requires.
GTN	Global Trade Identification Number	- Global Standards 1 (GS1) Organization - Establishes and maintains unique identifiers and labeling standards for medical equipment, supplies, and devices.	Current global standard – Emerging FDA and HIPAA standard.
HCPCS	Healthcare Common Procedure Coding System	CMS HCPCS Committee reviews and votes on requests to revise HCPCS codes or add new ones.	Current – HIPAA requires use of HCPCS “S” codes instead.
HIBC-LIC	Health Industry Bar Code – Labeler Identification Code	- Health Industry Business Communications Council (HIBCC) - Establishes and maintains unique identifiers and labeling standards for medical equipment, supplies, and devices.	Current global standard – Emerging FDA and HIPAA standard.
ICD-9-CM Vol. 1 & 2 Diagnosis Codes	International Classification of Diseases, 9th Edition, Clinical Modification, Volume 1 & 2, Diagnoses	- Maintained by the United Nations World Health Organization and distributed by HHS. - The NCVHS has lead responsibility in the U.S. for the Tabular List and Alphabetic Index.	Revised – HIPAA requires.
ICD-9-CM Vol. 3 Procedure	International Classification of Diseases, 9th Edition, Clinical	HHS inpatient procedures or other actions as reported by hospitals: Prevention, Diagnosis, Treatment,	Revised – HIPAA requires.

Other Standards – List of Vocabulary Domains and Data Sets			
Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
Codes	Modification, Volume 3, Procedures	and Management. Includes the Official ICD-9-CM Guidelines for Coding and Reporting.	
ICD-10 Vol. 1-3	International Classification of Diseases, 10th Revision	Maintained by the United Nations World Health Organization and distributed by HHS.	Current – HIPAA requires.
LOINC	Logical Observation Identifiers, Names, and Codes	The Regenstrief Institute, Inc., a non-profit medical research organization associated with Indiana University.	Current – HIPAA 275 will likely require.
NDC	National Drug Codes	HHS, in collaboration with drug manufacturers, for the following: Drugs and biologics.	Current – HIPAA requires for retail pharmacy & drug rebate.
Non-Medical Code Sets used in ASC X12N HIPAA Transactions	Including Provider Taxonomy Codes, Claim Status Codes, Country Codes, Facility Codes, and Revenue Codes	Non-medical data code sets as described in the HIPAA Implementation Guides and other information structure standards required for health care attachments and other mandatory reporting.	Current & Emerging – HIPAA will require.
PHIN	Public Health Information Network	A national initiative to improve the capacity of public health to use and exchange information electronically by promoting the use of standards and defining functional and technical requirements.	Current & Emerging – Clinical Registry, Communication Standards, Information Modeling for EHR, Public Health Registry, Breast and Cervical Cancer Registry, etc.
SNOMED	Systematized Nomenclature of Medicine	The College of American Pathologists for clinical reference terminology.	Licensed for use within the U.S. – emerging use for clinical data.

Other Standards - Information Structures for Communication

Table 5-4 contains a list of the information structures used by business processes for communication (e.g., messages, interfaces, and other information exchange formats).

Table 5-4. Information Structures for Communication

List of Communication Information Structures			
Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
Arden Syntax	N/A	- HL7. - HL7 clinical decision support standard for representing and sharing clinical knowledge in medical logic modules.	Current and emerging – relevant for claims validation, prior authorization, and case management processes.
ASTM E1762-95	American Society for Testing and Materials Standard Guide for Electronic Authentication of Health Care Information	- Maintained by ASTM. - Structure, characteristics, and requirements for user identification, access control, and other security requirements. - Structure and acceptable technologies for use by electronic signature mechanisms.	Emerging – relevant for Security and Privacy.
BPMN	Business Process Model and Notation	- A modeling notation used for documenting business process workflows. - Commonly used by business subject matter experts, business analysts, and technical developers.	Current – use for Business and Technical Architecture activity diagrams.
CCOW	Clinical Context Object Workgroup, Management Specification Version 1.4	- Maintained by HL7. - HL7 standard for integrating clinical applications at the point of use so that multiple, vendor-independent applications can work seamlessly from the caregiver's perspective.	Emerging – relevant for prior authorization and case management processes.
CDA	Clinical Document	Maintained by HL7.	Emerging – HIPAA

List of Communication Information Structures			
Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
	Architecture	HL7 standard for structured and unstructured clinical document exchange.	275 will likely require.
DICOM	Digital Imaging and Communications in Medicine	- Maintained by the National Electrical Manufacturers Association (NEMA). - Medical imaging data interchange standard published by the NEMA. - When used with CCOW, it synchronizes imaging systems with reporting systems and other clinical applications.	Emerging – relevant for claims validation, prior authorization, and case management processes.
HL7 V2	Version 2x message	- Maintained by HL7. - EDI clinical message standards using LOINC and other medical codes.	Current – HIPAA 275 will likely require.
HL7 V3	Version 3 artifact	- Maintained by HL7. - Object-oriented model (e.g., RIM) based artifact development methodology and specifications for HL7 V2 messages, CDA, CCOW, DICOM, and IEEE1079.	Emerging – HIPAA 275 will likely require.
IEEE 1073	Institute of Electrical and Electronics Engineers, 1073 Standard for Medical Device Communications	- Maintained by the Institute of Electrical and Electronics Engineers (IEEE). - Standard for electronic transmission of data from patient-connected bedside medical devices. - Will be able to communicate efficiently with HL7-based applications. - Both SDOs are working toward convergence in HL7 V.3.	Emerging – relevant for claims validation, prior authorization, and case management processes.
NCPDP	National Council for Prescription Drug Programs Standards	- Maintained by the National Council for Prescription Drug Programs. - NCPDP's Telecommunication Standard Version 5.1 and equivalent	Current – required by HIPAA Emerging – Version D.0.

List of Communication Information Structures			
Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
		NCPDP Batch Standard Batch Implementation Guide, Version Release 0, are the standards for retail pharmacy transactions.	
UML V2/UMM	Unified Modeling Language/Unified Modeling Methodology	• Maintained by the OMG. • Modeling language used by HL7, RIM, and ebXML. • Convertible to ERwin and other modeling languages. • UN/CEFACT-sponsored methodology for modeling information artifacts. • A modeling notation tool used for documenting system processes and blueprints. Commonly used by business subject matter experts, business analysts, information analysts, and technical developers.	Emerging – relevant for collaboration processes.
X12N	ASC X12 Insurance Subcommittee	• Maintained by ASC X12. • EDI health care administrative transactions based on core ASC X12 standards. • Uses required medical codes for HIPAA health care transactions. • Subcommittee X12C – Communications & Controls is developing XML Reference Model and design rules for all ASC X12 standards.	Current – HIPAA requires.

Other Standards - Infrastructure and Protocols

Table 5-5 contains a list of the infrastructures and protocols that enable information exchange, including standards for registering and discovering how to implement specified information exchanges.

Table 5-5. Infrastructure and Protocols that Enable Information Exchange

List of Infrastructure and Protocols that Enable Information Exchange			
Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
ASN.1	Abstract Syntax Notation One	- Maintained by International Telecommunications Union (ITU-I) and International Organization for Standardization (ISO). - Data syntax and constraint language.	Emerging – relevant for collaboration processes.
ASTM E31	Committee E31 on Healthcare Informatics	- Maintained by the ASTM. - Develops standards related to the architecture, content, storage, security, confidentiality, functionality, and communication of information used within health care. - The industry is considering ASTM Digital Signature Standards for HIPAA. - Currently working on the Semantic Web for Healthcare E2084-00 Standard Specification for Authentication of Health Care Information Using Digital Signatures.	Emerging – relevant for data architecture, information structures, and security and privacy collaboration processes.
BPSS	ebXML Business Process Specification Schema v1.01	- Maintained as a joint initiative by OASIS and UN/CEFACT. - ebXML specification schema provides a standard framework to configure business systems to support business transactions. - Based on the UN/CEFACT modeling methodology, it works with ebXML, Collaboration Protocol Profile (CPP), and Collaboration Protocol Profile and Agreement (CPPA) specifications.	Emerging – relevant for business processes, technical and data architectures, and collaboration processes.
Core Components	ebXML Core Component	Maintained as a joint initiative by the OASIS and UN/CEFACT.	Emerging – relevant for data architecture and collaboration

List of Infrastructure and Protocols that Enable Information Exchange			
Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
	Overview v1.05	- Core component architecture combines structured information with context. It identifies commonalities across business processes. - Core components are context-free, “general” building blocks that States can use across several business sectors. “Reuse” refers to using common core components for a specific business purpose.	processes.
CPP/CPPA	ebXML Collaboration-Protocol Profile and Agreement Specification Version 2.0	- Maintained as a joint initiative by OASIS and UN/CEFACT. - Standard for two or more business partners to engage in business transactions based on each party's message exchange capabilities as described in a CPP and agreed to in a CPPA. - A CPP describes each party's IT capabilities, communication protocols, security requirements, and supported business processes. - A CPPA describes the party's agreement about how they exchange messages and provides a definition of business transactions, transition rules, etc.	Emerging – relevant for collaboration processes.
EbMS	ebXML Message Service Specification Version 2.0	- Maintained as a joint initiative by OASIS and UN/CEFACT. - Defines the message envelope and header schema used to transfer ebXML messages over a communications protocol (e.g., HTTP or SMTP) and the behavior of software sending and receiving ebXML messages. - ebMS is a set of layered extensions to the base Simple Object Access Protocol (SOAP) and SOAP	Emerging – relevant for technical messaging architecture.

List of Infrastructure and Protocols that Enable Information Exchange			
Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
		Messages with attachments specifications.	
ISO 11179	International Organization for Standardization: Information Technology — Metadata Repository Standard	- Maintained by ISO. - ANSI standard that supports registration of data regardless of syntax, naming and definition conventions, and registry interoperability.	Emerging – relevant for registry, interoperability, and collaboration processes.
ISO 23950	International Organization for Standardization: Protocol for Information Search and Retrieval	- Maintained by ISO. - Discovery interface standard.	Emerging – relevant for registry, interoperability, and collaboration processes.
OCL	Object Constraint Language	- Maintained by OMG. - UML-based standard for specifying the refinements of artifacts based on models (e.g., RIM) that are essential for documenting collaboration profiles.	Emerging – relevant for collaboration processes.
OWL	Ontology Web Language	- Maintained by the World Wide Web Consortium (W3C). - Ontologies share domain information. They are critical for applications that search across or merge information from diverse communities. - Ontologies include computer-usable definitions of basic concepts in the domain and the relationships among them. They make knowledge reusable by encoding knowledge in a domain and knowledge that spans domains.	Emerging – relevant for collaboration processes.
Registry	ebXML Registry Information Model	Maintained as a joint initiative by	Emerging – relevant for component

List of Infrastructure and Protocols that Enable Information Exchange			
Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
	v2.0 OASIS/ebXML Registry Services Specification v2.0	- OASIS and UN/CEFACT. - Permanently stores information from a submitting organization. - Such information facilitates ebXML-based, business-to-business partnerships and transactions.	interoperability, standards conformance determination, and collaboration processes.
RDF	W3C Reference Description Framework	- Maintained by the W3C. - Integrates applications (e.g., library catalogs, worldwide directories, news syndication and aggregation, software, and personal collections of music and photos) using XML as an interchange syntax. - The RDF specifications provide a lightweight ontology system to support the exchange of knowledge on the Web.	Emerging – relevant for collaboration processes.
UDDI	Universal Description, Discovery and Integration (OASIS)	Maintained by OASIS Registry of Internet-based business services aligned with emerging Web services architectures.	Emerging – relevant for collaboration processes.
WS-1	W3C Web Services	- Maintained by the W3C. - The goal of the W3C Web Services Activity is to design the infrastructure, define the architecture, and create the core technologies for Web services. - The Web Services Activity Statement explains the W3C's work on this topic in more detail.	Emerging — relevant for collaboration processes.

Other Federal Agency Projects or Programs

The following federal agencies have either current or emerging relevance to MITA. **Table 5-6** notes their contribution to interoperability and collaboration.

Table 5-6. Other Federal Agency Projects or Programs

List of Other Federal Agency Projects or Programs			
Acronym	Organization Name	Organization Description	MITA Impacts
Models, vocabulary domains, and information structures used by federal health care agencies.			
FHIM	Federal Health Information Model	• A project under the Federal Health Interoperability Modeling and Standards (FHIMS) program. • A model of health care data developed for the FHA partner agencies seeking to develop a common Logical Information Model or Computationally Independent Model (CIM). • Transforming models to be NIEM compliant.	Current and emerging – MITA uses this as the parent model.
NIEM	National Information Exchange Model	• National program supported by the federal government designed to develop, disseminate, and support enterprise-wide information sharing standards and processes across communities of people (i.e., justice, public safety, emergency and disaster management, intelligence, and homeland security enterprise) at all levels and across all branches of government. • Provides tools, common terminology, governance, methodologies, and assistance to support development, discovery, dissemination, and reuse of Information Exchange Package Documentation (IEPDs). • Currently the NIEM healthcare domain does not exist, but it is under way.	Emerging – FHIM transforms its models into NIEM Models to be NIEM compliant; MITA is proposing to use the same transformation rules.
VHIM	Veterans Health Administration (VHA) Health	• The authoritative enterprise information model for VHA, representing the structure and	Current and emerging – FHIM and VHIM are harmonizing with each

List of Other Federal Agency Projects or Programs			
<i>Acronym</i>	<i>Organization Name</i>	<i>Organization Description</i>	<i>MITA Impacts</i>
	Information Model	content of all shared information that it exchanges across the enterprise.	other. MITA is using FHIM as its base model.

Using Data Standards

A state should use Data Standards to:

- ❖ Apply data standards for any state-specific data extensions of the LDM.
- ❖ Develop data standards associated with the physical datasets and databases created during implementation of components of the Medicaid Enterprise.
- ❖ Identify those business processes in their environment that do not use data standards and consider what data conversions are necessary.
- ❖ Develop its IT procurement by identifying data standards in the Request for Proposal (RFP) and including them in the evaluation criteria. This may initially increase the cost of the procurement but will, eventually; enable States to benefit from simpler and less costly acquisition and maintenance.
- ❖ Enable seamless interoperability and data sharing.
- ❖ Improve outcomes and reduce errors.

The mapping of data standards for the data models and messages, any associated metadata, and links for data standards and how to provide them to the national repository will follow in subsequent guidance.