
Part II — Information Architecture

Chapter 5 — Data Standards

Introduction

This section provides a discussion of the use of data standards by the MI Technology Architecture's (MITA's) Information Architecture (IA). The lack of shared data standards is one of the most important issues currently 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 data to be duplicated, which results in poor quality and wasted physical storage
- Increases paperwork and data collection burdens
- Reduces the analytic potential of health 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 will coordinate the identification and use of common data standards for the Medicaid enterprise. It will address the need for better agreement on common data vocabularies, assurances of privacy, and other issues surrounding electronic transmission of information.

This chapter answers the following questions:

- What is a MITA data standard?
- What are the benefits of using data standards?
- What is the scope of the MITA data standards?
- How are the MITA data standards developed?
- What are the key current and emerging health data standards?
- How do States use the MITA data standards?

Purpose

The purpose of the MITA data standards is to enable data sharing and interoperability of Medicaid enterprise information. The data standards allow both a syntactic and semantic understanding of this information.

Scope

This chapter should be read in conjunction with the technology standards chapter (Part III Chapter 8). MITA will use data standards produced by designated standard maintenance organizations (DSMOs) whenever available. If such standards are not available, MITA will facilitate the development of specific data standards and submit them to a DSMO for adoption. Because data standards are quite dynamic, a periodic review of the available data standards and versions is needed to keep the MITA data standards current.

What Is a MITA Data Standard?

Data standards are necessary when information is exchanged between two or more parties. They enable the sharing or exchange of information in a way that guarantees the mutual understanding of what is represented within that information. Data standards can be used for automated or manual processes. The key elements of a data standard are data element names, definitions, data types, and formatting rules. From a business point of view, MITA data standards represent agreements on the format and description of the shared data used by the Medicaid enterprise. MITA data standards describe objects, features, or items that are collected, automated, or affected by the business processes of a State's Medicaid enterprise.

MITA data standards fall into two major categories — structure data standards and vocabulary data standards:

- *Structure data standards* specify how data should be formatted or structured. Structure data standards are used for messages and data stores (e.g., flat files and databases) and enable two computer applications to exchange data, though not necessary to understand or act on that data. Traditional data standards have focused on the structural aspect of data standards (e.g., electronic data interchange [EDI], Health Level 7 [HL7] Version 2). This approach allowed the systems or applications to exchange data, but then point-to-point agreements needed to be developed (e.g., an interface control document) to enable applications to actually use this data.
- *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. *International Classification of Diseases*, Ninth Edition, Clinical Modification (ICD-9-CM) is an example of a vocabulary data standard.

The MITA IA will focus on both types of data standards in order to enable the interoperability and 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 will allocate their evolution across the MITA Maturity Model (MMM) and Business Capability Matrix (BCM). The final MITA maturity levels are designed to support seamless semantic operability of data and data sharing internally and with external partners. The data standards will be aligned with the MITA data models and MITA service interface definitions.

What Are the Benefits of Using Data Standards?

Medicaid has not taken full advantage of the efficiencies 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 have resulted 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 have been point-to-point, which often meant that the standard used from a State to Provider A could be different from the standard used for the same data to Provider B. This problem will grow exponentially as Medicaid begins to make use of electronic health records (EHRs) and to share data among Medicaid enterprises and other groups as part of normal business processes. Consistent data standards will be 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 it is needed.

Some of the benefits of data standardization include the following:

- Interoperability and the means by which a Medicaid enterprise can seamlessly share information, which will improve data availability to external users (e.g., public health and bioterrorism detection)
- Improved data quality and consistency
- Reduced medical errors, improved care quality, and the elimination of redundant cost through the use of standardized terminologies
- Increased data compatibility
- Improved consistency and efficiency of data collection, with a seamless flow of information without the need for reformatting and transcribing data each time it needs to be shared
- Reduced data redundancy (i.e., data only needs to be stored once in the enterprise or even not at all, as in the case of business processes that use data from an external enterprise)
- Improved data access
- More efficient use of resources by enabling States to reduce the effort needed to remain current with the ever-expanding world of data standards and return to the business of Medicaid
- Leveraged use of standardization work previously done by MITA and other States
- Increased data sharing
- Increased data integration
- Better understanding of data through the use of vocabulary data standards
- Improved data security

What Is the Scope of the MITA Data Standards?

MITA Framework 2.0 only discusses the concepts related to the MITA data standards. These data standards will be mapped to MITA data models and MITA messages in future versions of the Framework. Future versions will also contain the procedures for developing MITA-specific data standards, governance procedures for MITA data standards, repository information, and business cases. The following points describe the scope of the MITA data standards:

- MITA Framework 2.0 does not contain a Logical Data Model (LDM). Future versions of the MITA Framework will evolve as the processes and services are defined in detail and will, at a minimum, contain all the data needed by the defined process and services. At that point, the data standards associated with the entities in the model will be mapped.
- The MITA data standards will be extended to be compatible with EHR once they are defined. The data standards will also be updated to stay current with government initiatives (e.g., National Health Information Infrastructure [NHII], Federal Enterprise Architecture [FEA], and Federal Health Architecture [FHA]), DSMOs, and industry updates.
- MITA data standards will not map to information for State-specific data and messages. The States are responsible for supplementing the MITA data standards with the standards needed for their unique data messages.
- Data standards associated with the physical data model, databases, and data files will not be part of MITA. Individual States are responsible for mapping or developing data standards to these areas.

How Are the MITA Data Standards Developed?

MITA will develop its data standards using the following principles:

- It will identify what standards are already in use by current State Medicaid systems.
- It will align data standards with data model entities/attributes and messages.
- It will only develop new standards when no alternatives exist. Data standards will typically be adopted in the following order of priorities:
 1. International standards
 2. National standards
 3. Industry/healthcare standards
 4. MITA- or State-developed standards
- Where possible, it will adopt a minimum standard that is usable (or will be usable for To-Be capabilities) by the maximum number of State Medicaid enterprises. States will be free to add (or extend) State-specific elements to these minimum standards.

- It will allow versioning and allocate the standard to MITA maturity levels. This will enable the data standard and the technology and business processes to evolve over time as States progress up the MMM.
- Once the need for a new data standard has been determined, the MITA team will form a collaborative workgroup with State representatives and vendors to develop that standard.
- All standards will be submitted to the MITA governance process. (NOTE: Adoption of this process is in process.)
- It will attempt to submit all MITA-developed standards to a standards development organization (SDO) whenever possible.
- The mapping of data standards for the data models and messages, any associated metadata, and MITA standards and links for non-MITA data standards will be maintained on the MITA repository.

MITA will use business scenarios and models to develop the MITA data standards. These activities are described in the following sections.

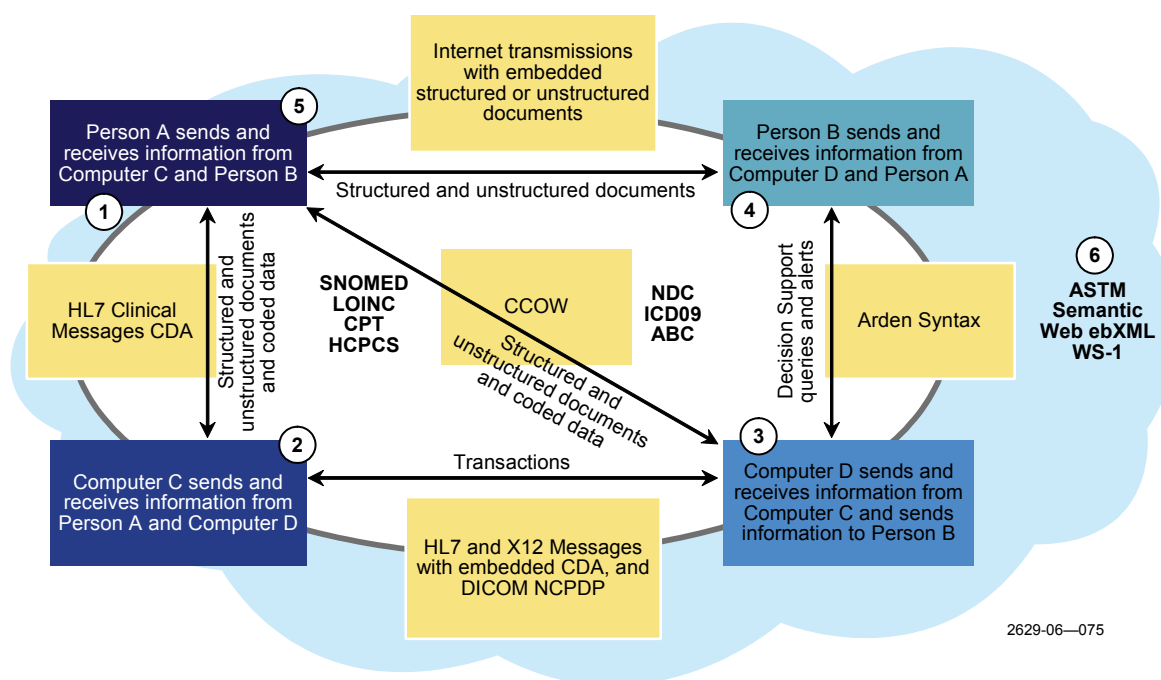
Business Scenarios Showing the Use of Standards

This section models the scenarios in which healthcare information is exchanged. It illustrates the importance of data standards, how they fit together, why they are of concern for MITA, and how they will contribute to the MITA data-sharing infrastructure. (Information about particular standards can be found in the tables toward the end of this chapter.)

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

1. Person-to-Computer Exchange:

- Human-readable administrative transactions (using X12, HL7, National Council for Prescription Drug Programs [NCPDP], 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).



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

CDA can carry structured messages (e.g., clinical observations coded in LOINC [logical observation identifiers, names and codes]) and unstructured messages (e.g., DICOM [digital imaging and communications in medicine] 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 healthcare information.

The future Medicaid Management Information System (MMIS) must be capable of processing the Health Insurance Portability and Accountability Act of 1996 (HIPAA) X12 275 healthcare attachment transaction. It will include the data from HL7 standards. These standards and the HIS architecture will be needed to support prior authorization, clinical reviews of claims, and case-management business processes in MITA. MITA will support the incorporation of the clinical information into the computer-to-computer exchange of administrative transactions using the HIPAA X12 278 and other transactions.

2. Computer-to-Computer Exchange:

- Inter-enterprise exchange of administrative transactions and clinical information. Many of these transactions are not currently conducted in accordance with any industry-recognized standards, a situation that adds complexity to trading partner

management. This is the area in which the adoption of standards would most benefit MITA. (Web portals also permit person-to-computer exchanges by creating human-readable versions of the administrative transactions.)

Source data in HL7 may not map well to the data needed to populate an X12 or NCPDP transaction. It will be necessary to harmonize the data elements used in these different specifications.

- Intra-enterprise exchange of messages and information structures using message broker technologies. MITA will likely specify 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 will be immediately updated 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 Prior Authorization 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 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 State Medicaid agencies. These information exchanges should follow transport protocol and privacy and security standards. Integrating these information exchanges into the MMIS is an opportunity for MITA. 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, 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. A collaboration protocol agreement (CPA) is used to document the common elements in the collaboration protocol profile (CPP) of the trading partners. MITA supports the adoption of 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 healthcare standards from models (or they are reverse engineering their standards to models) such as the HL7 Reference Information Model (RIM) using Unified Modeling Language (UML). This enables users to create CPPs in which they can describe their conformance to a standard, any customizations or constraints they have 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 will require architecting data harmonization to a core model that supports refinements for business-line specifications.

Current X12N and HL7 Version 2 message standards are not derived according to precise rules from any core model. Without this underpinning, X12N and HL7 Version 2 transactions cannot describe their conformance to their standards, which makes it difficult to judge interoperability except on a case-by-case basis. At this time, HL7 Version 3 is in the early adopter phase, and X12N needs to complete its efforts to reverse engineer a core model, possibly modeled on the RIM. Once these efforts are completed, MITA could consider adoption of HL7 Version 3 RIM-based standards and support the use of the related HL7 development framework as the method by which MITA users can demonstrate conformance and develop interfaces.

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

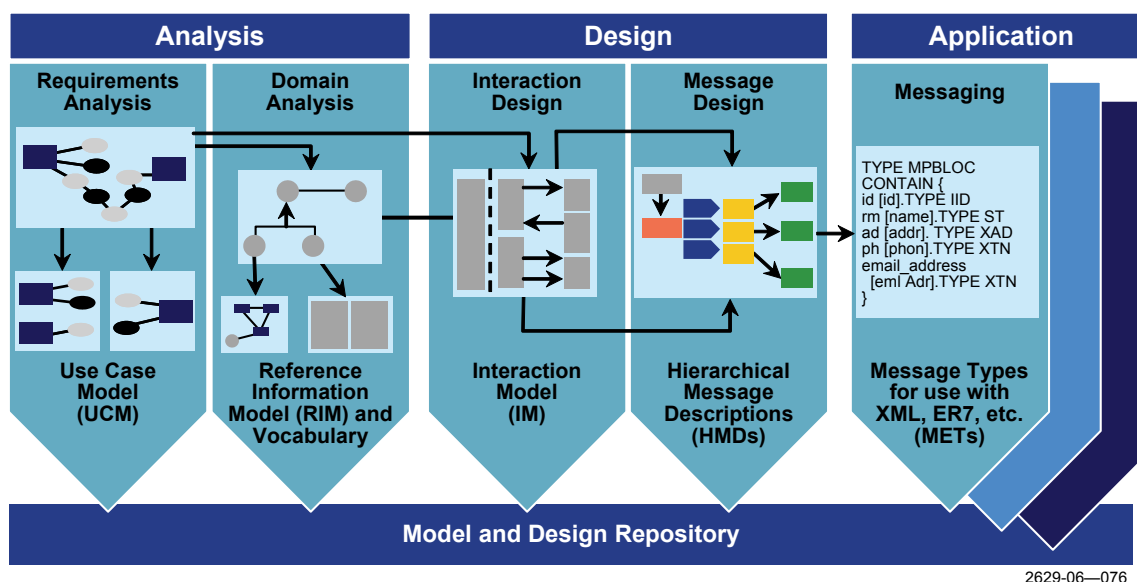


Figure 5-2. Model and Design Repository

What Are the Key Current and Emerging Health Data Standards?

Health SDOs and the standards 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, even internationally (e.g., the International Classification of Diseases or the National Drug Codes). Before HIPAA, the healthcare 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; instead, the HIPAA Transactions and Code Sets Rule adopts existing healthcare standards. HIPAA mandates internal codes (which are defined in the transaction implementation guides) and external code sets (which are maintained by different outside organizations). In addition, the NHII has adopted (or is considering the development and adoption of) clinical codes and information structures. MTA must reference all HIPAA-mandated standards, including those that currently exist and those that will be added in the future.

The DSMOs that are responsible for the major external medical codes required by HIPAA are listed in the following tables. **Table 5-1** lists some major medical code maintenance organizations and other standards development or advisory organizations that will affect MTA.

Table 5-1. Key Standards Development and Maintenance Organizations

DSMO Organization	Purpose
American Dental Association (ADA) (Statutory Advisory Group)	<ul style="list-style-type: none"> ■ Works with others to develop and maintain the Code on Dental Procedures and Nomenclature (CDT), currently the CDT-3
Accredited Standards Committee (ASC) X12N — Insurance Subcommittee (DSMO) (SDO)	<ul style="list-style-type: none"> ■ Develops standards for administrative transactions to facilitate electronic data exchange in the healthcare industry ■ Chartered by the American National Standards Institute (ANSI) as a consensus-building organization ■ Open to the public for input, but only paid members can vote ■ Representation from the Centers for Medicare & Medicaid Services (CMS) and State Medicaid enterprises is increasing ■ A Medicaid caucus is held in conjunction with all X12N meetings
Dental Content Committee of the ADA (DeCC) (DSMO) (DCC)	<ul style="list-style-type: none"> ■ Sets standards for dental claim data content and maintains the CDT ■ A committee of the ADA

DSMO Organization	Purpose
Health Level 7 (HL7) (DSMO) (SDO)	<ul style="list-style-type: none"> ■ Develops and publishes standards for communicating clinical information ■ ANSI accredited ■ Of particular interest to Medicaid is the Attachment Special Interest Group, which is finalizing attachments for the following claims: ambulance, rehabilitation, medications, laboratory, clinical reports, and emergencies ■ It is developing standards for clinical and administrative information attached to claims ■ Like X12N, HL7 operates on a consensus basis
National Council for Prescription Drug Programs (NCPDP) (DSMO) (SDO)	<ul style="list-style-type: none"> ■ Develops standards for pharmacy payers and providers across the country ■ 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)	<ul style="list-style-type: none"> ■ Acts as the public advisory body to the Department of Health and Human Services (DHHS) for health data and statistics ■ Provides advice and assistance to DHHS and serves as a forum for interaction with the public ■ Serves as a national forum to foster collaboration and consensus on key data standards and privacy issues ■ Named in HIPAA to advise the Secretary of DHHS 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)	<ul style="list-style-type: none"> ■ Tasked with the explicit mission of assisting U.S. industry to advance its development and application of technology ■ The U.S. government agency with leading expertise in technology standards and industry standardization issues ■ Its staff is actively involved in developing voluntary consensus standards (www.nist.gov)
National Uniform Billing Committee (NUBC) (DSMO) (DCC) (Statutory Advisory Group)	<ul style="list-style-type: none"> ■ 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 the CMS, State Medicaid agencies, the National Association of State Medicaid Directors (NASMD), and public health representatives
National Uniform Claim Committee (NUCC) (DSMO) (DCC) (Statutory Advisory Group)	<ul style="list-style-type: none"> ■ Maintain the data set for the professional claim ■ Chaired by the American Medical Association (AMA) in partnership with the CMS ■ Membership includes State- and national-level representatives from Medicaid (including CMS and NASMD) and public health representatives

Designated Standard Maintenance Organizations

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

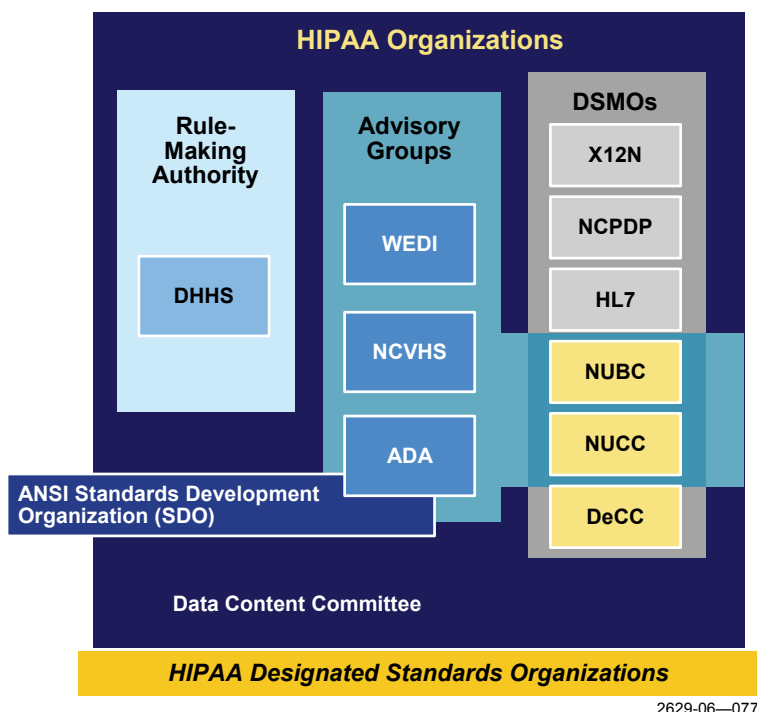


Figure 5-3. DSMO Roles

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

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

Acronym	Organization	Activities
ANSI	American National Standards Institute	<ul style="list-style-type: none"> ■ A not-for-profit, nongovernmental organization headquartered in Washington, D.C. ■ Serve as the U.S. member body 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 (www.ansi.org)

Acronym	Organization	Activities
ANSI HISB	ANSI Healthcare Informatics Standards Board	<ul style="list-style-type: none"> ■ Forum for voluntary coordination of healthcare informatics standards nationally ■ All SDOs participate in the HISB ■ The HISB supplied the Secretary of DHHS with an inventory of healthcare informatics standards (aspe.os.dhhs.gov/admsimp/) ■ Oversees the United States Health Information Knowledgebase (USHIK), the metadata registry project
DISA	Data Interchange Standards Association	<ul style="list-style-type: none"> ■ Supports the development and use of electronic business interchange standards in electronic commerce ■ Establishes cross-industry standards ■ Works with ASC X12
UN/CEFACT	United Nations Centre for the Facilitation of the Administration, Commerce and Transport	<ul style="list-style-type: none"> ■ Works to improve the ability of business, trade, and administrative organizations from developed, developing, and transitional economies to effectively exchange products and relevant services ■ Works to facilitate international transactions by simplifying and harmonizing procedures and information flows ■ Collaborates with OASIS on ebXML and core components (http://www.unece.org/cefact/index.htm)
OASIS	Organization for the Advancement of Structured Information Standards	<ul style="list-style-type: none"> ■ 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 consensus and unite disparate efforts (http://www.oasis-open.org/who/)
NASMD	National Association of State Medicaid Directors	<ul style="list-style-type: none"> ■ Sponsors NMEH and appoints State representatives to the NUCC, NUBC, and Healthcare Common Procedure Coding System (HCPCS) committees ■ Will comment on future Notices of Proposed Rulemaking
NMEH	National Medicaid EDI HIPAA Workgroup	<ul style="list-style-type: none"> ■ Acts as coordinator for participating States and is best known for the local medical codes subworkgroup
PHDSC	Public Health Data Standards Consortium	<ul style="list-style-type: none"> ■ Advisory group and voice of public health interests in SDO meetings ■ Part of the CDC's National Center for Health Statistics

Other Standards Maintenance Organizations

The following standards have either current or emerging relevance to MITA, and **Table 5-3** notes their contribution to interoperability and collaboration.

Table 5-3. Other Standards Maintenance Organizations

Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
Vocabulary domains and data code sets that business processes use to relay semantics or meaning			
CDT	Code on Dental Procedures & Nomenclature	<ul style="list-style-type: none"> American Dental Association (ADA) 	Current — HIPAA requires
CPT-4	Current Procedural Terminology, Fourth Edition	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> The 3M Corporation contracts with CMS to maintain the DRGs 	Current — HIPAA requires
HCPCS	Healthcare Common Procedure Coding System	<ul style="list-style-type: none"> CMS's HCPCS Committee reviews and votes on requests to revise HCPCS codes or add new ones 	Current — HIPAA requires use of HCPCS "S" codes instead
ICD-9-CM Vol. 1 & 2 Diagnosis Codes	International Classification of Diseases, 9th Edition, Clinical Modification, Volume 1 & 2, Diagnoses	<ul style="list-style-type: none"> Maintained by the United Nations World Health Organization and distributed by the DHHS The NCVHS has lead responsibility in the U.S. for the Tabular List and Alphabetic Index Version ICD-10 is under development 	Current — HIPAA requires
ICD-9-CM Vol. 3 Procedure Codes	International Classification of Diseases, 9th Edition, Clinical Modification, Volume 3, Procedures	<ul style="list-style-type: none"> The DHHS for the following inpatient procedures or other actions as reported by hospitals: Prevention, Diagnosis, Treatment, and Management Includes the Official ICD-9-CM Guidelines for Coding and Reporting 	Current — HIPAA requires
NDC	National Drug Codes	<ul style="list-style-type: none"> The DHHS, in collaboration with drug manufacturers, for the following: drugs and biologics 	Current — HIPAA requires for retail pharmacy & drug rebate
LOINC	Logical Observation Identifiers, Names and Codes	<ul style="list-style-type: none"> The Regenstrief Institute, a non-profit medical research organization associated with Indiana University 	Current — HIPAA 275 will likely require
SNOMED	Systematized Nomenclature of Medicine	<ul style="list-style-type: none"> The College of American Pathologists for clinical reference terminology 	Licensed for use within the U.S. — emerging use for clinical data

Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
Non-Medical Code Sets used in X12 HIPAA Transactions	Including Provider Taxonomy Codes, Claim Status Codes, Country Codes, Facility Codes, and Revenue Codes	<ul style="list-style-type: none"> ■ Maintenance organizations listed in Appendix C ■ Non-medical data code sets as described in the HIPAA Implementation Guides and other information structure standards required for healthcare attachments and other mandatory reporting 	Current & Emerging — HIPAA will require
Information structures that are used by business processes for communication (e.g., messages, interfaces, and other information exchange formats)			
X12N	X12 Insurance Committee	<ul style="list-style-type: none"> ■ Maintained by ANSI Accredited Standards Committee (ASC) X12 ■ EDI healthcare administrative transactions based on core X12 standards ■ Uses required medical codes for HIPAA healthcare transactions ■ X12 C is developing XML design rules for all X12 standards 	Current — HIPAA requires
HL7 V2	Version 2x message	<ul style="list-style-type: none"> ■ Maintained by Health Level 7 (HL7) ■ EDI clinical message standards using LOINC and other medical codes 	Emerging — HIPAA 275 will likely require
HL7 V3	Version 3 artifact	<ul style="list-style-type: none"> ■ Maintained by Health Level 7 (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
CCOW	Clinical Context Object Workgroup, Management Specification Version 1.4	<ul style="list-style-type: none"> ■ Maintained by Health Level 7 (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 MITA prior authorization and case management processes
CDA	Clinical Document Architecture	<ul style="list-style-type: none"> ■ Maintained by Health Level 7 (HL7) ■ HL7 standard for structured and unstructured clinical document exchange 	Emerging — HIPAA 275 will likely require
DICOM	Digital Imaging and Communications in Medicine	<ul style="list-style-type: none"> ■ Maintained by the National Electrical Manufacturers Association (NEMA) ■ Medical imaging data interchange standard published by the National Electrical Manufacturers Association ■ When used with CCOW, it synchronizes imaging systems with reporting systems and other clinical applications 	Emerging — relevant for MITA claims validation, prior authorization, and case management processes

Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
ASTM E1762-95	American Society for Testing and Materials Standard Guide for Electronic Authentication of Health Care Information	<ul style="list-style-type: none"> ■ Maintained by American Society for Testing and Materials (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 MITA Security and Privacy
IEEE 1073	Institute of Electrical and Electronics Engineers, 1073 Standard for Medical Device Communications	<ul style="list-style-type: none"> ■ Maintained by the Institute of Electrical and Electronics Engineers (IEEE) ■ Standard for electronic transmission of data from patient-connected bedside medical devices ■ Must be able to efficiently communicate with HL7-based applications ■ Both SDOs are working toward convergence in HL7 V.3 	Emerging — relevant for MITA claims validation, prior authorization, and case management processes
NCPDP	National Council for Prescription Drug Programs Standards	<ul style="list-style-type: none"> ■ Maintained by the National Council for Prescription Drug Programs ■ NCPDP's Telecommunication Standard Version 5.1 and equivalent NCPDP Batch Standard Batch Implementation Guide, Version Release 0, are the standards for retail pharmacy transactions 	Current — required by HIPAA
Arden Syntax	N/A	<ul style="list-style-type: none"> ■ Maintained by Health Level 7 (HL7) ■ HL7 clinical decision support standard for representing and sharing clinical knowledge in medical logic modules 	Emerging — relevant for MITA claims validation, prior authorization, and case management processes

Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
Infrastructure and protocols that enable information exchange, including standards for registering and discovering how to implement specified information exchanges			
Core Components	ebXML Core Component Overview v1.05	<ul style="list-style-type: none"> ■ Maintained as a joint initiative by the Organization for the Advancement of Structured Information Standards (OASIS) and United Nations Centre for the Facilitation of the Administration, Commerce, and Transport (UN/CEFACT) ■ Core component architecture combines structured information with context. It is designed to identify commonality across business processes ■ Core components are context-free, “general” building blocks that can be used across several business sectors ■ “Reuse” refers to using common core components for a specific business purpose (http://www.ebxml.org/specs/ccOVER.pdf) 	Emerging — relevant for MITA data architecture and collaboration processes
ISO11179	International Standards Organization: Information Technology — Metadata Repository Standard	<ul style="list-style-type: none"> ■ Maintained by International Organization for Standardization (ISO) ■ ANSI standard that supports registration of data regardless of syntax, naming and definition conventions, and registry interoperability 	Emerging — relevant for MITA registry, interoperability, and collaboration processes
ISO 23950	International Standards Organization: Protocol for Information Search and Retrieval	<ul style="list-style-type: none"> ■ Maintained by International Organization for Standardization (ISO) ■ Discovery interface standard 	Emerging — relevant for MITA registry, interoperability, and collaboration processes
BPSS	ebXML Business Process Specification Schema v1.01	<ul style="list-style-type: none"> ■ Maintained as a joint initiative by Organization for the Advancement of Structured Information Standards (OASIS) and United Nations Centre for the Facilitation of the Administration, Commerce, and Transport (UN/CEFACT) ■ ebXML specification schema provides a standard framework to configure business systems to support of business transactions ■ Based on the UN/CEFACT modeling methodology, it works with ebXML CPP and CPA specifications (http://www.ebxml.org/specs/ebBPSS.pdf) 	Emerging — relevant for MITA business processes, technical and data architectures, and collaboration processes

Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
Registry	ebXML Registry Information Model v2.0 OASIS/ebXML Registry Services Specification v2.0	<ul style="list-style-type: none"> ■ Maintained as a joint initiative by Organization for the Advancement of Structured Information Standards (OASIS) and United Nations Centre for the Facilitation of the Administration, Commerce, and Transport (UN/CEFACT) ■ Permanently stores information from a submitting organization ■ Such information is used to facilitate ebXML-based, business-to-business partnerships and transactions (http://www.ebxml.org/specs/ebim2.pdf) (http://www.ebxml.org/specs/ebrs2.pdf) 	Emerging — relevant for component interoperability and standards conformance determination and collaboration processes
CPP/CPA	ebXML Collaboration-Protocol Profile and Agreement Specification Version 2.0	<ul style="list-style-type: none"> ■ Maintained as a joint initiative by Organization for the Advancement of Structured Information Standards (OASIS) and United Nations Centre for the Facilitation of the Administration, Commerce, and Transport (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 CPA ■ A CPP describes each party's IT capabilities, communication protocols, security requirements, and supported business processes ■ A CPA describes the party's agreement about how they will exchange messages and provides a definition of business transactions, transition rules, etc. (http://www.ebxml.org/specs/ebcpp-2.0.pdf) 	Emerging — relevant for MITA collaboration processes

Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
EbMS	ebXML Message Service Specification Version 2.0	<ul style="list-style-type: none"> ■ Maintained as a joint initiative by Organization for the Advancement of Structured Information Standards (OASIS) and United Nations Centre for the Facilitation of the Administration, Commerce, and Transport (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 defined as a set of layered extensions to the base Simple Object Access Protocol (SOAP) and SOAP Messages with attachments specifications (http://www.ebxml.org/specs/ebMS2.pdf) 	Emerging — relevant for MITA technical messaging architecture
OCL	Object Constraint Language	<ul style="list-style-type: none"> ■ Maintained by the Object Management Group (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 MITA collaboration processes
UML V2/UMM	Unified Modeling Language/Unified Modeling Methodology	<ul style="list-style-type: none"> ■ Maintained by the Object Management Group (OMG) ■ Modeling language upon which HL7 RIM and ebXML are based ■ Convertible to ERwin and other modeling languages ■ UN/CEFACT-sponsored methodology for modeling information artifacts 	Emerging — relevant for MITA collaboration processes
OWL	Ontology Web Language	<ul style="list-style-type: none"> ■ Maintained by the World Wide Web Consortium (W3C) ■ Ontologies are used to 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 (http://www.w3.org/TR/Webont-req/#onto-def) 	Emerging — relevant for MITA collaboration processes

Acronym	Standard Name	Maintenance Organization and Description	MITA Impacts
RDF	W3C Reference Description Framework	<ul style="list-style-type: none"> ■ Maintained by the World Wide Web Consortium (W3C) ■ Integrates applications (e.g., library catalogs, world-wide 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 MITA collaboration processes
ASN.1	Abstract Syntax Notation One	<ul style="list-style-type: none"> ■ Maintained by International Telecommunications Union (ITU-I) and International Organization for Standardization (ISO) ■ Data syntax and constraint language 	Emerging — relevant for MITA collaboration processes
ASTM E31	Committee E31 on Healthcare Informatics	<ul style="list-style-type: none"> ■ Maintained by the American Society for Testing and Materials (ASTM) ■ Develops standards related to the architecture, content, storage, security, confidentiality, functionality, and communication of information used within healthcare ■ ASTM Digital Signature Standards are being considered for HIPAA ■ Currently working on the Semantic Web for Healthcare E2084-00 Standard Specification for Authentication of Healthcare Information Using Digital Signatures, which will be important for collaboration 	Emerging — relevant for MITA data architecture, information structures, and security and privacy collaboration processes
WS-1	W3C Web Services	<ul style="list-style-type: none"> ■ Maintained by the World Wide Web Consortium (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 MITA collaboration processes
UDDI	Universal Description, Discovery and Integration (OASIS)	<ul style="list-style-type: none"> ■ Maintained by Organization for the Advancement of Structured Information Standards (OASIS) Registry of Internet-based business services aligned with emerging Web services architectures (http://www.uddi.org/pubs/the_evolution_of_uddi_20020719.pdf) 	Emerging — relevant for MITA collaboration processes

How Do States Use the MITA Data Standards?

- States will need to apply data standards for any State-specific data extensions of the LDM.
- States will need to develop data standards associated with the physical datasets and databases created during implementation of components of the Medicaid enterprise.
- States will need to identify those business processes in their environment that do not use data standards and consider what data conversions will be needed.
- For a State's IT procurement, MITA data standards need to be listed in the RFP and included 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.

Conclusion

The MITA data standards are critical to the successful transformation and evolution of Medicaid enterprises. The MITA data standards will help ensure that implementations are interoperable and plug-and-play capable. With participation by States, partners, and other stakeholders, the MITA data standards will become a tool to enable seamless interoperability and data sharing, which will ultimately reward State Medicaid enterprises with lower cost (through elimination of redundant or unnecessary operations), improved outcomes and reduced errors (through access to quality and outcome information), and improved stakeholder satisfaction (through self-service).