

HL7

Purpose:

Health Level Seven is one of several American National Standards Institute (ANSI) - accredited Standards Developing Organizations (SDOs) operating in the healthcare arena. The specific domain that Health Level Seven addresses is clinical and administrative data. HL7's mission is: *"To provide standards for the exchange, management and integration of data that support clinical patient care and the management, delivery and evaluation of healthcare services. Specifically, to create flexible, cost effective approaches, standards, guidelines, methodologies, and related services for interoperability between healthcare information systems."* Health Level Seven develops specifications, the most widely used being a messaging standard that enables disparate healthcare applications to exchange keys sets of clinical and administrative data. The organization sets standards for performance below which we do not want to fall. Data integrity is of the utmost importance in healthcare. HL7 is writing the informatics standards that direct how data is exchanged in any electronic format.

Interoperability means that HL7 supports healthcare data exchange in any electronic format. Its focus is on "semantic interoperability," which is more than just getting a message from point A to point B," It ensures that point B "understands and interprets the message in the same way that point A intended." HL7 structures the data in a coded manner that allows exchange within, between, and among computer systems. Data integrity is preserved when sending data, receiving data, storing data, and retrieving data. "Level Seven" refers to the highest level of the International Standards Organization's (ISO) communications mode. The seventh level supports such functions as security checks, participant identification, availability checks, exchange mechanism negotiations and, most importantly, data exchange structuring.

HL7 writes standards for all types of medical data exchange, including nursing. The nursing data refers to the ANA accepted nursing terminologies. The exchange of data can only have meaning to the receiver if the language used has well defined and unambiguous meaning. Interoperability ensures the successful exchange of information among diverse systems.

Collaborative efforts:

Its volunteer members-- providers, vendors, payers, consultants, government groups and others who have an interest in the development and advancement of clinical and administrative standards for healthcare—develop the standards. These members are known as the Working Group. HL7 includes at least one representative from NANDA, a vocabulary developer. International. SNOMED is a registered standard with the HL7 Vocabulary Technical Committee for use in HL7 messages. HL7 is accepted and used internationally, with affiliate groups around the world. The organization continues to dedicate its efforts to ensuring concurrence with other United States and International standards development activities. It facilitates interconnectivity and cuts costs for organizations to exchange data. The group addresses the unique

requirements of already installed hospital and departmental systems, some of which use mature technologies. HL7 strives to identify and support the diverse requirements of each of its membership constituencies: Users, Vendors, and Consultants. This focus on interoperability instead of on the needs of a particular group, make it the most widely used standards organization.

LOINC (Logical Observation Identifier Names and Codes) provides a set of universal names and ID codes for identifying laboratory test results. It now includes, vital signs, CNS pressure monitoring, intake and output, EKG measurements, and obstetric US measurements. LOINC has considerable input into LH7.

DICOM, which addresses the communication of digital images, are working with HL7 in the context of the Image Integration Special Interest Group to their structured reporting methodology to introduce images into HL7 structured documents.

HL7 has been asked by the Department of Health and Human Services to review the Institute of Medicine's (IOM) recommendation and create an electronic medical records (EMR) functionality standard. It is speculated that the Centers for Medicare & Medicaid Services will ultimately tie providers' funding to compliance with EHR standards set by HL7. Development of a clear standard for an EHR were just beginning in 2004.

Workgroups at the Nursing Terminology Summits conducted tested examples of nursing terminology against the HL7 RIM class Observation. They concluded that it is possible to model and map nursing information into the comprehensive healthcare information model, the HL7 RIM. The integration of nursing information, terminology, and processes in information models is a first step toward rendering nursing information machine-readable in electronic patient records and messages.

Membership:

The organization, founded in 1987 with an original committee of 14 people, now numbers nearly 2,000 members including healthcare providers, vendors and consultants.

The organization is managed by a Board of Directors, which is comprised of eight elected positions and three appointed positions. The organization is comprised of Technical Committees and Special Interest Groups that are responsible for defining the HL7 standard protocol. Each Technical Committee and Special Interest group is chaired by two or more co-chairs. Collectively, the co-chairs comprise the Technical Steering Committee, which votes on issues related to the standard. Votes of the Technical Steering Committee as passed as recommendations to the Board of Directors, who make the final decision. HL7 members are encouraged to participate in all of these committees.

HL7's Vocabulary Technical Committee is responsible for organizing the way in which vocabulary terminologies are organized and maintained within an HL7-created repository, called the RIM (reference information model). For this endeavor HL7 works with "standards-development organizations, creators and maintainers of vocabularies, government agencies and regulatory bodies, clinical professional specialty groups, vocabulary content providers, and vocabulary tool ventors."

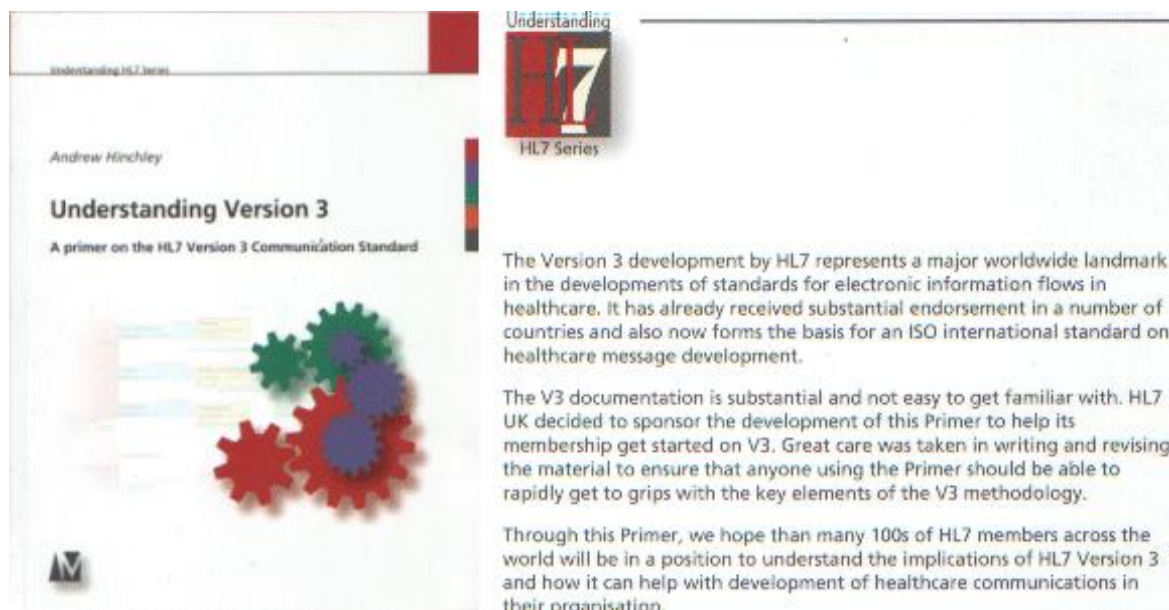
Membership in HL7 is available to everyone interested in the development of a cost-effective approach to system connectivity. Involvement and support from HL7's members is crucial to the ongoing expansion and enhancement of the HL7 standard and the overall success of the organization.

HL7 offers two main categories of membership: Individual and Organizational. Individual membership is geared toward those with a personal interest in the standard, while organizational membership is designed for those who will be using the standard for business purposes. Organizational memberships include benefits crucial to those who rely on the standard as part of their business plan—the most critical of these being the right to distribute excerpts of the standard to clients (as part of technical documentation or proposals)—or distribute the standard within your organization.

Publications:

In 1999, two HL7 protocols were published in an effort to move HL7 beyond its traditional message-based functionality. First, the HL7 organization published the Clinical Context Management Specification Version 1.0 (CCM). The CCM standard establishes nationwide support for the visual integration of disparate healthcare application on the clinical desktop. The enduser would be able to view results from different clinical systems as if they were one. Also, the Arden Syntax for Medical Logic Systems Version 2.0 was accepted as an American National Standard. This HL7 language encodes medical decision-making into healthcare knowledge bases in the form of alerts, reminders, interpretations and diagnoses. HL7 has published multiple versions of its standards.

The latest publication is the release of the version 3.0 standard. The following figure shows a sample publication related to version 3.0.



Accomplishments

Since the publication and widespread implementation of HL7 version 2.1 in 1990, use of the standard has slashed interface costs by specifying the meaning of events that trigger information flows and the definition of the data fields that flow between systems. The cost of an interface has gone from a maximum of \$250,000 to \$10,000 today. And it can also reduce the implementation time and amount of work required to connect many diverse systems.

HL7 has grown to be much more than the clinical messaging for which it was originally developed. It serves to tighten medical interface specifications and expand data exchange possibilities.

The current version of the HL7 standard (3.0) has established itself as a nearly universal standard for clinical and administrative data exchange. Healthcare organizations face a number of information technology challenges and opportunities moving into the new century, not the least of which was the anticipated introduction of a new and radically improved version of the HL7 standard. As with previous versions of the Standard, HL7 3.0 establishes an ideal presentation of information or encoding rules which facilitate the exchange of patient centric information throughout the industry. The primary goal of HL7 version 3.0 is to offer a comprehensive standard that is definite and testable. It will define messages between systems to the degree that difficult negotiations and compromise can be totally eliminated or minimized. XML (Extensible Mark up Language) will be a new addition to HL7 version 3.0 and many associate that sole fact with version 3.0 being successful. We hope to show that although XML will certainly be a very valuable asset of HL7 version 3.0, it is simply one improvement in a vastly better interfacing standard.

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