Standards & Testing

NIST has a long history of advancing standards and the use of technology in the United States – two key factors driving the adoption of health information technologies in today's healthcare arena.

Overview

NIST supports health IT standards development and facilitates interoperability through its standards and testing research initiatives. NIST research efforts contribute to the documentary standards necessary to achieve the vision of an interoperable health IT network that will improve healthcare quality.

Industry Need Addressed

Research activities focus on both the refinement of current industry health IT standards and the development of standards needed for the future, such as those that will shape emerging healthcare technologies.

NIST Approach

To accelerate health IT standards, NIST provides technical expertise and leverages industry-led, consensus-based standards development and harmonization efforts. NIST plays a critical role providing expertise to ensure that the standards are further constrained and defined through detailed implementation guidelines. NIST participates early in the standards development process and helps ensure that the requisite infrastructural standards (such as clinical information exchange, security, and usability) are complete and unambiguous. To achieve all of these objectives, NIST collaborates with standard development organizations, such as Health Level Seven (HL7), IEEE, and Integrated Healthcare Enterprise (IHE) and engages with other federal agencies that have responsibility for health IT standards and technologies.

NIST makes available testing tools for the following:

- **Healthcare Infrastructure Integration** (http://ihexds.nist.gov/) – NIST collaborates in the development of a standards-based registry infrastructure that will allow healthcare professionals to find and access all pertinent documents of clinical information regarding a patient regardless of the healthcare organization that creates and manages the documents based on the Cross Enterprise Document Sharing (XDS) and related profiles published by IHE.

- **Healthcare Message Test Generation** (http://hl7v2tools.nist.gov/#tools.html) – NIST has built and continues to develop a tool kit that supports the testing of HL7 V2 message interfaces based on the concept of message profiles.

- **Medical Device Communication** (http://www.nist.gov/medicaldevices) – NIST researchers are collaborating with medical device experts to facilitate the development and adoption of standards for medical device communications throughout the healthcare enterprise as well as integration into the electronic health record.

- **Nationwide Health Information Network** (www.nist.gov/healthcare/testing/nhin) – NIST has been working with the Office of the National Coordinator (ONC) Nationwide Health Information Network (NHIN) initiative in the development of conformance test tools based on the NHIN specifications, including testing tools for query and retrieve documents as well as summary patient record.

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- **Patient Identification Matching** (http://pixpdqtests.nist.gov:8080/) – NIST researchers have developed a tool to support testing of the IHE Patient Identifier Cross-Reference (PIX) and Patient Demographic Query (PDQ) pre-Connectathon test cases for both HL7 Version 2 (v2) and Version 3 (v3).

- **Semantic Interoperability of Clinical Documents** (http://xreg2.nist.gov/cda-validation/index.html) – NIST researchers are collaborating on the development of testing tools to promote the adoption of standards-based interoperability by vendors and users of healthcare information systems. The testing tools are designed to be used during the development of software that implements Clinical Document Architecture (CDA)/ Continuity of Care Document (CCD) based specifications.

Impact

During the standards development and harmonization process, NIST-developed testing tools and procedures can determine and provide feedback on standard ambiguities and gaps. Resolving these issues enables complete, user-friendly standards and implementation guidelines. NIST testing activities focus on reducing the cost to develop health IT systems by providing developers with an innovative, flexible, and virtual test bed to confirm that their systems can exchange clinical information with other systems.

For additional information, please visit http://www.nist.gov/healthcare/testing/index.cfm

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