

Response to ONCHIT NHIN Interoperability RFI

HIMSS Electronic Health Record Vendor Association

Dr. David Brailer, M.D.
Office of the National Coordinator for Health Information Technology
Department of Health and Human Services
Attention: NHIN RFI Responses
Hubert H. Humphrey Building, Room 517D
200 Independence Avenue, S.W.
Washington, DC 20201

Via Email at NHINRFI@hhs.gov

Subject: NHIN RFI Responses

Dear Dr. Brailer,

The HIMSS EHR Vendor Association (EHRVA) is pleased to respond to your office's **Request for Information dated November 15, 2004 regarding the establishment, implementation, and support for a National Health Information Network.** This response represents the collective voice of more than 25 Electronic Health Record (EHR) vendors to answer the call for public comment on the national health information technology infrastructure.

The EHRVA is a trade association of EHR vendors that addresses national efforts to create interoperable EHRs in hospital and ambulatory care settings. The primary mission of the association is to provide a forum for the EHR vendor community relative to standards development, the EHR certification process, interoperability, performance and quality measures, and other EHR issues that may become the subject of increasing government, industry and physician association initiatives and requests. Through its membership of EHR vendors serving the market spectrum from small to medium practices to large health enterprises, the EHRVA is in a unique position to accelerate the process for defining, implementing, and supporting the standards-based interoperability among EHRs that is necessary for a National Health Information Network. To accomplish this, the EHRVA has established these priorities:

- Promote rapid adoption of EHR technology to ultimately improve the quality of patient care and the productivity of the healthcare system.
- Provide leadership for our customers by offering a fair representation of their interests in governmental and non-governmental processes impacting EHR adoption and development.
- Work together to solidify a universal standard for interoperability between vendors - which will in turn remove a major barrier to EHR adoption.
- Use the collective knowledge of our members to gain insight into EHR acceleration opportunities.

- Engage in ongoing, topical work groups to support the specific goals of EHR adoption acceleration (including security, interoperability and agreed-upon standards).

The EHRVA believes that its focus on these priorities makes the Association uniquely qualified to respond to your Request for Information on behalf of its member companies, our customers, and the healthcare information technology industry as a whole.

In preparing the response, we joined alongside 12 other healthcare thought leaders and developed a unified response to the RFI that is being submitted by The 13 Organization Collaborative coordinated by Connecting for HealthSM (the Collaborative). Prepared through collaboration within the recently formed EHRVA, this multi-tiered response represents an unprecedented consensus among organizations that frequently diverge on many issues of policy, business and philosophy. The group developed consensus responses to the RFI point by point, with the overall agreement that general adoption of a small set of critical tools can permit rapid attainment of an interoperable information environment that supports modern health care practice. We fully endorse the collaborative responses and we reference those responses in the EHRVA submission.

As indicated, the EHRVA offers the unique perspective of sharing the common experience of developing and implementing EHR software. To share this perspective, we have developed this response, which should be regarded as an elaboration to the Collaborative response on specific architectural and process considerations. We also propose an implementation “roadmap” containing the possible next steps for implementing these proposals.

The EHRVA response focuses on four themes:

- Healthcare applications are end-point systems connected to a “thin” NHIN.
- The NHIN should be deployed utilizing an approach that allows the incremental deployment of services to provide healthcare information exchange.
- The NHIN should be deployed by encouraging sub-networks (e.g., RHIOs or RHINs) to be created, but all sub-networks must use the same “Common Framework” of interoperability standards and policies.
- A roadmap with a first set of healthcare information exchange services can be defined and implemented by 2006.

As ONCHIT continues to evaluate and coordinate the national efforts, we are ready to help in any appropriate way. Our experience and proven leadership in developing and delivering today’s current generation HIT solutions provides a solid foundation upon which to incrementally build tomorrow’s solutions – solutions that will interconnect providers and patients nation-wide. As we worked together with the Collaborative and as a vendor association, it became apparent that the EHRVA has unmatched experience and knowledge gained from developing and deploying HIT solutions. The scope and diversity of the group alone promises a far-reaching perspective, but it is the combined commitment to our customers and to improving the safety, quality, and efficiency of our national healthcare system that distinguishes our association’s efforts. This is the EHRVA commitment to you, our customers, and the nation.

RFI Response:

General 1. The primary impetus for considering a NHIN is to achieve interoperability of health information technologies used in the mainstream delivery of health care in America. Please provide your working definition of a NHIN as completely as possible, particularly as it pertains to the information contained in or used by electronic health records. Please include key barriers to this interoperability that exist or are envisioned, and key enablers that exist or are envisioned. This description will allow reviewers of your submission to better interpret your responses to subsequent questions in this RFI regarding interoperability.

Healthcare applications are end-point systems connected to a “thin” NHIN

- A “thin” NHIN should build upon the peer-to-peer model using existing Internet technologies, which allows the healthcare market to utilize and expand upon proven standards and technologies.
- By utilizing existing Internet technologies, a “thin NHIN fosters increased competition, innovation and resource utilization since efforts are focused on providing healthcare specific solutions.
- The NHIN Common Framework defines specific two levels of interfaces between End-Point Systems (e.g. EMR, Patient Portal, Acute Care Information System, Payor Systems, etc.). See Figure 1.
- The first level of interfacing is between the End-Point system and the NHIN sub-network.
- The second level of interfacing is where Peer Entities perform information exchange, i.e., the NHIN is transparent.

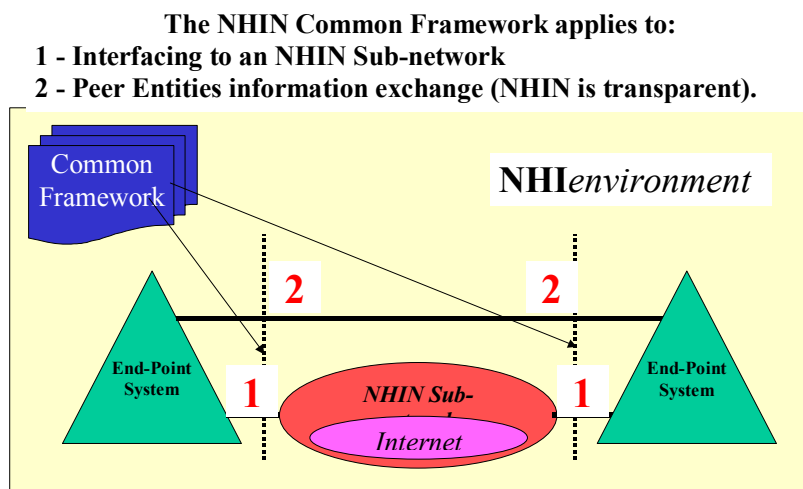


Fig 1: Common Framework, key to interoperability for a thin NHIN

- Healthcare applications provide these solutions as End-Point Systems connected to the NHIN and its sub-networks. See Figure 2.

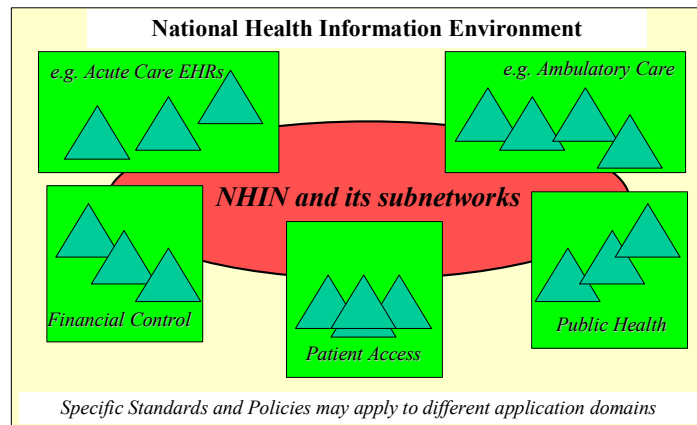


Fig 2: Applications are supported by End-point Systems

The NHIN should be deployed utilizing an approach that allows the incremental deployment of services to provide healthcare information exchange.

- The NHIN should be deployed with a set of services that facilitates the exchange of basic patient healthcare information between End-Point Systems to improve the delivery of patient care, and incrementally enhancing these services with increasing interoperability and transaction innovation over time.
- The EHRVA proposes that this first set of services utilize the existing Integrating the Healthcare Enterprise (IHE) integration profiles being demonstrated at HIMSS 2005 Interoperability Showcase, with security extensions planned in 2005 which could be available for NHIN sub-network pilot implementation in 2006.
- Utilizing IHE's six year proven approach of defining and implementing incremental services enhancements utilizing existing standards such as HL7, DICOM, ISO and the like, a predictable roadmap of services can be defined with a proposed timeframe of deployments.
- The financial incentives used to drive adoption of the NHIN in its early stages should be linked to the roadmap of services that are supported by the End-Point Systems or sub-networks. The financial incentives should be linked to the level of interoperability services provided by the End-Point Systems or sub-networks.

The NHIN should be deployed by encouraging sub-networks (e.g., RHIOs or RHINs) to be created, but all sub-networks must use the same "Common Framework" of interoperability standards and policies.

- The EHRVA proposes that the quickest way to grow the NHIN is by allowing multiple sub-networks to be deployed in parallel, but all must comply with the same standards based interoperability interfaces, i.e., as defined by the "Common Framework".
- Utilizing the same interoperability standards (via the "Common Framework") within the various sub-networks ensures economy of scale and speed of deployment.

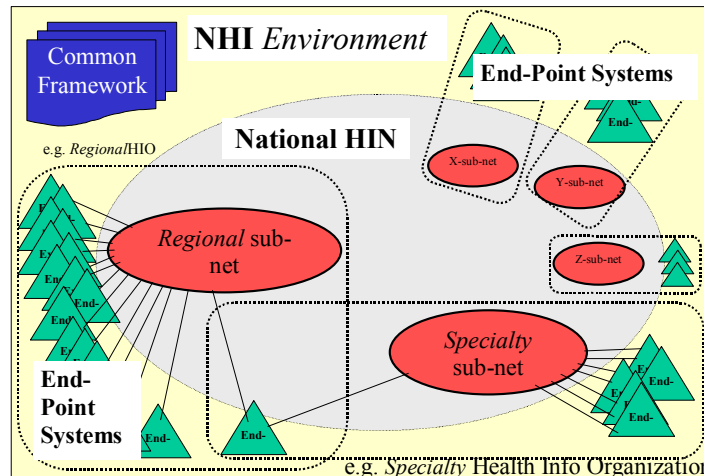


Fig 3: NHIN, sub-networks and environment

- The fast development and deployment of the Internet was based on the utilization of standards such as http, html, smtp and the like. Internet innovations such as email notification of transactions and eRetail shopping carts are process-based deployments that relied on common standards to gain widespread adoption.
- Using the same “Common Framework” for interfacing all End-Point Systems among multiple sub-networks allows healthcare providers and vendors to focus their resources on providing healthcare delivery innovation in the foreground of the healthcare delivery process.

Question 10. How could the NHIN be established to maintain a health information infrastructure that:

- a. evolves appropriately from private investment;*
- b. is non-proprietary and available in the public domain;*
- c. achieves country-wide interoperability; and*
- d. fosters market innovation.*

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These profiles are all built upon widely accepted standards, mainly HL7 but also DICOM, ISO, OASIS and the like.

- Utilizing IHE's six year proven approach of defining and implementing incremental services enhancements based on clinician and user feedback, a predictable roadmap of services can be defined with a proposed timeframe of deployment.
- The financial incentives used to drive adoption of the NHIN should be linked to the roadmap of services that are supported by the End-Point Systems or sub-networks. The financial incentives should be linked to the level of interoperability services provided by the End-Point Systems or sub-networks.

A roadmap with a first set of healthcare information exchange services can be defined and implemented by 2006

- EHR Vendor Association proposes an incremental approach to develop Healthcare Information Services for NHIN sub-networks and builds upon the Collaborative ONCHIT RFI response. A broad range of services will be eventually needed, but the critical question that must be answered is "Where to start?"
- The three critical success factors necessary to successfully implement healthcare information exchange services are:
 - The services must be clinically meaningful at the point of care & achievable
 - The services are built upon End-Point Systems (e.g. EHR Vendors) experience & commitment
 - The services are defined by a clear roadmap that articulates incremental improvements from an **initial first step** to a defined **end goal**.
- **The proposed end goal** establishes a set of services anticipated to fully enable healthcare information exchange throughout the NHIN.
 - **Classify the target set of services.** A broad range of services will be necessary. See Figure 4. Four classes can be distinguished: Security and Patient/Provider Identification, Passive-Historical record services, Active Information Management services and Workflow services. Such a classification is critical to plan staged development, since the availability of some services may be more critical than others.

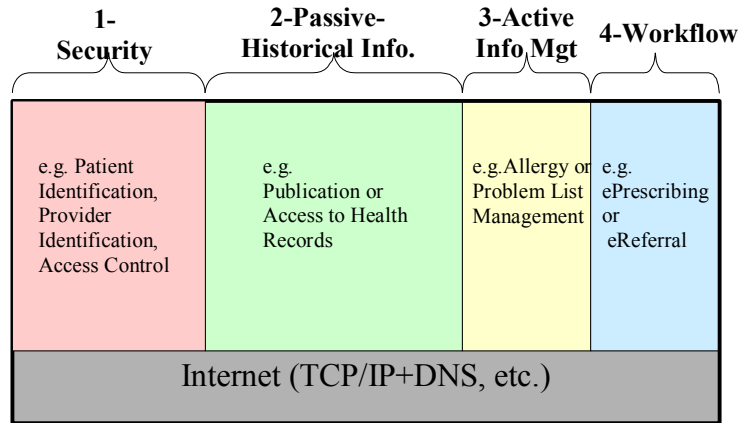


Fig 4: Four Classes of Health Info Communication Services

- **Characterize the target set of services.** Certain services may be provided by the NHIN (or its sub-networks) while others may be provided in a manner transparent to the NHIN. See Figure 5. The NHIN-level services involve the end-point-systems as well as the NHIN sub-nets. Such services may support higher-level services in a transparent manner and only involve the End-Point Systems in a peer communication manner (e.g. document content). Such a distinction is critical in planning deployment and impact.

Two levels of Interfacing

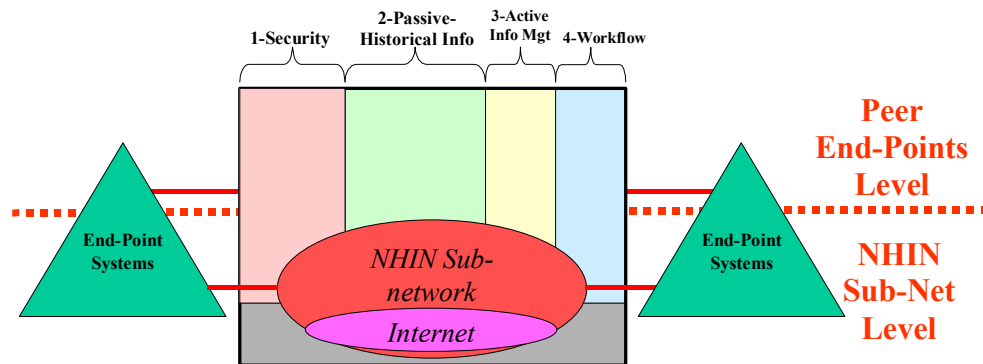


Fig 5 - Characterize health information services

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- **Scope the target set of services.** These Levels and Classifications organize the definition of the services. An end-goal picture is proposed first in Figure 6, before a first step is proposed in Fig 7.

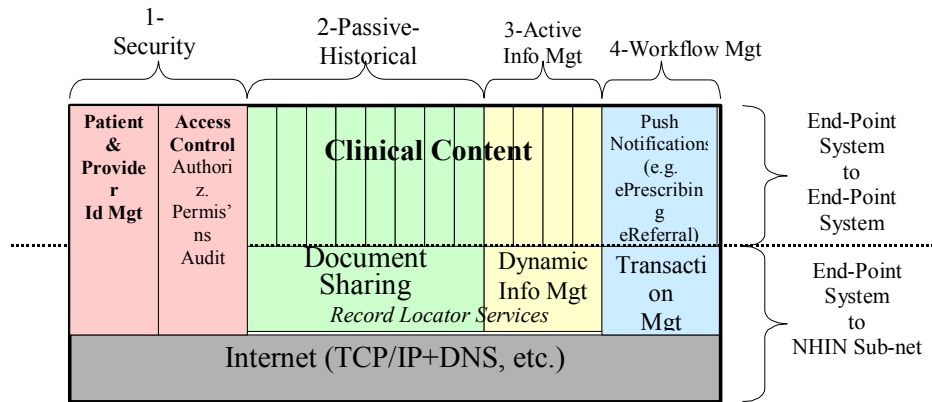


Fig 6 - Health Info Communication Services – End Goal Scope

- **The proposed *first step*** identifies the classes of services and the specific elements that can be fully specified in 2005, and delivered in products for use in NHIN sub-network pilot projects as soon as 2006. See Figure 7.
 - **Security is required from the start.** Some simplification is achieved by limiting the classes of services to which it is applied (e.g., Document sharing), but it cannot be over simplified. IHE has already addressed Audit Trail and Node Authentication, Consistent Time, Patient Id X-Referencing, and Patient Demographics Query. Access Control is on the 2005 IHE work program.
 - **Document Sharing across enterprises is the simplest and most effective approach to provide record location services in the NHIN.** The Document “unit of sharing” simplifies access control, allows modular definition of document content, leverage existing standards (e.g. HL7-CDA, CCR, Lab), supports loose cooperation between peer end-point systems and is easier to implement and to test, especially on ambulatory EHRs. It is based on actual deployments around the world and 19 vendors will demonstrate the concept at the HIMSS 2005 Interoperability Showcase.
 - **Clinical Content with four types of documents.** A converged CCR/HL7-CDA Medical Summary, Laboratory Result, Radiology Results, and PDF Documents (e.g. ECG Reports, other legacy info).
 - **Simple Notifications.** A basic provider-to-provider e-mail type notification of the availability of shared documents without containing PHI information, resulting in minimal security. This capability is currently used in many proprietary “secured e-mail implementations” (i.e., the access to the shared document is secured, which is critical).
- **The majority of is the services needed for a first version of a Common Framework can be completed by mid-2005.** The remaining services are being addressed by the CCHIT, HIMSS-EHRVA, IHE and the completed HL7-CDA-V2 standards. The remaining Profiles necessary for a first version of a Common

Framework would be defined by mid-2005 with validation testing at January 2006 IHE Connectathon.

Question 23. Describe the major design principles/elements of a potential technical architecture for a NHIN. This description should be suitable for public discussion.

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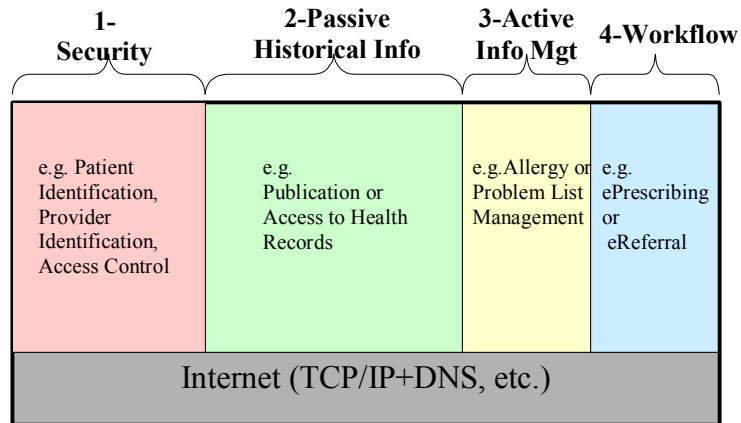


Fig 4: Four Classes of Health Info Communication Services

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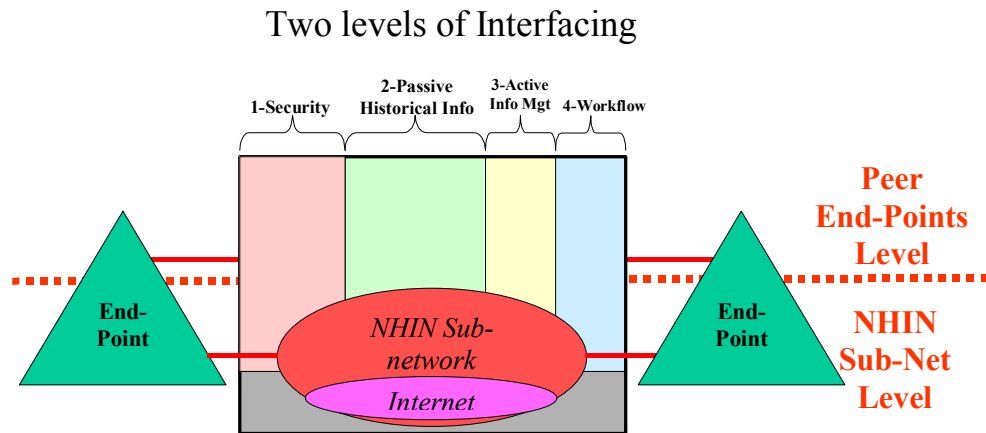


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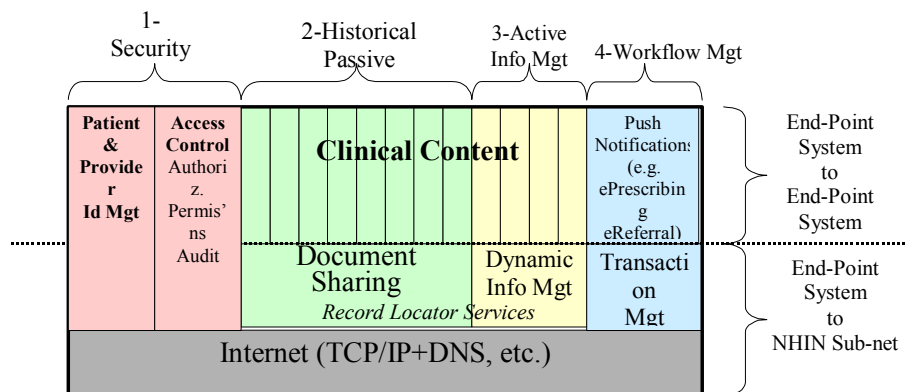


Fig 6 - Health Info Communication Services – End Goal Scope

- **The proposed *first step*** identifies the classes of services and the specific elements that can be fully specified in 2005, and delivered in products for use in NHIN sub-network pilot projects as soon as 2006. See Figure 7.

Focus first on what can deliver better healthcare quality.
Minimize negative impact on physician efficiency.

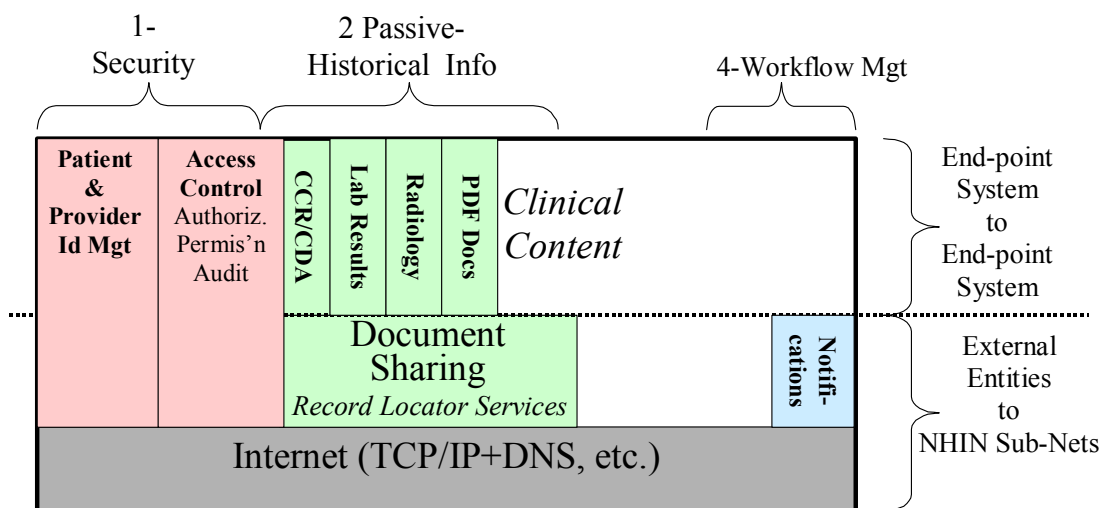


Fig 7 - NHIN Communications Services-First Step

- **Security is required from the start.** Some simplification is achieved by limiting the classes of services to which it is applied (e.g., Document sharing), but it cannot be over simplified. IHE has already addressed

Audit Trail and Node Authentication, Consistent Time, Patient Id X-Referencing, and Patient Demographics Query. Access Control is on the 2005 IHE work program.

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Interoperability Concepts and Definitions

Healthcare information may be exchanged in ways that have different requirements for the interoperating systems and different consequences for the ability of receiving systems to process that information. We can usefully distinguish three “levels” of interoperability, all of which may co-exist in transactions between interoperable systems.

- The first, most basic level requires only that a system be able to send and receive text. It is the electronic equivalent of sending and receiving a written document. A second level is achieved when the sending system structures the text to indicate component pieces of data as separate entities. For example, part of a document might describe a patient’s medication list, with each medication appearing singly on its own line. The receiving system will be able to determine which part of the document contains the medications and will be able to read off the individual entries in the list. Finally, structured data can be semantically enriched through the use of coded vocabularies shared by the sending and receiving systems. Rather than simply including a list of discrete diagnoses, for example, the sending

system provides SNOMED or ICD-9 codes for those diagnoses. The receiving system can be more certain that its internal representation of the patient's health data is equivalent to the knowledge embodied in the sending system. The ability to exchange coded data is interoperability level three. In summary:

- **Level 1 – Unstructured information**, e.g. narrative data represented by a PDF document or an HTML page. Used when a sending system cannot recover, produce, or convey the semantic structure of information or when the complexity of the information makes it impractical to do so.
 - **Level 2 - Structured information**, in which each text string represents exactly one data element of a type made explicit in the document (e.g. this text string is the name of a single medication, or of one allergen). Should be used as widely as possible and whenever shared vocabularies cannot be used. A receiving system may be able to convert structured text to internally coded values through string matching or other processing.
 - **Level 3 - Structured, coded information**. Data elements are represented as coded values from a shared vocabulary. Used whenever a sending system is able to assign to pieces of data lexical values from a vocabulary it may share with receiving systems. There are few kinds of data today in which this is likely to be the case, but they will be increasingly common as standards develop.
- It is important to note that, in general, a document exchanged between any two systems will contain a mixture of data fitting all three levels. For example, one document may contain a large piece of narrative data representing a discharge summary (level 1), a list of un-coded medications (level 2), and a list of ICD-9 encoded discharge diagnoses (level 3).
 - For such mixed documents to form a basis for interoperability, receiving systems must be able to indicate which parts of a document conform to which level (as well as include other information such as to which version of which vocabulary certain level 3 data conforms). Because not all receiving systems may be able to process coded data or because two particular systems may not share a common vocabulary, the sending system must also send the structured text (level 2) equivalent of any coded (level 3) data. Similarly, a receiving system must not count on receiving coded values for all data, but be able to process structured or unstructured text as the situation requires. These last two requirements allow for graceful semantic degradation.