



October 30, 2006

The Honorable Michael O. Leavitt
Secretary
U.S. Department of Health and Human Services
200 Independence Avenue, S.W.
Washington, D.C. 20201

Dear Secretary Leavitt:

I am pleased to transmit our recommendations on the initial functional requirements for a nationwide health information network (NHIN). The recommendations were developed by the National Committee on Vital and Health Statistics (NCVHS), the public advisory committee to the U.S. Department of Health and Human Services on health data, privacy, and health information policy.

The July 21, 2004, *Framework for Strategic Action* identifies “a nationwide health information network that can provide low-cost and secure data movement” as a key strategy for interconnecting health care. As you have observed in your 500-Day Plan for Transforming the Health Care System, it is critical “to link all health records through an interoperable system that protects privacy as it connects patients, providers, and payers – resulting in fewer medical mistakes, less hassle, lower costs, and better health.” The Office of the National Coordinator for Health Information Technology (ONC) has also observed that “as the nation embarks on the widespread deployment of EHRs [electronic health records], a key consideration will be the ability to exchange patient health information accurately and in a timely manner under stringent security, privacy, and other protections.”

NCVHS was asked by ONC to define a minimum, but inclusive, set of functional requirements necessary for nationwide health information activities. To undertake this task, NCVHS utilized an open process through which we received significant public comment. NCVHS participated in the NHIN Forums on June 28-29 and October 16-17, 2006; held public hearings on June 29 and July 27-28, 2006, in Washington, DC; and held public conference calls on August 31 and October 3, 2006 to receive comments on preliminary documents and drafts. In addition, working documents were posted on the Web for further contributions. Although time for input was short, NCVHS is very appreciative of the effort so many put into contributing comments, and feedback on the recommendations has been very positive.

In developing the recommendations, it was important to bear in mind that a nationwide health information network is not a single entity, but will be a system of systems. NCVHS assumes a nationwide health information network will develop incrementally, and nothing in this report is intended to preclude such an incremental approach.

Variations in design of services are emerging from the work of the consortia that have been contracted to develop nationwide health information prototypes as well as from the growing numbers of communities involved in health information exchange. Where variations appear to be compatible with one another and do not impose an undue burden, NCVHS recommends they be accommodated to the extent possible. However, for a nationwide health information network to work for the nation, variations that may be incompatible with one another or impose an undue burden should be further studied to determine how variation can be reduced.



In keeping with our June 22, 2006, transmittal to you on Recommendations Regarding Privacy and Confidentiality in the Nationwide Health Information Network, NCVHS also observes that what distinguishes a nationwide *health information* network is that the activities must be wrapped in privacy and security structures that warrant the trust of the individuals whose information is exchanged.

NCVHS recommendations include not only the statements of requirements, but also recommendations to broaden the array of scenarios studied in the development of a nationwide health information network to ensure completeness and widespread applicability of the functional requirements. NCVHS also recognizes the significant number of policy decisions that must be made to enable a nationwide health information network, and enumerates several standards to be developed that will be necessary to support a nationwide health information network. Accordingly, we encourage you to use this set of recommendations to help inform the activities that will lead to a nationwide health information network, both at the national and state levels.

If you or your staff would like a briefing on the recommendations, please let me know and we will provide one. We are committed to supporting the efforts to enable nationwide health information exchange that will fulfill the goals, outlined in the *Framework for Strategic Action*, of informing clinical practice, interconnecting clinicians, personalizing care, and improving population health.

Sincerely,

/s/

Simon P. Cohn, M.D., M.P.H., Chairman,
National Committee on Vital and Health Statistics

Cc: Data Council Co-chairs
Enclosures

NATIONAL COMMITTEE ON VITAL AND HEALTH STATISTICS

Report to the Secretary
of the U.S. Department of Health and Human Services

on

**Functional Requirements Needed for the
Initial Definition of a Nationwide Health Information Network (NHIN)**

October 30, 2006

Report to the Secretary of HHS
**Functional Requirements Needed for the
Initial Definition of a Nationwide Health Information Network (NHIN)**

Table of Contents

Introduction	3
Purpose and Scope	3
Background	4
NCVHS Process	4
Intended Audience.....	5
Framework	5
Importance of a Nationwide Health Information Network.....	5
Observations Related to a Nationwide Health Information Network	6
System of Systems	6
Services, Functions, and Functional Requirements	7
Differences in Design of Services (Architectural Variations)	7
Discussion of Terms	7
Functional Requirements Needed for the Initial Definition of a Nationwide Health Information Network	11
Organization	11
Accommodation of Differences in Design of Services	11
Set of High Level Functional Requirements.....	11
NCVHS Recommendations	15
Gaps, Policy Issues, and Needed Standards	22
Observations about Gaps in Functional Requirements.....	22
Policy Issues.....	22
Needed Standards.....	24
Recommendations for Next Steps.....	24
Appendices	25
Appendix A: NCVHS Work Group on NHIN.....	26
Appendix B: List of Testifiers	29
Appendix C: ONC Proposed Functional Requirements Categories, Version 3, April 16, 2006.....	30
Appendix D: Functional Requirements for Entities to Participate in a Nationwide Health Information Network, Sorted by ONC Functional Category	32
Appendix E: Analysis of Original 977 Functional Requirements	35
Appendix F: Derivation of Interim Working Set of Functional Requirements	37
Appendix G. High Level Minimum but Inclusive Functional Requirements for Entities to Participate in a Nationwide Health Information Network Mapped to Interim Working Set of Functional Requirements	38
Appendix H. Summary of Patient Matching Testimony.....	39
Appendix I: Differences in Design of Services (Architectural Variations).....	42

Functional Requirements Needed for the Initial Definition of a Nationwide Health Information Network (NHIN)

Introduction

Purpose and Scope

The National Committee on Vital and Health Statistics (NCVHS) was asked by the Office of the National Coordinator for Health Information Technology (ONC) to identify minimum but inclusive functional requirements needed for the initial definition of a nationwide health information network (NHIN).

“A nationwide health information network that can provide low-cost and secure data movement” was described in the *Framework for Strategic Action* as a key strategy for interconnecting health care.¹ The ONC has observed that “as the nation embarks on the widespread deployment of EHRs [electronic health records], a key consideration will be the ability to exchange patient health information accurately and in a timely manner under stringent security, privacy, and other protections.”²

A nationwide health information network is not a single entity, but a system of systems.

NCVHS envisions that a framework of standards and agreements would enable the secure exchange of health information for many uses in multiple ways and by a number of different health information network providers. NCVHS assumes a nationwide health information network will develop incrementally, and nothing in this report is intended to preclude such an incremental approach.

There are many tasks to be performed to enable a nationwide health information network. The *Framework for Strategic Action* identified that a key component of a nationwide health information network is “the development of technically sound and robustly specified interoperability standards and policies for diffusion into practice.” As a result, the Healthcare Information Standards Panel (HITSP) was formed to identify, prioritize, and promote relevant standards. This NCVHS report identifies a number of standards that either have been included in HITSP recommendations to date or that NCVHS recommends be addressed by HITSP.

Identifying a set of minimum but inclusive functional requirements is another key task. Functional requirements are “minimum” insofar as they establish basic requirements for connectivity, and are “inclusive” because they represent requirements that may be performed in multiple ways by different entities at different locations. This report does not distinguish what must be done where or by whom. In many cases, the functional requirements are described as enabling, indicating that such functions are important, but may not exist universally today. The report recognizes, and indeed calls for, local needs to be accommodated where compatible within a nationwide initiative. However, it also recognizes that without a *nationwide* framework that addresses the special requirements for exchange of *health information*, a *nationwide health information* network does not exist. NCVHS observed fundamental differences of opinion

¹ Thompson, TG and DJ Brailer. The Decade of Health Information Technology: Delivering Consumer-centric and Information-rich Health Care, *Framework for Strategic Action*, July 21, 2004

www.hhs.gov/healthit/framework.html

² www.hhs.gov/healthit/nhin

concerning where functionality should be provided. These differences will need to be addressed in policy early in the nationwide health information network initiative.

NCVHS has addressed other issues required for a secure and effective nationwide health information network in other reports to the Secretary of Health and Human Services. In particular, privacy was covered in the June 22, 2006 letter report entitled, "Recommendations Regarding Privacy and Confidentiality in the Nationwide Health Information Network." Readers are referred to this document for more detail regarding privacy, confidentiality, and security. These and other recommendations related to a nationwide health information network are not repeated in the current report, but readers are encouraged to visit NCVHS Web site (<http://ncvhs.hhs.gov>).

Background

On November 15, 2004, the ONC released a Request for Information (RFI) that sought public comment regarding how widespread interoperability of health information technologies and health information exchange can be achieved through a nationwide health information network initiative. Substantial comments were received from over 500 organizations and individuals. These were analyzed and summarized into a report posted to the Web on June 3, 2005 (see www.hhs.gov/healthit/rfisummaryreport.pdf). On June 6, 2005, HHS published a Request for Proposals (RFP) for the development of prototypes for a nationwide health information network. Four awards to consortia were announced on November 10, 2005. In May 2006, the four consortia contractors submitted lists of functional requirements for a nationwide health information network, which were consolidated into a non-duplicative list of 997 and discussed at a NHIN Forum on June 28-29, 2006.

NCVHS Process

To identify the minimum but inclusive functional requirements for the initial definition of a nationwide health information network, NCVHS used a process of refinement that started with the initial set of consolidated functional requirements.

NCVHS heard significant public comment that contributed to this report. NCVHS participated in the NHIN Forum on June 28-29, 2006 and October 16-17; held public hearings on June 29 and July 27-28, 2006 in Washington, D.C.; and held public conference calls on August 31 and October 3, 2006 to receive comments on preliminary documents and drafts. In addition, working documents were posted on the Web for further contributions. Although time for input was short, NCVHS is very appreciative of the effort so many put into contributing comments. Members of NCVHS are listed in **Appendix A** and testifiers are listed in **Appendix B**.

The process to analyze and develop a list of high level minimum but inclusive functional requirements was aided by an enumeration of Functional Categories provided by ONC. The list of ONC Functional Categories and their definitions is provided in **Appendix C**.

The process used to develop recommendations for the set of high level functional requirements included analysis of the original 977 detailed functional requirements, consolidation of those 977 requirements into a working set of minimum but inclusive set of functional requirements, and then refinement of the working set into high level functional requirements. The high level functional requirements are summarized in **Figure 1** (on page 12). A map of the high level functional requirements to the ONC Functional Categories is provided in **Appendix D**.

To review the working material, readers are referred to Appendices E, F, and G which are provided in spreadsheet form. An introduction to the analysis of the original 977 requirements and a spreadsheet of the requirements are provided in **Appendix E**. The interim working set of functional requirements and gaps identified by testifiers is provided in **Appendix F**. A map of the high level functional requirements to the interim working set of functional requirements is provided in **Appendix G**.

Intended Audience

This report is intended for a broad audience. The Framework and High Level Functional Requirements should serve all readers in achieving a general understanding of the concept and end-to-end capabilities of a nationwide health information network. The High Level Functional Requirements may serve as a checklist for organizations³ to assure they are considering all critical elements for connecting to a nationwide health information network. They may also serve as a description of services to be developed by network service providers and other intermediary entities. The Description of Gaps, Policy Issues, and Needed Standards should assist those with more specific tasks associated with developing the framework for a nationwide health information network initiative. For example, they should be useful for ONC in addressing specific policy issues. The Health Information Technology Standards Panel (HISTP) may find the identification of needed standards helpful in advancing their development. The Certification Commission on Health Information Technology (CCHIT) may find the minimum but inclusive functional requirements can contribute to development of certification criteria.

Framework

Importance of a Nationwide Health Information Network

There is significant evidence of the need for a nationwide health information network. The consortia contractors used three scenarios, or use cases, to focus the initial effort and illustrate how a nationwide health information network would be used. Each of the three scenarios – named EHR-Lab, Consumer Empowerment-Registration and Medication History, and Biosurveillance – focused on a number of goals. There are literally thousands of uses of health information – for direct patient care, many forms of consumer empowerment, public health, case management, disease management, reimbursement, clinical research, and many others. However, most health information is exchanged in one of three ways: via document sharing, transactions, and to a lesser, but perhaps more desirable extent, dynamic queries.

The following scenarios further illustrate the current state of health information exchange and how a nationwide health information network would improve such exchange:

- A physician's office may have an arrangement with an e-prescribing gateway to route prescriptions to pharmacies of a patient's choice. Each prescription transaction received by the gateway can be transformed into the format required of the recipient pharmacy or to meet specific legal requirements (e.g., a particular version of a standard transaction or an e-fax of a prescription requiring a wet signature). However,

³ Organizations may include sub-network organizations, regional health information organizations, connected communities, and others.

with a nationwide health information network, adverse drug event reporting could be automated for earlier detection of drug problems.

- After a local disaster, an emergency department treating an unconscious, but identifiable, patient may be able to view a list of current medications consolidated from a pharmacy benefits management system, but not be able to identify the patient's primary care physician or retrieve data from the office's EHR. If the patient is not local or is displaced as a result of the disaster, a nationwide health information network would enable other providers to access critical health information.
- A patient with multiple health conditions may visit several health care providers, each time completing a patient history form. Each time, however, the patient may record some information and not other information. With a personal health record maintained with the support of a nationwide health information network, the patient can compile healthcare events as they occur. This enables a complete health picture to be available to any or all providers as the patient so chooses.
- A school may query a statewide immunization registry to check that a child's shots are up-to-date. The registry may have received the immunization data from a batch transaction sent by a health insurer where the child is enrolled, from a paper fax sent by a physician's office, and/or from a direct posting by the child's parent to a Web site maintained by the registry. A nationwide health information network can support services that ensure that the three reports actually do belong to one specific child and that they are not counted three separate times. In addition, it can enable the de-identification of the data to report aggregate immunization rates to the state's public health department.

In addition to the specific potential benefits reflected by these and other scenarios, a nationwide health information network also addresses security services, privacy protections, and methods to identify (or de-identify) individuals who are the subject of the health information exchanged. During 2005-2006, NCVHS held six hearings on the topic of matching patients to their records. A summary of the testimony is provided in **Appendix H**. NCVHS learned, for example, that today, entities utilize a variety of different data elements to match individuals to specific information. There are both privacy and health care reasons for the need to assure the unique identity of an individual. In addition, there are very few environments today in which there are organized means to identify where health information may exist as applicable to a given, authorized use. There is a significant need for services to improve the exchange of health information in a purposeful manner and with privacy and security protections. Health care quality, patient safety, public health and biosurveillance, research, and other appropriate uses of health information would be greatly enabled by the ability to easily exchange health information.

Observations Related to a Nationwide Health Information Network

System of Systems

A nationwide health information network is not a specific entity – it is a system of systems. Given that a system is a collection of parts that work together to achieve a common purpose or carry out a specific goal, a system of systems may include any number of systems, each with its own goals as well as a set of shared goals.

Services, Functions, and Functional Requirements

Within a nationwide health information network, various systems would provide services to enable health information exchange in a secure and protected manner. Some of these systems may reside in specific healthcare entities. For example, a hospital may be able to perform a translation service that enables it to format its own standard transactions. Other services may be offered by network service providers. For example, a physician's office may need an e-prescribing gateway service to route prescriptions to pharmacies of the patient's choice. Vendors may have systems that provide personal health record services. Various community organizations may support systems offering terminology mapping or record location services.

A key provision of a nationwide health information network, however, would be that there are agreed upon policies, standards, and transport arrangements for any entity to provide or use such services and participate in such exchanges. The **functions** that various **services** need to provide constitute the **functional requirements** for a nationwide health information network. Functions are actions, activities, or work. Services are the act of supplying such work, and imply taking into account the social, political, and organizational factors of supplying the work. Functional requirements identify what functions service providers must supply.

Differences in Design of Services (Architectural Variations)

As a nationwide health information network is being developed and prototyped in different locations, a number of different ways systems may interact and interconnect with one another are being proposed. There are differences in business cases and policies. Some differences reflect the state of maturity in standards and technology. Differences in how services are provided within a nationwide health information network have been described by ONC as architectural variations. Information flow variations within several of the ONC Functional Categories are described in **Appendix I**. NCVHS has analyzed these and other variations described by testifiers. It recognizes that variation can lead to overhead and complexity that may not be feasible to accommodate. However, where variations appear to be compatible with one another and do not impose an undue burden, NCVHS recommends they be accommodated to the extent possible. Where variations may be incompatible with one another or impose an undue burden, NCVHS recommends further study to determine how variation can be reduced.

Discussion of Terms

In describing the minimum but inclusive functional requirements for a nationwide health information network, the terms used and how they are defined play a critical role. Special attention has been given to the following terms or sets of terms as the minimum but inclusive functional requirements are described (in the next section of this report):

- **Entities, systems, and users:** There are many **entities** that will use a nationwide health information network; and there are many entities that will supply services for networking. Some entities will be both users and suppliers. Entities may include care delivery organizations, consumer systems, data analysis and secondary use systems, payer systems, health information intermediaries, and network service providers, among others.

Within these broad entity descriptions, many more specific types of entities can be described. Certainly care delivery organizations may include hospitals, clinics, physician offices, long term care facilities, home health agencies, institutional infirmaries, and

others. Consumer systems are perhaps newer, but include those both “tethered” and “untethered” to a care delivery organization. Data analysis and secondary use systems may include clinical researchers, pharmaceutical manufacturers, government agencies, accreditation organizations, and many others. Payer systems may include insurers, health maintenance organizations, group health plans, and other organizations that support payers, such as pharmacy benefits managers and case management companies. Health information intermediaries may include healthcare clearinghouses, e-prescribing gateways, and other types of intermediaries. There are also entities that are more closely aligned with specific types of services that enable participation in a nationwide health information network. These may provide message handling, record location, terminology mapping services, etc. Finally, some entities may provide many network services for a specific group of entities, such as sub-network organizations, regional health information organizations, connected communities, and others.

The purpose of enumerating these entities is to emphasize that there are many players that constitute a nationwide health information network. Moreover, a given entity may play multiple roles. In short, this document does not suggest that there is a single entity performing all the services of a nationwide health information network.

Likewise, although initial prototype development focused on three scenarios, or use cases, there is no intent to preclude any specific type of legitimate use or user. **Users** may be individuals, software tools, or other **systems**. Individuals, in particular, may have many roles. Some special roles are typically identified within the healthcare industry. These include members of the workforce in HIPAA-covered entities, such as providers (who may be clinicians or healthcare organizations authorized to bill for healthcare services), health plans, and healthcare clearinghouses. In addition, all individuals have some health information, and at various times may be patients, consumers, clients, residents, inmates, beneficiaries, etc. Other individuals who may also have legitimate access to health information include personal representatives of patients, caregivers (generally not healthcare professionals and not always personal representatives), and the workforce of many other organizations, some of whom are designated by HIPAA as business associates of covered entities and others who may derive their authority for access to health information through legal and regulatory processes. In the context of identifying minimum but inclusive functionality for entities to participate in a nationwide health information network, there is an attempt made to use the terms entity, system, and user as referring to an organizational construct, information system (which may also be a user), and individual respectively.

- **Data, information, and record:** The industry often uses these terms synonymously, and sometimes uses them to convey different meanings within different contexts.

Within the context of the original functional requirements, the term **data** seems to refer to any health information associated with a specific individual that would generally be considered confidential and/or sensitive. HIPAA-covered entities would consider such data protected health information (PHI), but in a broader context, it may include any data that an individual considers confidential or sensitive. This may include health information that is not held by a covered entity whose duty it is to protect the health information. It may include identifying information, such as an individual’s address or a provider’s DEA number, which – if stolen – could result in harm.

In analyzing the functional requirements, it is observed that the term “information” is not only used interchangeably with (confidential and/or sensitive) data, but also to describe generally available information that is not confidential or sensitive, such as information about the existence of a clinical trial, properties of drugs, hospital census, etc. This latter use of the term seems inconsistent with the more general definition of **information** that refers to the result of processing data within a context to provide knowledge.

The term **record** is used in the original enumeration of functional requirements as suggesting a location or collection of data. The data contained in the record may or may not be known to the service that is attempting to locate health information on an individual. Whether this was the actual intent or not, for purposes of this report, every attempt is made to treat data, information, and record, unless otherwise specified, as being confidential and/or sensitive in some way. Furthermore, privacy and security protections ought to be afforded whether the data, information, and record are considered “protected health information” under HIPAA or not.

- **Data quality and data integrity:** These terms are grouped together in the original ONC categorization of functional requirements. Typically, **data quality** is a property associated with the completeness and accuracy of the data captured and subsequently processed into information. The quality of data and any resultant information may be ascertained by various validity and reliability checks. Alternatively, **data integrity** generally refers to the property of data as being whole or unimpaired. This generally refers to maintaining the technical representation of data and information within an information system and as it is transmitted across information systems. Evaluating the integrity of data is generally a technical function.
- **Pull vs. push:** Much of the functionality described for entities to participate in a nationwide health information network relates to requests for data (**pull**); however, there are also a number of specific use cases that require data to be sent to an entity where a specific request for data may not have been made, but where a subscription arrangement or expectation exists that such data will be pushed to it (**push**). Specific examples of the latter include sending new event information to a previous requestor of lab results, supporting medical supplies inventory and resource management data communications to public health, enabling patients and clinicians to report adverse medical events and/or errors to FDA, enabling individuals to find and enroll in appropriate clinical trials, and providing data to and receiving data from payer systems in support of eligibility verification, billing, and other administrative services. The nature of the data itself and whether it is pulled or pushed is distinguished in the minimum but inclusive functionality only if there appears to be a key difference in functionality, or where some examples would help clarify intent of functionality. Otherwise, both pull and push are considered data exchange.
- **Certification, registration, credentialing, evaluation, and testing:** Consortia contractors have used the term **certification**, with respect to information systems, as a process performed to establish the extent to which a particular system, network design, or application implementation meets a pre-specified set of requirements. Although the term *certification* may technically refer to products or systems and the term *accreditation* to entities, the term certification is used in this report to reference both systems and entities. Consortia contractors use the term **registration** in describing the process of adding a user to a system. The process includes establishing the user’s identity, providing a means to authenticate to the system (e.g., password or token), and assigning

access privileges based on what the user is authorized, or permitted, to do within the system. In the ONC Functional Categories, the term **credentialing** was defined as a process for validating or confirming the qualifications of licensed professionals, distinct from authentication and authorization. However, some usages of the term credentialing in the detailed functional requirements suggest that it is a process synonymous with authentication and authorization. Since the term credentialing within health care refers to a specific process of reviewing and validating the qualifications of physicians and other licensed practitioners for granting medical staff membership to provide patient care services, the term credentialing has been reserved in this report for this meaning exclusively. Evaluation and testing are actions that may be performed for many different purposes. For example, they may be performed as part of system certification, or to determine whether an implementation conforms to a standard. However, NCVHS observes that there is a distinction between evaluation and testing, where **evaluation** suggests a process of inspection, and **testing** refers to an actual trial use.

- **Authorization, restriction, authentication, access controls, and nonrepudiation:** These terms reflect processes that work together to provide confidentiality and security. However, each process is distinct. **Authorization** is the granting of permission. From the perspective of the individual who is the subject of health information (the subject), the permission is given to the recipient of the confidential information to use and disclose the information in a manner consistent with the individual's expressed privacy rights and applicable regulations. Such authorization may carry specific **restrictions**, such as not to disclose any health information to certain individuals or entities or to limit health information disclosure in some way. From the perspective of individuals and entities who are the recipients of the subject's confidential health information, authorization is the permission to carry out uses and disclosures consistent with the subject's permissions and applicable regulations.

When health information is collected and stored in an information system, **access authorization** is the granting of access to use electronic systems. Access authorization is based on policies and procedures relating to a user's "need to know." The technical administration of access authorization is **access controls**. Access controls and restrictions must operate together. **Authentication** is a process of proving the identity of a system or individual. Authentication establishes the validity of a transmission, message, or originator and verifies the system's or individual's authorization for its use. **Nonrepudiation** is a cryptographic process created so that an author of a message in an information system cannot falsely deny sending the message. With respect to electronic signatures used in authentication, it is proof that only the specific user could have created a specific signature.

- **Anonymization, re-linking, and de-identification:** **Anonymization** functions are used by public health and other entities to remove identifying information and assign a code to a set of health information to enable it to be **re-linked** to other health information with the same code. These processes protect individuals' identities, but also assure proper counting of cases, especially for biosurveillance purposes. **De-identification**, defined in the HIPAA Privacy Rule, is a process that removes identifying information such that there is no reasonable basis to identify an individual from the underlying information.

Functional Requirements Needed for the Initial Definition of a Nationwide Health Information Network

Organization

The following high level minimum but inclusive functional requirements are organized as they may be performed by an entity participating in a nationwide health information network. For example, an entity would first be certified to connect to a nationwide health information network. Users (individuals and systems) would need to be authorized to use various systems in specific ways. They would be registered as system users. For any authorized use, the systems and/or individuals would authenticate themselves.

Accommodation of Differences in Design of Services

It is important to note that there are differences in how the services meeting these functional requirements might be carried out. Several variations were described by the consortia contractors. In addition, testimony provided to NCVHS described further variations and stressed the importance of being sensitive to local needs, while recognizing it is not possible to accommodate all variations.

To address differences in design of services (architectural variations), NCVHS has structured its description of the minimum but inclusive functional requirements both to recognize variations and to make specific recommendations with respect to the variations:

- Where variations exist and seem to be compatible with one another and do not impose an undue burden, NCVHS describes the variations within the minimum but inclusive set of functional requirements. Many of these variations relate to where certain services may be performed.
- Where variations exist, but they appear to be incompatible with one another or impose an undue burden, NCVHS lists the variations and recommends further study to reduce the variations.

Set of High Level Functional Requirements

The complete set of high level minimum but inclusive functional requirements needed for the initial definition of a nationwide health information network are provided in Figure 1. It is important to note that these functional requirements build upon each other. They are not mutually exclusive. The reader is also reminded that these are recommended as *minimum* but *inclusive* functional requirements with which individual entities, local communities, regional health information organizations, sub-network organizations, and other health information exchanges may connect within a nationwide framework. As the functional requirements are implemented, risk assessments should be performed to guide adoption of standards and policies.

**Figure 1. Functional Requirements Needed for the
Initial Definition of a Nationwide Health Information Network**

- 1. Certification:** Utilize a certification⁴ process that includes the requirements (standards and agreements) with which any entity's health information users⁵ must conform for exchange of data within a nationwide health information network.
 - 1.1 Certification of an entity's ability to connect with a nationwide health information network should include a description of the level of participation for which an entity's information systems are capable. For example, a small provider may only be able to exchange data within a nationwide health information network via a gateway; another entity may only be able to exchange certain types of data electronically, or during certain hours.

- 2. Authentication:** Enable authentication of an entity's users⁵ as well as independent users whenever location of information and/or data are exchanged within a nationwide health information network.
 - 2.1 Enable an entity to register (provide authorization and establish authentication processes for)⁶ users to connect with a nationwide health information network in a manner consistent with all HIPAA and other applicable federal, state, and local privacy and security legislation/regulations.
 - 2.2 Protect authentication credentials during transmission.
 - 2.3 Provide mechanisms for non-repudiation when the policies of the parties exchanging data would require such service.

- 3. Authorization:** Facilitate management of an individual's permission/authorization to share information about location of health information or apply restrictions on access to specified health information.
 - 3.1 Enable entities and/or users to provide permissions, authorizations, and/or restrictions to share location information/data.
 - 3.2 Enable changes to be made in permissions, authorizations, and restrictions as requested by applicable entity and/or user.
 - 3.3 Allow access to location of information and/or data based only on permission/authorization status or emergency access as defined by law.
 - 3.4 Utilize standard authorization codes to convey permissions/authorizations to share data.
 - 3.5 Enable participants in a nationwide health information network the ability to anonymize and re-link data to ensure its confidentiality, in accordance with policies of the relevant entities (e.g., public health departments).
 - 3.6 Enable an entity to de-identify and aggregate data, for research or other purposes, upon request

- 4. Person Identification:** Utilize a standard person identity/information correlation process to uniquely identify an individual.

⁴ See definition on page 9.

⁵ See definition on page 8.

⁶ See definitions on page 10.

- 4.1 Uniquely identify an individual through matching on a common set of various identifiers, such as last name, middle name, first name, date of birth, gender, etc.
- 4.2 Utilize a set of standard policies to resolve identity ambiguities, consistent with applicable tolerance levels for errors.

5. Location of Health Information: Provide functionality that will locate where health information exists for identified individuals.

- 5.1 Utilize a standard, unique entity identifier to locate entities holding a specific individual's information.
- 5.2 Provide notification concerning location of information, pointers to the locations, metadata describing the nature of available data (e.g. radiology report, dates of service, advance directives), or the data itself to the requestor depending on the structure of the network used and agreements in place. (See also 6.3)
- 5.3 Provide information back to the authorized requestor if identity, location information, and/or data could not be determined and/or provided.

6. Transport and Content Standards: Transport requests for and responses regarding location of information, requests for data, data itself, and other types of messages (such as notifications of the availability of new data) to destinations using general industry-recognized transport types (e.g., Internet Protocol Version 6 [IPv6]) and authorized recipient's specified mode (e.g., e-fax vs. transaction) to and from electronic addresses that are unambiguously identified in a standardized manner.

- 6.1 Support content (vocabulary and code sets), application protocols, and message formats used for the exchange of health information within a nationwide health information network that conform to standard interoperability specifications.
- 6.2 Verify the integrity of data transmission using general industry recognized methods.
- 6.3 Enable standard information metadata (e.g., UML, XSD) to be included in message formats in order to convey, for example, sensitivity restrictions, individual permissions, and entity preferences. (See also 5.2)
- 6.4 Support the ability to include an error message service that notifies the requestor if authentication or authorization is not verified.
- 6.5 Support, based on an entity's query, the ability to temporarily hold and aggregate appropriate error messages or data until completely collected and ready for transmission to the requestor.
- 6.6 Support the ability to transport data, as directed, from one entity's system to another, such as from one personal health record to another personal health record, or from one provider's system to a personal health record.
- 6.7 Provide the ability to send/receive/retransmit acknowledgment of data requests or data content transmissions.
- 6.8 Enable entities and systems to transport updates, corrections, and amendments to health information in accordance with HIPAA requirements and internal policies.
- 6.9 Ensure that all parties involved in the transport of health information manage the connections with contingency plans, security incident procedures, ongoing evaluation and risk management, and retention of data and metadata (including audit logs) as required by state statutes and other requirements.

7. Data Transactions: Provide functionality that will enable data transactions to occur among authorized entities and/or users upon specific trigger events, such as to automatically send final lab results for any previously sent preliminary results, send any

changes in medications prescribed, report medication errors, notify public health about the occurrence of a bio-hazard event, inform individuals about the availability of a clinical trial, determine hospital census for disaster planning, etc.

- 7.1 Identify the source of any externally-provided data in whatever form the data may take (e.g., aggregated, anonymized, or identifiable).
 - 7.2 Enable data filtering to allow for subscription and un-subscription to specified or all available future clinical events and other applicable data.
 - 7.3 Enable entities to acquire data to monitor a previously detected event, generate alerts/notifications, or perform similar functions.
 - 7.4 Enable entities to account for disclosures in accordance with HIPAA requirements if a covered entity; or provide an audit trail of accesses and disclosures if not a covered entity.
 - 7.5 Support consistent methodology for granting and tracking access in applicable emergency situations (e.g., when normal authorizations for access are not feasible and special procedures are instituted to gain access to critical care data).
- 8. Auditing and Logging:** Log and audit all (intentional or unintentional) connections and disconnections to network services and all network configuration changes, generating alerts/notifications for system activity outside the normal range of monitoring levels/thresholds.
- 8.1 Retain logs for period of time determined by law, accrediting agencies, marketplace, and entities.
 - 8.2 Protect audit data from unauthorized access/modification.
 - 8.3 Generate evidence to support incident management (investigations) and response processes (corrective action).
 - 8.4 Be guided in standards and policy adoption by regular risk assessments.
- 9. Time-sensitive Data Access:** Enable time-sensitive data request/response interactions to specific target systems (e.g., query of immunization registry, request for current medication list).
- 10. Communications:** Communicate health information using HITSP-identified standard content and message formats.
- 10.1 Enable mapping between versions of a standard and multiple standards, mapping terminologies and code sets, and supporting Americans with Disabilities Act Section 508 compliance.
 - 10.2 Support display, entry, or retrieval of data in multiple ways as determined by the needs of the recipient.
- 11. Data Storage:** Enable the ability to aggregate data from disparate sources to facilitate communications. For example, temporarily hold information as it is being collected to communicate a concise summary of the information; or permanently store data from uncoordinated sources across time to support a data registry.

NCVHS Recommendations

Global Requirements

Observation: NCVHS has sequenced the high level functional requirements assuming a sequential flow. Functional requirements for entities to connect with a nationwide health information network are sequenced first. Functions required to authorize and authenticate users (individuals, software tools, or other systems) are next. Following that are functions required to identify and locate information – whether about a given individual or an aggregate set of data. Lastly identified are functional requirements relating to transporting, securing, aggregating, and retaining health information – whether by a network service provider or an entity itself. Each functional requirement builds upon all predecessor requirements.

Global Recommendation: NCVHS recommends that HHS adopt the set of minimum but inclusive high level functional requirements for the *initial* definition of a nationwide health information network. In addition, there are specific recommendations following each functional requirement set of statements.

1. **Certification:** Utilize a certification⁷ process that includes the requirements (standards and agreements) with which any entity's health information users⁸ must conform for exchange of data within a nationwide health information network.
 - 1.1 Certification of an entity's ability to connect to a nationwide health information network should include a description of the level of participation for which an entity's information systems are capable. For example, a small provider may only be able to exchange data within a nationwide health information network via a gateway; another entity may only be able to exchange certain types of data electronically, or during certain hours.

Observation: NCVHS notes that the initial development of network certification criteria is part of the 2007 deliverables from the Certification Commission for Health Information Technology (CCHIT). NCVHS envisions that the certification process will accommodate appropriate variations by location and system capabilities and enable changes over time. For example, entities certified to enable small providers to participate in a nationwide health information network may provide specific services that these providers are unable to perform themselves, such as message handling, terminology mapping, or repository functions. At some time in the future, the entities may prefer to perform these functions themselves.

Recommendation 1: NCVHS recommends that CCHIT ensure that the network certification currently being addressed accommodates appropriate variations by location and system capabilities and that their ability to change over time is assured.

⁷ See definition on page 9.

⁸ See definition on page 8.

2. Authentication: Enable authentication of an entity's users⁹ as well as independent users whenever location of information and/or data are exchanged within a nationwide health information network.

- 2.1 Enable an entity to register (provide authorization and establish authentication processes for)¹⁰ users to connect with a nationwide health information network in a manner consistent with all HIPAA and other applicable federal, state, and local privacy and security legislation/regulations.
- 2.2 Protect authentication credentials during transmission.
- 2.3 Provide mechanisms for non-repudiation when the policies of the parties exchange data would require such service.

Observation: Some testifiers to NCVHS suggested that only local entities should authorize and provide authentication for their users and that authentication should not be a network function. NCVHS observes that there is a difference between where an entity would authorize and authenticate its own users and where an independent user, such as of a personal health record, would grant authorization to share data and need to authenticate to a network. Variations in where authorization and authentication of systems and individual users – both aligned with an entity and not aligned with an entity – take place seem compatible with the goals of a nationwide health information network. NCVHS also recognizes that policy matters are the subject of other groups working on the nationwide health information network initiative.

Recommendation 2: NCVHS recommends that HHS ensure that the current development of policy for participation in a nationwide health information network includes appropriate authorization and authentication processes.

3. Authorization: Facilitate management of an individual's permission/authorization to share information about location of health information or apply restrictions on access to specified health information.

- 3.1 Enable entities and/or users to provide permissions, authorizations, and/or restrictions to share location information/data.
- 3.2 Enable changes to be made in permissions, authorizations, and restrictions as requested by applicable entity and/or user.
- 3.3 Allow access to location of information and/or data based only on permission/authorization status or emergency access as defined by law.
- 3.4 Utilize standard authorization codes to convey permissions/authorizations to share data.
- 3.5 Enable participants in a nationwide health information network the ability to anonymize and re-link data to ensure its confidentiality, in accordance with policies of the relevant entities (e.g., public health departments).
- 3.6 Enable an entity to de-identify and aggregate data, for research or other purposes, upon request.

Observation: NCVHS refers readers to its recommendations to the Secretary of HHS on June 22, 2006, "Recommendations Regarding Privacy and Confidentiality in the Nationwide

⁹ See definition on page 8.

¹⁰ See definitions on page 10.

Health Information Network,” regarding an individual’s participation in a nationwide health information network. See also recommendations on needed standards later in this report.

Recommendation 3: NCVHS recommends that HHS adopt positions consistent with NCVHS recommendations of June 22, 2006 regarding an individual’s participation in a nationwide health information network, that:

- a. “The method by which personal health information is stored by healthcare providers should be left to the healthcare providers.
- b. Individuals should have the right to decide whether they want to have their personally identifiable electronic health records accessible via the NHIN. This recommendation is not intended to disturb traditional principles of public health reporting or other established legal requirements that might or might not be achieved via the NHIN.
- c. Providers should not be able to condition treatment on an individual’s agreement to have his or her health records accessible via the NHIN.
- d. HHS should monitor the development of opt-in/opt-out approaches; consider local, regional, and provider variations; collect evidence on the health, economic, social, and other implications; and continue to evaluate in an open, transparent, and public process, whether a national policy on opt-in or opt-out is appropriate.
- e. HHS should require that individuals be provided with understandable and culturally sensitive information and education to ensure that they realize the implications of their decisions as to whether to participate in the NHIN.”

4. Person Identification: Utilize a standard person identity/information correlation process to uniquely identify an individual.

- 4.1 Uniquely identify an individual through matching on a common set of various identifiers, such as last name, middle name, first name, date of birth, gender, etc.
- 4.2 Utilize a set of standard policies to resolve identity ambiguities, consistent with applicable tolerance levels for errors.

Observation: Successfully matching individuals to their health information is essential for the functioning of a nationwide health information network. Most entities collecting and maintaining health information have implemented master person indices (MPIs) or an enterprise-wide MPI (E-MPI) to accurately match individuals to their records. A set of demographic data is used for this purpose, although each entity establishes what demographic data and matching process, or algorithm, to use. Although there is a high percentage of correct matching at the entity level, adjudication of non-matches is labor-intensive and time consuming. There are also variations in the need for a perfect match vs. a near-perfect match. When two or more entities exchange health information without a standard set of high quality data matching elements and matching algorithm, the risk of failing to match or mismatching individuals to their health information increases. Testifiers recommended various automated and manual processes for resolving identity ambiguities. NCVHS observes that the Department of Defense (DoD) and the Veterans Health Affairs (VHA) are working together to test an automated process that results in accurate record matching to enable the transfer of health information from the DoD to the VHA. See also Appendix H.

Recommendation 4: NCVHS recommends that HHS should identify and recommend minimum criteria for successfully matching individuals to their health information, including that:

- a. ONC continue to provide national leadership and direction to the Healthcare Information Technology Standards Panel (HITSP) for the purpose of developing standard criteria for the accurate matching of individuals. The work being conducted by the consortia contractors to identify matching identifiers is one example. NCVHS stands ready to assist with further analysis of testimony heard during 2005-2006 as well as its experience with vital and health statistics data as another resource.
- b. Data sets should be created for use by entities for testing the accuracy of their matching methods.
- c. The results of the DoD and the VHA process to accurately match individuals with their health information should be evaluated, including its technical, financial, and social impacts, for adoption within a nationwide health information network.

5. Location of Health Information: Utilize functionality that will locate where health information exists for identified individuals.

- 5.1 Utilize a standard, unique entity identifier to locate entities holding a specific individual's information.
- 5.2 Provide notification concerning location of information, pointers to the locations, metadata describing the nature of available data (e.g., radiology report, dates of service, advance directives), or the data itself to the requestor depending on the structure of the network used and agreements in place. (See also 6.3)
- 5.3 Provide information back to the authorized requestor if identity, location information, and/or data could not be determined and/or provided.

Observation: NCVHS observes that there are several entity identifiers in use or being proposed for use within healthcare today, including the National Provider Identifier and National Plan Identifier for HIPAA-covered entities, although none are universal and not all are available to non-HIPAA-covered entities. HITSP has voted for the ISO Object Identifiers (OIDs) to be the sole standard unique organization identifier for organizations that assign and manage patient identifiers.

NCVHS also observes that in addition to identifiers, there are a variety of processes for location of health information, including those in which the provision of access or retrieval of health information is performed simultaneously with the location of the health information. It further observes that some of the variations relate to whether the subject of the query is a specific individual's health information or other information. Other information may be de-identified and/or aggregated health information. A nationwide health information network may also serve to support the exchange of information not related to or derived from individual health information, such as hospital census information or the availability of a clinical trial at a particular research institution. HITSP has recognized that standards are not completely architecture-neutral and that it may be necessary to define a range of architectural options that is not limitless.

Recommendation 5: NCVHS recommends that HHS should collaborate with public and private organizations on the development, deployment, and systematic continuing evaluation of services for the location of health information about individuals that would accommodate local preference and system capabilities to the extent feasible, yet be compatible within a nationwide health information network.

6. Transport and Content Standards: Transport requests for and responses regarding location of information, requests for data, data itself, and other types of messages (such as

notifications of the availability of new data) to destinations using general industry-recognized transport types (e.g., Internet Protocol Version 6 [IPv6]) and authorized recipient's specified mode (e.g., e-fax vs. transaction) to and from electronic addresses that are unambiguously identified in a standardized manner.

- 6.1 Support content (vocabulary and code sets), application protocols, and message formats used for the exchange of health information within a nationwide health information network that conform to interoperability specifications.
- 6.2 Verify the integrity of data transmission using general industry recognized methods.
- 6.3 Enable standard information metadata (e.g., UML, XSD) to be included in message formats in order to convey, for example, sensitivity restrictions, individual permissions, and entity preferences. (See also 5.2)
- 6.4 Support the ability to include an error message service that notifies the requestor if authentication or authorization is not verified.
- 6.5 Support, based on an entity's query, the ability to temporarily hold and aggregate appropriate error messages or data until completely collected and ready for transmission to requestor.
- 6.6 Support the ability to transport data, as directed, from one entity's system to another, such as from one personal health record to another personal health record, or from one provider's system to a personal health record.
- 6.7 Provide the ability to send/receive/retransmit acknowledgment of data requests or data content transmissions.
- 6.8 Enable entities and systems to transport updates, corrections, and amendments to health information in accordance with HIPAA requirements and internal policies.
- 6.9 Ensure that all parties involved in the transport of health information manage the connections with contingency plans, security incident procedures, ongoing evaluation and risk management, and retention of data and metadata (including audit logs) as required by state statutes and other requirements.

Observation: NCVHS notes that it is important to recognize that many of the functions associated with transporting meaningful messages depend on the ability of an entity's systems to produce standard messages or that the entity will utilize one or more third parties to process messages into standard formats. Such conformance to standards may be enabled by a network service provider, system vendor, entity itself, or other means. Such variation appears to be compatible with the goals of a nationwide health information network that is deployed in a federated manner.

Recommendation 6: NCVHS recommends that HHS support the work of the HITSP in promoting creation, adoption, and conformance to message and content standards for use within a nationwide health information network. (See also Recommendation 15 for specific standards gaps.)

7. Data Transactions: Provide functionality that will enable data transactions to occur among authorized entities and/or users upon specific trigger events, such as to automatically send final lab results for any previously sent preliminary results, send any changes in medications prescribed, report medication errors, notify public health about the occurrence of a bio-hazard event, inform individuals about the availability of a clinical trial, determine hospital census for disaster planning, etc.

- 7.1 Identify the source of any externally-provided data in whatever form the data may take (e.g., aggregated, anonymized, or identifiable).

- 7.2 Enable data filtering to allow for subscription and un-subscription to specified or all available future clinical events and other applicable data.
- 7.3 Enable entities to acquire data to monitor a previously detected event, generate alerts/notifications, or perform similar functions.
- 7.4 Enable entities to account for disclosures in accordance with HIPAA requirements if a covered entity; or provide an audit trail of accesses and disclosures if not a covered entity.
- 7.5 Support consistent methodology for granting and tracking access in applicable emergency situations (e.g., when normal authorizations for access are not feasible and special procedures are instituted to gain access to critical care data).

Observation: NCVHS heard testimony from some that a nationwide health information network should only enable retrieval of data based on a specific query (pull). Still other testifiers, however, supported the ability to offer push services that enable, with permission, the ability to inform others of the availability of (new or updated) data and the ability to be notified when certain data become available. All data transactions, however, must be traceable. Furthermore, access to health information in an emergency treatment situation must be performed within stringent security controls that enable access only when legitimately required and afford special monitoring of those accesses.

Recommendation 7: NCVHS recommends that HHS support a nationwide health information network initiative within which both pull and push data transaction services can be accommodated based on local or community policies.

- a. NCVHS recommends that HHS support the capability of a nationwide health information network that enables access to data in an emergency treatment situation within a construct that affords security measures in accordance with HIPAA requirements and guidance from the Office of Civil Rights (OCR).

8. Auditing and Logging: Log and audit all (intentional or unintentional) connections and disconnections to network services and all network configuration changes, generating alerts/notifications for system activity outside the normal range of monitoring levels/thresholds.

- 8.1 Retain logs for period of time determined by law, accrediting agencies, marketplace, and entities.
- 8.2 Protect audit data from unauthorized access/modification.
- 8.3 Generate evidence to support incident management (investigations) and response processes (corrective action).
- 8.4 Be guided in standards and policy adoption by regular risk assessments.

Observation: NCVHS heard testimony from some that auditing and logging of connection and disconnection to network services are sufficient measures to ensure the security (confidentiality, integrity, and availability) of any network; and heard from others that access controls alone are sufficient measures to ensure the security (confidentiality, integrity, and availability) of any network. NCVHS believes both are necessary. Access controls and auditing and logging are requirements consistent with the HIPAA Security Rule as they apply to covered entities and should extend to all other entities as appropriate security practices. In addition to auditing and logging being minimum and essential functionality, other auditing and logging functionality were brought forth for inclusion in network functional requirements. These included:

- *Auditing of cross organization data access at the healthcare entity level so that inappropriate data retrieval can be retrospectively identified (the healthcare entity is responsible for auditing the specific provider of care requesting the retrieval).*
- *Auditing of cross organizational data access at the provider of care level through metadata shared by the requesting organization.*

NCVHS Recommendation 8: NCVHS recommends that HHS support the continued development and testing of approaches for a nationwide health information network that incorporate both access controls and logging and auditing.

- 9. Time-sensitive Data Access:** Enable time-sensitive request/response interactions to specific target systems (e.g., query of immunization registry, request for current medication list).

Observation: The ability to query and obtain a response in a timely manner – at the point of care or to respond to a disaster situation – is an essential function of a nationwide health information network that will improve patient care, enhance emergency responsiveness, and reduce medical errors.

NCVHS Recommendation 9: NCVHS recommends that the performance requirements of a nationwide health information network enable inquiry and response in a manner that supports the timely use of the data.

10. Communications: Communicate health information using HITSP-identified standard content and message formats.

- 10.1 Enable mapping between versions of a standard and multiple standards, mapping terminologies and code sets, and supporting Americans with Disabilities Act Section 508 compliance.
- 10.2 Support display, entry, or retrieval of data in multiple ways as determined by the needs of the recipient.

Observation: NCVHS observes that conformance with HITSP-identified standard content and message formats may require translation or mapping of communications prior to transmission. Entities may be able to conduct such translation or mapping themselves, or may need to have them performed by third party network service providers.

Recommendation 10: NCVHS recommends that HHS support the continued development and testing of approaches for a nationwide health information network that demonstrate that mapping and translation functions performed by network service providers or other entities may be appropriate in environments where applicable agreements exist.

11. Data Storage: Enable the ability to aggregate data from disparate sources to facilitate communications. For example, temporarily hold information as it is being collected to communicate a concise summary of the information; or permanently store data from uncoordinated sources across time to support a data registry.

Observation: NCVHS observes that a given query may result in identifying the existence of data at many sources, and it may be desirable to aggregate these data prior to responding to the inquiry. In addition, some locations may find it useful to create data repositories in

support of healthcare quality, patient safety, biosurveillance, research, and other legitimate uses of health information.

Recommendation 11: NCVHS recommends that HHS support the continued development and testing of prototypes for a nationwide health information network that do not preclude transient or permanent storage of data as may be established by policy.

Gaps, Policy Issues, and Needed Standards

In the process of identifying high level functional requirements, NCVHS heard testimony regarding gaps, and NCVHS observed additional gaps in the functional requirements originally enumerated. NCVHS also identified policy issues, and recognized that in several areas consortia contractors and testifiers recommended standards that did not yet exist.

Observations about Gaps in Functional Requirements

NCVHS has compiled the list of high level minimum but inclusive functional requirements needed for the initial definition of a nationwide health information network utilizing all of the resources available to it, including the consortia contractors' original specific functional requirements and comments from numerous testifiers. The contributions of all have permitted NCVHS to fill in where it believes there may have been gaps in any one resource. NCVHS has attempted to make the list of high level functional requirements as complete as possible, recognizing that as work continues to enable a nationwide health information network there may well be gaps identified in this list. It is also recognized that there are high level functional requirements, specific functional requirements for any given application, and then technical requirements for any deployment of functional requirements. At each level there will be further detail, but the detail should serve to enhance and not be incompatible with the minimum but inclusive functional requirements.

NCVHS, however, also observes that in public comments there appeared to be the perception of gaps due to the fact that functional requirements are specified at a high level. The minimum but inclusive functional requirements should be broad enough to cover any scenario, but, of course, this must be tested for any specific use case.

Recommendation 12: NCVHS recommends that HHS support the testing of the high level functional requirements against other very common use cases. These might include e-prescribing and its various exchanges between prescribers and dispensers and special signature requirements for controlled substances; medication reconciliation within a hospital as described by JCAHO and across the continuum of care; use of clinical decision support – by caregivers and individuals (especially as related to differences in data rendering); chronic care, long term care, home health care, behavioral health care, and other settings for care; safety net organizations, reimbursement for healthcare services; clinical research; regulatory reporting; and selected services provided by public health departments.

Policy Issues

In developing the list of high level functional requirements needed for the initial definition of a nationwide health information network, NCVHS identified a number of areas where policy issues will need to be addressed.

In many cases, these policy issues probably could be addressed at the local or community level. At this level, there would be business agreements surrounding specific policies, procedures, and technical requirements. There are, however, some policy issues that appear to be needed for the networking capability to be enabled at a nationwide level. Yet, NCVHS heard fundamental differences of opinion concerning even this level of nationwide service provision. Some testifiers stated that functional requirements should be performed at the most local level possible, while others suggested that there needs to be a common framework while accommodating local variations, innovation, and maturation of standards and technology to the extent feasible.

Recommendation 13: NCVHS recommends that HHS:

- a. Utilize the results of the prototypes and growing experience in community health information exchanges to determine the public policy that describes where responsibilities for the performance of the various functional requirements may exist within a nationwide health information network.
- b. Determine how to assure the ongoing conformance of entities and their systems to the requirements for connectivity and exchange of data within a nationwide health information network.
- c. Identify and recommend policy for individual identification and health information location to ensure accurate matching of individuals to their health information.
- d. Support the use of standards that would enable the communication of individual permissions or entity preferences concerning specific data. Such communications have been recommended by consortia contractors and testifiers as being carried out by standard metadata. While such metadata can be applied by a given entity's systems, having metadata standards and requiring conformance to the standards appears to be a matter of policy relating to cross-entity exchange of data.
- e. Recognize that baseline requirements for privacy, security, transactions and code sets, and identifiers are provided for by HIPAA for covered entities, but that equivalent requirements do not exist where there may be exchange of health information among non-covered entities or their business associates. The most common example of this is between an individual and a personal health record (PHR) vendor not affiliated with a provider or health plan. Equivalent protections could be implemented through enhancements and extensions to HIPAA or through other appropriate mechanisms. With regard to privacy protections, NCVHS has previously stated that, while a HIPAA-like framework is not necessarily the most appropriate for safeguarding privacy in PHR systems, it does believe that privacy measures at least equal to those in HIPAA should apply to all PHR systems, whether or not they are managed by covered entities.
- f. Collaborate with other public and private entities to develop a public awareness campaign regarding the value of a nationwide health information network that is grounded in sound communication research about diverse target audiences, including across various locations and communities.

Needed Standards

Several functional requirements include reference to standards. Some of the standards referenced already exist, although there may be variability in conformance of how they are used or they may only provide a framework. Many standards, by their nature, change over time with new versions being necessitated by new information requirements. New standards versions must be accommodated.

Some testifiers urged adoption of standards that were system platform independent to the extent possible. For example, a standard set of message exchange protocols such as CORBA, Web Services, SMTP (e-mail) should be able to be composed into industry specific standards, such as HL7 V3. There were also gaps identified in standards specific to health information exchange.

Recommendation 14: NCVHS recommends that HHS support the development and adoption of standards for the following, in the context of multiple additional use cases:

- a. Authorization codes that support individuals' permissions
- b. Provider preference codes, such as a provider wants to receive automatic updates
- c. Clinical terminology subsets and cross-maps for multiple use cases
- d. Metadata requirements for patient consent documents and processes
- e. Metadata related to retention of clinical data and queries for clinical data in multiple use cases
- f. Information location/identity correlation processes, including registry services
- g. Content standards for certain types of messages, especially relating to event detection and alerts/notifications
- h. Implementation guides for electronic clinical documents and message
- i. Managing the shared use of unique identifiers across multiple participating institutions
- j. Processes and specifications for correction of existing clinical information

Recommendations for Next Steps

In conclusion, NCVHS recognizes that describing high level minimum but inclusive functional requirements needed for the initial definition of a nationwide health information network implies that there is considerably more work to support the exchange of health information in a trusted, secure, and protected manner. NCVHS makes the following recommendations for next steps with respect to the functional requirements:

Recommendation 15: NCVHS recommends that HHS support further work to:

- a. Use the high level functional requirements as described in this report as a way to communicate the nature of the initiative that is enabling a nationwide health information network.
- b. Utilize more detailed statements of functionality to illustrate specific use cases and business needs.
- c. Monitor the emergence of types of entities that enhance the adoption of a NHIN and any issues encountered.

Appendices

See following.

Appendix A: National Committee on Vital and Health Statistics

CHAIRMAN

Simon P. Cohn, M.D., M.P.H.
Associate Executive Director
The Permanente Federation
Kaiser Permanente
Oakland, California

HHS EXECUTIVE STAFF DIRECTOR

James Scanlon
Deputy Assistant Secretary
Office of Science and Data Policy
Office of the Assistant Secretary
for Planning and Evaluation,
Department of Health and Human Services
(HHS)
Washington, D.C.

EXECUTIVE SECRETARY

Marjorie S. Greenberg
Chief
Classifications & Public Health Data Standards
Staff
Office of the Director
National Center for Health Statistics,
HHS Centers for Disease Control and
Prevention
Hyattsville, Maryland

MEMBERSHIP

Jeffrey S. Blair, M.B.A.
Director of Health Informatics
Lovelace Clinic Foundation
Albuquerque, New Mexico

Justine M. Carr, M.D.
Director, Clinical Resource Management
Health Care Quality
Beth Israel Deaconess Medical Center
Boston Massachusetts

John P. Houston, J.D.
Director, ISD; Privacy Officer; Assistant
Counsel
University of Pittsburgh Medical Center
Pittsburgh, Pennsylvania

Stanley M. Huff, M.D.
Professor, Medical Informatics
University of Utah
College of Medicine
Intermountain Health Care
Salt Lake City, Utah

Robert W. Hungate
Principal
Physician Patient Partnerships for Health
Wellesley, Massachusetts

A. Russell Localio, Esq., M.A., M.P.H., M.S.
Assistant Professor of Biostatistics
University of Pennsylvania School of Medicine
Center for Clinical Epidemiology and
Biostatistics
Philadelphia, Pennsylvania

Carol J. McCall, F.S.A., M.A.A.A.
Vice President
Humana
Center for Health Metrics
Louisville, Kentucky

Harry Reynolds
Vice President
Blue Cross Blue Shield of North Carolina
Durham, North Carolina

Mark A. Rothstein, J.D.
Herbert F. Boehl Chair of Law and Medicine
Director, Institute for Bioethics, Health Policy
and Law
University of Louisville School of Medicine
Louisville, Kentucky

William J. Scanlon, Ph.D.
Health Policy R&D
Washington, D.C.

Donald M. Steinwachs, Ph.D.
Professor and Director
The Johns Hopkins University
Bloomberg School of Public Health
Department of Health Policy and Management
Baltimore, Maryland

C. Eugene Steuerle, Ph.D.
Senior Fellow
The Urban Institute
Washington, D.C.

Paul Tang, M.D.
Chief Medical Information Officer
Palo Alto Medical Foundation
Palo Alto, California

Kevin C. Vigilante, M.D., M.P.H.
Principal
Booz-Allen & Hamilton
Rockville, Maryland

Judith Warren, Ph.D., R.N.
Associate Professor
School of Nursing
University of Kansas
Kansas City, Kansas

LIAISON REPRESENTATIVES

Irma T. Elo, Ph.D.
Associate Professor of Sociology
Department of Sociology, Population Studies
Center
University of Pennsylvania
Philadelphia, Pennsylvania

J. Michael Fitzmaurice, Ph.D.
Senior Science Advisor for
Information Technology
HHS Agency for Healthcare Research and
Quality
Rockville, Maryland

Steven J. Steindel, Ph.D.
Senior Advisor
Standards and Vocabulary Resource
Information Resources Management Office
HHS Centers for Disease Control and
Prevention
Atlanta, Georgia

Edward J. Sondik, Ph.D.
Director
National Center for Health Statistics
Centers for Disease Control and Prevention
Hyattsville, Maryland

Karen Trudel
Deputy Director
Office of E-Health Standards & Security
HHS Centers for Medicare and Medicaid
Services
Baltimore Maryland

Staff of the Centers for Disease Control and Prevention, National Center for Health Statistics

Debbie Jackson
Katherine Jones
Marietta Squire

NCVHS Ad Hoc Workgroup on Nationwide Health Information Network

Simon P. Cohn, M.D., Chair

Jeffrey S. Blair, M.B.A.

John P. Houston, J.D.

Stan M. Huff, M.D.

Harry Reynolds

Mark Rothstein, J.D.

Paul Tang, M.D.

Kevin Vigilante, M.D., M.P.H.

Judith Warren, Ph.D, RN

Workgroup Staff

Mary Jo Deering, Ph.D., HHS National Institutes of Health, National Cancer Institute, Lead Staff

Suzie Burke-Bebbee, HHS Office of the Secretary

Linda Fischetti, RN, MS, Department of Veterans Affairs

Mike Fitzmaurice, Ph.D., HHS Agency for Healthcare Research and Quality

Helga Rippen, M.D., HHS Office of the Assistant Secretary for Planning and Evaluation

Steven J. Steindel, Ph.D., HHS Centers for Disease Control and Prevention

Margret Amatayakul, RHIA, CPHS, CPHIT, CPEHR, FHIMSS, **Consultant Writer**

Appendix B: List of Testifiers

Mark Adams, Ph.D., Cancer Biomedical Informatics Grid (caBIG TM)
John Apathy, Clinical Research Community
Elaine Blechman, Ph.D., Healthcare Information Technology Standards Panel (HITSP)
Consumer Empowerment Technical Committee Use Case Co-Chair
Robert Cothren, Ph.D., Northrup Grumman
Jac Davies, M.S., M.P.H., Inland Northwest Health Services
Didi Davis, Integrating the Healthcare Enterprise
Gary Dickenson, CentrififyHealth
Jason Dubois, American Clinical Laboratory Association
Floyd Eisenberg, M.D., M.P., HITSP Biosurveillance Technical Committee Use Case Co-Chair
Jamie Ferguson, HITSP Electronic Health Records Technical Committee Use Case Co-Chair
Linda Fischetti, R.N., Veterans Health Administration
Lawrence Hanrahan, Ph.D., M.S., Association of State and Territorial Public Health
Organizations
Kevin Hutchinson, SureScripts
Brian Kelly, M.D., Accenture
Vik Kheterpal, M.D., Principal, CareEvolution, Inc.
David Lansky, Ph.D., Markle Personal Health Technology Council
Phil Marshall, M.D., M.P.H., WebMD
Jon A. McBride, Humana
Blackford Middleton, M.D., M.P.H., MSc, RHIO Federation and eHealth Initiative Connecting
Communities
Don Mon, Ph.D., Certification Commission for Healthcare Information Technology
Tim Morris, CDC - Public Health Information Network
J. Mark Overhage, M.D., Ph.D., Computer Sciences Corporation
Jan Root, Ph.D., Utah, Health Information Network
Vish Sankaran, Federal Health Architecture
Charlene Underwood, Electronic Health Record Vendors Association and Siemens
Dave (Casey) Webster, IBM
Russel Williams, Long Term Care Community

Appendix C: ONC Proposed Functional Requirements Categories, Version 3, April 16, 2006

Functional Categories

Audit and Logging – Functionality to support the recording of transactions and capability to review such recordings. For example, the functionality to support the identification and monitoring of activities within an application or system.

Authentication – The ability to uniquely identify and validate (to a reasonable degree) the identity of an entity. These requirements are applicable to systems, services, and organizational actors.

Authorization – The ability to determine and grant access to systems, services and data based on prescribed parameters (instantiated authorization/access policies). For example, the process of granting authority or delegation to specified actors.

Confidentiality – The ability to ensure that data are not disclosed (e.g., viewed, obtained or made known) to unauthorized individuals per organizational policies. Functionality to provide privacy, de-identification, anonymization and re-linking would be included in the confidentiality category.

Credentialing – The process of validating or confirming the qualifications of licensed professionals, e.g., clinical provider. These functional requirements are distinct from authentication and authorization.

Data Access and Update – The ability to retrieve, view, and modify data, within prescribed policies.

Data Content – There may exist requirements on data that constrain the context and use of data exchanged within the Nationwide Health Information Network. While many data requirements may be deferred to review of specifications or standards, there may be some high level data constraints that should be included within the Data Content functional category (e.g., requirement for structured or unstructured text).

Data Filtering – The functional requirements to support identifying and/or qualifying data that needs to be transmitted.

Data Mapping/Translation – The functional requirements to support reformatting or expressing data in different terms. These requirements may relate to terminology and/or message structure.

Data Quality/Data Integrity – The functional requirements to ensure data is correct and complete, including the ability to verify that data were transferred.

Data Rendering – The ability to present data.

Data Retrieval (Pull) – The functional requirements to support the request/retrieval of data.

Data Routing – The ability to identify a receiving system and ensure delivery of data.

Data Source – The functional requirements to support the identification of the data/information point of origin.

Data Transmission (Push) – The functional requirements to support the unsolicited sending of data.

Data Usage – There may exist requirements on data that constrain the context and use of data exchanged within the Nationwide Health Information Network. While many data requirements may be deferred to review of specifications or standards, there may be some high level data constraints that should be included within the Data Usage functional category.

Identity/Information Correlation – The ability to map information or entities with other entities (e.g., individuals or organizations, or necessarily a named system or network user). For example, correlating clinical information to the system or network-known identity of a patient where the patient. .

Persistent Data Storage – The ability of a system to function as a data repository.

Record Location – The ability to determine the location of data.

Transient Data – The ability of a systems to function as a data repository for a given entity for a given period of time or purpose.

Non-Functional Categories

Below is a proposed list of categories that include system qualities or “non-functional” requirements. As noted above, the expectation is that categories of non-functional requirements will only be designated where the property has a substantial impact on the architecture and capabilities of the Nationwide Health Information Network or a use case.

Accuracy – a measure of the application service quality - from the customer’s perspective, the precision with which responses are provided to customer inquiries.

Business Rules – Policy driven dynamic requirements that may change during the operation of the system, requiring that the system adapt to the change without major rework.

Performance – a measure of the degree to which an entity satisfies its intended purpose.

Robustness – a measure of the ability of system to adjust to unanticipated conditions (i.e., the ability of a system to adjust to unanticipated conditions without losing its endurance and level of quality).

Scalability – a measure of the ability of system to adjust or extend to changing demands (user load, data load).

Appendix D: Functional Requirements for Entities to Participate in a Nationwide Health Information Network, Sorted by ONC Functional Category

Reference numbers in parentheses refer to the sequencing of the high level functional requirements displayed in Figure 1.

Audit and Logging	<ul style="list-style-type: none"> • Enable entities and systems to transport updates, corrections, and amendments to health information in accordance with HIPAA requirements and internal policies. (6.8) • Ensure that all parties involved in the transport of health information manage the connections with contingency plans, security incident procedures, ongoing evaluation and risk management, and retention of data and metadata (including audit logs) as required by state statutes and other requirements. (6.9) • Enable entities to account for disclosures in accordance with HIPAA requirements if a covered entity; or provide an audit trail of accesses and disclosures if not a covered entity. (7.4) • Log and audit all (intentional or unintentional) connections and disconnections to network services and all network configuration changes, generating alerts/notifications for system activity outside the normal range of monitoring levels/thresholds. (8.0) • Retain logs for period of time determined by law, accrediting agencies, marketplace, and entities. (8.1) • Protect audit data from unauthorized access/modification. (8.2) • Generate evidence to support incident management (investigations) and response processes (corrective action). (8.3) • Be guided in standards and policy adoption by regular risk assessments. (8.4)
Authentication	<ul style="list-style-type: none"> • Enable authentication of an entity's users as well as independent users whenever location of information and/or data are exchanged within a nationwide health information network. (2.0) • Enable an entity to register (provide authorization and establish authentication processes for) users to connect with a nationwide health information network in a manner consistent with all HIPAA and other applicable federal, state, and local privacy and security legislation/regulations. (2.1) • Protect authentication credentials during transmission. (2.2) • Provide mechanisms for non-repudiation when the policies of the parties exchanging data would require such service. (2.3)
Authorization	<ul style="list-style-type: none"> • Utilize a certification process with which any entity's health information users must conform for exchange of data within a nationwide health information network. (1.0) • Facilitate management of an individual's permission/authorization to share information about location of health information or apply restrictions on access to specified health information. (3.0) • Utilize standard authorization codes to convey permissions/authorizations to share data. (3.4) • Enable an entity to de-identify and aggregate data, for research or other purposes, upon request. (3.6)

Confidentiality	<ul style="list-style-type: none"> • Enable entities and/or users to provide permissions, authorizations, and/or restrictions to share location information/data. (3.1) • Enable changes to be made in permissions, authorizations, and restrictions as requested by applicable entity and/or user. (3.2) • Allow access to location of information and/or data based only on permission/authorization status or emergency access as defined by law. (3.3) • Enable participants in a nationwide health information network the ability to anonymize and re-link data to ensure its confidentiality, in accordance with policies of the relevant entities (e.g., public health departments). (3.5)
Configuration	<ul style="list-style-type: none"> • Certification of an entity's ability to connect with a nationwide health information network should include a description of the level of participation for which an entity's information systems are capable., For example, a small provider may only be able to exchange data within a nationwide health information network via a gateway; another entity may only be able to exchange certain types of data electronically, or during certain hours. (1.1)
Credentialing	<i>See Terms page 9 and Authentication</i>
Data Access and Update	<ul style="list-style-type: none"> • Enable time-sensitive data request/response interactions to specific target systems (e.g., query of immunization registry, request for current medication list). (9.0) • Support consistent methodology for granting and tracking access in applicable emergency situations (e.g., when normal authorizations for access are not feasible and special procedures are instituted to gain access to critical care data). (7.5)
Data Content	<ul style="list-style-type: none"> • Support content (vocabulary and code sets), application protocols, and message formats used for the exchange of information within a nationwide health information network that conform to standard interoperability specifications. (6.1)
Data Filtering	<ul style="list-style-type: none"> • Enable data filtering to allow for subscription and un-subscription to specified or all available future clinical events and other applicable data. (7.2)
Data Mapping/ Translation	<ul style="list-style-type: none"> • Communicate health information using HITSP-identified standard content and message formats (10.0) • Enable mapping between versions of a standard and multiple standards, mapping terminologies and code sets, and supporting Americans with Disabilities Act Section 508 compliance. (10.1)
Data Quality/Data Integrity	<ul style="list-style-type: none"> • Provide information back to the authorized requestor if identity, location information, and/or data could not be determined and/or provided. (5.3) • Verify the integrity of data transmission using general industry recognized methods. (6.2). • Support the ability to include an error message service that notifies the requestor if authentication or authorization is not verified. (6.4) • Provide the ability to send/receive/retransmit acknowledgment of data requests or data content transmissions. (6.7)
Data Rendering	<ul style="list-style-type: none"> • Support display, entry, and retrieval of data in multiple ways as determined by the needs of the recipient. (10.2)
Data Retrieval	<ul style="list-style-type: none"> • Provide notification concerning location of information, pointers to the

(Pull)	<p>locations, metadata describing the nature of available data (e.g., radiology report, dates of service, advance directives), or the data itself to the requestor depending on the structure of the network used and agreements in place. (Also applies to Data Transmission [Push]). (5.2)</p> <ul style="list-style-type: none"> • Enable standard information metadata (e.g., UML, XSD) to be included in message formats in order to convey, for example, sensitivity restrictions, individual permissions, and entity preferences. (6.3)
Data Routing	<ul style="list-style-type: none"> • Transport requests for and their responses to location of information, requests for data, data itself, and other types of messages (such as notifications of the availability of new data) to destinations using general industry-recognized transport types (e.g., Internet Protocol Version 6 [IPv6]) and authorized recipient's specified mode (e.g., e-fax vs. transaction) to and from electronic addresses that are unambiguously identified in a standardized manner. (6.0)
Data Source	<ul style="list-style-type: none"> • Identify the source of any externally-provided data in whatever form the data may take (e.g., aggregated, anonymized, or identifiable). (7.1)
Data Transmission (Push)	<ul style="list-style-type: none"> • Support the ability to transport data, as directed, from one entity's system to another, such as from one personal health record to another personal health record, or from one provider's system to a personal health record. (6.6) • Provide functionality that will enable data transactions to occur among authorized entities and/or users upon specific trigger events, such as to automatically send final lab results for any previously sent preliminary results, send any changes in medications prescribed, report medication errors, notify public health about the occurrence of a bio-hazard event, inform individuals about the availability of a clinical trial, determine hospital census for disaster planning, etc. (7.0)
Data Usage	<ul style="list-style-type: none"> • Enable entities to acquire data to monitor a previously detected event, generate alerts/notifications, or perform similar functions. (7.3)
Identity/ Information Correlation	<ul style="list-style-type: none"> • Uniquely identify an individual through matching on a common set of various identifiers, such as last name, middle name, first name, date of birth, gender, etc. (4.1) • Utilize a set of standard policies to resolve identity ambiguities, consistent with applicable tolerance levels for errors. (4.2)
Persistent Data Storage	<ul style="list-style-type: none"> • Enable the ability to aggregate data from disparate sources to facilitate communications. For example, temporarily hold information as it is being collected to communicate a concise summary of the information; or permanently store data from uncoordinated sources across time to support a data registry. (11.0)
Record Location	<ul style="list-style-type: none"> • Utilize a standard person identity/information correlation process to uniquely identify an individual. (4.0) • Provide functionality that will locate where health information exists for identified individuals. (5.0) • Utilize a standard, unique entity identifier to locate entities holding a specific individual's information. (5.1)
Transient Data	<ul style="list-style-type: none"> • Support, based on an entity's query, the ability to temporarily hold and aggregate appropriate error messages or data until completely collected and ready for transmission to the requestor. (6.5)

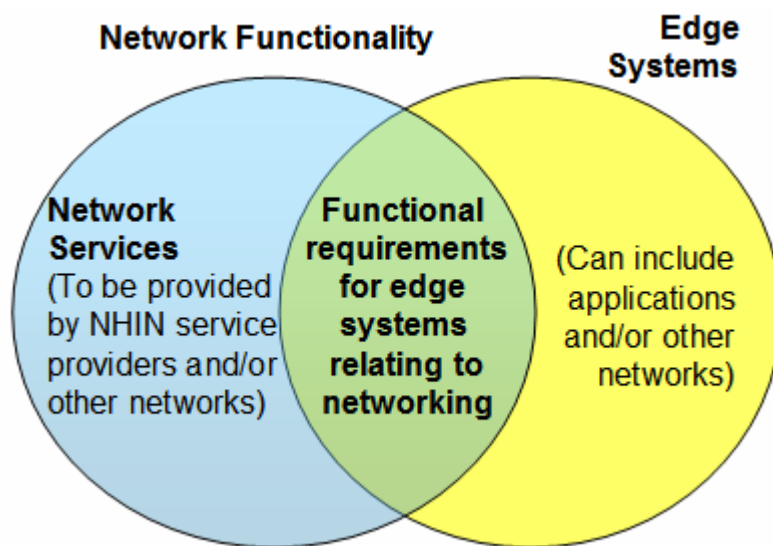
Appendix E: Analysis of Original 977 Functional Requirements

An analysis of the set of original 977 functional requirements enumerated by the consortia contractors is provided in the **attached spreadsheet**.

The original 977 functional requirements were identified by the consortia contractors as those that may be performed by entities whose primary purpose was to provide networking services, identified initially by ONC as “core systems,” and those that may be performed by various other entities, identified initially by ONC as “edge systems.” Edge systems may be EHRs in care delivery organizations, terminology servers provided by vendor systems, etc. Some edge systems provide application support exclusively and others provide both application and networking support.

Because the terms “core” and “edge” did not convey the notion that “core” was comprised of many entities and that “edge” systems could also provide networking functionality, these terms were first refined as illustrated in the Venn diagram below.

Interim Categorization of Functional Requirements for a Nationwide Health Information Network



Each of the 977 functional requirements was then labeled as pertaining to one of the three locations, using the following definitions:

Network functionality (N) may be provided by network service providers and/or other networks.

Functional requirements for edge systems relating to networking (E). These functional requirements may at different times and different locations be performed by different types of entities.

Functions that apply eXclusively to an edge system (X) are those where an application at a specific location interacts with the information and applies it in a useful and appropriate manner. NCVHS has identified these within the analysis of the complete set of detailed functions as those that apply exclusively to edge functionality. NCVHS has not brought these “X” functions forward as part of the minimum but inclusive networking functions.

In addition to analyzing where a functionality may occur, NCVHS considered how closely one functional requirement resembled one or more other requirements, and annotated these relationships.

Subsequently, the categories “core” and “edge” were discarded because they did not support architectural variations.

Appendix F: Derivation of Interim Working Set of Functional Requirements

The set of interim functional requirements derived by NCVHS is provided in the **attached spreadsheet**.

While NCVHS analysis process began with a review of 977 functional requirements initially identified by the ONC consortia contractors, the contractors and other testifiers to NCVHS helped frame the consolidation of the functional requirements into the high level view ultimately presented in the body of this report. However, an interim step was used to reach the high level minimum but inclusive functional requirements. The process of deriving this working set included the consolidation of functionalities that closely resembled one another.

The initial location categorization of Network Functionality and Networking Functions Performed by Edge Systems was retained. However, within the functional requirements for edge systems relating to networking, two categorizations were identified: Where the function related generically to locations and content, it was categorized as GENERAL EDGE. Where the function was specific to a location or content, it was categorized as SPECIFIC EDGE.

In addition to consolidating the functional requirements that closely resembled one another, gaps identified by NCVHS and its testifiers were added.

As noted previously, the categories “core” and “edge” (both general and specific) were subsequently discarded.

Appendix G. High Level Minimum but Inclusive Functional Requirements for Entities to Participate in a Nationwide Health Information Network Mapped to Interim Working Set of Functional Requirements

The mapping of the high level functional requirements to the interim working set of functional requirements is provided in the **attached spreadsheet**.

Appendix H. Summary of Patient Matching Testimony

Testimony

During the period from November 2005 to May 2006, the National Committee on Vital and Health Statistics (NCVHS) held six hearings on the topic of matching patients to their records. The role of unique patient identifiers was included in the testimony to insure a complete discussion of the matching process. Successfully matching patients to their records is essential for HIPAA-related transactions and Medicare Part D transactions, as well as, for the functioning of electronic health records (EHRs) and regional health information organizations (RHIOs). NCVHS held an additional two hearings on functional requirements of a national healthcare information network (NHIN) in which the challenge of matching patients to their records was also discussed.

According to testimony, the healthcare industry has developed various approaches to uniquely match patients to their records for treatment, payment, operations, administration, and research purposes. NCVHS heard from a variety of testifiers on how patients could be appropriately identified and matched to their records. These testifiers represented care providers, researchers, vendors, e-prescribing network services, payers, and government agencies, including the Veterans Health Administration (VHA), the Indian Health Service (IHS), and the Social Security Administration (SSA). This is a summary of the testimony heard during this period.

The role of patient identifiers in matching patients to their records. A unique patient identifier is a data element, typically a number or alphanumeric string that can be used to match patients to their records. Many entities assign a unique personal identifier to their members/patients, primarily for administrative purposes. For example, health plans routinely assign members a health plan identification number and/or a case number. Medicare assigns beneficiaries a Medicare number upon enrollment. Care provider organizations assign identifiers for internal use. Coupled with demographic and other data, the assigned identifier is a key data element for matching patients to their records within individual enterprises, such as health plans. However, because the internal numbers assigned to individuals vary among plans, providers, pharmacies, and others, there is no interoperability of such numbers across enterprises, and sometimes even within enterprises, such as those with multiple campuses or corporate names.

The Social Security Number (SSN) is a widely used patient identifier because it is a number that is consistent among organizations for the same patient. However, given issues of identity theft related to access to SSNs, many entities are moving away from using this number as an identifier and are assigning a unique organizational identity number. In addition, the validity of the SSN as a unique personal identifier has eroded in recent years because there are frequent instances in which several people use the same SSN. In rare circumstances, the same SSN has been issued by the SSA to more than one individual and an individual may have more than one SSN. For these reasons many states have prohibited the use of an SSN as a health identifier and many health plans have also done so voluntarily.

A number of testifiers reminded the committee of that fact that a national unique patient identifier was mandated as one of the administrative simplification provisions of HIPAA in 1996. While, in response to Congressional directive, the federal government has ceased its efforts to select and implement a national unique patient identifier, several testifiers observed that the private sector is not similarly constrained. Further, these testifiers noted that the potential value

of a national patient identifier to the efficiency of the healthcare system and, specifically, for matching patients to their records has not been thoroughly investigated.

Methods for Matching Patients to their Records. Most organizations have implemented master person indexes (MPIs), or enterprise patient identifiers as defined above, to meet the need for accurately matching records to patients within their domains of responsibility. These methods are often based on a core set of data:

- Many entities use a core set of demographic data to identify patients with a high degree of probability. These include first and last names, date of birth, gender, and zip code of residence.
- This core set also may include a SSN and/or organizational identifier, such as a previously calculated or assigned health plan identification number.
- Using these and additional data, one of two methods is commonly used to match patients to their records:
 - In the first method, a deterministic matching algorithm determines if a direct one-to-one correspondence with a given number of variables exists between known patient data and data in the record.
 - In the second method, a probabilistic matching algorithm assigns weights to the variables and calculates the probability that a match exists when there is not an exact correspondence between the known patient data and the data in the record.

Testifiers indicated a high percentage of correct matches result when they use either method, usually around 95 percent. When “unique” and accurately recorded patient identifiers are used, the matching accuracy can go as high as 97%. When the probabilistic method indicates that the probability of the match does not meet the organizations’ standard for acceptance, the match is assigned to a human reviewer to adjudicate whether a match exists. Adjudication may incorporate additional demographic traits, such as mother’s maiden name or place of birth city and state. This is a labor-intensive and time consuming process.

There are a number of factors that prevent a perfect match, regardless of the number and perceived quality of variables used for matching or the intensity of human scrutiny of records review. For example, transposition of digits in key data (zip code, SSN, date of birth); misspellings and variations of names and abbreviations and recording the wrong city of residence (Jackson, MS, instead of Jackson, MI), and other kinds of clerical mistakes are common errors that prevent perfect matches. Other common problems include blending of records for similarly named people in the same family; blending or mis-assignment of records for different people with the same name or nearly the same name and approximate age; lack of key data (such as date of birth); errors introduced by the patient (such as the use of a different birth year for different circumstances over time); and system issues, such as duplicate entries for individuals, duplicate numbers, and issues dealing with patient records from different sites in the system. Normal changes in life events (surname changes, address changes) also provide challenges in matching patients to their records.

In addition, there are variations among entities in standards for a perfect match vs. a near-perfect match. These standards depend on the entity and its purpose for matching. For example, the standard tolerance for error may be less stringent for certain kinds of research and administrative uses and more stringent for medication history, drug administration, and other situations where clinical decisions are required to ensure patient care and safety. In addition, entities must weigh their tolerances for risk of false positive and false negative matches, as well

as for the administrative time and expense needed to adjudicate questionable matches or rejected non-matches.

NCVHS Observations

Observation 1. The opportunity to improve the quality of patient care and patient safety is based on the interoperability of EHRs and the accurate linking of data in EHRs to the correct patient. Care providers are justifiably reluctant to use potentially erroneous information when making decisions about treating patients. For a nationwide health information network to be successful, data and information must be interoperable and accurate. This requires health data to be matched to the correct patient. Moreover, if two organizations need to share patient data, but use different matching methods, or have different standards (probabilities) required for a match, then there is still a possibility that data from the first organization will not be properly matched to the correct patient in the second organization. There are no singularly agreed upon performance criteria of methods for matching patients to their records.

Observation 2. A standard guide does exist that defines the format and content of a patient identifier. ASTM E1714-00 Standard Guide for Properties of a Universal Healthcare Identifier (UHID) specifies the format of a patient identifier number. The DoD and the VHA use the ASTM guide for their patient identifier and are developing a plan enabling the transfer of patients from the DoD to the VHA without the need to create a new number for the patient identifier within the receiving organization. This plan enables record matching interoperability.

Appendix I: Differences in Design of Services (Architectural Variations)

To facilitate the inclusion of differences in design of services in the high level minimum but inclusive functional requirements needed for the initial definition of a nationwide health information network, ONC provided the information flows in the **attached presentation** material as examples of variations identified from the NHIN prototype consortia contractors as well as other testifiers.

**NCVHS Analysis and Identification
of
Minimum but Inclusive Functional Requirements
Needed for the Initial Definition of a
Nationwide Health Information Network**

Sheet 1 - Table of Contents

Sheet 2 - Introduction to Analysis

Sheet 3 - Appendix E: Analysis of Original 977 Functional Requirements from Office of the National Coordinator for Health Information Technology (ONC)

Sheet 4 - Appendix F: Interim Working Set of Functional Requirements

Sheet 5 - Appendix G: Mapping of High Level Functional Requirements to Interim Working Set of Functional Requirements

Sheet 6 - Original 977 Functional Requirements from ONC as Identified by NHIN Contractor Consortia

Sheet 7 - Duplications Previously Identified by ONC

SENSITIVE: UNAUTHORIZED DISTRIBUTION PROHIBITED
Compressed Inventory of Functional Requirements

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.			
336	1	CSC-ALL-60	All Edge Systems (CSC)	Shall	Transmit well formed messages according to a HITSP specified implementation instruction, when communicating with the NHIN Interface.	Data Content	Edge		Infrastructure			IBM-303-05	IBM-303-05 CDO-LIS Shall Adhere to approved content standards as provided by HITSP when sending lab results data to the repository.							3.1	4.4		
365	1	CSC-ALL-980	All Edge Systems (CSC)	May	Allow the clinician to notify the holder of suspect data	Data Content-Data Quality/Data Integrity	Edge		Infrastructure		This notification may not necessarily be over the NHIN.											4.4	
482	1	CSC-SEC-150	All Edge Systems (CSC)	Shall	Enforce non-repudiation of message or query origin	Data Content-Data Quality/Data Integrity	Edge		Infrastructure													4.4	
483	1	CSC-SEC-160	All Edge Systems (CSC)	Should	Use HITSP-specified security tokens for trusted computer-to-computer authentication, computer authorization, and encryption.	Data Content-Data Quality/Data Integrity	Edge		Infrastructure		This does not include user authorization, which is addressed in SEC-050 and SEC-060.											4.4	
494	1	CSC-SEC-30	All Edge Systems (CSC)	Shall	Send integrity verification information along with data sent over the network	Data Content-Data Quality/Data Integrity	Edge		Infrastructure													4.4	
495	1	CSC-SEC-40	All Edge Systems (CSC)	Shall	Use integrity verification information to validate the integrity of data received across the network	Data Content-Data Quality/Data Integrity	Edge		Infrastructure													4.4	
362	1	CSC-ALL-950	All Edge Systems (CSC)	Should	Display the results of queries that it initiates if the query was initiated through a human user interface.	Data Content-Data Usage	Edge		Infrastructure													4.4	
363	1	CSC-ALL-960	All Edge Systems (CSC)	May	Persist the results of queries that it initiates.	Data Content-Data Usage	Edge		Infrastructure													4.4	
364	1	CSC-ALL-970	All Edge Systems (CSC)	May	Print the results of queries that it displays	Data Content-Data Usage	Edge		Infrastructure													4.4	
355	1	CSC-ALL-870	All Edge Systems (CSC)	May	Use the CDO NHIN Interface to query health data for a patient within a SNO.	Data Transaction-(Pull)	Edge		Infrastructure													3.2 4.4	
356	1	CSC-ALL-880	All Edge Systems (CSC)	Shall	Use the CDO NHIN Interface to query outside the SNO for health data for a patient.	Data Transaction-(Pull)	Edge		Infrastructure													3.2 4.4	
326	1	CSC-ALL-380	All Edge Systems (CSC)	May	Exchange messages with any other edge entity	Data Transaction-(Push)	Edge		Infrastructure													3.2 4.4	
327	1	CSC-ALL-390	All Edge Systems (CSC)	May	Use the NHIN Interface as the intermediary for the distribution of messages to other entities within the SNO.	Data Transaction-(Push)	Edge		Infrastructure													3.2 4.4	
329	1	CSC-ALL-400	All Edge Systems (CSC)	Shall	Use the NHIN Interface as the intermediary for the distribution of messages to entities in other SNOs.	Data Transaction-(Push)	Edge		Infrastructure													3.2 4.4	
410	1	CSC-CE-640	All Edge Systems (CSC)	Shall	Log all account and account data accesses	Data Transaction-Audit & Logging	Edge	CSC-SEC-85	CE - Consumer	2.2.2.6, 2.2.3.4, 2.2.2.6, 2.3.2.6, 2.3.3.4, 2.4.1.5												3.2 4.3	
449	1	CSC-EHR-500	All Edge Systems (CSC)	Should	Log all interactions.	Data Transaction-Audit & Logging	Edge	CSC-SEC-85	EHR - Lab	3.2.1.7, 3.2.3.5, 3.2.4.6, 3.3.1.3, 3.4.1.6, 3.4.2.3, 3.4.3.5, 3.5.2.6		CSC-SEC-85	CSC-SEC-85 All Edge Systems Should Log all interactions										3.2 4.1
478	1	CSC-SEC-110	All Edge Systems (CSC)	Shall	Protect audit data and other logged protected health information from unauthorized access and from any modification.	Data Transaction-Audit & Logging	Edge		Infrastructure													3.2 4.4	
498	1	CSC-SEC-85	All Edge Systems (CSC)	Should	Log all interactions.	Data Transaction-Audit & Logging	Edge		Infrastructure				CSC-EHR-500	CSC-EHR-500 All Edge Systems Should Log all interactions								3.2 4.4	
499	1	CSC-SEC-90	All Edge Systems (CSC)	Shall	Create an audit trail with sufficient information to trace each operation back to the originator, with the ability to audit according to requirements and local policy.	Data Transaction-Audit & Logging	Edge		Infrastructure													3.2 4.4	
481	1	CSC-SEC-140	All Edge Systems (CSC)	May	Provide a "break-the-glass" function for authorized users to bypass normal security barriers during an emergency. If implemented, this should not be accomplished by using a generic login that obscures the identity of the user.	Data Transaction-Data Access and Update	Edge		Infrastructure		Although this functionality is excluded from the Use Cases, it is perceived to have future operational benefits in the health markets											3.2 4.4	
331	1	CSC-ALL-420	All Edge Systems (CSC)	May	Determine the method of message delivery to the final destinations.	Data Transaction-Data Routing	Edge		Infrastructure													3.2 4.4	
333	1	CSC-ALL-440	All Edge Systems (CSC)	May	Specify multiple destinations for a message, in order that the message transmission system may distribute the messages	Data Transaction-Data Routing	Edge		Infrastructure		This requirement is difficult to implement across all CDOs since there is no widely adopted methodology for identifying provider organizations and individuals.											3.2 4.4	
360	1	CSC-ALL-930	All Edge Systems (CSC)	May	Specify various filters for returned data, for example filtering results on a specific lab order number.	Data Transformation-Data Filtering	Edge		Infrastructure													3.3 4.4	
358	1	CSC-ALL-910	All Edge Systems (CSC)	May	Submit various identifiers to the NHIN Interface, to aid in ascertaining patient identity.	Information Location-Identify/Information Correlation	Edge		Infrastructure													3.4 4.4	
359	1	CSC-ALL-920	All Edge Systems (CSC)	May	Interact with clinicians to determine identity of patients, using some form of local MPI, but this is not allowed for identities from other SNOs.	Information Location-Identify/Information Correlation	Edge		Infrastructure		Subject to local SNO policies											3.4 4.4	
451	1	CSC-NFR-10	All Edge Systems (CSC)	Shall	Ensure that essential clinical data (to be defined by the SNO) maintains accuracy to of no less than 99.99%, where accuracy is defined as: data displayed to user is semantically equal to the version stored in original data source	Non-Functional-Accuracy	Edge		Infrastructure		We use the term Sub-Network Organization (SNO) to represent a group of healthcare entities that are contractually bound by common clinical data sharing policies, including security, privacy and technology standards. All RHI/Os that use the NHIN are SNOs, but not all SNOs are organized on a regional basis. CSC architecture recommends distributing most of the storage and processing to edge systems, while providing a thin NHIN. In the context of the prototype implementation in the three health markets the terms SNO and health markets are interchangeable.												3.5 4.4
369	1	CSC-BIO-070	All Edge Systems (CSC)	Shall	Use HITSP implementation guidelines to implement interoperable solutions	Non-Functional-Business Rules	Edge	CSC-ALL-50, 60, 800	Bio	p03 s1												3.5 4.2	
468	1	CSC-NFR-260	All Edge Systems (CSC)	May	Allow the data exchange services and policies of the local CDO to be discovered electronically	Non-Functional-Robustness	Edge		Infrastructure													3.5 4.4	
476	1	CSC-NFR-95	All Edge Systems (CSC)	Should	Tolerate problems caused by duplicate data received from one or several sources. [Fault tolerance]	Non-Functional-Robustness	Edge		Infrastructure	CE-p.9.s6.2.3, p.9.s6.3.3												3.5 4.4	
372	1	CSC-BIO-120	All Edge Systems (CSC)	Shall	Provide levels of confidentiality, integrity, and availability meeting legal, regulatory requirements and protecting information appropriate with its value	Security-Authentication	Edge	BIO-530	Bio	p04 s2, p09 s5, p10 s6												3.6 4.2	
496	1	CSC-SEC-50	All Edge Systems (CSC)	Shall	Authenticate user accesses into the system	Security-Authentication	Edge		Infrastructure			ACN-07.6.1	ACN-07.6.1 External User Interfaces Shall Authenticate all users before a connection to the NHIN is allowed.									3.6 4.4	
357	1	CSC-ALL-890	All Edge Systems (CSC)	Shall	Send the identity and institution of the initiating user with each query message	Security-Authorization	Edge		Infrastructure													3.6 4.4	
497	1	CSC-SEC-60	All Edge Systems (CSC)	Shall	Establish user authorizations to use specific functions of the system	Security-Authorization	Edge		Infrastructure													3.6 4.4	
477	1	CSC-SEC-10	All Edge Systems (CSC)	Shall	Protect confidentiality of data and services over the network using encryption.	Security-Confidentiality	Edge		Infrastructure													3.6 4.4	
480	1	CSC-SEC-130	All Edge Systems (CSC)	Should	Detect network intrusions and log them.	Security-Confidentiality	Edge		Infrastructure													3.6 4.4	
484	1	CSC-SEC-170	All Edge Systems (CSC)	Shall	Establish, publish and implement security and privacy policies	Security-Confidentiality	Edge		Infrastructure													3.6 4.4	
487	1	CSC-SEC-200	All Edge Systems (CSC)	Should	Manage levels of patient consent, that are used to filter the release of health data from local data sources.	Security-Confidentiality	Edge		Infrastructure													3.6 4.4	
488	1	CSC-SEC-210	All Edge Systems (CSC)	Shall	Provide patients with a method to chose to not participate in the NHIN.	Security-Confidentiality	Edge		Infrastructure													3.6 4.4	
489	1	CSC-SEC-212	All Edge Systems (CSC)	Shall	Provide patients with a method to keep specific data confidential.	Security-Confidentiality	Edge		Infrastructure													3.6 4.4	
490	1	CSC-SEC-220	All Edge Systems (CSC)	Shall	Upon request, provide patients with a list of institutions or providers requesting information about them.	Security-Confidentiality	Edge		Infrastructure													3.6 4.4	
435	1	CSC-EHR-380	CDO	May	Flag availability, and transmit lab results updates and corrections to the appropriate repository(s). The repository might be part of the same system, for example an EMR system, that received the results.	Data Content	Edge	CSC-ALL-380	EHR - Lab	3.2.2.0, 3.2.2.1, 3.3.1.2	EMRs may persist lab results in some SNOs, and LIS may do so in others											1.1 3.1 4.1	
425	1	CSC-CE-850	CDO	May	Acknowledge completeness of data, and produce an exception list of validation errors to allow for human resolution.	Data Content-Data Quality/Data Integrity	Edge	CSC-ALL-980	CE - Consumer	2.3.2.3a, 2.3.2.5												1.1 4.3	
553	1	IBM-105-02	CDO	May	Be able to receive request to re-identify specified patient data to support event detection	Data Content-Data Quality/Data Integrity	Edge	IBM-105-01	Bio	1.z.1.2	5.1 PH Agency - Authorized Request to Re-identify Patient Data											1.1 4.2	
376	1	CSC-BIO-250	CDO	May	Provide institution data including Hospital System, Main Facility ID/name, physical facility address, and total number of beds in institution	Data Content-Data Usage	Edge	CSC-SEC-220	Bio	p07 s3	For the Year 1 prototype, we will investigate supplying this information in a spreadsheet for each Market.	CSC-BIO-560	CSC-BIO-560 CDO May Send results (and requested meta data) to PH Agency(s)									1.1 4.2	
377	1	CSC-BIO-260	CDO	May	Provide Unit-level Census Data including unit name, number of patients by unit, number of beds available by unit, and emergency room triage marginal capacity as a percentage and head-count	Data Content-Data Usage	Edge	CSC-SEC-220	Bio	p07 s3, p10 s6		CSC-BIO-560	CSC-BIO-560 CDO May Send results (and requested meta data) to PH Agency(s)									1.1 4.2	
378	1	CSC-BIO-270	CDO	May	Provide Facility Utilization Data including admissions in last 24 hours at institution, discharges in last 24 hours at institution, deaths in last 24 hours at institution, date and time of report	Data Content-Data Usage	Edge	CSC-SEC-220	Bio	p07 s3, p10 s6		CSC-BIO-560	CSC-BIO-560 CDO May Send results (and requested meta data) to PH Agency(s)									1.1 4.2	
379	1	CSC-BIO-310	CDO	May	Provide information to support unique identification of data records (and avoid double counting)	Data Content-Data Usage	Edge	CSC-NFR-95	Bio	p09 s5		CSC-BIO-560	CSC-BIO-560 CDO May Send results (and requested meta data) to PH Agency(s)									1.1 4.2	
382	1	CSC-BIO-410	CDO	Should	Provide data management, including review of patient information to identify data elements necessary for BIo surveillance, and automatic sharing with Public Health Agencies	Data Content-Data Usage	Edge	BIO-010, 400	Bio	p10 s6, s7												1.1 4.2	
424	1	CSC-CE-810	CDO	May	Accept, acknowledge, validate format, and incorporate registration data, consumer-entered data, medication data, and/or consumer annotations.	Data Content-Data Usage	Edge	CSC-SEC-40	CE - Consumer	2.3.2.2, 2.3.2.3, 2.3.2.4	These actions may also occur after a CDO queries another CDO for registration data, without the involvement of a PHR system.											Needs to be broken into separate components 1.1 4.3	
447	1	CSC-EHR-480	CDO	Should	Receive query results, acknowledge them, validate their format, and report exceptions.	Data Content-Data Usage	Edge		EHR - Lab	3.2.1.6, 3.2.1.7a												Needs to be broken into separate components 1.1 4.1	

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.					
448	1	CSC-EHR-490	CDO	May	Display, print and/or store query results on the local system, and possibly flag their availability. The display may include browsing and drill-down functions.	Data Content-Data Usage	Edge		EHR - Lab	3.2.1.4, 3.2.1.5, 3.2.4.3a,b, 3.5.2.3a										Needs to be broken into separate components	1.1		4.1		
1038	1	NGIT-054	CDO	Shall	Electronically collect demographic and clinical data for public health reporting	Data Storage-Persistent Data Storage	Edge		Bio		Collect data as specified by PHA requirements (limited demographics, clinical, orders (labs/rads), results)	CSC-BIO-340 CSC-BIO-510	CSC-BIO-340 CDO Should Electronically collect, process, and transmit pertinent public health data in a secure fashion, using existing data exchange, ensure data is sent to appropriate PH agencies	CSC-BIO-510 CDO May Aggregate identified essential data								1.1		4.2	
41	1	ACN-02.3.15	CDO	Shall	Accept update messages from other edge systems.	Data Transaction-(Pull)	Edge	N/A	Infrastructure	No Reference	The requesting system must be able to update its own system with information received via the NHIN.											1.1	3.2	4.4	
422	1	CSC-CE-780	CDO	May	Transmit a query that are formatted according to HITSP standards and implementation guides, for consumer health data to a PHR system. The query will contain the PHR location and patient/consumer provided credentials.	Data Transaction-(Pull)	Edge	CSC-ALL-870	CE - Consumer	CE-p.5.s3.A3, 2.3.1.1, 2.3.2.1	Queries to PHRs that are not fully-qualified SNO members do not occur over the NHIN.											1.1	3.2	4.3	
423	1	CSC-CE-790	CDO	May	Receive the data results, that are formatted according to HITSP standards and implementation guides, from a query to a PHR system	Data Transaction-(Pull)	Edge	CSC-ALL-650	CE - Consumer	2.3.1.2												1.1	3.2	4.3	
426	1	CSC-CE-870	CDO	May	Accept provider/operator-mediated authorized requests over the NHIN for data to be subsequently transferred to a patient's PHR. These requests must stipulate that the results will be viewed by the patient.	Data Transaction-(Pull)	Edge	CSC-ALL-650	CE - Consumer	2.3.3.1, 2.3.3.2	CDO must physically verify consumer identity before assembling data for the consumer or their PHR											1.1	3.2	4.3	
427	1	CSC-CE-890	CDO	May	Under provider/operator control, transmit data that is formatted according to HITSP standards and implementation guides, accompanied by the patient's credentials, to a patient's PHR	Data Transaction-(Pull)	Edge	CSC-ALL-660	CE - Consumer	2.3.3.3												1.1	3.2	4.3	
443	1	CSC-EHR-440	CDO	May	Query the NHIN Interface for historical lab results. Queries contain the identity and organization of the requester, and may contain a filtering specification, such as to return only results from a specified order number.	Data Transaction-(Pull)	Edge	CSC-ALL-40	EHR - Lab	3.2.1.1a,b, 3.2.3.3, 3.2.3.3a, 3.5.2.3												1.1	3.2	4.1	
514	1	IBM-102-02	CDO	Shall	Receive notification from PH Agency of data to be sent	Data Transaction-(Pull)	Core	IBM-104-02	Bio	1.1.1.0	2.2 Individual CDOs - Receive PH and Configure Data Request For reference numbers 1.1.1 through 1.1.5, the recipients of requests for patient data from PH agencies are Individual Healthcare Delivery Organizations denote stand-alone hospitals and clinics that provide ambulatory and/or emergency departments care and/or in-house laboratories.											1.1	3.2	4.2	
529	1	IBM-103-02	CDO	Shall	Receive notification from PH AGENCY of patient care data to be sent	Data Transaction-(Pull)	Core	IBM-104-02	Bio	1.2.1.0	3.2 Integrated CDOs - Receive and Configure PH Data Request											1.1	3.2	4.2	
554	1	IBM-105-03	CDO	May	Be able to provide re-identified data for specific patients upon authorized request to Public Health agencies to support event detection	Data Transaction-(Pull)	Edge		Bio	1.2.1.3	5.1 PH Agency - Authorized Request to Re-Identify Patient Data											1.1	3.2	4.2	
673	1	IBM-209-08	CDO	Shall	Transmit request to view registration/medication history directly from PHR system	Data Transaction-(Pull)	Edge		CE - Consumer	2.3.1.2	6.1 Provider access to PHR data		CSC-CE-780 CDO May Transmit a query that are formatted according to HITSP standards and implementation guides, for consumer health data to a PHR system. The query will contain the PHR location and patient/consumer provided credentials.								1.1	3.2	4.3		
677	1	IBM-209-12	CDO	Shall	Transmit request to receive registration/medication history from PHR through NHIN	Data Transaction-(Pull)	Core		Infrastructure	2.3.1.2	6.1 Provider access to PHR data											1.1	3.2	4.4	
434	1	CSC-EHR-370	CDO	Should	Receive Lab Results pushed to them, acknowledge receipt, and validate their format.	Data Transaction-(Push)	Edge		EHR - Lab	3.2.1.1, 3.2.1.2, 3.2.1.3											1.1	3.2	4.1		
438	1	CSC-EHR-400	CDO	Should	Push patient demographic identifying information and updates and record locations to the Record Locator Service, if they are not already the same system.	Data Transaction-(Push)	Edge	CSC-ALL-190	EHR - Lab	3.4.2.0, 3.4.2.1, 3.4.2.2												1.1	3.2	4.1	
440	1	CSC-EHR-420	CDO	May	Send Notification messages and/or Lab results to specified organizations	Data Transaction-(Push)	Edge	CSC-ALL-380	EHR - Lab	3.2.2.0, 3.4.1.5, 3.5.1.0, 3.5.2.4, 3.5.2.5, 3.5.3.0, 3.5.3.1	EMRs may distribute lab results or notifications in some SNOs, and LIS may do so in others											1.1	3.2	4.1	
580	1	IBM-107-14	CDO	May	Receive patient specific biosurveillance event response information message from Public Health to support event response	Data Transaction-(Push)	Edge	IBM-107-13	Bio	1.2.4.2	7.3 PH Community - Event Response - Patient Centric											1.1	3.2	4.2	
675	1	IBM-209-10	CDO	Shall	Receive registration/medication history to view via web portal	Data Transaction-(Push)	Edge	IBM-209-08	CE - Consumer	2.3.1.2	6.1 Provider access to PHR data											1.1	3.2	4.3	
214	1	ACN-07.17	CDO	Shall	Log system and user interactions.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	N/A											1.1	3.2	4.4	
273	1	ACN-07.25	CDO	Shall	Conduct regular risk assessments.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	Conduct regular risk assessments including but not limited to vulnerability scans, penetration testing, application testing, social engineering and policy compliance.											1.1	3.2	4.4	
390	1	CSC-BIO-570	CDO	Should	Log interaction between CDO systems and PH Agency(s)	Data Transaction-Audit & Logging	Edge	CSC-SEC-90	Bio	1.1.5.2, 1.2.5.2, p11 s7												1.1	3.2	4.2	
974	1	IBM-319-01	CDO	Shall	Create audit entry for each transaction	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.x.1	3.7 Maintain and Access Audit Log											1.1	3.2	4.1	
975	1	IBM-319-02	CDO	Shall	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.x.2	3.7 Maintain and Access Audit Log											1.1	3.2	4.1	
976	1	IBM-319-03	CDO	Shall	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.x.3	3.7 Maintain and Access Audit Log											1.1	3.2	4.1	
977	1	IBM-319-04	CDO	Shall	Not allow edits to audit entries	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.x.4	3.7 Maintain and Access Audit Log											1.1	3.2	4.1	
978	1	IBM-319-05	CDO	Shall	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.x.5	3.7 Maintain and Access Audit Log											1.1	3.2	4.1	
979	1	IBM-319-06	CDO	Shall	Provide capability to print audit trail	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.x.6	3.7 Maintain and Access Audit Log												1.1	3.2	4.1
980	1	IBM-319-07	CDO	Shall	Display audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.x.7	3.7 Maintain and Access Audit Log												1.1	3.2	4.1
430	1	CSC-EHR-310	CDO	May	Collect and persist information, provided by the patient, regarding providers to be notified, or excluded from notification, of availability of Lab results	Data Transaction-Data Routing	Edge	CSC-ALL-180	EHR - Lab	3.1.2.0, 3.1.2.1, 3.1.2.1a												1.1	3.2	4.1	
431	1	CSC-EHR-330	CDO	May	Collect and persist information, provided by the patient, regarding providers to be allowed, or excluded from, access to Lab results	Data Transaction-Data Routing	Edge	CSC-ALL-180	EHR - Lab	3.1.2.0, 3.1.2.1, 3.1.2.1a												1.1	3.2	4.1	
664	1	IBM-208-04	CDO	Shall	Send HL7 feeds to NHIN interface	Data Transaction-Data Routing	Core		Infrastructure	2.2.5.1	5.1 PHR on the NHIN											Refers to a specific standard-the statement should be changed to reference HITSP	1.1	3.2	4.4
704	1	IBM-209-40	CDO	Shall	Send confirmation acknowledging receipt of registration/medication history data	Data Transaction-Data Routing	Edge		CE - Consumer	2.3.2.5	6.1 Provider access to PHR data											1.1	3.2	4.3	
701	1	IBM-209-37	CDO	Shall	Confirm integrity of imported data	Data Transaction-Data Transaction Verification	Edge		CE - Consumer	2.3.2.3	6.1 Provider access to PHR data											1.1	3.2	4.3	
1039	1	NGIT-055	CDO	May	Filter collected data records to identify biosurveillance data	Data Transformation-Data Filtering	Edge		Bio	1.1.1.1, 1.2.1.1		CSC-BIO-340 CSC-BIO-500 NGIT-056	CSC-BIO-340 CDO Should Electronically collect, process, and transmit pertinent public health data in a secure fashion, using existing data exchange, ensure data is sent to appropriate PH agencies	CSC-BIO-500 CDO Should Filter collected data records to identify biosurveillance data and mark relevant data whether directly or through an intermediary as required by PHA or local policy	NGIT-056 CDO May Support filtering rules defined by public health agencies							1.1	3.3	4.2	
1041	1	NGIT-057	CDO	May	Accept a filter rule defined by public health agencies	Data Transformation-Data Filtering	Edge		Bio													Too Granular	1.1	3.3	4.2
1042	1	NGIT-058	CDO	May	Apply filter rule changes	Data Transformation-Data Filtering	Edge		Bio													Too Granular	1.1	3.3	4.2
1043	1	NGIT-059	CDO	May	Aggregate data for transmission as determined by HITSP implementation guide	Data Transformation-Data Filtering	Edge		Bio	1.1.1.2, 1.2.1.2	Implement logic to minimize "double counting" (bio precondition 4). HITSP implementation guide will need to specify aggregation rules.											1.1	3.3	4.2	
387	1	CSC-BIO-540	CDO	Should	Transform data into approved HITSP standards using their implementation guidelines	Data Transformation-Data Mapping/Translation	Edge		Bio	1.1.3.1, 1.2.3.1, p11 s7												1.1	3.3	4.2	
698	1	IBM-209-34	CDO	Shall	Receive registration/medication history to parse into EHR system via NHIN	Data Transformation-Data Mapping/Translation	Edge		CE - Consumer	2.3.2.2	6.1 Provider access to PHR data											1.1	3.3	4.3	
703	1	IBM-209-39	CDO	Shall	Parse and validate results content	Data Transformation-Data Mapping/Translation	Edge		CE - Consumer	2.3.2.4	6.1 Provider access to PHR data											1.1	3.3	4.3	
962	1	IBM-317-01	CDO	Shall	Support multiple languages	Data Transformation-Data Rendering	Edge		EHR - Lab	3.2.1.1	3.5, UI Accommodates Multiple Languages and Handicapped											Feature of edge system	1.1	3.3	4.1
963	1	IBM-317-02	CDO	Shall	Display content in language designated by user	Data Transformation-Data Rendering	Edge		EHR - Lab	3.2.1.2	3.5, UI Accommodates Multiple Languages and Handicapped											Feature of edge system	1.1	3.3	4.1

Compressed Inventory of Functional Requirements

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Closely resembles...	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.
964	1	IBM-317-03	CDO	Shall	Support data entry in language designated by user	Data Transformation-Data Rendering	Edge		EHR - Lab	3.2.1.3	3.5. UI Accommodates Multiple Languages and Handicapped							Feature of edge system	1.1	3.3	4.1
965	1	IBM-317-04	CDO	Shall	Display retrieved data in language specified by user	Data Transformation-Data Rendering	Edge		EHR - Lab	3.2.1.4	3.5. UI Accommodates Multiple Languages and Handicapped							Feature of edge system	1.1	3.3	4.1
966	1	IBM-317-05	CDO	Shall	Provide accessibility for handicapped	Data Transformation-Data Rendering	Edge		EHR - Lab	3.2.1.5	3.5. UI Accommodates Multiple Languages and Handicapped							Feature of edge system	1.1	3.3	4.1
370	1	CSC-BIO-100	CDO	May	Relink anonymized data to patients when requested by authorized public health officials for investigations, or use intermediaries to do so	Information Location-Identify/Information Correlation	Edge	CSC-SEC-250	Bio	p04 s2, p09 s5, p10 s6									1.1	3.4	4.2
373	1	CSC-BIO-210	CDO	May	Provide patient demographic data including encounter date, patient information, date/time of last record update	Information Location-Identify/Information Correlation	Edge	BIO-400, 540	Bio	p07 s3		IBM-101-01 IBM-101-03 IBM-101-05	IBM-101-01 CDO-EMR-Ambulatory Shall "Provide limited patient demographic data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System.	IBM-101-03 CDO-EMR-Acute Shall "Provide limited patient demographic data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System.	IBM-101-05 CDO-EMR-ED Shall "Provide limited patient demographic data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System.				1.1	3.4	4.2
374	1	CSC-BIO-220	CDO	May	Provide clinical data including patient class, diagnosis/injury code, diagnostic type, diagnostic date and time, discharge disposition, chief complaint, date and time of first signs of illness	Information Location-Identify/Information Correlation	Edge	CSC-NFR-10, 20, 220	Bio	p07 s3		IBM-101-02 IBM-101-04 IBM-101-06	IBM-101-02 CDO-EMR-Ambulatory Shall "Provide clinical data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System.	IBM-101-04 CDO-EMR-Acute Shall "Provide clinical data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System.	IBM-101-06 CDO-EMR-ED Shall "Provide clinical data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Clinical data include: patient class				1.1	3.4	4.2
375	1	CSC-BIO-240	CDO	May	Provide Laboratory and Radiology Test Results including reporting lab ID, performing lab ID, report date/time, report status, collection date, collection method, specimen site, test ordered, test results, organism identified/result other than organism, method type, result unit, test interpretation, susceptibility test interpretation, test status	Information Location-Identify/Information Correlation	Edge	BIO-400, 540	Bio	p07 s3									1.1	3.4	4.2
386	1	CSC-BIO-530	CDO	Should	Embed randomized data linker to allow authorized re-identification	Information Location-Identify/Information Correlation	Edge	CSC-SEC-250	Bio	1.1.2.2, 1.2.2.2, p07 s3, p09 s5, p11 s7									1.1	3.4	4.2
429	1	CSC-EHR-305	CDO	Should	Collect and update patient demographic identity information.	Information Location-Identify/Information Correlation	Edge	CSC-ALL-180	EHR - Lab	3.1.1.0, 3.1.1.1									1.1	3.4	4.1
523	1	IBM-102-11	CDO	Shall	Send biosurveillance data within 24 hours of the event	Non-Functional-Performance			Bio	1.1.5.1X	2.4 Individual CDOs - Route, Transmit, Audit Log Requested Data	IBM-103-11 CSC-BIO-010 NGIT-159 CSC-BIO-110	IBM-103-11 CDO Shall Send biosurveillance data within 24 hours of the event	CSC-BIO-010 CDO May Share data with appropriate government authorities. CDOs may share directly or use a third-party intermediary.	NGIT-159 CDO Shall Transmit data to support public health biosurveillance	CSC-BIO-110 CDO Should Ensure timely data delivery (within twenty-four hours of clinical event)			1.1	3.5	4.2
676	1	IBM-209-11	CDO	Shall	Present data within via web portal in 5 seconds	Non-Functional-Performance	Edge		CE - Consumer	2.3.1.2x	6.1 Provider access to PHR data							Feature - Performance	1.1	3.5	4.3
255	1	ACN-07.21	CDO	Shall	Implement security best practices at all levels in the Edge Systems environment.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Implement security best practices for configuration across infrastructure, operating systems and applications.								1.1	3.5	4.4
256	1	ACN-07.21.1	CDO	Shall	Ensure that only required components are enabled/activated for Edge System infrastructure .	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Only required access control lists, accounts and services are enabled, all others are disabled or deactivated.								1.1	3.5	4.4
257	1	ACN-07.21.2	CDO	Shall	Ensure that only required components are enabled/activated for Edge System operating systems.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Only required access control lists, accounts and services are enabled, all others are disabled or deactivated.								1.1	3.5	4.4
258	1	ACN-07.21.3	CDO	Shall	Ensure that only required components are enabled/activated for Edge System applications.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Only required access control lists, accounts and services are enabled, all others are disabled or deactivated.								1.1	3.5	4.4
260	1	ACN-07.21.5	CDO	Shall	Ensure that the system is protected against the introduction of malware into the environment.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Malware detection, prevention and remediation capabilities must exist across the NHIN environment, including but not limited to the infrastructure, system and application layers.								1.1	3.5	4.4
261	1	ACN-07.21.6	CDO	Shall	Ensure that only required application functionalities are enabled/activated.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Only application functionalities required to support access to NHIN services should be enabled; all others should be disabled or deactivated.								1.1	3.5	4.4
262	1	ACN-07.21.7	CDO	Shall	Limit functionality that can be accessed remotely.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Certain privileged functions can not be executed from a remote session.								1.1	3.5	4.4
263	1	ACN-07.21.8	CDO	Shall	Ensure that data is transmitted securely between system endpoints.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Communications between systems must be protected against interception or modification with controls, including but not limited to encryption, data integrity checking and acknowledgement.								1.1	3.5	4.4
267	1	ACN-07.22.2	CDO	Shall	Segregate the network by environments, including but not limited to development, testing and production.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	N/A								1.1	3.5	4.4
286	1	ACN-07.32	CDO	Shall	Ensure that the system is protected against the introduction of malware into the environment.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Malware detection, prevention and remediation capabilities must exist across the NHIN environment, including but not limited to the infrastructure, system and application layers.								1.1	3.5	4.4
289	1	ACN-07.33.2	CDO	Shall	Segregate the network by environments, including but not limited to development, testing and production.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	N/A								1.1	3.5	4.4
290	1	ACN-07.34	CDO	Shall	Ensure that data is transmitted securely between system endpoints.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Communications between systems must be protected against interception or modification with controls, including but not limited to encryption, data integrity checking and acknowledgement.								1.1	3.5	4.4
307	1	ACN-07.9	CDO	Shall	Provide a mechanism for ensuring non-repudiation.	Security-Authentication	Edge	N/A	Infrastructure	No Reference	Edge Systems must provide non-repudiation for output that requires verification, including but not limited to prescription issuance (signatures), birth/death certificates.								1.1	3.6	4.4
442	1	CSC-EHR-430	CDO	Shall	Authorize and authenticate users making use of CDO Systems and the NHIN Interface.	Security-Authentication	Edge	CSC-SEC-50, 60	EHR - Lab	3.2.1.1b, 3.2.3.1, 3.2.4.2, 3.4.2.1, 3.4.3.2, 3.5.2.1									1.1	3.6	4.1
666	1	IBM-209-01	CDO	Shall	Submit authentication information to the PHR provider [to view/access registration/medication history]	Security-Authentication	Edge	IBM-203-04	CE - Consumer	2.3.1.1	6.1 Provider access to PHR data ONC Guidance: The Harmonized Consumer Empowerment Use Cases did not intend to imply a common provider ID across the network, but does express the need for authentication of providers. Several use case needs suggest that an NHIN architecture may need to prototype and support some federated identity functions. NOTE: Whether the PHR is viewed directly through a web-portal or via the NHIN will be dictated by consumer preference and marketplace circumstances.								1.1	3.6	4.3
667	1	IBM-209-02	CDO	Shall	Submit authentication information to the NHIN Interface [to view/access registration/medication history]	Security-Authentication	Core	IBM-208-02	Infrastructure	2.3.1.1x	6.1 Provider access to PHR data ONC Guidance: The Harmonized Consumer Empowerment Use Cases did not intend to imply a common provider ID across the network, but does express the need for authentication of providers. Several use case needs suggest that an NHIN architecture may need to prototype and support some federated identity functions. NOTE: Whether the PHR is viewed directly through a web-portal or via the NHIN will be dictated by consumer preference and marketplace circumstances.								1.1	3.6	4.4
177	1	ACN-07.12	CDO	Shall	Control Edge System access through structured Role Based Access Control (RBAC).	Security-Authorization	Core	N/A	Infrastructure	No Reference	RBAC is necessary to assign and manage access privileges for all NHIN users and interfacing Edge Systems.								1.1	3.6	4.4
178	1	ACN-07.12.1	CDO	Shall	Implement a RBAC model which is scalable and flexible.	Security-Authorization	Core	N/A	Infrastructure	No Reference	RBAC model must be able to support large scale user expansion and varying types of access privileges.								1.1	3.6	4.4
185	1	ACN-07.13	CDO	Shall	Control Edge System user access through structured Role Based Access Control (RBAC).	Security-Authorization	Edge	N/A	Infrastructure	No Reference	RBAC must be used to assign and manage access privileges for all Edge System users.								1.1	3.6	4.4
186	1	ACN-07.13.1	CDO	Shall	Implement a RBAC model which is scalable and flexible.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	RBAC model must be able to support large scale user expansion and varying types of access privileges.								1.1	3.6	4.4
187	1	ACN-07.13.2	CDO	Shall	Strictly manage all internal user access requests through structured Role Based Access Control (RBAC).	Security-Authorization	Edge	N/A	Infrastructure	No Reference	Edge Systems must implement access controls based on user role definitions.								1.1	3.6	4.4
190	1	ACN-07.13.5	CDO	Shall	Designate an administrator role covering administration of internal resources.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	Administration of internal resources must be restricted to designated administrators for accountability and incident response integrity.								1.1	3.6	4.4
191	1	ACN-07.13.6	CDO	Shall	Create new internal roles where there is a business requirement for the new role.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	N/A								1.1	3.6	4.4
192	1	ACN-07.14	CDO	Shall	Permit access to an individual's data to Edge System users where there is a legitimate need.	Security-Authorization	Edge	N/A	CE, EHR	3.4.1.4. Patient-Provider Relationship	Access to an individual's data is conditional based on the user having an established care relationship with the individual. An established care relationship could include, but not limited to, being involved in medical care/diagnosis/treatment for the patient.								1.1	3.6	4.4
193	1	ACN-07.15	CDO	Shall	Permit override of access restrictions to an individual's data by Edge System users.	Security-Authorization	Edge	N/A	CE, EHR	No Reference	There may be exception events that require access to an individual's data, where the user does not have an established care relationship, e.g. emergency treatment. Legitimate overrides in such instances must be allowed.								1.1	3.6	4.4

SENSITIVE: UNAUTHORIZED DISTRIBUTION PROHIBITED
Compressed Inventory of Functional Requirements

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.
												Closely resembles...								
520	1	IBM-102-08	CDO-CDO NHIN Interface	Shall	Transform data using approved standards as provided by HITSP or as agreed upon with ONC for the Architecture Prototype	Data Transformation-Data Mapping/Translation	Core		Bio	1.1.3.1	2.3 Individual CDOs - Filter, Transform, Anonymize, Link Requested Data	NGIT-068 NGIT-072 IBM-103-08	NGIT-068 CDO-CDO NHIN Interface Shall Transform data into approved standards	NGIT-072 CDO-CDO NHIN Interface Shall Transmit anonymized data as well formed messages to specific public health agencies	IBM-103-08 CDO-CDO NHIN Interface Shall Transform data using approved standards as provided by HITSP or as agreed upon with ONC for the Architecture Prototype			2.5	3.3	4.2
325	1	CSC-ALL-320	CDO-CDO NHIN Interface	Shall	Use the Record Locator Service to resolve patient identity ambiguities.	Information Location-Identity/Information Correlation	Core		Infrastructure									2.5	3.4	4.4
347	1	CSC-ALL-770	CDO-CDO NHIN Interface	Shall	Return unambiguous patient identities for all query results.	Information Location-Identity/Information Correlation	Core		Infrastructure		The NHIN Interface uses the Record Locator Service for this.							2.5	3.4	4.4
540	1	IBM-103-13	CDO-CDO NHIN Interface	Should	Minimize double counting. The system should be able to determine when multiple and/or independently submitted data refer to the same case (patient) or event.	Information Location-Identity/Information Correlation	Core		Bio	1.2.5.1X	3.4 Integrated CDOs - Route, Transmit, Audit Log Requested Data	IBM-102-13	IBM-102-13 CDO-CDO NHIN Interface Should Minimize double counting. The system should be able to determine when multiple and/or independently submitted data refer to the same case					2.5	3.4	4.2
444	1	CSC-EHR-450	CDO-CDO NHIN Interface	May	Route queries to the Record Locator Service in order to resolve patient identity ambiguities and locate records. Record locations returned to the NHIN Interface are used for routing the query to the proper repositories for processing.	Information Location-Record Location	Core	CSC-ALL-220	EHR - Lab	3.2.3.1, 3.2.3.0, 3.2.3.2, 3.2.3.2a,b, 3.2.3.4, 3.5.2.0, 3.5.2.2								2.5	3.4	4.1
599	1	IBM-205-06	CDO-CDO NHIN Interface	Shall	Contain one Record Locator Service (RLS) for NHIN searches	Information Location-Record Location	Core		Infrastructure	2.2.2.3x	3.2 Pre-populating a PHR							2.5	3.4	4.4
600	1	IBM-205-07	CDO-CDO NHIN Interface	Shall	Require that the requesting institution provide appropriate demographic information (presumably brokered by the PHR vendor in this instance) to query data in the NHIN. Data required is determined by the community.	Information Location-Record Location	Core		Infrastructure	2.2.2.3x	3.2 Pre-populating a PHR	IBM-207-07 IBM-209-14	IBM-207-07 CDO-CDO NHIN Interface Shall Require that the requesting institution provide appropriate demographic information to query data in the NHIN. Data required is determined by the community.	IBM-209-14 CDO-CDO NHIN Interface Shall Require that the requesting institution provide appropriate demographic information to query data in the NHIN. Data required is determined by the community.			2.5	3.4	4.4	
626	1	IBM-207-06	CDO-CDO NHIN Interface	Shall	Contain one Record Locator Service (RLS) for NHIN searches	Information Location-Record Location	Core		Infrastructure	2.1.5.2x	4.2 Updating a PHR							2.5	3.4	4.4
678	1	IBM-209-13	CDO-CDO NHIN Interface	Shall	Contain one Record Locator Service (RLS) for NHIN searches	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data							2.5	3.4	4.4
680	1	IBM-209-15	CDO-CDO NHIN Interface	Shall	Specify what marketplaces the Record Locator should search	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data							2.5	3.4	4.4
308	1	CSC-ALL-10	CDO-CDO NHIN Interface	Shall	Be shared between all entities in a single RHIO or SNO. There is only one NHIN Interface in a SNO, and it is used for all communications with other SNOs over the NHIN.	Non-Functional-Business Rules	Core		Infrastructure									2.5	3.5	4.4
346	1	CSC-ALL-760	CDO-CDO NHIN Interface	Shall	Use the Record Locator Service to resolve ambiguities in the patient's identity, and to locate repositories of data, within the SNO, for that patient.	Non-Functional-Business Rules	Core		Infrastructure									2.5	3.5	4.4
465	1	CSC-NFR-230	CDO-CDO NHIN Interface	Should	Entail low Deployment and Operational Costs, commensurate with technology and investment capacity of the health market.	Non-Functional-Business Rules	Core		Infrastructure									2.5	3.5	4.4
470	1	CSC-NFR-40	CDO-CDO NHIN Interface	Should	Be efficient and not consume more computer resources than is directly useful to the data exchange process [Efficiency]	Non-Functional-Performance	Core		Infrastructure									2.5	3.5	4.4
452	1	CSC-NFR-100	CDO-CDO NHIN Interface	Should	Allow users to install and operate with not more than 4 hours of training [Ease of learning]	Non-Functional-Robustness	Core		Infrastructure									2.5	3.5	4.4
456	1	CSC-NFR-140	CDO-CDO NHIN Interface	Should	Be configurable and extendable to support existing and new workflows	Non-Functional-Robustness	Core		Infrastructure									2.5	3.5	4.4
457	1	CSC-NFR-150	CDO-CDO NHIN Interface	Shall	Be extensible to new message types in a modular fashion; without requiring any changes to the application for the heretofore handled messages	Non-Functional-Robustness	Core		Infrastructure									2.5	3.5	4.4
458	1	CSC-NFR-160	CDO-CDO NHIN Interface	Should	Enable remote troubleshooting and deployment of application fixes (patches) [Supportable]	Non-Functional-Robustness	Core		Infrastructure									2.5	3.5	4.4
459	1	CSC-NFR-170	CDO-CDO NHIN Interface	Should	Enable problems to be traced and analyzed, so that they can be resolved [Maintainable]	Non-Functional-Robustness	Core		Infrastructure									2.5	3.5	4.4
460	1	CSC-NFR-180	CDO-CDO NHIN Interface	Shall	Provide testing facilities to enable verification of new functionality before deployment to production environments [Testability]	Non-Functional-Robustness	Core		Infrastructure									2.5	3.5	4.4
461	1	CSC-NFR-190	CDO-CDO NHIN Interface	Shall	Provide for remote monitoring of operations, detection of potential problems, and preventive maintenance measures [Manageability]	Non-Functional-Robustness	Core		Infrastructure									2.5	3.5	4.4
473	1	CSC-NFR-70	CDO-CDO NHIN Interface	Should	Support reliable messaging between edge applications that are engaged in the data exchange process	Non-Functional-Robustness	Core		Infrastructure									2.5	3.5	4.4
474	1	CSC-NFR-80	CDO-CDO NHIN Interface	Should	Plan and implement recovery procedures in case of failure of any of its discrete architectural components; recovery times range from near real time to deferred based on the requirements (and investment) of the health markets [High Availability]	Non-Functional-Robustness	Core		Infrastructure									2.5	3.5	4.4
475	1	CSC-NFR-90	CDO-CDO NHIN Interface	Should	Tolerate errors in data exchange messages and files, as well as other exception conditions, and not disrupt other edge applications in the user work environment. [Fault tolerance]	Non-Functional-Robustness	Core		Infrastructure									2.5	3.5	4.4
472	1	CSC-NFR-60	CDO-CDO NHIN Interface	Should	Be modularly expandable to support higher transaction volumes as usage of the NHIN increases	Non-Functional-Scalability	Core		Infrastructure									2.5	3.5	4.4
1030	1	NGIT-004	CDO-CDO NHIN Interface	Shall	Authenticate entity for NHIN data request	Security-Authentication	Core		Infrastructure									2.5	3.6	4.4
1108	1	NGIT-129	CDO-CDO NHIN Interface	Shall	Authenticate entity for NHIN access	Security-Authentication	Core											2.5	3.6	4.4
670	1	IBM-209-05	CDO-CDO NHIN Interface	Shall	Maintain a list of authorized users that can access the consumer's PHR data from the NHIN hub	Security-Authorization	Core	EHR - Patient Authorizes Access IBM-302-01	Infrastructure	2.3.1.1x	6.1 Provider access to PHR data Different rules will apply for queries within a community (from a trusted source), across a community (from a trusted source), and from a non-trusted querying entity. Data source entities will retain the right to share information as per their business rules and data sharing agreements. 6.1 Provider access to PHR data							2.5	3.6	4.4
672	1	IBM-209-07	CDO-CDO NHIN Interface	Shall	Authorize (or not) provider's request to access consumer's PHR data via the NHIN	Security-Authorization	Core	IBM-209-05	Infrastructure	2.3.1.1x	6.1 Provider access to PHR data							2.5	3.6	4.4
1031	1	NGIT-005	CDO-CDO NHIN Interface	Shall	Authorize an entity's request for data	Security-Authorization	Core		Infrastructure									2.5	3.6	4.4
1126	1	NGIT-151	CDO-CDO NHIN Interface	Shall	Authorize an entity's request for laboratory data	Security-Authorization	Core		EHR - Lab	3.4.3.3	NHIN will authorize a request for data per agreement and configuration							2.5	3.6	4.1
486	1	CSC-SEC-190	CDO-CDO NHIN Interface	Shall	Enforce NHIN security and privacy policies.	Security-Confidentiality	Core		Infrastructure									2.5	3.6	4.4
519	1	IBM-102-07	CDO-CDO NHIN Interface	Shall	Attach randomized linker before transmission of patient specific data that supports ability to re-identify data when required as part of an authorized public health investigation	Security-Confidentiality	Core		Bio	1.1.2.2	2.3 Individual CDOs - Filter, Transform, Anonymize, Link Requested Data							2.5	3.6	4.2
534	1	IBM-103-07	CDO-CDO NHIN Interface	Shall	Attach randomized linker before transmission of patient specific data that supports ability to re-identify data when required as part of an authorized public health investigation	Security-Confidentiality	Core		Bio	1.2.2.2	3.3 Integrated CDOs - Filter, Transform, Anonymize, Link Requested Data							2.5	3.6	4.2
1050	1	NGIT-066	CDO-CDO NHIN Interface	Shall	Anonymize data for transmission to public health agencies	Security-Confidentiality	Core	NGIT-069	Bio	1.1.2.0, 1.2.2.0	Data anonymization will be performed in a consistent manner.							2.5	3.6	4.2
1053	1	NGIT-069	CDO-CDO NHIN Interface	Shall	Implement a randomized data linker (RDL) for biosurveillance data transmitted to public health agencies	Security-Confidentiality	Core		Bio	1.1.2.2, 1.2.2.2								2.5	3.6	4.2
1095	1	NGIT-116	CDO-CDO NHIN Interface	Shall	Support re-linking identity information to anonymized data per RDL	Security-Confidentiality	Core	NGIT-069	Bio	1.1.2.2, 1.2.2.2								2.5	3.6	4.2
492	1	CSC-SEC-240	CDO-CDO NHIN Interface	Shall	Establish pairwise trust relationships with the entities of the RHIO or SNO.	Security-Credentialing	Core		Infrastructure									2.5	3.6	4.4

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Closely resembles...	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.
954	1	IBM-316-10	CDO-EMR	May	Store lab supplied unique lab order identification information	???-Unknown (IBM)	Edge		EHR - Lab	3.2.2.10	3.4 Process Lab Order								1.1		4.1
888	1	IBM-308-12	CDO-EMR	Shall	Adhere to approved content standards as provided by HITSP when sending request for lab result data to repository	Data Content	Edge		EHR - Lab	3.2.1.1ax	2.2 Clinician Requests Historical Results from Data Repositories								1.1	3.1	4.1
890	1	IBM-308-14	CDO-EMR	Should	Include name of the requesting clinician; the HIPAA designated National Provider ID and name of the clinician's affiliated organization; and identifying information for the requesting marketplace as part of the data request transmission when sending request for lab result data to repository	Data Content	Edge		EHR - Lab	3.2.1.1ax2	2.2 Clinician Requests Historical Results from Data Repositories NOTE: National Provider IDs have not yet been promulgated; as such, this is requirement is stated in the form of "should" to acknowledge prospective health care environment.								1.1	3.1	4.1
946	1	IBM-316-02	CDO-EMR	Shall	Adhere to approved content standards as provided by HITSP when sending lab orders to lab	Data Content	Edge		EHR - Lab	3.2.2.2	3.4 Process Lab Order								1.1	3.1	4.1
947	1	IBM-316-03	CDO-EMR	Should	Include name of the requesting clinician; the HIPAA designated National Provider ID and name of the clinician's affiliated organization; and identifying information for the requesting marketplace as part of the data request transmission when sending lab orders to lab	Data Content	Edge		EHR - Lab	3.2.2.3	3.4 Process Lab Order								1.1	3.1	4.1
948	1	IBM-316-04	CDO-EMR	May	Indicate for lab to send result event messages to ordering clinician's EMR and include in lab order message to lab	Data Content	Edge		EHR - Lab	3.2.2.4	3.4 Process Lab Order								1.1	3.1	4.1
949	1	IBM-316-05	CDO-EMR	May	Indicate to send result event availability notifications to ordering clinician's EMR and include in lab order message sent to lab	Data Content	Edge		EHR - Lab	3.2.2.5	3.4 Process Lab Order								1.1	3.1	4.1
950	1	IBM-316-06	CDO-EMR	May	Indicate for lab to send result availability notification to other clinicians and include in lab order message sent to lab	Data Content	Edge		EHR - Lab	3.2.2.6	3.4 Process Lab Order								1.1	3.1	4.1
1094	1	NGIT-115	CDO-EMR	Should	Identify providers associated in the care of the patient, and their relationship to patient and/or procedures	Data Content	Edge		EHR - Lab	3.1.2.0	Provider relationship to patients is needed to support authorized disclosure of data. EMR systems maintain the patient-provider relationship for the episode of care and specifically for lab tests requested during the period of care. Relationships may be pre-defined by hospital, practice, group policy. Additional patient-provider relationships may be identified at the time tests are ordered or subsequently by primary care providers.								1.1	3.1	4.1
813	1	IBM-306-05	CDO-EMR	Shall	Validate integrity and completeness of new lab result event availability notification message	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.2.2.1x2	1.6 Clinician Notified of New Lab Results	NGIT-122	NGIT-122 CDO-EMR May Verify integrity of unsolicited result transaction						1.1		4.1
815	1	IBM-306-07	CDO-EMR	Shall	Send acknowledgement message to record locator for successful transmission of new lab result event availability notification message	Data Content-Data Quality/Data Integrity	Edge	IBM-305-14	EHR - Lab	3.2.2.1x3	1.6 Clinician Notified of New Lab Results								1.1		4.1
817	1	IBM-306-09	CDO-EMR	Shall	Send error messages to locator service if authenticity content integrity or completeness not validated for transmission of notifications	Data Content-Data Quality/Data Integrity	Edge	IBM-305-15	EHR - Lab	3.2.2.1x4	1.6 Clinician Notified of New Lab Results								1.1		4.1
952	1	IBM-316-08	CDO-EMR	Shall	Receive acknowledgement of order receipt and unique order identifier or error message from lab	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.2.2.9	3.4 Process Lab Order								1.1		4.1
563	1	IBM-106-08	CDO-EMR	Shall	Provide additional/revised patient data (demographics, clinical data, lab and radiology test orders and results) to monitor a previously detected event	Data Content-Data Source	Edge		Bio	1.2.2.8	6.5 PH Community - Monitor Detected Event - Additional CDO Data Applies to ambulatory, acute, and ED.								1.1		4.2
1088	1	NGIT-104	CDO-EMR	Shall	Identify source of externally-provided data	Data Content-Data Source	Edge		CE - Consumer	also an EHR requirement	PHR-provided clinical data needs to be identified								1.1		4.3
85	1	ACN-03.3	CDO-EMR	Shall	Enable providers to access a patient's Electronic Health Record.	Data Content-Data Usage	Edge	N/A	CE, EHR	3.2	It is necessary for participating providers to have access to Electronic Health Records for their patients.								1.1		4.1
86	1	ACN-03.3.1	CDO-EMR	Shall	Enable edge systems to acquire data to populate a Electronic Health Record	Data Content-Data Usage	Core	N/A	EHR - Lab	3.2	Electronic medical record systems need to have electronic access to patient data.								1.1		4.1
87	1	ACN-03.3.10	CDO-EMR	Shall	Enable providers to more easily report adverse drug reactions.	Data Content-Data Usage	Edge	N/A	EHR - Lab	No Reference	An Electronic Health Record should help providers more easily report adverse drug reactions suffered by their patients to the manufacturer or regulatory agency.								1.1		4.1
88	1	ACN-03.3.11	CDO-EMR	Shall	Capture clinical information as part of the normal health care interaction that can be used for clinical trials in a 21CFR Part 11 compliant manner.	Data Content-Data Usage	Edge	N/A	EHR - Lab	No Reference	This would eliminate the need to key the same data into clinical trial data capture systems.								1.1		4.1
89	1	ACN-03.3.2	CDO-EMR	Shall	Present patient demographic information as part of the Electronic Health Record.	Data Content-Data Usage	Edge	N/A	EHR - Lab	3.2	Physicians can view the demographics of consenting patients as part of the Electronic Health Record.								1.1		4.1
90	1	ACN-03.3.3	CDO-EMR	Shall	Present patient financial and insurance information as part of the Electronic Health Record.	Data Content-Data Usage	Edge	N/A	EHR - Lab	3.2	Physicians can view the financial and insurance information of consenting patients as part of the Electronic Health Record.								1.1		4.1
91	1	ACN-03.3.4	CDO-EMR	Shall	Present patient allergy information as part of the Electronic Health Record.	Data Content-Data Usage	Edge	N/A	EHR - Lab	3.2	Physicians can view the allergy information of consenting patients as part of the Electronic Health Record.								1.1		4.1
92	1	ACN-03.3.5	CDO-EMR	Shall	Present patient medication history as part of the Electronic Health Record.	Data Content-Data Usage	Edge	N/A	EHR - Lab	3.2	Physicians can view the medication history of consenting patients as part of the Electronic Health Record.								1.1		4.1
93	1	ACN-03.3.6	CDO-EMR	Shall	Present patient conditions as part of the Electronic Health Record.	Data Content-Data Usage	Edge	N/A	EHR - Lab	3.2	Physicians can view the health conditions of consenting patients as part of the Electronic Health Record.								1.1		4.1
94	1	ACN-03.3.7	CDO-EMR	Shall	Present a list of patient procedures and surgeries as part of the Electronic Health Record.	Data Content-Data Usage	Edge	N/A	EHR - Lab	3.2	Physicians can view a list of the procedures and surgeries of consenting patients as part of the Electronic Health Record.								1.1		4.1
95	1	ACN-03.3.8	CDO-EMR	Shall	Present patient laboratory results as part of the Electronic Health Record.	Data Content-Data Usage	Edge	N/A	EHR - Lab	3.2	Physicians can view a list of the laboratory results of consenting patients as part of the Electronic Health Record.								1.1		4.1
96	1	ACN-03.3.9	CDO-EMR	Shall	Enable providers and investigators to find and enroll their patients in clinical trials.	Data Content-Data Usage	Edge	N/A	EHR - Lab	No Reference	An Electronic Health Record should help providers find and enroll their patients in appropriate clinical trials								1.1		4.1
921	1	IBM-311-06	CDO-EMR	Shall	Flag new results within EHR	Data Content-Data Usage	Edge		EHR - Lab	3.2.1.5	2.5 Clinician Receives Results into EHR								1.1		4.1
919	1	IBM-311-04	CDO-EMR	Shall	Parse and validate lab results content	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.2.1.3	2.5 Clinician Receives Results into EHR								1.1		4.1
920	1	IBM-311-05	CDO-EMR	Shall	Merge data into EHR	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.2.1.4	2.5 Clinician Receives Results into EHR ONC Guidance: The integration of lab result data into EHRs is a critical part of the use case and should be part of the prototype architecture								1.1		4.1
953	1	IBM-316-09	CDO-EMR	Shall	Store lab order information	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.2.2.8	3.4 Process Lab Order								1.1		4.1
1117	1	NGIT-140	CDO-EMR	May	Receive, process, and persist laboratory result data	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.4.1.4	Results may identify restrictions on use of data. (Does this pertain to acute care EMRs only?)								1.1		4.1
870	1	IBM-307-50	CDO-EMR	Shall	Receive the data repository location(s) where the test results are stored	Data Transaction-(Pull)	Edge	IBM-307-47; IBM-307-01	EHR - Lab	3.2.3.4	2.1 Clinician Requests Historical Results Location								1.1	3.2	4.1
875	1	IBM-307-55	CDO-EMR	Shall	Browse and select the relevant test results location information and select locations from which to request data	Data Transaction-(Pull)	Edge		EHR - Lab	3.2.3.3ax6	2.1 Clinician Requests Historical Results Location								1.1	3.2	4.1
877	1	IBM-308-01	CDO-EMR	Shall	Send request for historical lab test result content directly to data repository (local or remote) from EHR or web application	Data Transaction-(Pull)	Edge	IBM-304-20 (IBM-304-18 through 22 may also apply); IBM-309-01	EHR - Lab	3.2.1.1a	2.2 Clinician Requests Historical Results from Data Repositories								1.1	3.2	4.1
879	1	IBM-308-03	CDO-EMR	Should	Submit request for lab test results through a data stager	Data Transaction-(Pull)	Edge		EHR - Lab	3.2.1.1ax2	2.2 Clinician Requests Historical Results from Data Repositories							Architecturally specific	1.1	3.2	4.1
881	1	IBM-308-05	CDO-EMR	Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data	Data Transaction-(Pull)	Edge		EHR - Lab	3.2.1.1ax3	2.2 Clinician Requests Historical Results from Data Repositories								1.1	3.2	4.1
917	1	IBM-311-02	CDO-EMR	Shall	Receive requested historical lab test results into EHR	Data Transaction-(Pull)	Edge		EHR - Lab	3.2.1.1ax	2.5 Clinician Receives Results into EHR								1.1	3.2	4.1
1086	1	NGIT-102	CDO-EMR	Shall	Process registration data received from CE	Data Transaction-(Pull)	Edge		CE - Consumer		Processing includes receiving, validating, confirming data integrity								1.1	3.2	4.3
1087	1	NGIT-103	CDO-EMR	Shall	Process medication data received from CE	Data Transaction-(Pull)	Edge		CE - Consumer		Processing includes receiving, validating, confirming data integrity								1.1	3.2	4.3
1090	1	NGIT-108	CDO-EMR	Shall	Receive and validate request for data from PHR	Data Transaction-(Pull)	Edge		CE - Consumer	2.3.3.1									1.1	3.2	4.3
1092	1	NGIT-110	CDO-EMR	Shall	Support the transmission of registration & medication data	Data Transaction-(Pull)	Edge		CE - Consumer	2.3.3.3									1.1	3.2	4.3
1107	1	NGIT-128	CDO-EMR	Shall	Transmit well formed query request for lab result data	Data Transaction-(Pull)	Edge		EHR - Lab	3.2.3.0		IBM-307-01	IBM-307-01 CDO-EMR Shall Query locator system for laboratory (historical) test results location						1.1	3.2	4.1
1122	1	NGIT-147	CDO-EMR	May	Receive and process well formed query for laboratory test results according to HITSP specified implementation instructions	Data Transaction-(Pull)	Edge		EHR - Lab	3.4.3.0	EMR is potential source of lab result data								1.1	3.2	4.1
916	1	IBM-311-01	CDO-EMR	Shall	Automatically Receive new lab test results into EHR as ordering clinician or provider of care	Data Transaction-(Push)	Edge	IBM-304-18	EHR - Lab	3.2.1.1	2.5 Clinician Receives Results into EHR								1.1	3.2	4.1
945	1	IBM-316-01	CDO-EMR	Shall	Send new, updated or canceled lab test orders to lab	Data Transaction-(Push)	Edge		EHR - Lab	3.2.2.1	3.4 Process Lab Order								1.1	3.2	4.1
951	1	IBM-316-07	CDO-EMR	Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data	Data Transaction-(Push)	Edge		EHR - Lab	3.2.2.7	3.4 Process Lab Order								1.1	3.2	4.1
1100	1	NGIT-121	CDO-EMR	May	Receive and process well formed laboratory test results according to HITSP specified standards and implementation instructions	Data Transaction-(Push)	Edge		EHR - Lab	3.2.1.0, 3.4.1.0	In the unsolicited result paradigm, an EMR may be capable of receiving and processing results, especially if it generated the initial order for the test.								1.1	3.2	4.1
1105	1	NGIT-126	CDO-EMR	May	Receive notification of new test results	Data Transaction-(Push)	Edge		EHR - Lab	3.2.2.1	Notifications do not need to be technically complex.	IBM-306-01	IBM-306-01 CDO-EMR Shall Receive notification from locator service that new lab test results events are available						1.1	3.2	4.1
872	1	IBM-307-52	CDO-EMR	Shall	Log location request interaction with locator service	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.3.5	2.1 Clinician Requests Historical Results Location								1.1	3.2	4.1
923	1	IBM-311-08	CDO-EMR	Shall	Log receipt of lab test results	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.1.7	2.5 Clinician Receives Results into EHR								1.1	3.2	4.1
955	1	IBM-316-11	CDO-EMR	Shall	Log lab order interaction with lab	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.2.11	3.4 Process Lab Order								1.1	3.2	4.1
1089	1	NGIT-107	CDO-EMR	Shall	Log interactions of system receiving data from external (PHR) sources	Data Transaction-Audit & Logging	Edge		CE - Consumer	2.3.2.6									1.1	3.2	4.3
1093	1	NGIT-113	CDO-EMR	Shall	Create an exception list when lab results can not be unequivocally be matched to an order/patient/etc.	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.1.7a		IBM-311-09 IBM-209-38	IBM-311-09 CDO-EMR Shall Produce exception list of errors IBM-311-07 CDO-EMR Shall Acknowledge successful receipt of lab results from repository or data stager	IBM-209-38 CDO May Create an exception list of data that is not imported				1.1	3.2	4.1	
1102	1	NGIT-123	CDO-EMR	Shall	Acknowledge receipt of lab result data	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.1.6, 3.4.1.3	Acknowledgement will confirm appropriateness or inappropriateness of transmission per validation check.								1.1	3.2	4.1
1103	1	NGIT-124	CDO-EMR	Shall	Maintain a log of interactions with external data systems	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.1.7,3.4.1.6	Log data must include history of the receipt of lab result data from other source systems.								1.1	3.2	4.1
1104	1	NGIT-125	CDO-EMR	Should	Provide listing of lab result transactions received but not processed or loaded into EMR	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.2.1.7a	Log of messages that were received but could not be processed -- including where results could not be unequivocally matched with a patient -- should contain sufficient data to trace transaction to source system.								1.1	3.2	4.1

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.	
1055	1	NGIT-070	CDO-EMR	May	Specify destination(s) for transmission of biosurveillance data	Data Transaction-Data Routing	Edge		Bio	1.1.5.1, 1.2.5.1	May defer determination of destinations to CDO NHIN							1.1	3.2	4.2	
850	1	IBM-307-30	CDO-EMR	Shall	Provide ability for clinician to request all available data (from local and remote communities) for specified patient	Data Transformation-Data Filtering	Edge		EHR - Lab	3.2.3.3a	2.1 Clinician Requests Historical Results Location							1.1	3.3	4.1	
852	1	IBM-307-32	CDO-EMR	Should	Provide clinician ability to query for results based on one or multiple criteria for a specified patient	Data Transformation-Data Filtering	Edge		EHR - Lab	3.2.3.3ax1	2.1 Clinician Requests Historical Results Location	IBM-307-34 IBM-307-36 IBM-307-38 IBM-307-40 IBM-307-42	IBM-307-34 CDO-EMR Should Provide clinician ability to query for lab results based on a specified date range for a specified patient	IBM-307-36 CDO-EMR Should Provide clinician ability to query for lab results based on one or more types of lab data (chemistry, hematology, pathology, etc) for a specified patient	IBM-307-38 CDO-EMR May Provide clinician ability to query for lab results based on one or more specified lab tests for a specified patient	IBM-307-40 CDO-EMR May Provide clinician ability to query for lab results based on one, more or all local or remote marketplaces for a specified patient	IBM-307-42 CDO-EMR Shall Provide clinician ability to request for specific lab test results based on order number or other unique test result identification	1.1	3.3	4.1	
1051	1	NGIT-067	CDO-EMR	May	Transform data into approved standards	Data Transformation-Data Mapping/Translation	Edge		Bio	1.1.3.1, 1.2.3.1								1.1	3.3	4.2	
819	1	IBM-306-11	CDO-EMR	Shall	Display notification of new lab result event. The display is easy to understand and the displayed content is determined by the receiving entity.	Data Transformation-Data Rendering	Edge		EHR - Lab	3.2.2.1x	1.6 Clinician Notified of New Lab Results							1.1	3.3	4.1	
826	1	IBM-307-06	CDO-EMR	Shall	Send demographic information to record locator to identify patient for query. Data required is determined by the community.	Information Location-Identify/Information Correlation	Edge		EHR - Lab	3.2.3.2	2.1 Clinician Requests Historical Results Location							1.1	3.4	4.1	
833	1	IBM-307-13	CDO-EMR	Shall	Provide ability for clinician to browse potential matches and confirm the correct patient for data location retrieval to locator system	Information Location-Identify/Information Correlation	Edge		EHR - Lab	3.2.3.2	2.1 Clinician Requests Historical Results Location							1.1	3.4	4.1	
811	1	IBM-306-03	CDO-EMR	Shall	Authenticate record locator sending notification of new lab result event messages	Security-Authentication	Edge		EHR - Lab	3.2.2.1x1	1.6 Clinician Notified of New Lab Results							1.1	3.6	4.1	
823	1	IBM-307-03	CDO-EMR	Shall	Submit authentication information to locator system when querying for lab results location	Security-Authentication	Edge		EHR - Lab	3.2.3.1	2.1 Clinician Requests Historical Results Location							1.1	3.6	4.1	
883	1	IBM-308-07	CDO-EMR	Shall	Submit authentication information to the data repository if sending data request directly to data repository	Security-Authentication	Edge		EHR - Lab	3.2.1.1b	2.2 Clinician Requests Historical Results from Data Repositories							1.1	3.6	4.1	
918	1	IBM-311-03	CDO-EMR	Shall	Authenticate entity sending lab results to EMR	Security-Authentication	Edge		EHR - Lab	3.2.2.1y	2.5 Clinician Receives Results into EHR							1.1	3.6	4.1	
1127	1	NGIT-152	CDO-EMR	May	Authorize query request for lab result data	Security-Authorization	Edge		EHR - Lab	3.4.3.3	Additional validation of request may be performed (specifying requisition or order number, dates of activity)							1.1	3.6	4.1	
428	1	CSC-EHR-300	CDO-LIS	May	Report results including but not limited to: clinical chemistry, hematology, serology, and microbiology, radiology, cardiology, and neurology.	Data Content	Edge		EHR - Lab	s3	The use case specifically excludes any requirement for radiology, cardiology, and neurology, but these may be available in some of the health market prototypes							2.1	3.1	4.1	
436	1	CSC-EHR-382	CDO-LIS	May	Flag availability, and transmit lab results updates and corrections to the appropriate Repository(ies). The repository might be part of the LIS.	Data Content	Edge	CSC-ALL-380	EHR - Lab	3.2.2.0, 3.2.2.1, 3.3.1.2	EMRs may persist lab results in some SNOs, and LIS may do so in others							2.1	3.1	4.1	
759	1	IBM-303-01	CDO-LIS	Shall	Create preliminary, final and updated results for lab test.	Data Content	Edge		EHR - Lab	3.3.1.1	1.3 Lab Processes New Result	CSC-EHR-360 NGIT-119 NGIT-141	CSC-EHR-360 CDO-LIS Should Transmit preliminary, complete, final, and updated lab results to the ordering system or its designee.	NGIT-119 CDO-LIS Shall Transmit well formed result messages according to a HITSP specified implementation instruction	NGIT-141 CDO-LIS May Transmit well formed result messages according to HITSP specified standards and implementation instructions			2.1	3.1	4.1	
763	1	IBM-303-05	CDO-LIS	Shall	Adhere to approved content standards as provided by HITSP when sending lab results data to the repository.	Data Content	Edge		EHR - Lab	3.3.1.2x1	1.3 Lab Processes New Result							2.1	3.1	4.1	
764	1	IBM-303-06	CDO-LIS	Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data.	Data Content	Edge		EHR - Lab	3.3.1.2x	1.3 Lab Processes New Result							2.1	3.1	4.1	
765	1	IBM-303-07	CDO-LIS	Shall	Send data from the lab to the storing repository that includes results data as well as information necessary for indexing and restrictions for use.	Data Content	Edge		EHR - Lab	3.3.1.2x3	1.3 Lab Processes New Result							2.1	3.1	4.1	
960	1	IBM-316-16	CDO-LIS	May	Send unique identifier to facilitate electronic retrieval of lab results to clinician	Data Content	Edge		EHR - Lab	3.3.y.5	3.4 Process Lab Order							2.1	3.1	4.1	
956	1	IBM-316-12	CDO-LIS	Shall	Authenticate entity sending lab order message	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.3.y.1	3.4 Process Lab Order							2.1	3.1	4.1	
957	1	IBM-316-13	CDO-LIS	Shall	Validate integrity and completeness of lab order message	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.3.y.2	3.4 Process Lab Order							2.1	3.1	4.1	
958	1	IBM-316-14	CDO-LIS	Shall	correct lab order error message as necessary	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.3.y.3	3.4 Process Lab Order							2.1	3.1	4.1	
959	1	IBM-316-15	CDO-LIS	Shall	Send acknowledgement message of receipt of complete lab order to sending entity	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.3.y.4	3.4 Process Lab Order							2.1	3.1	4.1	
564	1	IBM-106-09	CDO-LIS	Shall	Provide additional/revised lab and radiology test orders and results to monitor a previously detected event	Data Content-Data Source	Edge		Bio	1.2.2.9	6.5 PH Community - Monitor Detected Event - Additional CDO Data Applies to reference lab and CDO lab.							2.1	3.1	4.2	
761	1	IBM-303-03	CDO-LIS	Shall	Store lab test results in data repository and note restrictions for use (providers of care list, patient consent restrictions or sensitivity restrictions)	Data Storage-Persistent Data Storage	Edge	IBM-303-01; IBM-302-01	EHR - Lab	3.4.1.4	1.3 Lab Processes New Result The performing lab or an entity other than the performing lab may store new lab test result events data for the purposes of the NHIN.							2.1	3.1	4.1	
961	1	IBM-316-17	CDO-LIS	Shall	Store lab order information	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.3.y.6	3.4 Process Lab Order							2.1	3.1	4.1	
1097	1	NGIT-118	CDO-LIS	Shall	Collect and persist laboratory result data to support electronic exchange with stakeholders	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.3.1.1	Data collected by LIS must maintain reference/data links to support association to patient, order							2.1	3.1	4.1	
1123	1	NGIT-148	CDO-LIS	Shall	Receive and process well formed query for laboratory test results according to HITSP specified implementation instructions	Data Transaction-(Pull)	Edge		EHR - Lab	3.4.3.0	LIS is potential source of lab result data							2.1	3.2	4.1	
441	1	CSC-EHR-422	CDO-LIS	May	Send Notification messages and/or Lab results to specified organizations	Data Transaction-(Push)	Edge	CSC-ALL-380	EHR - Lab	3.2.2.0, 3.4.1.5, 3.5.1.0, 3.5.2.4, 3.5.2.5, 3.5.3.0, 3.5.3.1	EMRs may distribute lab results or notifications in some SNOs, and LIS may do so in others							2.1	3.2	4.1	
762	1	IBM-303-04	CDO-LIS	Shall	Securely transmit lab result messages to the data repository of the storing entity (if another entity maintains lab data for storage and retrieval for the performing lab for the purposes of the NHIN, the performing lab)	Data Transaction-(Push)	Edge	IBM-303-01	EHR - Lab	3.3.1.2	1.3 Lab Processes New Result This action applies to situations in which the performing lab sends data to be stored in a database other than the performing lab's LIS. For example, a satellite commercial lab may store all lab results in a regional or national data repository for the commercial lab. For some communities, lab result events will be stored in a data repository that is part of the community for purposes of the NHIN.							2.1	3.2	4.1	
760	1	IBM-303-02	CDO-LIS	Shall	Log creation of test results	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.3.1.3	1.3 Lab Processes New Result							2.1	3.2	4.1	
766	1	IBM-303-08	CDO-LIS	Shall	Log transmission of new lab result event message to the storing entities data repository	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.3.1.2x2	1.3 Lab Processes New Result							2.1	3.2	4.1	
1009	1	IBM-319-36	CDO-LIS	Shall	Create audit entry for each transaction	Data Transaction-Audit & Logging	Core		EHR - Lab	3.3.x.1	3.7 Maintain and Access Audit Log							2.1	3.2	4.1	
1011	1	IBM-319-38	CDO-LIS	Shall	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core		EHR - Lab	3.3.x.2	3.7 Maintain and Access Audit Log							2.1	3.2	4.1	
1013	1	IBM-319-40	CDO-LIS	Shall	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core		EHR - Lab	3.3.x.3	3.7 Maintain and Access Audit Log							2.1	3.2	4.1	
1015	1	IBM-319-42	CDO-LIS	Shall	Not allow edits to audit entries	Data Transaction-Audit & Logging	Core		EHR - Lab	3.3.x.4	3.7 Maintain and Access Audit Log							2.1	3.2	4.1	
1017	1	IBM-319-44	CDO-LIS	Shall	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Core		EHR - Lab	3.3.x.3	3.7 Maintain and Access Audit Log							2.1	3.2	4.1	
1019	1	IBM-319-46	CDO-LIS	Shall	Provide capability to print audit trail	Data Transaction-Audit & Logging	Core		EHR - Lab	3.3.x.3	3.7 Maintain and Access Audit Log							2.1	3.2	4.1	
1021	1	IBM-319-48	CDO-LIS	Shall	Display audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Core		EHR - Lab	3.3.x.7	3.7 Maintain and Access Audit Log							2.1	3.2	4.1	
1099	1	NGIT-120	CDO-LIS	Shall	Maintain log of interactions with external data systems and/or networks	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.3.1.3	Log data must include the destination of transaction (clinician system, data repository)							2.1	3.2	4.1	
1128	1	NGIT-153	CDO-LIS	May	Authorize query request for lab result data	Security-Authorization	Edge		EHR - Lab	3.4.3.3	Additional validation of request may be performed (specifying requisition or order number, dates of activity)							2.1	3.6	4.1	
506	1	IBM-101-07	CDO-LIS--CDO lab	Shall	Provide lab order data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Lab order data include: order number, order test name, and date and time of order.	Data Content-Data Source	Edge		Bio	1.1.1.0X	1.2 Data Source - CDO and Reference Lab Information Systems							2.1	3.1	4.2	
507	1	IBM-101-08	CDO-LIS--CDO lab	Shall	Provide lab result data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Lab result data include: reporting lab ID, performing lab ID, report date/time, report status, collection date, collection method, organism, method type, result unit, test interpretation, and test status.	Data Content-Data Source	Edge		Bio	1.1.1.0X	1.2 Data Source - CDO and Reference Lab Information Systems							2.1	3.1	4.2	
508	1	IBM-101-09	CDO-LIS--Reference lab	Shall	Provide lab order data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Lab order data include: order number, order test name, and date and time of order.	Data Content-Data Source	Edge		Bio	1.1.1.0X	1.2 Data Source - CDO and Reference Lab Information Systems							2.1	3.1	4.2	
509	1	IBM-101-10	CDO-LIS--Reference lab	Shall	Provide lab result data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Lab result data include: reporting lab ID, performing lab ID, report date/time, report status, collection date, collection method, organism, method type, result unit, test interpretation, and test status.	Data Content-Data Source	Edge		Bio	1.1.1.0X	1.2 Data Source - CDO and Reference Lab Information Systems							2.1	3.1	4.2	
1119	1	NGIT-142	CDO-LIS--Reference lab	May	Transmit well formed result notification message according to HITSP specified standards and implementation instructions	Data Transaction-(Push)	Edge		EHR - Lab	3.4.2.2	Result notification messages do not contain actual test results. Unsolicited result notifications will update patient record locator that data exists at the transmitting entity's system, and provide network queries the information needed to locate the actual results in source systems.							2.1	3.2	4.1	
1058	1	NGIT-073	CDO-Registration	Shall	Electronically collect census and utilization data to support public health reporting	Data Storage-Persistent Data Storage	Edge		Bio									1.1		4.2	
310	1	CSC-ALL-190	CDO-Registration	Shall	Push patient demographic identifying information and updates to the Record Locator Service.	Data Transaction-(Push)	Edge		Infrastructure									1.1	3.2	4.4	
1059	1	NGIT-074	CDO-Registration	May	Filter collected data records to identify biosurveillance data	Data Transformation-Data Filtering	Edge		Bio									1.1	3.3	4.3	
1060	1	NGIT-075	CDO-Registration	May	Aggregate and format census data for transmission to public health agencies	Data Transformation-Data Filtering	Edge		Bio	1.1.1.2, 1.2.1.2	Aggregation and formatting to be implemented per approved specifications							1.1	3.3	4.2	
309	1	CSC-ALL-180	CDO-Registration	Shall	Maintain latest available patient identifying information	Information Location-Identify/Information Correlation	Edge		Infrastructure									1.1	3.4	4.4	
1136	1	NGIT-161	Consumer System-	Shall	Authenticate the requesting data from external systems	Security-Authentication	Core		CE - Consumer								No defined Entity Role	2.3	3.6	4.3	
415	1	CSC-CE-690	Consumer System-Consumer NHIN Interface	Shall	Accept queries from, and return results to, fully-qualified PHRs for registration and medication data.	Data Transaction-(Pull)	Core	CSC-SEC-160, CSC-ALL-750	CE - Consumer	2.4.1.1, 2.4.1.2, 2.4.1.4	These queries must indicate that the query results will be viewed by a consumer.								3.2	3.3	4.3
1084	1	NGIT-100	Consumer System-Consumer NHIN Interface	Shall	Support translating data into appropriate standards for incorporating data into EHRs	Data Transformation-Data Mapping/Translation	Core		CE - Consumer		Determine how to express requirement for viewing of data only (portal)								3.3	3.3	4.3
1078	1	NGIT-094	Consumer System-Consumer NHIN Interface	Shall	Authenticate entity requesting data	Security-Authentication	Core		CE - Consumer		Authenticate valid NHIN request for the entity supporting the consumer.								3.6	3.6	4.3
666	1	IBM-209-03	Consumer System-Consumer NHIN Interface	May	Maintain a queriable marketplace-based registry to correlate to possible PHRs	Security-Authorization	Core		Infrastructure	2.2.4.1	6.1 Provider access to PHR data								3.6	3.6	4.4
717	1	IBM-212-01	Consumer System-PHR	May	Be able to retrieve clinical notes	Data Content	Edge		CE - Consumer	2.2.3.1	8.1 PHR Clinical Content							2.3	3.1	4.3	
716	1	IBM-212-02	Consumer System-PHR	May	Be able to retrieve lab results	Data Content	Edge		CE - Consumer	2.2.3.2	8.1 PHR Clinical Content							2.3	3.1	4.3	
720	1	IBM-212-04	Consumer System-PHR	May	Capture and maintain data on clinical encounters and outpatient and inpatient procedures, including date, facility, attending Health Care Provider, diagnosis procedure, and type of encounter.	Data Content	Edge		CE - Consumer	2.2.3.4	8.1 PHR Clinical Content								2.3	3.1	4.3

SENSITIVE: UNAUTHORIZED DISTRIBUTION PROHIBITED
Compressed Inventory of Functional Requirements

ID-ONC	#	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Closely resembles...	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.	
721	1	IBM-212-05	Consumer System-PHR	May	Capture and maintain the presence and/or absence of a history of major diseases among the PHR Account Holder's close blood relatives.	Data Content	Edge		CE - Consumer	2.2.3.5	8.2 PHR Consumer Data Entry							Feature of Edge System	2.3	3.1	4.3	
722	1	IBM-212-06	Consumer System-PHR	May	Capture and maintain the PHR Account Holder's health problem list. Provide ability to manage the problem list over time	Data Content	Edge		CE - Consumer	2.2.3.6	8.2 PHR Consumer Data Entry							Feature of Edge System	2.3	3.1	4.3	
723	1	IBM-212-07	Consumer System-PHR	May	Capture and maintain the PHR Account Holder's list of known allergens and adverse reactions with all pertinent information	Data Content	Edge		CE - Consumer	2.2.3.7	8.2 PHR Consumer Data Entry							Feature of Edge System	2.3	3.1	4.3	
724	1	IBM-212-08	Consumer System-PHR	May	Capture and maintain the PHR Account Holder's immunizations in a way that can be easily viewed over time	Data Content	Edge		CE - Consumer	2.2.3.8	8.2 PHR Consumer Data Entry							Feature of Edge System	2.3	3.1	4.3	
729	1	IBM-212-13	Consumer System-PHR	May	Capture the PHR Account Holder's advanced directive as well as the date and circumstances under which the directives are provided, and/or the location and/or custodian's contact information, for any	Data Content	Edge		CE - Consumer	2.2.3.13	8.2 PHR Consumer Data Entry							Feature of Edge System	2.3	3.1	4.3	
734	1	IBM-212-18	Consumer System-PHR	May	Display health data — both patient sourced and professionally sourced — with consumer-friendly terminology	Data Content	Edge		CE - Consumer	2.2.3.18	8.3 PHR Usability and User Preferences							Feature of Edge System	2.3	3.1	4.3	
749	1	IBM-212-33	Consumer System-PHR	May	Provide access to the PHR Account Holder's care plan(s)	Data Content	Edge		CE - Consumer	2.2.3.33	8.10 PHR Health Plan Administration							Feature of Edge System	2.3	3.1	4.3	
750	1	IBM-212-34	Consumer System-PHR	May	Provide access to financial data from clinical and pharmacy sources	Data Content	Edge		CE - Consumer	2.2.3.34	8.11 PHR Consumer Health Financial Tools							Feature of Edge System	2.3	3.1	4.3	
754	1	IBM-212-38	Consumer System-PHR	Should	Retain data according to SLAs	Data Content	Edge		CE - Consumer	2.2.3.38	8.13 PHR Administration								2.3	3.1	4.3	
748	1	IBM-212-32	Consumer System-PHR	May	Offer the ability to read remote electronic medication or diagnostics monitoring devices	Data Content-Data Source	Edge		CE - Consumer	2.2.3.32	8.9 PHR Remote Diagnostic Monitoring Interfaces								2.3		4.3	
76	1	ACN-03.1.1	Consumer System-PHR	Shall	Enable edge systems to acquire data to populate a Personal Health Record.	Data Content-Data Usage	Core	N/A	CE - Consumer	2.1.4.2	Personal health record systems need to have electronic access to patient data.								2.3		4.3	
77	1	ACN-03.1.2	Consumer System-PHR	Shall	Present patient demographic information as part of the Personal Health Record.	Data Content-Data Usage	Edge	N/A	CE - Consumer	2.1.4	Patients, who have consented, can view their patient demographic information as part of the Personal Health Record.								2.3		4.3	
78	1	ACN-03.1.3	Consumer System-PHR	Shall	Present patient financial and insurance information as part of the Personal Health Record.	Data Content-Data Usage	Edge	N/A	CE - Consumer	2.1.4	Patients, who have consented, can view their patient financial and insurance information as part of the Personal Health Record.								2.3		4.3	
79	1	ACN-03.1.4	Consumer System-PHR	Shall	Present patient allergy information as part of the Personal Health Record.	Data Content-Data Usage	Edge	N/A	CE - Consumer	2.1.4	Patients, who have consented, can view their allergy information as part of the Personal Health Record.								2.3		4.3	
80	1	ACN-03.1.5	Consumer System-PHR	Shall	Present patient medication history as part of the Personal Health Record.	Data Content-Data Usage	Edge	N/A	CE - Consumer	2.1.4	Patients, who have consented, can view their medication history as part of the Personal Health Record.								2.3		4.3	
81	1	ACN-03.1.6	Consumer System-PHR	Shall	Present patient conditions as part of the Personal Health Record.	Data Content-Data Usage	Edge	N/A	CE - Consumer	No Reference	Patients, who have consented, can view their health conditions as part of the Personal Health Record.								2.3		4.3	
82	1	ACN-03.1.7	Consumer System-PHR	Shall	Present a list of patient procedures and surgeries as part of the Personal Health Record.	Data Content-Data Usage	Edge	N/A	CE - Consumer	No Reference	Patients, who have consented, can view a list of their procedures and surgeries as part of the Personal Health Record.								2.3		4.3	
83	1	ACN-03.2.1	Consumer System-PHR	Shall	Enable patient proxies to access the Personal Health Record of their associated patients.	Data Content-Data Usage	Edge	N/A	CE - Consumer	2.1.2	Personal health records must allow patient proxies to access the same information that the patient can access.								2.3		4.3	
84	1	ACN-03.2.2	Consumer System-PHR	Shall	Enable patients and their proxies to find and enroll in appropriate clinical trials	Data Content-Data Usage	Edge	N/A	CE - Consumer	No Reference	A Personal Health Record should help the patient find and enroll in clinical trials								2.3		4.3	
646	1	IBM-207-26	Consumer System-PHR	Shall	Allow for edits	Data Content-Data Usage	Edge	IBM-205-01	CE - Consumer	2.1.5.4x	4.2 Updating a PHR Note difference - some fields fully editable while others can only be annotated. Also, some fields can only be changed by directly contacting PHR administrator.	CSC-CE-570	CSC-CE-570 Consumer System-PHR Shall Enable consumer to modify consumer-entered data							2.3		4.3
725	1	IBM-212-09	Consumer System-PHR	May	Enable the PHR Account Holder to add past and present information about other modalities of treatment used	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.9	8.2 PHR Consumer Data Entry								2.3		4.3	
726	1	IBM-212-10	Consumer System-PHR	May	Enable the PHR Account Holder to self-report symptoms or concerns in a chronologically sortable diary	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.10	8.2 PHR Consumer Data Entry								2.3		4.3	
727	1	IBM-212-11	Consumer System-PHR	May	Enable the PHR Account Holder to add information about religious/spiritual beliefs that he or she wants Health Care Providers to know	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.11	8.2 PHR Consumer Data Entry								2.3		4.3	
728	1	IBM-212-12	Consumer System-PHR	May	Enable the PHR Account Holder to add information about personal health goals, next steps or other notes related to his or her health or conditions, or any other information he or she wants Health Care Providers to know	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.12	8.2 PHR Consumer Data Entry								2.3		4.3	
732	1	IBM-212-16	Consumer System-PHR	May	Provide one-screen bulleted and printable health summary	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.16	8.3 PHR Usability and User Preferences								2.3		4.3	
733	1	IBM-212-17	Consumer System-PHR	May	Enable an Authorized PHR User to display laboratory and test results by means of flow sheets, graphs, or other tools that enable the discovery of trends	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.17	8.3 PHR Usability and User Preferences								2.3		4.3	
735	1	IBM-212-19	Consumer System-PHR	May	Provide multiple printer friendly functions to allow consumer to create hard copies of records	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.19	8.3 PHR Usability and User Preferences								2.3		4.3	
736	1	IBM-212-20	Consumer System-PHR	May	Track and graph tests over time	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.20	8.3 PHR Usability and User Preferences								2.3		4.3	
737	1	IBM-212-21	Consumer System-PHR	May	Offer patient education and self-care modules	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.21	8.4 PHR Healthy Tools and Content								2.3		4.3	
738	1	IBM-212-22	Consumer System-PHR	May	Create and offer links to other educational sites	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.22	8.4 PHR Healthy Tools and Content								2.3		4.3	
739	1	IBM-212-23	Consumer System-PHR	May	Offer secure electronic communication between consumer and provider	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.23	8.5 PHR Consumer/Provider Communications and Alerts								2.3		4.3	
740	1	IBM-212-24	Consumer System-PHR	May	Offer provider initiated auto-reminders for the PHR Account Holder	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.24	8.5 PHR Consumer/Provider Communications and Alerts								2.3		4.3	
741	1	IBM-212-25	Consumer System-PHR	May	Provide access to intake forms	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.25	8.6 PHR Appointment and Pre-admit Workflow								2.3		4.3	
742	1	IBM-212-26	Consumer System-PHR	May	Allow the consumer to request appointments with their care providers through PHR	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.26	8.6 PHR Appointment and Pre-admit Workflow								2.3		4.3	
743	1	IBM-212-27	Consumer System-PHR	May	Allow for preliminary screenings and follow-ups with secure messaging	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.27	8.6 PHR Appointment and Pre-admit Workflow								2.3		4.3	
744	1	IBM-212-28	Consumer System-PHR	May	Check drug-to-drug interactions	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.28	8.7 PHR Drug and Prescription Tools								2.3		4.3	
745	1	IBM-212-29	Consumer System-PHR	May	Check insurance coverage for prescribed drugs	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.29	8.7 PHR Drug and Prescription Tools								2.3		4.3	
746	1	IBM-212-30	Consumer System-PHR	May	Remind the PHR Account Holder about prescription renewals	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.30	8.7 PHR Drug and Prescription Tools								2.3		4.3	
747	1	IBM-212-31	Consumer System-PHR	May	Support biosurveillance and data mining activity	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.31	8.8 PHR Linkage to Biosurveillance, Disease Management and Clinical Research								2.3		4.3	
751	1	IBM-212-35	Consumer System-PHR	May	Offer health care cost estimate tools	Data Content-Data Usage	Edge		CE - Consumer	2.2.3.35	8.11 PHR Consumer Health Financial Tools								2.3		4.3	
403	1	CSC-CE-560	Consumer System-PHR	Shall	Persist PHR information	Data Storage-Persistent Data Storage	Edge		CE - Consumer	2.1.4.3, 2.1.5.3, 2.1.5.5									2.3		4.3	
406	1	CSC-CE-590	Consumer System-PHR	Shall	Persist consumer edits and annotations to PHR information	Data Storage-Persistent Data Storage	Edge		CE - Consumer										2.3		4.3	
407	1	CSC-CE-600	Consumer System-PHR	Shall	Close PHR account when requested by authenticated consumer.	Data Storage-Persistent Data Storage	Edge		CE - Consumer	2.1.6.1, 2.2.4.3		IBM-211-01	IBM-211-01 Consumer System-PHR Shall Terminate PHR account							2.3		4.3
408	1	CSC-CE-620	Consumer System-PHR	Shall	Notify customer that PHR account is closed	Data Storage-Persistent Data Storage	Edge		CE - Consumer	2.1.6.2, 2.2.4.4		NGIT-098	NGIT-098 Consumer System-PHR Shall Support termination of a consumers account							2.3		4.3
412	1	CSC-CE-670	Consumer System-PHR	May	Establish a PHR account containing user authentication credentials	Data Storage-Persistent Data Storage	Edge		CE - Consumer	2.2.1.2									2.3		4.3	
654	1	IBM-207-34	Consumer System-PHR	Shall	Import annotated/modified data into the PHR system	Data Storage-Persistent Data Storage	Edge		CE - Consumer	2.1.5.5x	4.2 Updating a PHR								2.3		4.3	
1066	1	NGIT-082	Consumer System-PHR	Shall	Support creation of unique consumer account	Data Storage-Persistent Data Storage	Edge		CE - Consumer		validation of 'owner' of account; can be created by third party 'owner' - need to specify means of uniquely identifying person associated with the account								2.3		4.3	
413	1	CSC-CE-678	Consumer System-PHR	May	Input data from, or store data to, offline storage devices	Data Transaction-(Pull)	Edge		CE - Consumer	2.2.2.3	This is also a mechanism for a CDO or PHR to transfer personal health records without network access.								2.3	3.2	4.3	
414	1	CSC-CE-680	Consumer System-PHR	May	Query other PHRs for accessible data using consumer provided credentials	Data Transaction-(Pull)	Edge		CE - Consumer	2.2.2.3	This is not an NHIN query								2.3	3.2	4.3	
418	1	CSC-CE-740	Consumer System-PHR	Shall	Acknowledge receipt of and validate the format of received messages and requests	Data Transaction-(Pull)	Edge	CSC-SEC-40, CSC-ALL-680	CE - Consumer	2.2.2.5									2.3	3.2	4.3	
597	1	IBM-205-04	Consumer System-PHR	Shall	Transmit request for registration/medication history data to data/network systems to query documents from the NHIN	Data Transaction-(Pull)	Edge	IBM-205-01	CE - Consumer	2.2.2.3	3.2 Pre-populating a PHR OMC Guidance: Architecturally, the PHR may be a primary source of some data and definitely will be a secondary source of some data. Although synchronization issues around reconciliation of multiple sources of medication data are out of scope, the network services necessary to handle data exchange, requests for correction and the handling of annotated data are within scope.	NGIT-085, NGIT-086, NGIT-088, NGIT-087	NGIT-088 Consumer System-PHR Shall Transmit well formed query request for medication history data	NGIT-085 Consumer System-PHR Shall Support user request to collect registration data from external source	NGIT-086 Consumer System-PHR Shall Support user request to collect medication history data from external source(s)				2.3	3.2	4.3	

SENSITIVE: UNAUTHORIZED DISTRIBUTION PROHIBITED
Compressed Inventory of Functional Requirements

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.	
613	1	IBM-205-20	Consumer System-PHR	Shall	Publish the appropriate links back to the record locator	Information Location-Identify/Information Correlation	Edge		CE - Consumer	2.2.2.3x	3.2 Pre-populating a PHR	IBM-207-20	IBM-207-20 Consumer System-PHR May Publish the appropriate links back to the record locator					2.3	3.4	4.3	
639	1	IBM-207-19	Consumer System-PHR	May	Maintain an XDS repository following pre-population	Information Location-Identify/Information Correlation	Edge		CE - Consumer	2.1.5.2x	4.2 Updating a PHR						Refers to a specific standard- the statement should be changed to reference HITSP	2.3	3.4	4.3	
656	1	IBM-207-36	Consumer System-PHR	May	Publish the appropriate links with updated data back to the record locator	Information Location-Identify/Information Correlation	Core	IBM-207-30	Infrastructure	2.2.1.18	4.2 Updating a PHR							2.3	3.4	4.4	
	1	IBM-208-03	Consumer System-PHR	May	Publish the appropriate links back to the record locator	Information Location-Identify/Information Correlation	Core		Infrastructure	2.2.2.3	5.1 PHR on the NHIN							2.3	3.4	4.4	
712	1	IBM-211-05	Consumer System-PHR	May	Publish the appropriate links with updated data back to the record locator	Information Location-Identify/Information Correlation	Core		Infrastructure	2.2.1.1	7.2 Closing a PHR							2.3	3.4	4.4	
397	1	CSC-CE-480	Consumer System-PHR	Shall	Not store location information in the Patient Matching service.	Information Location-Record Location	Edge		CE - Consumer								Architecturally specific	2.3	3.4	4.3	
595	1	IBM-205-02	Consumer System-PHR	May	Confirm with the consumer that the system will request information from data and network systems	Non-Functional-Accuracy	Edge		CE - Consumer	2.1.4.2x	3.2 Pre-populating a PHR	IBM-207-02	IBM-207-02 Consumer System-PHR May Confirm with the consumer that the system will request information from data and network systems					2.3	3.5	4.3	
596	1	IBM-205-03	Consumer System-PHR	May	Receive and validate the query request	Non-Functional-Accuracy	Edge		CE - Consumer	2.1.4.2x	3.2 Pre-populating a PHR	IBM-207-03	IBM-207-03 Consumer System-PHR May Receive and validate the query request					2.3	3.5	4.3	
618	1	IBM-205-25	Consumer System-PHR	Shall	Review and validate populated PHR record	Non-Functional-Accuracy	Edge		CE - Consumer	2.1.4.3	3.2 Pre-populating a PHR							2.3	3.5	4.3	
645	1	IBM-207-25	Consumer System-PHR	Shall	Review and validate updated PHR record	Non-Functional-Accuracy	Edge		CE - Consumer	2.1.5.3	4.2 Updating a PHR							2.3	3.5	4.3	
649	1	IBM-207-29	Consumer System-PHR	May	Restrict how data fields will be annotated/modified.	Non-Functional-Accuracy	Edge		CE - Consumer	2.1.5.4x	4.2 Updating a PHR							2.3	3.5	4.3	
650	1	IBM-207-30	Consumer System-PHR	Shall	Receive modified registration and medication history, if appropriate, back from the consumer	Non-Functional-Accuracy	Edge	IBM-207-26, IBM-207-27	CE - Consumer	2.1.5.5	4.2 Updating a PHR							2.3	3.5	4.3	
395	1	CSC-CE-400	Consumer System-PHR	Shall	Only be allowed to query the NHIN interface, and be queryable over the NHIN, if it is a full member of a SNO	Non-Functional-Business Rules	Edge	CSC-SEC-230, CSC-ALL-20, CSC-ALL-30	CE - Consumer									2.3	3.6	4.3	
615	1	IBM-205-22	Consumer System-PHR	Shall	Present retrieved data from medication brokers within 5 seconds	Non-Functional-Performance	Edge		CE - Consumer	2.2.2.3x	3.2 Pre-populating a PHR						Feature - Performance	2.3	3.5	4.3	
											NOTE: All following performance requirements are stated in terms of possible peak loads; determining the baseline for peak loads should become part of the certification process.										
642	1	IBM-207-22	Consumer System-PHR	Shall	Present retrieved data from medication brokers within 5 seconds	Non-Functional-Performance	Edge		CE - Consumer	2.1.5.3x	4.2 Updating a PHR						Feature - Performance	2.3	3.5	4.3	
											NOTE: All following performance requirements are stated in terms of possible peak loads; determining the baseline for peak loads should become part of the certification process.										
658	1	IBM-207-38	Consumer System-PHR	Shall	Receive request from consumer to close PHR account	Non-Functional-Scalability	Edge		CE - Consumer	2.1.6.1	4.2 Updating a PHR							2.3	3.5	4.3	
583	1	IBM-201-03	Consumer System-PHR	Shall	Accept first time log-in identification data from consumer	Security-Authentication	Edge		CE - Consumer	2.1.1.1	1.1 Opening a PHR							2.3	3.6	4.3	
											First time access will be guided by PHR vendor selected - information entered could be demographic or a unique identifier provided by sponsoring organization (pin, etc).										
585	1	IBM-201-05	Consumer System-PHR	Shall	Prompt consumer to create a unique log-in mechanism after first time	Security-Authentication	Edge		CE - Consumer	2.1.1.1x	1.1 Opening a PHR							2.3	3.6	4.3	
398	1	CSC-CE-510	Consumer System-PHR	Shall	Authenticate the identity of the person requesting access to personal health information	Security-Authentication	Edge	CSC-SEC-50	CE - Consumer	2.1.2.1, 2.1.3.1, 2.1.4.1, 2.1.5.1, 2.2.1.1, 2.2.2.2	Consumer access to their PHR via the NHIN introduces security vulnerabilities to the network, and would be prohibited.	IBM-207-40 NGIT-083	IBM-207-40 Consumer System-PHR- PHR Registration info Shall Authenticate and verify the	NGIT-083 Consumer System-PHR Shall Authenticate consumers before accessing their personal health record.	CSC-CE-750 Consumer System-PHR Shall Accept queries for PHR data. The queries must contain authentication and authorization	ACN-03.1 Consumer System-PHR Shall Enable people to access their Personal Health Record.		2.3	3.6	4.3	
399	1	CSC-CE-520	Consumer System-PHR	Shall	Enable creation and modification of an access list of persons and entities authorized by the consumer to access their PHR account.	Security-Authentication	Edge	CSC-SEC-200, CSC-ALL-610	CE - Consumer	CE-p.5.3.3.A1, 2.1.2.2, 2.2.1.3								2.3	3.6	4.3	
591	1	IBM-203-04	Consumer System-PHR	Shall	Maintain an authorized access list to the consumer's PHR	Security-Authentication	Edge	IBM-201-03	CE - Consumer	2.1.2.2x	2.2 Designating third party access	IBM-209-04 CSC-CE-530	IBM-209-04 Consumer System-PHR Shall Maintain a list of authorized users that can directly access the consumer's PHR					2.3	3.6	4.3	
671	1	IBM-209-06	Consumer System-PHR	Shall	Authorize (or not) provider's request to access consumer's PHR	Security-Authentication	Edge	IBM-209-04	CE - Consumer	2.3.1.1x	6.1 Provider access to PHR data	NGIT-095 CSC-CE-760	NGIT-095 Consumer System-PHR Shall Authorize request for data	CSC-CE-760 Consumer System-PHR Shall Validate that data requestor is permitted by consumer access list				2.3	3.6	4.3	
1068	1	NGIT-084	Consumer System-PHR	May	Enable consumer to define who has access to data within PHR	Security-Authentication	Edge		CE - Consumer	2.1.2.2	Consumer has authorization over access to his/her data.	NGIT-163	NGIT-163 Consumer System-PHR May Enable consumer to mark only selected portions of the PHR as available to external authorized entities					2.3	3.6	4.3	
1139	1	NGIT-164	Consumer System-PHR	Shall	Enable consumer to opt in or out of having data in PHR available to authorized entities	Security-Authentication	Edge		CE - Consumer									2.3	3.6	4.3	
588	1	IBM-203-01	Consumer System-PHR	Shall	Prompt the consumer to select what third-parties will have access to their PHR	Security-Credentialing	Edge		CE - Consumer	2.2.1.3	2.2 Designating third party access This may be facilitated by use of a provider registry; contingent upon PHR vendor selected.							2.3	3.6	4.3	
589	1	IBM-203-02	Consumer System-PHR	May	Provide look-up and reconciliation service for third parties	Security-Credentialing	Edge		CE - Consumer	2.1.2.2x	2.2 Designating third party access							2.3	3.6	4.3	
590	1	IBM-203-03	Consumer System-PHR	May	Query against a provider directory provided by the marketplace	Security-Credentialing	Edge		CE - Consumer	2.1.2.2x	2.2 Designating third party access							2.3	3.6	4.3	
584	1	IBM-201-04	Consumer System-PHR--PHR Registration info	Shall	Reconcile consumer provided first time log-in information and authenticate consumer. 1) allow the consumer to proceed or 2) reject consumer	Security-Authentication	Edge		CE - Consumer	2.1.1.1x	1.1 Opening a PHR							2.3	3.6	4.3	
586	1	IBM-202-01	Consumer System-PHR--PHR Registration info	Shall	Prompt consumer for uniquely identifying information when logging in (not first time)	Security-Authentication	Edge	IBM-201-04	CE - Consumer	2.1.2.1	2.1 Logging into a PHR							2.3	3.6	4.3	
592	1	IBM-204-01	Consumer System-PHR--PHR Registration info	Shall	Prompt consumer for uniquely identifying information during log-in (not first time)	Security-Authentication	Edge	IBM-201-04	CE - Consumer	2.1.3.1	3.1 Logging into a PHR	IBM-206-01 IBM-210-01	IBM-206-01 Consumer System-PHR--PHR Registration info Shall Prompt consumer for uniquely identifying information during log-in (not first time)	IBM-210-01 Consumer System-PHR--PHR Registration info Shall Prompt consumer for uniquely identifying information during log-in (not first time)				2.3	3.6	4.3	
593	1	IBM-204-02	Consumer System-PHR--PHR Registration info	Shall	Establish consumer's identity and authorize based on information provided	Security-Authentication	Edge		CE - Consumer	2.1.3.1	3.1 Logging into a PHR	IBM-202-02 IBM-206-02 NGIT-101	IBM-202-02 Consumer System-PHR--PHR Registration info Shall Establish consumer's identity and authorize based on information provided	IBM-206-02 Consumer System-PHR--PHR Registration info Shall Establish consumer's identity and authorize based on information provided	IBM-210-02 Consumer System-PHR--PHR Registration info Shall Establish consumer's identity and authorize based on information provided	NGIT-101 Consumer System-PHR May Support direct access to registration and medication data for viewing by external user interfaces		2.3	3.6	4.3	
582	1	IBM-201-02	Consumer System-PHR--PHR Registration info	Shall	Prompt consumer for uniquely identifying information to allow for first time access to PHR	Security-Authentication	Edge		CE - Consumer	2.2.1.2	1.1 Opening a PHR							2.3	3.6	4.3	
135	1	ACN-06.1.10	Data Analysis and Secondary Use Systems	Shall	Generate a re-linking identifier for patients included in the anonymized data.	Data Content-Data Usage	Edge	N/A	Bio	3	The NHIN system must be capable of re-linking specific patient identification information with an identifier for patients included in reports that do not include sensitive health data from participating edge systems should be combined without including specific patient identification information.							2.4	2.4	4.2	
141	1	ACN-06.1.4	Data Analysis and Secondary Use Systems	Shall	Aggregate anonymized health data from participating edge systems.	Data Content-Data Usage	Core	N/A	Bio	Pre-condition	Health data not including specific patient identification information should be received from participating edge systems.	ACN-06.1.5	ACN-06.1.5 Data Analysis and Secondary Use Systems-Public Health Shall Generate aggregated					2.4	2.4	4.2	
140	1	ACN-06.1.3	Data Analysis and Secondary Use Systems	Shall	Receive anonymized health data from participating edge systems.	Data Transaction-(Push)	Core	N/A	Bio	Pre-condition	Health data not including specific patient identification information should be received from participating edge systems.							2.4	3.2	4.2	
118	1	ACN-05.1.1.1	Data Analysis and Secondary Use Systems	Shall	Make public health information available within 24 hours of creation.	Non-Functional-Performance	Core	N/A	Infrastructure	No Reference	Edge systems must make information available to public health users within 24 hours of creation.	IBM-102-11 IBM-103-11 ACN-06.1.12 NGIT-159 CSC-BIO-560	IBM-102-11 CDO Shall Send biosurveillance data within 24 hours of the event	IBM-103-11 CDO Shall Send biosurveillance data within 24 hours of the event	ACN-06.1.12 Data Analysis and Secondary Use Systems-Public Health Shall Transmit aggregated anonymized data to public health systems within 24 hours of generation.	NGIT-159 CDO Shall Transmit data to support public health biosurveillance	CSC-BIO-560 CDO May Send results (and requested meta data) to PH Agency(ies)	2.4	3.5	4.4	
568	1	IBM-107-02	Data Analysis and Secondary Use Systems-Public Health	May	Provide and support template driven composition of biosurveillance event response 'broadcast' messages to support event response	Data Content	Edge		Biosurveillance	1.2.3.2	7.1 PH Community - Event Response - Secure Broadcast Messaging							2.4	3.1	4.2	
569	1	IBM-107-03	Data Analysis and Secondary Use Systems-Public Health	Should	Allow sender to specify type and urgency of biosurveillance 'broadcast' messages to support event response	Data Content	Edge		Biosurveillance	1.2.3.3	7.1 PH Community - Event Response - Secure Broadcast Messaging							2.4	3.1	4.2	
548	1	IBM-104-06	Data Analysis and Secondary Use Systems-Public Health	Shall	Send acknowledgment to senders that integrity, authenticity and completeness of results are acceptable.	Data Content-Data Quality/Data Integrity	Edge		Biosurveillance	1.3.2.3	Different types of biosurveillance event reporters will 4.2 PH Agencies - Receive, Check, Store, Audit Log Requested Data	NGIT-079	NGIT-079 Data Analysis and Secondary Use Systems-Public Health Shall Acknowledge receipt of data.					2.4	3.1	4.2	
133	1	ACN-06.1	Data Analysis and Secondary Use Systems-Public Health	Shall	Aggregate anonymized patient health data for biosurveillance, drug and medical product safety monitoring, and use by regulators to support the review and approval of new drugs and biologics.	Data Content-Data Usage	Core	N/A	Bio	Pre-condition	The NHIN architecture should architect Patient health data used for biosurveillance should be combined without including specific patient identification information. It is necessary to generate health data reports that do not include specific patient identification information.							2.4	2.4	4.2	
136	1	ACN-06.1.11	Data Analysis and Secondary Use Systems-Public Health	Shall	Allow authorized public health users to access a patient's information using the re-linking identifier.	Data Content-Data Usage	Edge	N/A	Bio	3.1	It is necessary to generate health data reports that do not include specific patient identification information.							2.4	2.4	4.2	
139	1	ACN-06.1.2	Data Analysis and Secondary Use Systems-Public Health	Shall	Generate anonymized health data.	Data Content-Data Usage	Edge	N/A	Bio	Pre-condition	It is necessary to generate health data reports for federal public health agencies without including specific patient identification information.							2.4	2.4	4.2	
142	1	ACN-06.1.5	Data Analysis and Secondary Use Systems-Public Health	Shall	Generate aggregated anonymized data for federal public health agencies.	Data Content-Data Usage	Core	N/A	Bio	Pre-condition	It is necessary to generate health data reports for state public health agencies without including specific patient identification information.	ACN-06.1.7 ACN-06.1.6	ACN-06.1.7 Data Analysis and Secondary Use Systems-Public Health Shall Generate aggregated anonymized data for state public health agencies.	ACN-06.1.6 Data Analysis and Secondary Use Systems-Public Health Shall Generate aggregated anonymized data for state public health agencies.				2.4	2.4	4.2	
143	1	ACN-06.1.6	Data Analysis and Secondary Use Systems-Public Health	Shall	Generate aggregated anonymized data for state public health agencies.	Data Content-Data Usage	Core	N/A	Bio	Pre-condition	It is necessary to generate health data reports for local public health agencies without including specific patient identification information.	ACN-06.1.5 ACN-06.1.7	ACN-06.1.5 Data Analysis and Secondary Use Systems-Public Health Shall Generate aggregated anonymized data for local public health agencies.	ACN-06.1.7 Data Analysis and Secondary Use Systems-Public Health Shall Generate aggregated anonymized data for local public health agencies.				2.4	2.4	4.2	
144	1	ACN-06.1.7	Data Analysis and Secondary Use Systems-Public Health	Shall	Generate aggregated anonymized data for local public health agencies.	Data Content-Data Usage	Edge	N/A	Bio	Pre-condition	It is necessary to generate health data reports for local public health agencies without including specific patient identification information.	ACN-06.1.5 ACN-06.1.6	ACN-06.1.5 Data Analysis and Secondary Use Systems-Public Health Shall Generate aggregated anonymized data for local public health agencies.	ACN-06.1.6 Data Analysis and Secondary Use Systems-Public Health Shall Generate aggregated anonymized data for local public health agencies.				2.4	2.4	4.2	
145	1	ACN-06.1.8	Data Analysis and Secondary Use Systems-Public Health	Shall	Generate alerts/notifications to public health users based on public health algorithms.	Data Content-Data Usage	Core	N/A	Bio	No Reference	It is necessary to generate positive/negative alerts/notifications based on public health algorithms that will be created by CMC.	ACN-06.1.9	ACN-06.1.9 Data Analysis and Secondary Use Systems-Public Health Shall Generate alerts/notifications to public health users based on public health algorithms.					2.4	2.4	4.2	
146	1	ACN-06.1.9	Data Analysis and Secondary Use Systems-Public Health	Shall	Generate alerts/notifications to public health users based on public health algorithms.	Data Content-Data Usage	Edge	N/A	Bio	No Reference	It is necessary to generate positive/negative alerts/notifications based on public health algorithms that will be created by CMC.	ACN-06.1.8	ACN-06.1.8 Data Analysis and Secondary Use Systems-Public Health Shall Generate alerts/notifications to public health users based on public health algorithms.					2.4	2.4	4.2	
147	1	ACN-06.2	Data Analysis and Secondary Use Systems-Public Health	Shall	Allow public health users to access aggregated anonymized health data.	Data Content-Data Usage	Core	N/A	Bio	No Reference	Public health users should have access to combined health data that does not include specific patient identification information.							2.4	2.4	4.2	
381	1	CSC-BIO-400	Data Analysis and Secondary Use Systems-Public Health	Should	Provide measurable utility to improve surveillance	Data Content-Data Usage	Edge	BIO-010	Bio	p10 s6								2.4	2.4	4.2	
392	1	CSC-BIO-590	Data Analysis and Secondary Use Systems-Public Health	Shall	Receive, acknowledge receipt, validate format, and log Biosurveillance data	Data Content-Data Usage	Edge	CSC-ALL-800	Bio	1.3.2.1.1 1.3.2.2 1.3.2.3 1.3.2.4, p11 s3		IBM-104-05 NGIT-078 IBM-104-03	IBM-104-05 Data Analysis and Secondary Use Systems-Public Health Shall Verify integrity of the transmission contents from the identified source including appropriate anonymized	NGIT-077 Data Analysis and Secondary Use Systems-Public Health Shall Receive unsolicited transmission of biosurveillance data	NGIT-078 Data Analysis and Secondary Use Systems-Public Health Shall Receive unsolicited transmission of biosurveillance data	IBM-104-03 Data Analysis and Secondary Use Systems-Public Health Shall Receive randomized data links from all authorized data sources		2.4	2.4	4.2	
566	1	IBM-106-11	Data Analysis and Secondary Use Systems-Public Health	Shall	Perform additional data mining to monitor a previously identified event	Data Content-Data Usage	Edge		Biosurveillance	1.2.2.11	6.6 PH Community - Monitor Detected Event - Data Mining							2.4	2.4	4.2	
549	1	IBM-104-07	Data Analysis and Secondary Use Systems-Public Health	Should	Store lab test results received from all participating Care Delivery Organizations	Data Storage-Persistent Data Storage	Edge		Biosurveillance	1.3.2.3X	4.2 PH Agencies - Receive, Check, Store, Audit Log Requested Data							2.4	2.4	4.2	
552	1	IBM-105-01	Data Analysis and Secondary Use Systems-Public Health	May	Be able to request re-identification of specified patient data to support event detection	Data Transaction-(Pull)	Edge		B												

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Closely resembles...	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.						
284	1	ACN-07.30	External User interfaces	Shall	Ensure the data sharing agreement is signed before sharing data with the NHIN.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	N/A										1.3	3.6	4.4				
756	1	IBM-302-01	External User interfaces	Shall	Provide capability for consumer or proxy to provide list of providers of care to serve as consumer's authorization for data access and to automatically send results and notifications	Security-Authorization	Edge		EHR - Lab	3.1.2.1	1.2 Patient Authorizes Access List serve as consumer's authorization for data access and to automatically send results and notifications ONC Guidance: The functionality described regarding providers of care is to 1) send providers of care either the content of (new) test results or notification of (new) test results or 2) help determine appropriate access by clinicians as a patient's provider of care. One source of determining the providers of care for a patient is from the patient. How this list gets created and used for result delivery, notification and access use is implementation defined. One of the goals of the breakthrough is that historical lab results are made available to the ordering clinician and other authorized clinicians. Functionality must exist that ensure that only the ordering clinician and providers of care receive relevant test results given access and sensitivity restrictions. The harmonized use case does not prescribe the stakeholder that provides this functionality. EXCEPTION: May be difficult to accomplish patient specification of consent, other than opt-in or opt-out, w/														1.3	3.6	4.1
757	1	IBM-302-02	External User interfaces	Shall	Provide capability for consumer or proxy to indicate that test results should not be made available to providers of care other than the ordering clinician	Security-Authorization	Edge		EHR - Lab	3.1.2.1a	1.2 Patient Authorizes Access ONC Guidance: The harmonized use case discusses multiple factors (sensitivity of data, clinician access designation, patient privacy restrictions and policy or regulations) that should be considered when designing access restrictions. The specifics of which data are managed in which way are still active areas of national conversation. In general, the architectural prototypes need to define and demonstrate the several capabilities involved. EXCEPTION: May be difficult to accomplish patient specification of consent, other than opt-in or opt-out, within the time frame of the prototype														1.3	3.6	4.1
6	1	ACN-01.13	Health Information Intermediaries	Shall	Allow the pharmaceutical, medical products, and regulatory agencies to improve the processes for drug and device development, submission approval, and safety monitoring.	Data Content-Data Quality/Data Integrity	Edge	N/A	Infrastructure	No Reference	N/A											1.5	3.1	4.4			
1113	1	NGIT-136	Health Information Intermediaries	Shall	Verify integrity of unsolicited result transactions	Data Content-Data Quality/Data Integrity	Edge	NGIT-135	EHR - Lab	3.4.1.2	Acting as a repository of unsolicited updates of patient data, the system must validate the integrity, authenticity, completeness, and appropriateness of data received according to HITSP specified standards and implementation guidelines.											1.5	3.1	4.1			
154	1	ACN-06.3	Health Information Intermediaries	Shall	Aggregate anonymized patient health data to support clinical research, including cohort, longitudinal, placebo population, demonstration of efficacy, pharmacoeconomic, and drug outcome comparator studies.	Data Content-Data Usage	Edge	N/A	Infrastructure	No Reference	Patient health data should be combined without including specific patient identification information to support clinical research studies using the aggregated data.											1.5	3.1	4.4			
1116	1	NGIT-139	Health Information Intermediaries	May	Collect and persist laboratory result data to support electronic exchange with stakeholders	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.4.1.4	A repository of laboratory results may be implemented as a controlled source of data. The control may be maintained at a regional level or by loose network of entities, for examples.											1.5	3.3	4.1			
1131	1	NGIT-156	Health Information Intermediaries	Shall	Electronically collect demographic and clinical data for public health reporting	Data Storage-Persistent Data Storage	Edge		Bio		Collect data as specified by PHA requirements (limited demographics, clinical, orders (labs/rads), results)											1.5	3.3	4.2			
1124	1	NGIT-149	Health Information Intermediaries	Shall	Receive and process well formed query for laboratory test results according to HITSP specified implementation instructions	Data Transaction-(Pull)	Edge		EHR - Lab	3.4.3.0	Lab result repository is potential source of lab result data											1.5	3.2	4.1			
1130	1	NGIT-155	Health Information Intermediaries	Shall	Transmit well formed result messages according to a HITSP specified implementation instruction.	Data Transaction-(Pull)	Edge		EHR - Lab	3.4.3.4	Results transmitted in response to authorized request for test results.											1.5	3.2	4.1			
1112	1	NGIT-135	Health Information Intermediaries	Shall	Receive and process well formed laboratory test results according to HITSP specified standards and implementation instructions	Data Transaction-(Push)	Edge		EHR - Lab	3.4.1.1	Applicable to an architecture implementing a result repository.											1.5	3.2	4.1			
1135	1	NGIT-160	Health Information Intermediaries	Shall	Transmit data to support public health biosurveillance	Data Transaction-(Push)	Edge		Bio		Data on patient-clinician encounters will be provided to a network communicating with public health agencies per agreement between entities. Arrangements shall Acknowledgment will confirm appropriateness or inappropriateness of transmission per validation check.											1.5	3.2	4.2			
1114	1	NGIT-137	Health Information Intermediaries	Shall	Acknowledge receipt of lab result data	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.4.1.3	Log data must include history of the receipt, storage, and destruction (where appropriate) of lab result data received from other source systems											1.5	3.2	4.1			
1115	1	NGIT-138	Health Information Intermediaries	Shall	Maintain a log of interactions with external data systems	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.4.1.6	Log data must include history of the receipt, storage, and destruction (where appropriate) of lab result data received from other source systems											1.5	3.2	4.1			
3	1	ACN-01.10	Health Information Intermediaries	Shall	Allow payers, providers, patients and other stakeholders the ability to share information to support medical research.	Data Transaction-Data Access and Update	Edge	N/A	Infrastructure	No Reference	N/A											1.5	3.2	4.4			
4	1	ACN-01.11	Health Information Intermediaries	Shall	Allow payers, providers, patients and other stakeholders the ability to share information to support drug safety and post-marketing drug surveillance.	Data Transaction-Data Access and Update	Edge	N/A	Infrastructure	No Reference	N/A											1.5	3.2	4.4			
5	1	ACN-01.12	Health Information Intermediaries	Shall	Allow payers, providers, patients, and other stakeholders to improve the processes needed for clinical trial recruitment and execution.	Data Transaction-Data Access and Update	Edge	N/A	Infrastructure	No Reference	N/A											1.5	3.2	4.4			
7	1	ACN-01.14	Health Information Intermediaries	Shall	Allow payers, providers, patients and other stakeholders the ability to share information to support public health surveillance.	Data Transaction-Data Access and Update	Edge	N/A	Infrastructure	Biosurveillance	N/A											1.5	3.2	4.4			
8	1	ACN-01.15	Health Information Intermediaries	Shall	Allow payers, providers, patients and other stakeholders the ability to share information to support care management and other quality initiatives.	Data Transaction-Data Access and Update	Edge	N/A	Infrastructure	No Reference	N/A											1.5	3.2	4.4			
16	1	ACN-01.9	Health Information Intermediaries	Shall	Allow payers, providers, patients and other stakeholders the ability to share information to support patient care.	Data Transaction-Data Access and Update	Edge	N/A	Infrastructure	No Reference	N/A											1.5	3.2	4.4			
462	1	CSC-NFR-20	Health Information Intermediaries	Shall	Support patient safety through transmitting clinical data fully and accurately, by logging and making displayable all intermediate data transformations	Non-Functional-Accuracy	Edge		Infrastructure													1.5	3.5	4.4			
469	1	CSC-NFR-30	Health Information Intermediaries	Should	Comply with "service level agreements" based on end-user / health market specified quality-of-service agreements	Non-Functional-Performance	Edge		Infrastructure													1.5	3.5	4.4			
471	1	CSC-NFR-50	Health Information Intermediaries	Should	Support modular addition of processing and storage resources to cater to additional users as the usage of the NHIN increases	Non-Functional-Scalability	Edge		Infrastructure													1.5	3.5	4.4			
1129	1	NGIT-154	Health Information Intermediaries	May	Authorize query request for lab result data	Security-Authorization	Edge		EHR - Lab	3.4.3.3	Additional validation of request may be performed (specifying requisition or order number, dates of activity).											1.5	3.6	4.1			
105	1	ACN-04.15	Message Handling	Shall	Communicate patient health data to other edge systems in the NHIN standard message format.	Data Content-Data Usage	Edge	N/A	Infrastructure	No Reference	Communication between edge systems will utilize a standard message format.												3.1	4.4			
38	1	ACN-02.3.12	Message Handling	Shall	Send the requested patient data to the provider at the requesting edge system.	Data Transaction-(Push)	Edge	N/A	CE, EHR	3.4.3	The edge system containing the requested information must send the data back to the requestor.												3.2	4.4			
49	1	ACN-02.3.9	Message Handling	Shall	Wait a specified configurable time for a request to be returned.	Data Transaction-Data Access and Update	Edge	N/A	Infrastructure	No Reference	The length of time a requesting system should wait to receive a response needs to be configured.												3.2	4.4			
571	1	IBM-107-05	Message Handling	Should	Determine entities to receive biosurveillance event response "broadcast" messages based on authorization by sender and subscription by receiver to support event response	Data Transaction-Data Routing	Core		Biosurveillance	1.2.3.5	7.1 PH Community - Event Response - Secure Broadcast Messaging												3.2	4.2			
572	1	IBM-107-06	Message Handling	Should	Determine entities to receive biosurveillance event response "broadcast" message based on one or more business rules (e.g. location of outbreak, severity of event, etc) to support event response	Data Transaction-Data Routing	Core		Biosurveillance	1.2.3.6	7.1 PH Community - Event Response - Secure Broadcast Messaging												3.2	4.2			
573	1	IBM-107-07	Message Handling	May	Send biosurveillance event response "broadcast" messages according to authorized recipient's specified mode (secure email, with annotation, FHIR transaction system)	Data Transaction-Data Routing	Core		Biosurveillance	1.2.3.7	7.1 PH Community - Event Response - Secure Broadcast Messaging												3.2	4.2			
39	1	ACN-02.3.13	Message Handling	Shall	Aggregate request results into a consolidated message.	Data Transformation-Data Rendering	Edge	N/A	CE, EHR	No Reference	The edge system containing the requested information must aggregate the data prior to sending it.												3.3	4.4			
40	1	ACN-02.3.14	Message Handling	Shall	Format the received data in a way which is understandable to the end user	Data Transformation-Data Rendering	Edge	N/A	CE, EHR	No Reference	The receiving system must format the data so that it is usable and meaningful, before displaying it to the end user.												3.3	4.4			
36	1	ACN-02.3.10	Message Handling	Shall	Notify requesting edge systems that identified edge systems contain the requested data.	Information Location-Record Location	Core	N/A	Infrastructure	No Reference	Once the NHIN has identified which edge systems contain data for the patient in question, the NHIN must pass these locations back to the requesting system.												3.4	4.4			
119	1	ACN-05.1.1.2	Message Handling	Shall	Respond to message requests within an agreed upon time.	Non-Functional-Performance	Core	N/A	Infrastructure	No Reference	The NHIN and Edge system should set up an agreed response time prior to data submission.	ACN-05.1.1.3	ACN-05.1.1.3 Message handling Shall Respond to message requests within an agreed upon time. (Edge)										3.5	4.4			
120	1	ACN-05.1.1.3	Message Handling	Shall	Respond to message requests within an agreed upon time.	Non-Functional-Performance	Edge	N/A	Infrastructure	No Reference	The NHIN and Edge system should set up an agreed response time prior to data submission.	ACN-05.1.1.2	ACN-05.1.1.2 Message handling Shall Respond to message requests within an agreed upon time. (Core)										3.5	4.4			
574	1	IBM-107-08	Message Handling	Shall	Send biosurveillance event response "broadcast" messages in real time	Non-Functional-Performance	Core		Biosurveillance	1.2.3.8	7.1 PH Community - Event Response - Secure Broadcast Messaging												3.5	4.2			
524	1	IBM-102-12	Message Handling	Shall	Transmit data to public health agencies in secure manner	Security-Confidentiality	Core		Biosurveillance	1.1.5.1X	2.4 Individual CDOs - Route, Transmit, Audit Log Requested Data												3.6	4.2			
539	1	IBM-103-12	Message Handling	Shall	Transmit data to public health agencies in secure manner	Security-Confidentiality	Core		Biosurveillance	1.2.5.1X	3.4 Integrated CDOs - Route, Transmit, Audit Log Requested Data												3.6	4.2			
575	1	IBM-107-09	Message Handling	Shall	Transmit the biosurveillance event response "broadcast" messages conforming to approved privacy, security and messaging standards as specified by HITSP or as determined by the marketplace in the Support transport level security	Security-Confidentiality	Core		Biosurveillance	1.2.3.9	7.1 PH Community - Event Response - Secure Broadcast Messaging												3.6	4.2			
1032	1	NGIT-006	Message Handling	Shall	Support transport level security	Security-Confidentiality	Core	N/A	Infrastructure	No Reference	SSL, for example												3.6	4.4			
18	1	ACN-02.1	MPI	Shall	Contain an index of unique patients participating in the NHIN.	Information Location-Identity/Information Correlation	Core	N/A	Infrastructure	No Reference	N/A											2.2	3.4	4.4			
19	1	ACN-02.1.1	MPI	Shall	Uniquely identify a person by some or all of the following attributes: - Last Name - Middle Name - First Name - Date of Birth - Gender - Place of Birth - Social Security Number - Mother's Maiden Name - Address	Information Location-Identity/Information Correlation	Core	N/A	Infrastructure	No Reference	These demographics elements are generally sufficient to uniquely identify a person.											2.2	3.4	4.4			

ID-ONC	#	ID	Entities	Entity - Property Relation	Entity - Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Closely resembles...	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.
20	1	ACN-02.1.2	MPI	Shall	Receive unique patient information from participating edge systems.	Information Location-Identify/Information Correlation	Core	N/A	Infrastructure	No Reference	Edge systems must be able to send demographic information to the NHIN for use in the MPI.								2.2	3.4	4.4
21	1	ACN-02.1.2.1	MPI	Shall	Add new patient identifier information to the patient index.	Information Location-Identify/Information Correlation	Core	N/A	Infrastructure	No Reference	When information for a new patient is received, it must be added to the index.								2.2	3.4	4.4
22	1	ACN-02.1.2.2	MPI	Shall	Update patient identifier information in the patient index.	Information Location-Identify/Information Correlation	Core	N/A	Infrastructure	No Reference	When updated information for a preexisting patient is received, the index record should be updated.								2.2	3.4	4.4
23	1	ACN-02.1.2.3	MPI	Shall	Add patient consent information to the patient index for patients willing to share their data.	Information Location-Identify/Information Correlation	Core	N/A	Infrastructure	No Reference	The system must store a patient's consent decision to allow data sharing.								2.2	3.4	4.4
24	1	ACN-02.1.2.4	MPI	Shall	Add patient dissent information to the patient index for patients not willing to share their data.	Information Location-Identify/Information Correlation	Core	N/A	CE - Consumer	No Reference	The system must track a patient's decision not to participate in data sharing.								2.2	3.4	4.3
25	1	ACN-02.1.2.5	MPI	Shall	Receive patient information when sent from edge systems.	Information Location-Identify/Information Correlation	Core	N/A	Infrastructure	No Reference	The NHIN must accept data sent by trusted edge systems.								2.2	3.4	4.4
26	1	ACN-02.1.2.6	MPI	Shall	Validate patient information when sent from edge systems.	Information Location-Identify/Information Correlation	Core	N/A	Infrastructure	No Reference	The NHIN must validate transactions before updating any systems.								2.2	3.4	4.4
27	1	ACN-02.1.3	MPI	Shall	Link patient identifiers for a patient that exists in multiple edge systems.	Information Location-Identify/Information Correlation	Core	N/A	Infrastructure	No Reference	For patients found in multiple edge systems, the system must recognize that separate patients are in fact the same person.								2.2	3.4	4.4
28	1	ACN-02.1.4	MPI	Shall	Unlink patient identifiers for patients incorrectly linked to other patients.	Information Location-Identify/Information Correlation	Core	N/A	Infrastructure	No Reference	For patients incorrectly linked, the system must allow an administrator to unlink patient data, creating one or more new patient identities.								2.2	3.4	4.4
113	1	ACN-04.8	MPI	Shall	Uniquely identify a person by some or all of the following attributes: - Last Name - Middle Name - First Name - Date of Birth - Gender - Place of Birth - Social Security Number - Mother's Maiden Name - Address	Information Location-Identify/Information Correlation	Edge	N/A	Infrastructure	No Reference	Communications with the NHIN must include enough demographic data to uniquely identify the patient.								2.2	3.4	4.4
114	1	ACN-04.9	MPI	Shall	Uniquely identify a provider by some or all of the following attributes: - Provider ID - Name - Role - Provider Organization - DEA # - License # - State Licensed In	Information Location-Identify/Information Correlation	Edge	N/A	Infrastructure	No Reference	Communications with the NHIN must include enough data to uniquely identify the provider.								2.2	3.4	4.4
445	1	CSC-EHR-460	MPI	May	Be used locally within a CDO or SNO to allow a clinician to browse and select from among candidate patient matches.	Information Location-Identify/Information Correlation	Edge	CSC-ALL-250	EHR - Lab	3.2.3.3a									2.2	3.4	4.1
831	1	IBM-307-11	MPI	Shall	Provide method for clinician and locator system to agree on patient identity through patient trait matching, shared MPI or patient identifier matching (as determined by the marketplace)	Information Location-Identify/Information Correlation	Core		EHR - Lab	3.2.3.2	2.1 Clinician Requests Historical Results Location	IBM-307-12	IBM-307-12 MPI Shall Provide method for clinician and locator system to agree on patient identity through patient trait matching, shared MPI or patient identifier matching (as determined by the marketplace)						2.2	3.4	4.1
1033	1	NGIT-007	MPI	Shall	Maintain index of patients registered at participating entities	Information Location-Identify/Information Correlation	Core		Infrastructure		Index will define all entities (locations) that have data associated to patients/person.								2.2	3.4	4.4
1034	1	NGIT-008	MPI	Shall	Determine unambiguous match of patient identities supported by entities associated with the network	Information Location-Identify/Information Correlation	Core		Infrastructure		matching occurs during upload or at time of query	NGIT-134	NGIT-134 MPI Shall Support unambiguous matching and subsequent correlation of patient identities for the purpose of locating records						2.2	3.4	4.4
1035	1	NGIT-009	MPI	Shall	Return patient identifiers previously uploaded by data sources for a uniquely identified patient	Information Location-Identify/Information Correlation	Core	NGIT-008	Infrastructure		The patient will be identified by a single identifier or a collection of traits								2.2	3.4	4.4
317	1	CSC-ALL-250	MPI	May	Allow for clinician interaction to ascertain the identities of patients within the SNO	Non-Functional-Robustness	Edge		Infrastructure		While clinician interaction is not allowed to disambiguate patient identities between SNOs, individual MPIs within a SNO may allow this interaction.								2.2	3.5	4.4
126	1	ACN-05.1.3	NHIN Administration	Shall	Establish Operational Agreements with all certified members.	Data Content-Data Usage	Core	N/A	Infrastructure	No Reference	It is necessary for the NHIN and edge systems to establish operational agreements with a certified members prior to data submission.								1.2	3.1	4.4
98	1	ACN-04	NHIN Administration	Shall	Perform core functions needed to share data in the NHIN.	Data Transaction-Data Access and Update	Edge	N/A	Infrastructure	No Reference	It is necessary to have providers and patients registered to use the system.								1.2	3.2	4.4
116	1	ACN-05.1	NHIN Administration	Shall	Abide by Service Level Agreements (SLA).	Non-Functional-Performance	Core	N/A	Infrastructure	No Reference	It is necessary for the NHIN and edge systems to have service level agreements set up prior to data submission.	ACN-05.1.1 NHIN Administration Shall Abide by Service Level Agreements (SLA) for performance.							1.2	3.5	4.4
121	1	ACN-05.1.1.4	NHIN Administration	Shall	Respond to non-messaging requests for information within an agreed upon time.	Non-Functional-Performance	Core	N/A	Infrastructure	No Reference	It is necessary for the NHIN and Edge systems to adhere to agreed response time for requests. The NHIN and Edge system should set up an agreed upon time.								1.2	3.5	4.4
122	1	ACN-05.1.1.5	NHIN Administration	Shall	Respond to non-messaging requests for information within an agreed upon time.	Non-Functional-Performance	Edge	N/A	Infrastructure	No Reference	It is necessary for the NHIN and Edge systems to adhere to agreed response time for requests. The NHIN and Edge system should set up an agreed upon time.								1.2	3.5	4.4
123	1	ACN-05.1.1.6	NHIN Administration	Shall	Notify the NHIN of any relevant changes to their system.	Non-Functional-Robustness	Edge	N/A	Infrastructure	Policy	The edge system should notify the NHIN when changes occur, including, but not limited to, downtime, upgrades, maintenance, and license changes.								1.2	3.5	4.4
156	1	ACN-07.1	NHIN Administration	Shall	Provide consent management.	Security-Authorization	Core	N/A	Infrastructure	No Reference	The NHIN system must be flexible and capable of handling multiple consent states (implied consent/dissent, expressed consent/dissent, undetermined), where applicable.								1.2	3.6	4.4
164	1	ACN-07.10.3	NHIN Administration	Shall	Allow authorized users to override view restrictions to specific data associated with an individual's clinical treatment.	Security-Authorization	Edge	N/A	CE, EHR	No Reference	Users must have the ability to override viewing restrictions where there is a legitimate need.								1.2	3.6	4.4
245	1	ACN-07.2	NHIN Administration	Shall	Provide consent management.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	Edge systems must be flexible and capable of handling multiple consent states (implied consent/dissent, expressed consent/dissent, undetermined), where applicable.								1.2	3.6	4.4
249	1	ACN-07.2.4	NHIN Administration	Shall	Permit consent override by authorized users.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	It must be possible to override the consent control where there is a legitimate need to do so and the override action must be made obvious to the user, where applicable.								1.2	3.6	4.4
30	1	ACN-02.2.1	NHIN Administration-Audit Trail	Shall	Log requests for patient data.	Data Transaction-Audit & Logging	Core	N/A	CE, EHR	3.2.3	All successful/unsuccessful requests for patient data should be logged and include the requestor name and reason.	ACN-02.2.2	ACN-02.2.2 NHIN Administration-Audit Trail Shall Save copies of requests for patient data.						1.2	3.2	4.4
32	1	ACN-02.2.3	NHIN Administration-Audit Trail	Shall	Notify the requesting edge system that it received the request for patient data.	Data Transaction-Audit & Logging	Core	N/A	CE, EHR	3.2.3	The NHIN must acknowledge receipt of the data request.								1.2	3.2	4.4
33	1	ACN-02.2.4	NHIN Administration-Audit Trail	Shall	Log notifications.	Data Transaction-Audit & Logging	Core	N/A	CE, EHR	3.2.3	These notifications should be logged, to allow for appropriate auditing.								1.2	3.2	4.4
37	1	ACN-02.3.11	NHIN Administration-Audit Trail	Shall	Log notifications sent to the requesting systems about requests being processed.	Data Transaction-Audit & Logging	Core	N/A	CE, EHR	3.4	The NHIN needs to keep the requesting system informed on the status of the request.								1.2	3.2	4.4
42	1	ACN-02.3.2	NHIN Administration-Audit Trail	Shall	Log the notification sent to the user.	Data Transaction-Audit & Logging	Core	N/A	CE, EHR	3.2.3	It is necessary to save successful/unsuccessful notifications sent to the user for auditing purposes.								1.2	3.2	4.4
44	1	ACN-02.3.4	NHIN Administration-Audit Trail	Shall	Log requests sent to identified systems.	Data Transaction-Audit & Logging	Core	N/A	CE, EHR	3.2.3	It is necessary to save all requests sent from the NHIN for audit purposes.								1.2	3.2	4.4
45	1	ACN-02.3.5	NHIN Administration-Audit Trail	Shall	Receive confirmation from an edge system that it received the request for patient data.	Data Transaction-Audit & Logging	Core	N/A	CE, EHR	3.2.3	All communication messages must be acknowledged. The notification is important so no messages are lost during transmission.								1.2	3.2	4.4
46	1	ACN-02.3.6	NHIN Administration-Audit Trail	Shall	Log confirmations from edge systems.	Data Transaction-Audit & Logging	Core	N/A	CE, EHR	3.2.3	All successful/unsuccessful confirmations from edge systems should be logged for auditing purposes.								1.2	3.2	4.4
48	1	ACN-02.3.8	NHIN Administration-Audit Trail	Shall	Log timeout notifications sent to the user.	Data Transaction-Audit & Logging	Core	N/A	CE, EHR	No Reference	If a user is notified that data is present, but not available, these notifications should be logged.								1.2	3.2	4.4
50	1	ACN-02.4	NHIN Administration-Audit Trail	Shall	Generate administrative reports.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	The NHIN system should generate administrative reports in a readable format.								1.2	3.2	4.4
51	1	ACN-02.4.1	NHIN Administration-Audit Trail	Shall	Generate system monitoring reports.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	The NHIN system should generate system monitoring reports to detail who has accessed the system and when the access occurred.		ACN-02.4.2 Admin-Audit Trail Shall Generate reports monitoring logging activity.						1.2	3.2	4.4
53	1	ACN-02.4.3	NHIN Administration-Audit Trail	Shall	Generate alerts/notifications for activity outside the normal range of monitoring levels.	Data Transaction-Audit & Logging	Core	N/A	Biosurveillance	No Reference	The NHIN system should have a mechanism for alerting the appropriate parties when the system monitoring identifies situations that are immediate.								1.2	3.2	4.2
198	1	ACN-07.16.1	NHIN Administration-Audit Trail	Shall	Log all relevant infrastructure level authentication attempts.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	User, administrator and system connecting to infrastructure resources in the NHIN environment must be logged to ensure all successful and failed activity can be traced.								1.2	3.2	4.4
199	1	ACN-07.16.10	NHIN Administration-Audit Trail	Shall	Log all configuration changes.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	Successful/Unsuccessful configuration changes are logged at the application, infrastructure and operating system level to ensure that all changes can be tracked.								1.2	3.2	4.4
200	1	ACN-07.16.11	NHIN Administration-Audit Trail	Shall	Log all modifications to consent status (for data sharing).	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	All attempts to modify consent (successful and unsuccessful) must be logged, to include but not limited to, who (user, role, system), when (date, time), application and infrastructure logs will be consolidated to a centralized log server for analysis, retention and reporting.								1.2	3.2	4.4
201	1	ACN-07.16.12	NHIN Administration-Audit Trail	Shall	Consolidate logs from NHIN systems in a central repository.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	Thresholds will determine activity outside of the baseline of normal system activity. Thresholds are set for tolerated deviation from normal system activity.							Architecturally specific	1.2	3.2	4.4
203	1	ACN-07.16.14	NHIN Administration-Audit Trail	Shall	Allow thresholds to be set to determine activities requiring further investigation.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	Reports and Alerts must be triggered when established thresholds are exceeded.								1.2	3.2	4.4
204	1	ACN-07.16.15	NHIN Administration-Audit Trail	Shall	Generate notifications based on anomalous system activity.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference									1.2	3.2	4.4
205	1	ACN-07.16.16	NHIN Administration-Audit Trail	Shall	Generate evidence to support incident management and response processes.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	In the event of an incident outbreak e.g. virus /worm attack or denial of service, evidence must be captured.								1.2	3.2	4.4
206	1	ACN-07.16.2	NHIN Administration-Audit Trail	Shall	Log all relevant system level authentication attempts.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	User, administrator and system connecting to system resources in the NHIN environment must be logged to ensure all successful and failed activity can be traced.								1.2	3.2	4.4
207	1	ACN-07.16.3	NHIN Administration-Audit Trail	Shall	Log all relevant application level authentication attempts.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	User, administrator and system connecting to application resources in the NHIN environment must be logged to ensure all successful and failed activity can be traced.								1.2	3.2	4.4
209	1	ACN-07.16.5	NHIN Administration-Audit Trail	Shall	Log all relevant system level access events.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	User, administrator and system accessing system resources in the NHIN environment must be logged.	ACN-07.16.4	ACN-07.16.4 NHIN Administration-Audit Trail Shall Log all relevant infrastructure level access events.						1.2	3.2	4.4
210	1	ACN-07.16.6	NHIN Administration-Audit Trail	Shall	Log all relevant application level access events.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	User, administrator and system accessing application resources in the NHIN environment must be logged.								1.2	3.2	4.4
211	1	ACN-07.16.7	NHIN Administration-Audit Trail	Shall	Log all relevant user management events.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	User, administrator and system user management activities in the NHIN environment must be logged.								1.2	3.2	4.4
212	1	ACN-07.16.8	NHIN Administration-Audit Trail	Shall	Log details necessary to support investigations and corrective action.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	Data details required to support investigations, trouble shooting and remedial action include, but are not limited to, who (user, role), what (process, tool), when (date, time), application, infrastructure and operating system logs will be retained to ensure there are audit trails for future use. Retention timeline would be defined by user.								1.2	3.2	4.4
213	1	ACN-07.16.9	NHIN Administration-Audit Trail	Shall	Retain logs for a period of time as defined in the retention standard.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	User, administrator and system connecting to infrastructure resources in the Edge System environment must be logged to ensure all successful and failed activity can be traced.								1.2	3.2	4.4
215	1	ACN-07.17.1	NHIN Administration-Audit Trail	Shall	Log all relevant infrastructure level authentication attempts.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference									1.2	3.2	4.4

SENSITIVE: UNAUTHORIZED DISTRIBUTION PROHIBITED
Compressed Inventory of Functional Requirements

ID-ONC	#	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Closely resembles...	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.				
217	1	ACN-07.17.11	NHIN Administration-Audit Trail	Shall	Log all configuration changes.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	Successful/Unsuccessful configuration changes are logged at the application, infrastructure and operating system level to ensure that all changes are captured.										1.2	3.2	4.4		
218	1	ACN-07.17.12	NHIN Administration-Audit Trail	Shall	Log all modifications to consent status (for data sharing).	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	All attempts to modify consent (successful and unsuccessful) will be logged.											1.2	3.2	4.4	
224	1	ACN-07.17.2	NHIN Administration-Audit Trail	Shall	Log all relevant system level authentication attempts.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	User, administrator and system connecting to system resources in the Edge System environment must be logged to ensure all successful and failed activity can be traced.											1.2	3.2	4.4	
225	1	ACN-07.17.3	NHIN Administration-Audit Trail	Shall	Log all relevant application level authentication attempts.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	User, administrator and system connecting to application resources in the Edge System environment must be logged to ensure all successful and failed activity can be traced.											1.2	3.2	4.4	
227	1	ACN-07.17.5	NHIN Administration-Audit Trail	Shall	Log all relevant system level access events.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	User, administrator and system accessing system resources in the Edge System environment.	ACN-07.17.4	ACN-07.17.4 NHIN Administration-Audit Trail Shall Log all relevant infrastructure level access events.									1.2	3.2	4.4	
228	1	ACN-07.17.6	NHIN Administration-Audit Trail	Shall	Log all relevant application level access events.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	User, administrator and system accessing application resources in the Edge System environment, including access overrides.											1.2	3.2	4.4	
229	1	ACN-07.17.7	NHIN Administration-Audit Trail	Shall	Log all modifications to legitimate need access events.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	A legitimate need is defined as being involved in medical treatment for the individual. All creations, modifications and terminations of these relationships must be logged.											1.2	3.2	4.4	
230	1	ACN-07.17.8	NHIN Administration-Audit Trail	Shall	Log all relevant user management events.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	User, administrator and system user management activities in the Edge System environment must be logged.											1.2	3.2	4.4	
231	1	ACN-07.17.9	NHIN Administration-Audit Trail	Shall	Log details necessary to support investigations and corrective action.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	Data details required to support investigations, trouble shooting and remedial action include, but are not limited to who (user, role), what (access type), when (date) and origin/destination.											1.2	3.2	4.4	
463	1	CSC-NFR-210	NHIN Administration-Audit Trail	Shall	Provide easy to use interface to message history logs and support rebuilding of patient medical records at specific points in time	Data Transaction-Audit & Logging	Edge		Infrastructure													Feature	1.2	3.2	4.4
464	1	CSC-NFR-220	NHIN Administration-Audit Trail	Shall	Comply with legal and regulatory requirements for retention of clinical data.	Data Transaction-Audit & Logging	Edge		Infrastructure													1.2	3.2	4.4	
657	1	IBM-207-37	NHIN Administration-Audit Trail	Shall	Create an audit log for updated data fields	Data Transaction-Audit & Logging	Core	IBM-207-30	Infrastructure	2.1.5.x	4.2 Updating a PHR											1.2	3.2	4.4	
716	1	IBM-211-09	NHIN Administration-Audit Trail	Shall	Log interaction	Data Transaction-Audit & Logging	Core		Infrastructure	2.2.4.5	7.2 Closing a PHR	IBM-205-24 IBM-207-24 IBM-209-41	IBM-205-24...Admin-Audit Trail Shall Create an audit log for each entity that sends data to the PHR	IBM-207-24 NHIN Administration-Audit Trail Shall Create an audit log for each entity that sends data to the PHR	IBM-209-41...Admin-Audit Trail Shall Create an audit log								1.2	3.2	4.4
1065	1	NGIT-080	NHIN Administration-Audit Trail	May	Maintain log of transactions between data suppliers and receivers	Data Transaction-Audit & Logging	Core		Bio													1.2	3.2	4.2	
35	1	ACN-02.3.1	NHIN Administration-Audit Trail	Shall	Notify users when edge systems do not contain any data about the requested patient.	Information Location-Record Location	Core	N/A	CE, EHR	3.2.3	If the patient is not found, the NHIN must send a notification back to the requesting system indicating that no data is available.											1.2	3.4	4.4	
576	1	IBM-107-10	NHIN Administration-Biosurveillance Responder System (IBM)	Shall	Receive biosurveillance event response "broadcast" messages	Data Content-Data Quality/Data Integrity	Edge	IBM-107-08	Biosurveillance	1.2.3.10	7.1 PH Community - Event Response - Secure Broadcast Messaging											1.2	3.1	4.2	
570	1	IBM-107-04	NHIN Administration-Biosurveillance Responder System (IBM)	May	Allows biosurveillance responder to subscribe to receive biosurveillance event response messages as secure email and/or directly into web application to support event response	Data Transaction-(Pull)	Edge		Biosurveillance	1.2.3.4	7.1 PH Community - Event Response - Secure Broadcast Messaging											1.2	3.2	4.2	
578	1	IBM-107-12	NHIN Administration-Biosurveillance Responder System (IBM)	May	Provide capability for secure, instant text or audio messaging or video conferencing between Public Health and authorized Responder to support event response	Data Transaction-(Push)	Edge		Biosurveillance	1.2.3.12	7.2 PH Community - Event Response - Secure Interactive Messaging											1.2	3.2	4.2	
100	1	ACN-04.10	NHIN Administration-Consumer Authorization	Shall	Establish patient-provider relationships.	Information Location-Identity/Information Correlation	Edge	N/A	Infrastructure	No Reference	It is necessary to establish which provider is authorized to view which patients. This should also establish which provider is authorized to view.											1.2	3.4	4.4	
157	1	ACN-07.1.1	NHIN Administration-Consumer Authorization	Shall	Capture an individual's consent to sharing his/her data.	Security-Authorization	Core	N/A	Infrastructure	No Reference	It is necessary to capture the date when patient consent was given, and the identity of the user who updated the consent status.											1.2	3.6	4.4	
158	1	ACN-07.1.2	NHIN Administration-Consumer Authorization	Shall	Capture any change in an individual's consent to sharing his/her data.	Security-Authorization	Core	N/A	Infrastructure	No Reference	Individuals must be permitted to change their consent status at any time.											1.2	3.6	4.4	
159	1	ACN-07.1.3	NHIN Administration-Consumer Authorization	Shall	Allow only authorized access to an individual's data based on their consent status.	Security-Authorization	Core	N/A	Infrastructure	No Reference	Access to an individual's data must be conditional, subject to the individual's consent status.											1.2	3.6	4.4	
160	1	ACN-07.1.4	NHIN Administration-Consumer Authorization	Shall	Provide consent status to authorized requesting systems.	Security-Authorization	Core	N/A	Infrastructure	No Reference	Consent status must be made available to other systems requesting access to data. Access to data must be conditional, subject to the individual's consent status.											1.2	3.6	4.4	
161	1	ACN-07.10	NHIN Administration-Consumer Authorization	Shall	Implement a data restriction service.	Security-Authorization	Edge	N/A	CE, EHR	3.4.1.4 Sealed envelope	It must be possible for a user to restrict access to a specific data set related to a medical diagnosis/treatment based on his/her professional discretion, on the request of the individual, legal requirement, or other legitimate reasons.											1.2	3.6	4.4	
162	1	ACN-07.10.1	NHIN Administration-Consumer Authorization	Shall	Allow users to restrict access to specific data associated with a clinical diagnosis and/or treatment.	Security-Authorization	Edge	N/A	CE, EHR	3.4.1.4 Sealed envelope	It must be possible for a user to restrict access to a specific data set related to a medical diagnosis/treatment based on his/her professional discretion, on the request of the individual, legal requirement, or other legitimate reasons.											1.2	3.6	4.4	
163	1	ACN-07.10.2	NHIN Administration-Consumer Authorization	Shall	Indicate that certain data has been restricted from viewing.	Security-Authorization	Edge	N/A	CE, EHR	3.4.1.4 Sealed envelope	It must be obvious to users that data has been restricted from view and the information presented is not complete.											1.2	3.6	4.4	
194	1	ACN-07.15.1	NHIN Administration-Consumer Authorization	Shall	Permit individuals to select which users can view some or all of their data.	Security-Authorization	Edge	N/A	CE - Consumer	2.1.1.0, 2.1.2.0	Individuals must be able to grant access to all or portions of their data to specific Edge System users.	ACN-07.15.2	ACN-07.15.2 NHIN Administration-Consumer Authorization Shall Permit individuals to select which users are									1.2	3.6	4.3	
196	1	ACN-07.15.3	NHIN Administration-Consumer Authorization	Shall	Permit view restriction override by authorized users.	Security-Authorization	Edge	N/A	CE - Consumer	No Reference	It must be possible to override the view restriction control where there is a legitimate need to do so and the user is authorized to use the override functionality.											1.2	3.6	4.3	
246	1	ACN-07.2.1	NHIN Administration-Consumer Authorization	Shall	Capture an individual's consent to sharing his/her data.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	It is necessary to capture the date when patient consent was given, and the identity of the user who updated the consent status, where applicable.											1.2	3.6	4.4	
247	1	ACN-07.2.2	NHIN Administration-Consumer Authorization	Shall	Capture any change in an individual's consent to sharing his/her data.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	Individuals must be permitted to change their consent status at any time, where applicable.											1.2	3.6	4.4	
248	1	ACN-07.2.3	NHIN Administration-Consumer Authorization	Shall	Allow only authorized access to an individual's data based on their consent status.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	As an individual's consent status changes, so do the access control around their data, where applicable.											1.2	3.6	4.4	
250	1	ACN-07.2.5	NHIN Administration-Consumer Authorization	Shall	Display the consent status.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	The consent status must be displayed to all users accessing information associated with an individual.											1.2	3.6	4.4	
758	1	IBM-302-03	NHIN Administration-Consumer Authorization	Shall	Store patient permissions for accessing data	Security-Authorization	Core	IBM-302-01	EHR - Lab	3.1.2.1x	1.2 Patient Authorizes Access											1.2	3.6	4.1	
887	1	IBM-308-11	NHIN Administration-Data Stager (IBM)	Shall	Adhere to approved content standards as provided by HITSP when sending request for lab result data to repository	Data Content	Edge		EHR - Lab	3.6.y.2	2.2 Clinician Requests Historical Results from Data Repositories											1.2	3.1	4.1	
892	1	IBM-308-16	NHIN Administration-Data Stager (IBM)	Should	Include name of the requesting clinician; the HIPAA designated National Provider ID and name of the clinician's affiliated organization, and identifying information for the requesting marketplace as part of the data request transmission when sending request for lab result data to repository	Data Content	Edge		EHR - Lab	3.6.y.3	2.2 Clinician Requests Historical Results from Data Repositories											1.2	3.1	4.1	
912	1	IBM-310-06	NHIN Administration-Data Stager (IBM)	Should	Inform requesting clinician that the transmission is incomplete if the stager sends data before all queried data sources respond	Data Content	Edge		EHR - Lab	3.6.y.11	2.4 Data Stager Sends Historical Results											1.2	3.1	4.1	
913	1	IBM-310-07	NHIN Administration-Data Stager (IBM)	Shall	Sends the identity of the data source to the requesting clinician if the data stager receives the data from the data source on behalf of the clinician	Data Content	Edge		EHR - Lab	3.6.y.12	2.4 Data Stager Sends Historical Results											1.2	3.1	4.1	
914	1	IBM-310-08	NHIN Administration-Data Stager (IBM)	Shall	Transmit messages for failed searches to the requesting clinician if the data stager receives the data from the data source on behalf of the clinician	Data Content	Edge		EHR - Lab	3.6.y.13	2.4 Data Stager Sends Historical Results											1.2	3.1	4.1	
908	1	IBM-310-02	NHIN Administration-Data Stager (IBM)	Shall	Acknowledge receipt of lab results from data repository	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.6.y.8	2.4 Data Stager Sends Historical Results											1.2	3.1	4.1	
911	1	IBM-310-05	NHIN Administration-Data Stager (IBM)	Shall	Hold and aggregate data or error messages received from the data repository as determined by the community. If the data stager receives the data from the data source on behalf of the clinician, the data stager may: 1) hold and aggregate data from each data source and transmit to clinician when all queried data sources have responded to the request 2) hold data received until a time limit specified by the marketplace has been met, sending the remaining response as they are received 3) immediately send data as it is received from each data source of data from each queried data source.	Data Storage-Transient Data	Edge		EHR - Lab	3.6.y.10	2.4 Data Stager Sends Historical Results												1.2	3.3	4.1
886	1	IBM-308-10	NHIN Administration-Data Stager (IBM)	Shall	Transmit request for lab data repository on behalf of the clinician	Data Transaction-(Pull)	Edge	IBM-309-11	EHR - Lab	3.6.y.1	2.2 Clinician Requests Historical Results from Data Repositories											1.2	3.2	4.1	
907	1	IBM-310-01	NHIN Administration-Data Stager (IBM)	Shall	Receive requested lab results from data repository if acting on behalf of the requesting clinician	Data Transaction-(Pull)	Edge	IBM-308-10; IBM-309-11	EHR - Lab	3.6.y.7	2.4 Data Stager Sends Historical Results												1.2	3.2	4.1
910	1	IBM-310-04	NHIN Administration-Data Stager (IBM)	Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data	Data Transaction-(Pull)	Edge		EHR - Lab	3.6.y.4	2.4 Data Stager Sends Historical Results											1.2	3.2	4.1	
909	1	IBM-310-03	NHIN Administration-Data Stager (IBM)	Shall	Log interaction with data repository related to receiving results	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.6.y.9	2.4 Data Stager Sends Historical Results											1.2	3.2	4.1	
915	1	IBM-310-09	NHIN Administration-Data Stager (IBM)	Shall	Log interaction with clinician related to transmitting results	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.6.y.14	2.4 Data Stager Sends Historical Results											1.2	3.2	4.1	
1010	1	IBM-319-37	NHIN Administration-Data Stager (IBM)	Shall	Create audit entry for each transaction	Data Transaction-Audit & Logging	Core		EHR - Lab	3.6.x.1	3.7 Maintain and Access Audit Log											1.2	3.2	4.3	
1012	1	IBM-319-39	NHIN Administration-Data Stager (IBM)	Shall	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core		EHR - Lab	3.6.x.2	3.7 Maintain and Access Audit Log											1.2	3.2	4.3	
1014	1	IBM-319-41	NHIN Administration-Data Stager (IBM)	Shall	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core		EHR - Lab	3.6.x.3	3.7 Maintain and Access Audit Log											1.2	3.2	4.3	
1016	1	IBM-319-43	NHIN Administration-Data Stager (IBM)	Shall	Not allow edits to audit entries	Data Transaction-Audit & Logging	Core		EHR - Lab	3.6.x.4	3.7 Maintain and Access Audit Log											1.2	3.2	4.3	
1018	1	IBM-319-45	NHIN Administration-Data Stager (IBM)	Shall	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Core		EHR - Lab	3.6.x.6	3.7 Maintain and Access Audit Log											1.2	3.2	4.3	
1020	1	IBM-319-47	NHIN Administration-Data Stager (IBM)	Shall	Provide capability to print audit trail	Data Transaction-Audit & Logging	Core		EHR - Lab	3.6.x.6	3.7 Maintain and Access Audit Log											1.2	3.2	4.3	
1022	1	IBM-319-49	NHIN Administration-Data Stager (IBM)	Shall	Display audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Core		EHR - Lab	3.6.x.7	3.7 Maintain and Access Audit Log											1.2	3.2	4.3	
885	1	IBM-308-09	NHIN Administration-Data Stager (IBM)	Shall	Authenticate to data repository if submitting request for lab results on behalf of clinician	Security-Authentication	Edge		EHR - Lab	3.6.y.5	2.2 Clinician Requests Historical Results from Data Repositories The Data Stager is middleware that provides for transient staging of results data. The data stager is an optional entity that may be provided by a marketplace to accumulate results from multiple locations to satisfy a clinician's request. The data stager sends the results to the clinician when all locations have responded to the request or when a designated time limit is met.												1.2	3.6	4.1

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Closely resembles...	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.		
1028	1	NGIT-002	NHIN Administration-Organization Registration	Shall	Support the specification of level of participation of an organization (entity) with the NHIN	???-Configuration (NGIT)	Core		Infrastructure		A NHIN component shall describe the level of participation shall include the type of data supported by the entity.								1.2		4.4		
127	1	ACN-05.2	NHIN Administration-Organization Registration	Shall	Maintain a unique organizational identifier for each participating edge system and provider organization.	Information Location-Identity/Information Correlation	Core	N/A	Infrastructure	No Reference	Participating edge systems and provider organizations should have a unique organizational identifier in order to uniquely identify the edge system and provider organization.								1.2	3.4	4.4		
128	1	ACN-05.2.1	NHIN Administration-Organization Registration	Shall	Maintain a list of certified members.	Information Location-Identity/Information Correlation	Core	N/A	Infrastructure	No Reference	The NHIN must maintain a list of all members that have passed the certification process.								1.2	3.4	4.4		
129	1	ACN-05.2.1.1	NHIN Administration-Organization Registration	Shall	Create new organization identifiers.	Information Location-Identity/Information Correlation	Core	N/A	Infrastructure	No Reference	The NHIN must be able to add new organizations to the network.								1.2	3.4	4.4		
130	1	ACN-05.2.1.2	NHIN Administration-Organization Registration	Shall	Update organization identifiers.	Information Location-Identity/Information Correlation	Core	N/A	Infrastructure	No Reference	The NHIN must be able to update the information related to member organizations.								1.2	3.4	4.4		
131	1	ACN-05.2.1.3	NHIN Administration-Organization Registration	Shall	Inactivate organization identifiers.	Information Location-Identity/Information Correlation	Core	N/A	Infrastructure	No Reference	The NHIN must have a mechanism for inactivating member organizations.								1.2	3.4	4.4		
125	1	ACN-05.1.2.1	NHIN Administration-Organization Registration	Shall	Accept data only from certified members.	Security-Authentication	Core	N/A	Infrastructure	No Reference	Only authorized members can send and access data from the system.								1.2	3.6	4.4		
1027	1	NGIT-001	NHIN Administration-Organization Registration	Shall	Support the definition of organizations (entities) connecting to a NHIN	Security-Authentication	Core		Infrastructure										1.2	3.6	4.4		
513	1	IBM-102-01	NHIN Administration-Organization Registration	Shall	Register all public health agencies that are authorized to receive biosurveillance data from the CDOs	Security-Authorization	Edge	IBM-104-01	Biosurveillance	1.1.1.0	2.1 Individual CDOs - Register Authorized PH Agencies	IBM-103-01	IBM-103-01 NHIN Administration-Organization Registration Shall Register all public health agencies that are authorized to receive biosurveillance data from the CDOs						1.2	3.6	4.2		
1029	1	NGIT-003	NHIN Administration-System Registration	Shall	Support physical communication configuration for an organization (entity)	???-Configuration (NGIT)	Core		Infrastructure		Configuration parameters will include the harmonized methods for communicating and authenticating between systems.								1.2		4.4		
282	1	ACN-07.3.2	NHIN Administration-System Registration	Shall	Provide an appropriate Edge System registration capability before access to the NHIN is granted.	Security-Authorization	Core	N/A	Infrastructure	No Reference	A consistent, formal registration process must occur to ensure only authorized systems are permitted to interface with the NHIN and that they attest to their compliance with the established baseline of Edge System minimum security and privacy controls.								1.2	3.6	4.4		
283	1	ACN-07.3.3	NHIN Administration-System Registration	Shall	Provide an appropriate Edge System certification capability before access to the NHIN is granted.	Security-Authorization	Core	N/A	Infrastructure	No Reference	N/A								1.2	3.6	4.4		
285	1	ACN-07.4	NHIN Administration-System Registration	Shall	Register all internal systems that require access to the NHIN.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	A consistent, formal registration process must occur to ensure only authorized systems are permitted to interface with the NHIN and that they attest to their compliance with the established baseline of Edge System minimum security and privacy controls.								1.2	3.6	4.4		
932	1	IBM-313-01	NHIN Administration-User Registration	Should	Store provider preferences to automatically receive new lab result events in EHR when provider is ordering clinician	Data Transformation-Data Filtering	Core		EHR - Lab	3.x.1.1	3.1 Administrative								1.2	3.3	4.1		
933	1	IBM-313-02	NHIN Administration-User Registration	Should	Store provider preferences to automatically receive new lab result events into EHR when provider is not the ordering clinician	Data Transformation-Data Filtering	Core		EHR - Lab	3.x.1.2	3.1 Administrative								1.2	3.3	4.1		
934	1	IBM-313-03	NHIN Administration-User Registration	Should	Store provider preferences to automatically receive notification of new lab result events into EHR or Web application when provider is ordering clinician	Data Transformation-Data Filtering	Core		EHR - Lab	3.x.1.3	3.1 Administrative								1.2	3.3	4.1		
935	1	IBM-313-04	NHIN Administration-User Registration	Should	Store provider preferences to automatically receive notification of new lab result events into EHR or Web application when provider is not ordering clinician	Data Transformation-Data Filtering	Core		EHR - Lab	3.x.1.4	3.1 Administrative								1.2	3.3	4.1		
167	1	ACN-07.11.10	NHIN Administration-User Registration	Shall	Create new NHIN user roles where there is a business requirement for the new role.	Security-Authorization	Core	N/A	Infrastructure	No Reference	N/A								1.2	3.6	4.4		
280	1	ACN-07.3	NHIN Administration-User Registration	Shall	Register NHIN users and Edge Systems that require access to the NHIN.	Security-Authorization	Core	N/A	Bio	No Reference	A registration process must occur to ensure the identity and associated capabilities of NHIN system users and Edge Systems.								1.2	3.6	4.2		
281	1	ACN-07.3.1	NHIN Administration-User Registration	Shall	Provide an appropriate NHIN user registration capability before access to the NHIN is granted.	Security-Authorization	Core	N/A	Bio	No Reference	A consistent, formal registration process must occur to ensure the identity and associated authorized capabilities of NHIN system users. NHIN system users are, but not limited to, Public Health Officials, NHIN Administrators, Security Administrator and ONC Super Administrators for which capability expectations are defined below. It is necessary to ensure that an individual's role define the type of system access he/she is granted.								1.2	3.6	4.2		
898	1	IBM-309-06	NHIN Administration-User Registration	Shall	Store non-ordering clinician credentials relative to sensitivity restrictions	Security-Authorization	Edge		EHR - Lab	3.4.3.3x	2.3 Data Repository Sends Historical Results Data								1.2	3.6	4.1		
99	1	ACN-04.1	NHIN Administration-User Registration	Shall	Register patients to participate in the NHIN.	Security-Credentialing	Edge	N/A	Infrastructure	No Reference	The NHIN must track patient identity and consent.								1.2	3.6	4.4		
107	1	ACN-04.2	NHIN Administration-User Registration	Shall	Register providers to participate in the NHIN.	Security-Credentialing	Edge	N/A	CE, EHR	3.1.2	The NHIN should support a provider registry.								1.2	3.6	4.4		
108	1	ACN-04.3	NHIN Administration-User Registration	Shall	Register public health users to participate in the NHIN.	Security-Credentialing	Core	N/A	Biosurveillance	No Reference	Federal public health users must be registered to access population health data at the national level.								1.2	3.6	4.2		
109	1	ACN-04.4	NHIN Administration-User Registration	Shall	Register public health users to participate in the NHIN.	Security-Credentialing	Edge	N/A	Biosurveillance	No Reference	State and local public health users must be registered to access population health data.								1.2	3.6	4.2		
110	1	ACN-04.5	NHIN Administration-User Registration	Shall	Register system administrators to participate in the NHIN.	Security-Credentialing	Edge	N/A	Infrastructure	No Reference	There must be a system administrator role at the edge systems. This individual would have access to performance and maintenance functions.								1.2	3.6	4.4		
111	1	ACN-04.6	NHIN Administration-User Registration	Shall	Register system administrators to participate in the NHIN.	Security-Credentialing	Core	N/A	Infrastructure	No Reference	There must be a system administrator role at the NHIN level. This individual would have access to performance and maintenance functions.								1.2	3.6	4.4		
493	1	CSC-SEC-250	NHIN Administration-User Registration	Shall	Maintain the identities of its Users, according to a written and approved security policy.	Security-Credentialing	Edge		Infrastructure										1.2	3.6	4.4		
510	1	IBM-101-11	NHIN Administration-Utilization Reporting System (IBM)	Shall	Provide institution data as specified in the Biosurveillance use case. Institution data includes hospital system, main facility ID/name, physical facility address, and total number of beds in institution.	Data Content-Data Source	Edge		Biosurveillance	1.1.1.0X	1.3 Data Source - CDO Utilization Reporting System Note: Strongly recommend employing a Web portal provided by state-level Public Health Departments (e.g., NC's SMARTT system) as the only viable approach to ensure timely and standards compliant collection of utilization statistics.								1.2	3.1	4.2		
511	1	IBM-101-12	NHIN Administration-Utilization Reporting System (IBM)	Shall	Provide unit-level census data as specified in the Biosurveillance use case. Unit-level census data includes: unit name, number of patients by unit, number of beds available by unit, and emergency room triage marginal capacity as a percentage and head-count.	Data Content-Data Source	Edge		Biosurveillance	1.1.1.0X	1.3 Data Source - CDO Utilization Reporting System Note: Recommend also tracking number of staffed beds in addition to number of available beds.									1.2	3.1	4.2	
512	1	IBM-101-13	NHIN Administration-Utilization Reporting System (IBM)	Shall	Provide facility utilization data as specified in the Biosurveillance use case. Facility utilization data includes: admissions in last 24 hours at institution, discharges in last 24 hours at institution, deaths in last 24 hours at institution, date and time of report.	Data Content-Data Source	Edge		Biosurveillance	1.1.1.0X	1.3 Data Source - CDO Utilization Reporting System									1.2	3.1	4.2	
565	1	IBM-106-10	NHIN Administration-Utilization Reporting System (IBM)	Shall	Provide additional/revised resource utilization data (institution data, unit level census data and facility utilization) to monitor a previously detected event	Data Content-Data Source	Edge		Biosurveillance	1.2.2.10	6.5 PH Community - Monitor Detected Event - Additional CDO Data								1.2	3.1	4.2		
155	1	ACN-07	NHIN Overarching (ACN)	Shall	Provide appropriate security and privacy processes to protect healthcare data.	Data Content-Data Quality/Data Integrity	Core	N/A	Infrastructure	No Reference	N/A									3.1	4.4		
132	1	ACN-06	NHIN Overarching (ACN)	Shall	Generate reports and derive insights from healthcare data	Data Content-Data Usage	Core	N/A	Bio	No Reference	Data should be easily manipulated into reports for analysis. The reports should be easily consumable by users. Please note that in addition to biosurveillance, this data can support clinical research, drug safety monitoring, and other health care processes.									3.1	4.2		
197	1	ACN-07.16	NHIN Overarching (ACN)	Shall	Log system and user interactions.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	N/A									3.2	4.4		
272	1	ACN-07.24	NHIN Overarching (ACN)	Shall	Conduct regular risk assessments.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	Conduct regular risk assessments including but not limited to vulnerability scans, penetration testing, application testing, social engineering and policy compliance.									3.2	4.4		
1	1	ACN-01	NHIN Overarching (ACN)	Shall	Support at least a minimum set of functionality for participants.	Data Transaction-Data Access and Update	Edge	N/A	Infrastructure	No Reference	N/A										3.2	4.4	
17	1	ACN-02	NHIN Overarching (ACN)	Shall	Facilitate the exchange of accurate and reliable health information.	Information Location-Identity/Information Correlation	Core	N/A	Infrastructure	No Reference	The NHIN should manage communication and exchanges of accurate and reliable health information between edge systems and the NHIN.										3.4	4.4	
124	1	ACN-05.1.2	NHIN Overarching (ACN)	Shall	Ensure that data integrity is maintained.	Non-Functional-Accuracy	Core	N/A	Infrastructure	No Reference	N/A										3.5	4.4	
115	1	ACN-05	NHIN Overarching (ACN)	Shall	Enforce membership rules for edge systems.	Non-Functional-Business Rules	Core	N/A	Infrastructure	No Reference	In order to participate, edge systems must agree to an expected level of behavior.										3.5	4.4	
232	1	ACN-07.18	NHIN Overarching (ACN)	Shall	Implement security best practices at all levels in the NHIN environment.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	Implement security best practices for configuration across infrastructure, operating systems and applications including but not limited to: continuity. Only required access control lists, accounts and services are enabled; all others are disabled or deactivated.										3.5	4.4	
233	1	ACN-07.18.1	NHIN Overarching (ACN)	Shall	Ensure that only required components are enabled/activated for NHIN infrastructure.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	All user, system and application (service) accounts must require strong passwords, including but not limited to length, complexity, and lifecycle. Malware detection, prevention and remediation capabilities must exist across the NHIN environment, including but not limited to the infrastructure system. Only application functionalities required to support NHIN services should be enabled; all others should be disabled or deactivated.	ACN-07.18.2 ACN-07.18.3	ACN-07.18.2 NHIN Overarching (ACN) Shall Ensure that only required components are enabled/activated for NHIN infrastructure.	ACN-07.18.3 NHIN Overarching (ACN) Shall Ensure that only required components are enabled/activated for NHIN applications.								3.5	4.4
236	1	ACN-07.18.4	NHIN Overarching (ACN)	Shall	Enforce compliance with an established password policy.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	All user, system and application (service) accounts must require strong passwords, including but not limited to length, complexity, and lifecycle. Malware detection, prevention and remediation capabilities must exist across the NHIN environment, including but not limited to the infrastructure system. Only application functionalities required to support NHIN services should be enabled; all others should be disabled or deactivated.										3.5	4.4	
237	1	ACN-07.18.5	NHIN Overarching (ACN)	Shall	Ensure that the system is protected against the introduction of malware into the environment.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	Malware detection, prevention and remediation capabilities must exist across the NHIN environment, including but not limited to the infrastructure system. Only application functionalities required to support NHIN services should be enabled; all others should be disabled or deactivated.										3.5	4.4	
238	1	ACN-07.18.6	NHIN Overarching (ACN)	Shall	Ensure that only required application functionalities are enabled/activated.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	Only application functionalities required to support NHIN services should be enabled; all others should be disabled or deactivated.										3.5	4.4	
239	1	ACN-07.18.7	NHIN Overarching (ACN)	Shall	Limit functionality that can be accessed remotely.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	Certain privileged functions can not be executed from a remote session.										3.5	4.4	
240	1	ACN-07.18.8	NHIN Overarching (ACN)	Shall	Ensure that data is transmitted securely between system endpoints.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	Communications between systems must be protected against interception or modification with controls, including but not limited to encryption, data integrity checking and acknowledgement.										3.5	4.4	
241	1	ACN-07.18.9	NHIN Overarching (ACN)	Shall	Secure all hardware against damage and unauthorized modification.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	Dedicated enclosures should be used to restrict access to hardware to authorized users. Data center facilities must offer protections, including but not limited to, UPS, humidity, temperature, flood, fire and natural disasters.										3.5	4.4	
242	1	ACN-07.19	NHIN Overarching (ACN)	Shall	Ensure that controls are applied to prevent unauthorized access to the network.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	Only trusted components may obtain access to the network.										3.5	4.4	
243	1	ACN-07.19.1	NHIN Overarching (ACN)	Shall	Ensure that controls are applied to prevent unauthorized traffic from entering the network.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	Devices, including but not limited to firewalls, routers, and switches, are installed on the network to allow only authorized traffic.										3.5	4.4	
244	1	ACN-07.19.2	NHIN Overarching (ACN)	Shall	Segregate the network by environments, including but not limited to development, testing and production.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	N/A										3.5	4.4	
73	1	ACN-02.6	NHIN Overarching (ACN)	Shall	Process and communicate data to scale as edge systems grow over time.	Non-Functional-Scalability	Core	N/A	Infrastructure	No Reference	It is important that the NHIN support future growth, in terms of both numbers of systems and numbers of transactions.										4.4	4.4	

SENSITIVE: UNAUTHORIZED DISTRIBUTION PROHIBITED
Compressed Inventory of Functional Requirements

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.			
302	1	ACN-07.7	NHIN Overarching (ACN)	Shall	Provide a mechanism for ensuring non-repudiation.	Security-Authentication	Core	N/A	Infrastructure	No Reference	The NHIN must provide non-repudiation (e.g. electronic signatures) for output that requires verification, including but not limited to biosurveillance alerting, and prescription issuance.									3.6	4.4		
303	1	ACN-07.8	NHIN Overarching (ACN)	Shall	Provide a secure and robust system authentication mechanism.	Security-Authentication	Core	N/A	Infrastructure	No Reference	The NHIN must support multiple authentication mechanisms including but not limited to system name/password, X509 or other standard certificate and smart card.										3.6	4.4	
304	1	ACN-07.8.1	NHIN Overarching (ACN)	Shall	Authenticate all systems before connection to the NHIN is allowed.	Security-Authentication	Core	N/A	Infrastructure	No Reference	Each user should be given a unique identifier so that it is possible to attribute a system action to one specific individual.										3.6	4.4	
305	1	ACN-07.8.2	NHIN Overarching (ACN)	Shall	Enforce mutual authentication between the NHIN and any Edge System.	Security-Authentication	Core	N/A	Infrastructure	No Reference	To ensure a Trusted Environment, both the sender and receiver organization must be mutually assured of each other's identity.										3.6	4.4	
306	1	ACN-07.8.3	NHIN Overarching (ACN)	Shall	Protect system authentication credentials during transmission between Edge Systems and the NHIN.	Security-Authentication	Core	N/A	Infrastructure	No Reference	N/A										3.6	4.4	
165	1	ACN-07.11	NHIN Overarching (ACN)	Shall	Control NHIN user access through structured Role Based Access Control (RBAC).	Security-Authorization	Core	N/A	Infrastructure	No Reference	RBAC must be used to assign and manage access privileges for all NHIN users.										3.6	4.4	
166	1	ACN-07.11.1	NHIN Overarching (ACN)	Shall	Implement a RBAC model which is scalable and flexible.	Security-Authorization	Core	N/A	Infrastructure	No Reference	RBAC model must be able to support large scale user expansion and varying types of access privileges.										3.6	4.4	
296	1	ACN-07.5	NHIN Overarching (ACN)	Shall	Certify that all internal systems meet NHIN security requirements for NHIN connectivity.	Security-Authorization	Edge	N/A	Infrastructure	No Reference	Self-certification statement must be signed before connection to the NHIN is allowed.										3.6	4.4	
251	1	ACN-07.20	NHIN Overarching (ACN)	Shall	Comply with accepted security policy, privacy and management standards.	Security-Confidentiality	Core	N/A	Infrastructure	No Reference	Security management standards and best practices issued by recognized security standards organizations should be implemented.										3.6	4.4	
252	1	ACN-07.20.1	NHIN Overarching (ACN)	Shall	Ensure that system complies with data privacy standards.	Security-Confidentiality	Core	N/A	Infrastructure	No Reference	N/A										3.6	4.4	
253	1	ACN-07.20.2	NHIN Overarching (ACN)	Shall	Ensure that system complies with HIPAA legislation.	Security-Confidentiality	Core	N/A	Infrastructure	No Reference	Federal privacy and security requirements outlined in HIPAA should be implemented.										3.6	4.4	
254	1	ACN-07.20.3	NHIN Overarching (ACN)	Shall	Ensure that system complies with applicable federal, state and local legislation.	Security-Confidentiality	Core	N/A	Infrastructure	No Reference	Federal, state and local privacy, security, retention, disclosure and any other relevant requirements outlined in applicable legislation must be implemented.										3.6	4.4	
1132	1	NGIT-157	Payer Systems	May	Electronically collect demographic and clinical data for public health reporting	Data Storage-Persistent Data Storage	Edge		Bio		Collect data as specified by PHA requirements (limited demographics, clinical, orders (labs/rads), results)										3.3	4.2	
1134	1	NGIT-159	Payer Systems	May	Transmit data to support public health biosurveillance	Data Transaction-(Push)	Edge		Bio		Data on patient-clinician encounters will be provided to a network communicating with public health agencies per assessment between entities. Arrangements shall										3.2	4.2	
1125	1	NGIT-150	Payer Systems	Shall	Authenticate user requesting data	Security-Authentication	Edge														3.6	4.4	
1110	1	NGIT-131	Portal NHIN interface (NGIT)	Shall	Maintain a log of interactions with external data systems	Data Transaction-Audit & Logging	Core		EHR - Lab	3.2.4.6	Log must include history of data requests and transactions provided through external user interface.										3.2	4.1	
780	1	IBM-304-14	Repositories	Shall	Adhere to approved content standards as provided by HITSP when sending information about lab result location to record locator.	Data Content	Edge		EHR - Lab	3.4.2.2x	1.4 Data Repository Processes New Results	IBM-303-05 IBM-303-06 CSC-ALL-60	IBM-303-05 CDO-LIS Shall Adhere to approved content standards as provided by HITSP when sending lab results data to the repository.	IBM-303-06 CDO-LIS Shall Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data.	CSC-ALL-60 All Edge Systems (CSC) Shall Transmit well formed messages according to a HITSP specified implementation instruction, when communicating with the NHIN interface.					1.5	3.1	4.1	
904	1	IBM-309-12	Repositories	Shall	Conform to approved vocabulary, structure and messaging standards as provided by HITSP when transmitting lab result event data to EHRs	Data Content	Edge		EHR - Lab	3.4.3.4x	2.3 Data Repository Sends Historical Results Data										1.5	3.1	4.1
342	1	CSC-ALL-680	Repositories	Shall	Receive and validate the query request	Data Content-Data Quality/Data Integrity	Edge		Infrastructure												1.5	3.1	4.4
437	1	CSC-EHR-390	Repositories	Should	Receive, acknowledge receipt, validate formats, and store or merge lab test results submitted to them, along with any supplied allowed or expected results	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.4.1.0, 3.4.1.2, 3.4.1.3, 3.4.1.4, 3.5.1.3										1.5	3.1	4.1	
768	1	IBM-304-02	Repositories	Should	Take proper action when lab results updates are sent (e.g. error correction, completeness, etc.) from the performing lab	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.4.1.1	1.4 Data Repository Processes New Results										1.5	3.1	4.1
770	1	IBM-304-04	Repositories	Shall	Verify integrity and completeness of new lab result events message contents	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.4.1.2	1.4 Data Repository Processes New Results										1.5	3.1	4.1
771	1	IBM-304-05	Repositories	Shall	Send error message if lab authenticity is not verified	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.4.1.2x	1.4 Data Repository Processes New Results										1.5	3.1	4.1
772	1	IBM-304-06	Repositories	Shall	Send error message if content is not verified for new lab result message	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.4.1.2x	1.4 Data Repository Processes New Results										1.5	3.1	4.1
773	1	IBM-304-07	Repositories	Shall	Send acknowledgement message to sending lab for successful send of new lab result message	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.4.1.3	1.4 Data Repository Processes New Results										1.5	3.1	4.1
774	1	IBM-304-08	Repositories	Shall	Log receipt of new lab results event message from the performing lab	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.4.1.6	1.4 Data Repository Processes New Results										1.5	3.1	4.1
782	1	IBM-304-16	Repositories	Shall	Receive acknowledgement of successful transmission of new lab result event location message from locator service	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.4.1.2x	1.4 Data Repository Processes New Results										1.5	3.1	4.1
783	1	IBM-304-17	Repositories	Shall	Receive error messages from locator service if authenticity of repository or content of new lab result event location message not validated	Data Content-Data Quality/Data Integrity	Edge	IBM-305-04	EHR - Lab	3.4.1.2x	1.4 Data Repository Processes New Results										1.5	3.1	4.1
893	1	IBM-309-01	Repositories	Shall	Receive, parse and validate the lab results data query request	Data Content-Data Quality/Data Integrity	Edge	IBM-308-01; IBM-307-01	EHR - Lab	3.4.3.1	2.3 Data Repository Sends Historical Results Data										1.5	3.1	4.1
894	1	IBM-309-02	Repositories	Shall	Send acknowledgement to clinician or data stager regarding received data query request	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.4.3.1	2.3 Data Repository Sends Historical Results Data										1.5	3.1	4.1
112	1	ACN-04.7	Repositories	Shall	Store core clinical patient data.	Data Content-Data Source	Edge	N/A	Infrastructure	No Reference	Core clinical data should be stored in edge systems rather than at the NHIN level.										1.5	3.1	4.4
361	1	CSC-ALL-945	Repositories	Shall	Accept and apply various filters as part of an incoming query, for example results for a specific Lab order number.	Data Content-Data Source	Edge	CSC-ALL-930	Infrastructure												1.5	3.1	4.4
936	1	IBM-314-01	Repositories	Shall	Store multiple types of clinical data (Lab, Rx, diagnostic, procedure reports, genomic data, patient teaching, clinical progress notes, etc)	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.4.y.1	3.2 Data Storage	IBM-304-09	IBM-304-09 Repositories Shall Store lab test results in data repository and note restrictions for use (providers of care list, patient consent restrictions or sensitivity restrictions)								1.5	3.3	4.1
937	1	IBM-314-02	Repositories	Shall	Store data from multiple types of media (video, audio, still images, unstructured text, coded data)	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.4.y.2	3.2 Data Storage										1.5	3.3	4.1
938	1	IBM-314-03	Repositories	Should	Store all data using standard format and vocabulary	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.4.y.3	3.2 Data Storage										1.5	3.3	4.1
939	1	IBM-314-04	Repositories	Should	Store, maintain and have capability to retrieve minimum set of data for lifetime of patient	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.4.y.4	3.2 Data Storage										1.5	3.3	4.1
940	1	IBM-314-05	Repositories	Shall	Store, maintain and have capability to retrieve data for amount of time required by law (Federal, state, local)	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.4.y.5	3.2 Data Storage										1.5	3.3	4.1
942	1	IBM-314-07	Repositories	Should	Provide ability to configure amount of time for data storage for each data type	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.4.y.7	3.2 Data Storage	IBM-103-01	IBM-103-01 NHIN Administration-Organization Registration Shall Register all public health agencies that								1.5	3.3	4.1
337	1	CSC-ALL-600	Repositories	May	Use the identity of the querying organization and originator in determining which records it will return, based on its own policies.	Data Transaction-(Pull)	Edge		Infrastructure												1.5	3.2	4.4
339	1	CSC-ALL-650	Repositories	May	Accept queries for clinical data, from authorized providers of care	Data Transaction-(Pull)	Edge		Infrastructure		Holder of data determines access control policies										1.5	3.2	4.4
340	1	CSC-ALL-660	Repositories	Should	Return clinical data in response to authorized queries.	Data Transaction-(Pull)	Edge		Infrastructure												1.5	3.2	4.4
446	1	CSC-EHR-470	Repositories	Should	Receive, acknowledge, and validate the format of queries, control access, process queries, and filter and return results.	Data Transaction-(Pull)	Edge		EHR - Lab	3.4.3.0, 3.4.3.1, 3.4.3.3, 3.4.3.4, 3.5.2.3											1.5	3.2	4.1
902	1	IBM-309-10	Repositories	Shall	Transmit lab results requested by an ordering clinician or other authorized provider of care for an identified patient to the requesting entity (clinician or data stager)	Data Transaction-(Pull)	Edge	IBM-304-18	EHR - Lab	3.4.3.4	2.3 Data Repository Sends Historical Results Data										1.5	3.2	4.1
610	1	IBM-205-17	Repositories	Shall	Transmit data according to HITSP standards	Data Transaction-(Push)	Core		Infrastructure	2.2.2.4x	3.2 Pre-populating a PHR	IBM-207-17 IBM-207-16	IBM-207-17 Repositories Shall Transmit data according to HITSP standards	IBM-207-16 Repositories Shall Transmit data according to web-based security standards (SSL, etc.)							1.5	3.2	4.4
700	1	IBM-209-36	Repositories	Shall	Transmit data according to HITSP standards	Data Transaction-(Push)	Edge		CE - Consumer	2.3.2.2x	6.1 Provider access to PHR data	IBM-205-16 IBM-209-35	IBM-205-16 Repositories Shall Transmit data according to web-based security standards (SSL, etc.)	IBM-209-35							1.5	3.2	4.3
767	1	IBM-304-01	Repositories	Shall	Receive new lab test result event messages from the performing lab as well as information necessary for indexing	Data Transaction-(Push)	Edge	IBM-303-04; IBM-303-07; IBM-303-01	EHR - Lab	3.4.1.1	1.4 Data Repository Processes New Results										1.5	3.2	4.1
777	1	IBM-304-11	Repositories	Shall	Securely send lab result event location and related information to locator service	Data Transaction-(Push)	Edge	IBM-305-01	EHR - Lab	3.4.2.2	1.4 Data Repository Processes New Results										1.5	3.2	4.1
784	1	IBM-304-18	Repositories	Shall	Automatically transmit lab test results to EHR of ordering provider (in local or remote marketplace)	Data Transaction-(Push)	Edge	IBM-311-01	EHR - Lab	3.4.1.5	1.4 Data Repository Processes New Results	IBM-304-21	IBM-304-21 Repositories Shall Automatically transmit lab test results to EHR of ordering provider (in local or remote marketplace)								1.5	3.2	4.1
785	1	IBM-304-19	Repositories	Shall	Automatically transmit lab test results to EHR of other providers of care who are not ordering clinician (local or remote marketplace) if person/data according to sensitivity restrictions and patient consent	Data Transaction-(Push)	Edge	IBM-311-01; IBM-309-10	EHR - Lab	3.4.1.5	1.4 Data Repository Processes New Results	IBM-304-22	IBM-304-22 Repositories Shall Automatically transmit lab test results to EHR of other providers of care who								1.5	3.2	4.1
786	1	IBM-304-20	Repositories	Shall	Transmit lab test results to providers (in local or remote marketplace) in real time as received from performing lab	Data Transaction-(Push)	Edge	IBM-309-10	EHR - Lab	3.4.1.5x1	1.4 Data Repository Processes New Results										1.5	3.2	4.1
789	1	IBM-304-23	Repositories	Shall	Adhere to approved content standards as provided by HITSP when sending lab results data to clinician.	Data Transaction-(Push)	Edge		EHR - Lab	3.4.1.5x	1.4 Data Repository Processes New Results										1.5	3.2	4.1
791	1	IBM-304-25	Repositories	Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data.	Data Transaction-(Push)	Edge		EHR - Lab	3.4.1.5x	1.4 Data Repository Processes New Results										1.5	3.2	4.1
943	1	IBM-315-01	Repositories	Should	Transmit all data in standard messaging format using standard vocabulary as recommended by HITSP or as determined by the marketplace if no standards exist	Data Transaction-(Push)	Edge		EHR - Lab	3.4.y.8	3.3 Standards										1.5	3.2	4.1
944	1	IBM-315-02	Repositories	Shall	Transmit minimum data set in standard messaging format and standard vocabulary as recommended by HITSP or as determined by the marketplace if no standards exist	Data Transaction-(Push)	Edge		EHR - Lab	3.4.y.9	3.3 Standards										1.5	3.2	4.1
776	1	IBM-304-10	Repositories	Shall	Log storage of the new lab result events in the data repository	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.4.1.6	1.4 Data Repository Processes New Results										1.5	3.2	4.1
781	1	IBM-304-15	Repositories	Shall	Log interaction with locator system for lab result location message	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.4.2.3	1.4 Data Repository Processes New Results										1.5	3.2	4.1
792	1	IBM-304-26	Repositories	Shall	Log transmission of new lab test result message to provider's EHR	Data Transaction-Audit & Logging	Edge		EHR - Lab	3.4.1.5x1	1.4 Data Repository Processes New Results										1.5	3.2	4.1
906	1	IBM-309-14	Repositories	Sh																			

ID-ONC	#	ID	Entities	Property	Property Relation	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.	
344	1	CSC-ALL-710	Repositories	May	Accept inserts, updates and deletes to persisted data.	Data Transaction-Data Access and Update	Edge		Infrastructure									1.5	3.2	4.4	
341	1	CSC-ALL-670	Repositories	Should	Support various filters for querying data, including filtering on a specific order number.	Data Transformation-Data Filtering	Edge		Infrastructure									1.5	3.3	4.4	
335	1	CSC-ALL-550	Repositories	Should	Exist within a SNO, but are Edge systems and not essential to the NHIN.	Non-Functional-Business Rules	Edge		Infrastructure		Repositories persists data at the edge -- they may be centralized, distributed, or both, within the SNO.							1.5	3.5	4.4	
779	1	IBM-304-13	Repositories	Should	Send lab result event location and related information to locator service in real time as received from lab	Non-Functional-Performance	Edge	IBM-303-04	EHR - Lab	3.4.2.2x	1.4 Data Repository Processes New Results							1.5	3.5	4.1	
903	1	IBM-309-11	Repositories	Should	Transmit lab results requested by a clinician (clinician or data stager) within 5 seconds of successful receipt of request	Non-Functional-Performance	Edge	IBM-308-10	EHR - Lab	3.4.3.4x	2.3 Data Repository Sends Historical Results Data						Feature - Performance	1.5	3.5	4.1	
769	1	IBM-304-03	Repositories	Should	Verify authenticity of lab sending new lab result events	Security-Authentication	Edge		EHR - Lab	3.4.1.2	1.4 Data Repository Processes New Results							1.5	3.6	4.1	
778	1	IBM-304-12	Repositories	Should	Authenticate to locator service when sending lab result event location information	Security-Authentication	Edge		EHR - Lab	3.4.2.1	1.4 Data Repository Processes New Results							1.5	3.6	4.1	
895	1	IBM-309-03	Repositories	Should	Authenticate system sending request for lab data	Security-Authentication	Edge		EHR - Lab	3.4.3.2	2.3 Data Repository Sends Historical Results Data							1.5	3.6	4.1	
338	1	CSC-ALL-610	Repositories	Should	Determine their own access control policies, respecting privacy concerns, sensitivity designations, policy, and/or other attributes	Security-Authorization	Edge		Infrastructure		If query results are being refused for a particular querier, then that querier must make separate arrangements with the holder of the Repository for access to those patient records.							1.5	3.6	4.4	
343	1	CSC-ALL-690	Repositories	May	Authorize access based on querying institution, and/or other criteria based on local policies and regulations.	Security-Authorization	Edge		Infrastructure									1.5	3.6	4.4	
896	1	IBM-309-04	Repositories	Should	Authorize release of laboratory test results based on verification as ordering clinician	Security-Authorization	Edge	IBM-307-16	EHR - Lab	3.4.3.3	2.3 Data Repository Sends Historical Results Data							1.5	3.6	4.1	
897	1	IBM-309-05	Repositories	Should	Authorize release of laboratory test results to non-ordering clinicians based on regulations (federal, state, local) regulatory agencies, entity policies, sensitivity restrictions and patient consent restrictions.	Security-Authorization	Edge		EHR - Lab	3.4.3.3	2.3 Data Repository Sends Historical Results Data							1.5	3.6	4.1	
899	1	IBM-309-07	Repositories	Should	Confirm non-ordering clinician credentials relative to sensitivity restrictions	Security-Authorization	Edge		EHR - Lab	3.4.3.3x	2.3 Data Repository Sends Historical Results Data							1.5	3.6	4.1	
900	1	IBM-309-08	Repositories	Should	Confirm non-ordering clinician status as provider of care for patient	Security-Authorization	Edge		EHR - Lab	3.4.3.3x	2.3 Data Repository Sends Historical Results Data							1.5	3.6	4.1	
901	1	IBM-309-09	Repositories	Should	Confirm patient consent restrictions	Security-Authorization	Edge		EHR - Lab	3.4.3.3x	2.3 Data Repository Sends Historical Results Data							1.5	3.6	4.1	
803	1	IBM-305-10	RLS	Should	Adhere to approved content standards as provided by HITSP when sending notification of new lab results to clinicians.	Data Content	Core		EHR - Lab	3.5.3.1x2	1.5 Locator Service Processes New Results							2.2	3.1	4.1	
804	1	IBM-305-11	RLS	Should	Send notification of new lab result event message that may include: patient identifying information, storing repository identifying information, storing repository marketplace and other content	Data Content	Core		EHR - Lab	3.5.3.1x3	1.5 Locator Service Processes New Results							2.2	3.1	4.1	
1120	1	NGIT-145	RLS	Should	Maintain information on the location of patient data available through network services.	Data Content	Core		Infrastructure		The data to be maintained by record locator services shall minimally include a patient identifier and associated data source. It may, include, additional.							2.2	3.1	4.4	
796	1	IBM-305-03	RLS	Should	Verify integrity and completeness of content of new lab result event location message sent from lab data repository	Data Content-Data Quality/Data Integrity	Core		EHR - Lab	3.5.1.2	1.5 Locator Service Processes New Results							2.2	3.1	4.1	
797	1	IBM-305-04	RLS	Should	Send error message to repository if authenticity not validated for repository sending new lab result event location message	Data Content-Data Quality/Data Integrity	Core	IBM-304-17	EHR - Lab	3.5.1.2x	1.5 Locator Service Processes New Results							2.2	3.1	4.1	
798	1	IBM-305-05	RLS	Should	Send error message to repository if content not validated for new lab result event location message	Data Content-Data Quality/Data Integrity	Core		EHR - Lab	3.5.1.2x	1.5 Locator Service Processes New Results							2.2	3.1	4.1	
799	1	IBM-305-06	RLS	Should	Send acknowledgement message to repository for successful transmission of new lab result event location notification message	Data Content-Data Quality/Data Integrity	Core		EHR - Lab	3.5.1.2x	1.5 Locator Service Processes New Results							2.2	3.1	4.1	
807	1	IBM-305-14	RLS	Should	Receive acknowledgement of successful transmission of new lab results availability notification message from clinician EHR or web application	Data Content-Data Quality/Data Integrity	Core	IBM-306-07	EHR - Lab	3.5.3.1x6	1.5 Locator Service Processes New Results							2.2	3.1	4.1	
808	1	IBM-305-15	RLS	Should	Receive error messages from clinician EHR or web application if authenticity of record locator or content of new lab result event availability notification message not validated	Data Content-Data Quality/Data Integrity	Core	IBM-306-09	EHR - Lab	3.5.3.1x7	1.5 Locator Service Processes New Results							2.2	3.1	4.1	
842	1	IBM-307-22	RLS	Should	Authenticate to remote marketplace record locator	Data Content-Data Quality/Data Integrity	Core		EHR - Lab	3.5.2.x2	2.1 Clinician Requests Historical Results Location							2.2	3.1	4.1	
843	1	IBM-307-23	RLS	Should	Receive error message from remote marketplace if requesting record locator not authenticated or if content of data location request message is not verified	Data Content-Data Quality/Data Integrity	Core		EHR - Lab	3.5.2.x3	2.1 Clinician Requests Historical Results Location							2.2	3.1	4.1	
844	1	IBM-307-24	RLS	Should	Receive acknowledgement from remote marketplace for data location request message	Data Content-Data Quality/Data Integrity	Core		EHR - Lab	3.5.2.x4	2.1 Clinician Requests Historical Results Location							2.2	3.1	4.1	
846	1	IBM-307-26	RLS	Should	Send error message to remote marketplace if not authenticated or if consent of data locations message is not verified	Data Content-Data Quality/Data Integrity	Core		EHR - Lab	3.5.2.x6	2.1 Clinician Requests Historical Results Location							2.2	3.1	4.1	
847	1	IBM-307-27	RLS	Should	Send acknowledgement to remote marketplace for successful receipt of data location message	Data Content-Data Quality/Data Integrity	Core		EHR - Lab	3.5.2.x7	2.1 Clinician Requests Historical Results Location							2.2	3.1	4.1	
439	1	CSC-EHR-410	RLS	Should	Receive, acknowledge, validate format, and store patient demographic identifying information and updates and record locations.	Data Storage-Persistent Data Storage	Core		EHR - Lab	3.5.1.1, 3.5.1.2								2.2	3.3	4.1	
800	1	IBM-305-07	RLS	Should	Store and index new lab result event location information by appropriate patient and other indices. Other indices are determined by the marketplace	Data Storage-Persistent Data Storage	Core		EHR - Lab	3.5.1.3	1.5 Locator Service Processes New Results							2.2	3.3	4.1	
34	1	ACN-02.3	RLS	Should	Identify the unique patient in the user's request and locate the edge system(s) containing the patient data.	Data Transaction-(Pull)	Core	N/A	CE, EHR	3.2.3	The NHIN should uniquely identify the patient sent in the message and utilize the record locator service determine which edge system contains the patient's data.							2.2	3.2	4.4	
841	1	IBM-307-21	RLS	Should	Query remote marketplace for data locations if clinician has specified to find data in one or more remote marketplaces	Data Transaction-(Pull)	Core		EHR - Lab	3.5.2.x1	2.1 Clinician Requests Historical Results Location							2.2	3.2	4.1	
845	1	IBM-307-25	RLS	Should	Receive data locations from remote marketplace	Data Transaction-(Pull)	Core		EHR - Lab	3.5.2.x5	2.1 Clinician Requests Historical Results Location							2.2	3.2	4.1	
849	1	IBM-307-29	RLS	Should	Send data location information from remote marketplace to authorized requesting clinician	Data Transaction-(Pull)	Core		EHR - Lab	3.5.2.x9	2.1 Clinician Requests Historical Results Location							2.2	3.2	4.1	
865	1	IBM-307-45	RLS	Should	Receive request for lab test results location based on one or more criteria for patient specified query	Data Transaction-(Pull)	Core		EHR - Lab	3.5.2.3a	2.1 Clinician Requests Historical Results Location							2.2	3.2	4.1	
866	1	IBM-307-46	RLS	Should	Send error message to clinician if specified lab results not found	Data Transaction-(Pull)	Core		EHR - Lab	3.5.2.5x	2.1 Clinician Requests Historical Results Location							2.2	3.2	4.1	
867	1	IBM-307-47	RLS	Should	Send one or more result location (links) pointers to authorized clinician for the specified lab test result	Data Transaction-(Pull)	Core	IBM-307-01	EHR - Lab	3.5.2.5	2.1 Clinician Requests Historical Results Location Clinician can use location pointers to retrieve test results.							2.2	3.2	4.1	
874	1	IBM-307-54	RLS	Should	Log interaction with clinician	Data Transaction-(Pull)	Core		EHR - Lab	3.5.2.6	2.1 Clinician Requests Historical Results Location							2.2	3.2	4.1	
793	1	IBM-304-27	RLS	Should	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data.	Data Transaction-(Push)	Core		EHR - Lab	3.5.x.1	1.4 Data Repository Processes New Results							2.2	3.2	4.1	
794	1	IBM-305-01	RLS	Should	Receive new lab result event (file) location information and related information from lab data repository	Data Transaction-(Push)	Core	IBM-304-11	EHR - Lab	3.5.1.1	1.5 Locator Service Processes New Results OVC Guidance: There is not an assumption of a results registry, although there is the need for providers of care to know about new and existing results.							2.2	3.2	4.1	
801	1	IBM-305-08	RLS	Should	Automatically send notification of new lab test result event availability to clinicians EHR or web application (local or remote marketplace) if appropriate according to sensitivity restrictions and patient consent restrictions	Data Transaction-(Push)	Core	IBM-306-01	EHR - Lab	3.5.3.1x1	1.5 Locator Service Processes New Results The goal for this functionality is that the clinician receive some indication that new results are available.							2.2	3.2	4.1	
802	1	IBM-305-09	RLS	Should	Automatically send notification of new lab test result event availability to clinicians EHR or web application dependent on provider preferences to receive or not receive notification of new lab result events automatically and specifications of lab order message	Data Transaction-(Push)	Core	IBM-306-01	EHR - Lab	3.5.3.1x2	1.5 Locator Service Processes New Results							2.2	3.2	4.1	
806	1	IBM-305-13	RLS	Should	Log notifications of new lab result events availability sent to clinicians	Data Transaction-Audit & Logging	Core		EHR - Lab	3.5.3.1x5	1.5 Locator Service Processes New Results							2.2	3.2	4.1	
848	1	IBM-307-28	RLS	Should	Log interaction with remote marketplace	Data Transaction-Audit & Logging	Core		EHR - Lab	3.5.2.x8	2.1 Clinician Requests Historical Results Location	CSC-ALL-310	CSC-ALL-310 RLS May Persist a list of other SNOs that have been queried in the past for information on a patient.						2.2	3.2	4.1
1002	1	IBM-319-29	RLS	Should	Create audit entry for each transaction	Data Transaction-Audit & Logging	Core		EHR - Lab	3.5.x.1	3.7 Maintain and Access Audit Log							2.2	3.2	4.1	
1003	1	IBM-319-30	RLS	Should	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core		EHR - Lab	3.5.x.2	3.7 Maintain and Access Audit Log							2.2	3.2	4.1	
1004	1	IBM-319-31	RLS	Should	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core		EHR - Lab	3.5.x.3	3.7 Maintain and Access Audit Log							2.2	3.2	4.1	
1005	1	IBM-319-32	RLS	Should	Not allow edits to audit entries	Data Transaction-Audit & Logging	Core		EHR - Lab	3.5.x.4	3.7 Maintain and Access Audit Log							2.2	3.2	4.1	
1006	1	IBM-319-33	RLS	Should	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Core		EHR - Lab	3.5.x.5	3.7 Maintain and Access Audit Log							2.2	3.2	4.1	
1007	1	IBM-319-34	RLS	Should	Provide capability to print audit trail	Data Transaction-Audit & Logging	Core		EHR - Lab	3.5.x.6	3.7 Maintain and Access Audit Log						Feature	2.2	3.2	4.1	
1008	1	IBM-319-35	RLS	Should	Display audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Core		EHR - Lab	3.5.x.7	3.7 Maintain and Access Audit Log							2.2	3.2	4.1	
1121	1	NGIT-146	RLS	Should	Maintain log of updates to patient-record locator index	Data Transaction-Audit & Logging	Core		Infrastructure		Updates to record locator data will include source of update provided by external system.							2.2	3.2	4.4	
312	1	CSC-ALL-200	RLS	Should	Accept and Maintain updates to patient identifying information.	Data Transaction-Data Access and Update	Core		Infrastructure									2.2	3.2	4.4	
864	1	IBM-307-44	RLS	Should	Receive request for lab test results location based on lab order number or other unique lab test identifier	Data Transformation-Data Filtering	Core		EHR - Lab	3.5.2.3	2.1 Clinician Requests Historical Results Location							2.2	3.3	4.1	
320	1	CSC-ALL-280	RLS	Should	Return actual identity values matched.	Information Location-Identity/Information Correlation	Core		Infrastructure									2.2	3.4	4.4	
323	1	CSC-ALL-300	RLS	May	Use various identifiers in determining patient identity	Information Location-Identity/Information Correlation	Core		Infrastructure			CSC-ALL-290	CSC-ALL-290 RLS May Allow identities to be determined from other identifiers associated with the patient.					2.2	3.4	4.4	
598	1	IBM-205-05	RLS	Should	Match patient to respective sources of data when pre-populating the PHR from the NHIN	Information Location-Identity/Information Correlation	Core		Infrastructure	2.2.2.3x	3.2 Pre-populating a PHR							2.2	3.4	4.4	
625	1	IBM-207-05	RLS	Should	Match patient to respective sources of data when updating the PHR from the NHIN	Information Location-Identity/Information Correlation	Core		Infrastructure	2.1.5.2x	4.2 Updating a PHR							2.2	3.4	4.4	
828	1	IBM-307-08	RLS	Should	Receive demographic information for patient for query	Information Location-Identity/Information Correlation	Core		EHR - Lab	3.5.2.2x1	2.1 Clinician Requests Historical Results Location							2.2	3.4	4.1	

ID-ONC	#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.				
829	1	IBM-307-09	RLS	Shall	Return one or more patients to the requesting clinician who meet the community defined minimum level of matching probability	Information Location-Identify/Information Correlation	Core		EHR - Lab	3.5.2.2x2	2.1 Clinician Requests Historical Results Location a. The community minimum level of matching probability should minimize false positives. b. "Fuzzy" matches should not be allowed. c. Wild card searches should not be allowed. d. A national identification number should not be required. e. Local identifiers may be determined by the community.									2.2	3.4	4.1		
830	1	IBM-307-10	RLS	Shall	Returns error message if no patients are found who meet the community defined minimum level of matching probability	Information Location-Identify/Information Correlation	Core		EHR - Lab	3.2.3.0x	2.1 Clinician Requests Historical Results Location										2.2	3.4	4.1	
319	1	CSC-ALL-270	RLS	Shall	Return pointers that enable retrieval of patient records from data sources / repositories	Information Location-Record Location	Core		Infrastructure												2.2	3.4	4.4	
601	1	IBM-205-08	RLS	Shall	Support HL7 R2.4 and 3.0 feeds as incoming queries	Information Location-Record Location	Core		Infrastructure	2.2.2.3x	3.2 Pre-populating a PHR	IBM-207-08 IBM-209-16	IBM-207-08 RLS Shall Support HL7 R2.4 and 3.0 feeds as incoming queries	IBM-209-16 RLS Shall Support HL7 R2.4 and 3.0 feeds as incoming queries							2.2	3.4	4.4	
602	1	IBM-205-09	RLS	Shall	Return one or more patients to the requesting consumer who meet the community defined minimum level of matching probability	Information Location-Record Location	Core	IBM-205-06	Infrastructure	2.2.2.3x	3.2 Pre-populating a PHR The community minimum level of matching probability should minimize false positives. "Fuzzy" matches should not be allowed. Wild card searches should not be allowed. A national identification number should not be required. Local identifiers may be determined by the community.	IBM-207-09 IBM-209-18	IBM-207-09 RLS Shall Return one or more patients to the requesting consumer who meet the community defined minimum level of matching probability	IBM-209-18 RLS Shall Return one or more patients to the requesting clinician who meet the community defined minimum level of matching probability							2.2	3.4	4.4	
604	1	IBM-205-11	RLS	Shall	Not return any clinical data; RLS shall only present links to appropriate records for NHIN queries	Information Location-Record Location	Core	IBM-205-06	Infrastructure	2.2.2.3x	3.2 Pre-populating a PHR	IBM-207-11 IBM-209-20	IBM-207-11 RLS Shall Not return any clinical data; RLS shall only present links to appropriate data for NHIN queries	IBM-209-20 RLS Shall Not return any clinical data; RLS shall only present links to appropriate data							2.2	3.4	4.4	
606	1	IBM-205-13	RLS	Shall	Present the retrieved records to allow for aggregation	Information Location-Record Location	Core	IBM-205-11	Infrastructure	2.2.2.3x	3.2 Pre-populating a PHR										2.2	3.4	4.4	
633	1	IBM-207-13	RLS	Shall	Present the retrieved records to allow for aggregation	Information Location-Record Location	Core	IBM-207-11	Infrastructure	2.1.5.2x	4.2 Updating a PHR	IBM-209-22	IBM-209-22 RLS Shall Present the retrieved records to allow for aggregation								2.2	3.4	4.4	
665	1	IBM-208-05	RLS	Shall	Maintain list of published documents	Information Location-Record Location	Core		Infrastructure	2.2.5.2	5.1 PHR on the NHIN										2.2	3.4	4.4	
682	1	IBM-209-17	RLS	Shall	Employ probabilistic matching for patient queries	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data										2.2	3.4	4.4	
687	1	IBM-209-23	RLS	Shall	Also query remote marketplaces if such a request is made by the CDO administrator	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data										2.2	3.4	4.4	
690	1	IBM-209-26	RLS	Shall	Receive notification from remote marketplace for data location request message	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data										2.2	3.4	4.4	
691	1	IBM-209-27	RLS	Shall	Receive data locations from remote marketplaces	Information Location-Record Location	Core	IBM-209-23	Infrastructure	2.3.1.2x	6.1 Provider access to PHR data										2.2	3.4	4.4	
692	1	IBM-209-28	RLS	Shall	Send error message to remote marketplace(s) if not authenticated or if content of data locations are not verified	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data										2.2	3.4	4.4	
693	1	IBM-209-29	RLS	Shall	Send acknowledgement to remote marketplace for successful receipt of data location message	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data										2.2	3.4	4.4	
694	1	IBM-209-30	RLS	Shall	Log interaction with remote marketplace	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data										2.2	3.4	4.4	
695	1	IBM-209-31	RLS	Shall	Send data location information from remote marketplace to authorized requesting CDO administrator	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data										2.2	3.4	4.4	
1036	1	NGIT-010	RLS	Shall	Query data sources for requested data and return data to requestor	Information Location-Record Location	Core		Infrastructure		Query using the patient identifiers and associated locations for data sources identified through MPI match.										2.2	3.4	4.4	
316	1	CSC-ALL-240	RLS	Shall	Match patient identities with a rate of false positive identifications less than one in 100,000.	Non-Functional-Accuracy	Core		Infrastructure												2.2	3.5	4.4	
313	1	CSC-ALL-210	RLS	Shall	Store only patient names and demographics, along with pointers to Repositories containing data for the Patient.	Non-Functional-Business Rules	Core		Infrastructure												2.2	3.5	4.4	
315	1	CSC-ALL-230	RLS	Shall	Not maintain pointers to individual health records, for example not maintain a separate pointer to a particular Lab order.	Non-Functional-Business Rules	Core		Infrastructure												2.2	3.5	4.4	
318	1	CSC-ALL-260	RLS	Shall	Not allow clinician interaction to ascertain the identities of patients in other SNOs.	Non-Functional-Business Rules	Core		Infrastructure												2.2	3.5	4.4	
605	1	IBM-205-12	RLS	Shall	Send result location (links) pointers for data located in local community repositories to authorized clinician within 5 seconds of receiving the request	Non-Functional-Performance	Core		Infrastructure	2.2.2.3x	3.2 Pre-populating a PHR NOTE: All following performance requirements are stated in terms of possible peak loads; determining the baseline for peak loads should become part of the certification process.							Feature - Performance		2.2	3.5	4.4		
632	1	IBM-207-12	RLS	Shall	Send result location (links) pointers for data located in local community repositories to authorized clinician within 5 seconds of receiving the request	Non-Functional-Performance	Core		Infrastructure	2.1.5.2x	4.2 Updating a PHR NOTE: All following performance requirements are stated in terms of possible peak loads; determining the baseline for peak loads should become part of the certification process.							Feature - Performance		2.2	3.5	4.4		
685	1	IBM-209-21	RLS	Shall	Send result location (links) pointers for data located in local community repositories to authorized clinician within 5 seconds of receiving the request	Non-Functional-Performance	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data NOTE: All following performance requirements are stated in terms of possible peak loads; determining the baseline for peak loads should become part of the certification process.							Feature - Performance		2.2	3.5	4.4		
696	1	IBM-209-32	RLS	Shall	Send data location information from remote marketplace to authorized requesting clinician within 30 seconds of receiving request	Non-Functional-Performance	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data NOTE: All following performance requirements are stated in terms of possible peak loads; determining the baseline for peak loads should become part of the certification process.							Feature - Performance		2.2	3.5	4.4		
805	1	IBM-305-12	RLS	Shall	Send notifications of new lab test result availability in real time when received from repository	Non-Functional-Performance	Core		EHR - Lab	3.5.3.1x4	1.5 Locator Service Processes New Results										2.2	3.5	4.1	
868	1	IBM-307-48	RLS	Shall	Send result location (links) pointers for data located in local community repositories to authorized clinician within 5 seconds of receiving the request	Non-Functional-Performance	Core		EHR - Lab	3.5.2.5	2.1 Clinician Requests Historical Results Location NOTE: All following performance requirements are stated in terms of possible peak loads; determining the baseline for peak loads should become part of the certification process.							Feature - Performance		2.2	3.5	4.1		
869	1	IBM-307-49	RLS	Shall	Send data location information from remote marketplace to authorized requesting clinician within 30 seconds of receiving request	Non-Functional-Performance	Core		EHR - Lab	3.5.2.x10	2.1 Clinician Requests Historical Results Location NOTE: All following performance requirements are stated in terms of possible peak loads; determining the baseline for peak loads should become part of the certification process.							Feature - Performance		2.2	3.5	4.1		
688	1	IBM-209-24	RLS	Shall	Authenticate to the remote record locator	Security-Authentication	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data										2.2	3.6	4.4	
689	1	IBM-209-25	RLS	Shall	Receive error message if requesting locator is not authorized or if content of data request location is not verified	Security-Authentication	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data										2.2	3.6	4.4	
795	1	IBM-305-02	RLS	Shall	Verify authenticity of lab data repository sending new lab result location information	Security-Authentication	Core		EHR - Lab	3.5.1.2	1.5 Locator Service Processes New Results										2.2	3.6	4.1	
825	1	IBM-307-05	RLS	Shall	Authenticate clinician requesting lab result location or sends message that not authenticated	Security-Authentication	Core		EHR - Lab	3.5.2.1	2.1 Clinician Requests Historical Results Location										2.2	3.6	4.1	
835	1	IBM-307-15	RLS	Shall	Authorize release of laboratory test results locations based on regulations (federal, state, local), community policies, clinician status as ordering clinician, clinician status as provider of care for patient, patient consent restrictions and sensitivity restrictions	Security-Authorization	Core		EHR - Lab	3.5.2.4	2.1 Clinician Requests Historical Results Location										2.2	3.6	4.1	
836	1	IBM-307-16	RLS	Shall	Confirm clinician status as ordering clinician for lab result	Security-Authorization	Core	IBM-303-01; IBM-304-01	EHR - Lab	3.5.2.4x	2.1 Clinician Requests Historical Results Location											2.2	3.6	4.1
837	1	IBM-307-17	RLS	Shall	Confirm non-ordering clinician status as provider of care for patient	Security-Authorization	Core		EHR - Lab	3.5.2.4x	2.1 Clinician Requests Historical Results Location										2.2	3.6	4.1	
838	1	IBM-307-18	RLS	Shall	Confirm patient consent restrictions	Security-Authorization	Core		EHR - Lab	3.5.2.4x	2.1 Clinician Requests Historical Results Location										2.2	3.6	4.1	
839	1	IBM-307-19	RLS	Shall	Confirm non-ordering clinician credentials relative to sensitivity restrictions	Security-Authorization	Core		EHR - Lab	3.5.2.4x	2.1 Clinician Requests Historical Results Location										2.2	3.6	4.1	
840	1	IBM-307-20	RLS	Shall	Send error message if clinician not authorized to access data for identified patient	Security-Authorization	Core		EHR - Lab	3.5.2.4x	2.1 Clinician Requests Historical Results Location										2.2	3.6	4.1	
54	1	ACN-02.5	Terminology Servers	Shall	Communicate in the NHIN using defined standards.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	The system should adhere to standards as defined by the FHA (Federal Health Architecture) where appropriate.										1.4	3.3	4.4	
55	1	ACN-02.5.1	Terminology Servers	Shall	Communicate in the NHIN using standard message formats.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
56	1	ACN-02.5.1.1	Terminology Servers	Shall	Communicate with the NHIN using Health Level 7 (HL7) version 3 messages.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
57	1	ACN-02.5.1.2	Terminology Servers	Shall	Communicate with the NHIN using Health Level 7 (HL7) Clinical Document Architecture (CDA) messages.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
58	1	ACN-02.5.1.3	Terminology Servers	Shall	Communicate with the NHIN using NCPDP Script (v8.1 or greater) messages.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
59	1	ACN-02.5.1.4	Terminology Servers	Shall	Communicate with the NHIN using HIPAA approved transactions.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
60	1	ACN-02.5.2	Terminology Servers	Shall	Communicate with the NHIN using standard terminology.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
61	1	ACN-02.5.2.1	Terminology Servers	Shall	Communicate with the NHIN using Health Level 7 (HL7) vocabulary standards for demographic information.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
62	1	ACN-02.5.2.10	Terminology Servers	Shall	Communicate with the NHIN using LOINC vocabulary standards for laboratory test codes.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
63	1	ACN-02.5.2.11	Terminology Servers	Shall	Communicate with the NHIN using terminology standards (such as CDISC and MedDRA) used to support clinical research and drug approval/monitoring.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
64	1	ACN-02.5.2.12	Terminology Servers	Shall	Communicate with the NHIN using ICD-9 vocabulary standards for diagnosis.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
65	1	ACN-02.5.2.2	Terminology Servers	Shall	Communicate with the NHIN using Health Level 7 (HL7) vocabulary standards for units of measure.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
66	1	ACN-02.5.2.3	Terminology Servers	Shall	Communicate with the NHIN using Health Level 7 (HL7) vocabulary standards for immunizations.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
67	1	ACN-02.5.2.4	Terminology Servers	Shall	Communicate with the NHIN using Health Level 7 (HL7) vocabulary standards for clinical encounters.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
68	1	ACN-02.5.2.5	Terminology Servers	Shall	Communicate with the NHIN using The College of American Pathologists Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) for laboratory result contents.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
69	1	ACN-02.5.2.6	Terminology Servers	Shall	Communicate with the NHIN using The College of American Pathologists Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) for non-laboratory interventions and procedures.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	
70	1	ACN-02.5.2.7	Terminology Servers	Shall	Communicate with the NHIN using The College of American Pathologists Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) for anatomy.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A										1.4	3.3	4.4	

Compressed Inventory of Functional Requirements

ID-ONC #	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Closely resembles...	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.	
71	1	ACN-02.5.2.8	Terminology Servers	Shall	Communicate with the NHIN using The College of American Pathologists Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) for diagnoses and procedures	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A							1.4	3.3	4.4	
72	1	ACN-02.5.2.9	Terminology Servers	Shall	Communicate with the NHIN using a set of federal terminologies related to medications, including: The Food and Drug Administration's names and codes for	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	N/A							1.4	3.3	4.4	
101	1	ACN-04.11	Terminology Servers	Shall	Contain mappings of local terminologies to NHIN standard terminologies.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	Members of the NHIN must utilize standard terminology when exchanging information.							1.4	3.3	4.4	
102	1	ACN-04.12	Terminology Servers	Shall	Present data to users in standard terminologies.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	Data received from NHIN requests should be displayed in the NHIN terminology, unless the mapping from NHIN terminologies back to local terminologies exists. Each edge system is responsible for staying up to date on standard terminologies.							1.4	3.3	4.4	
103	1	ACN-04.13	Terminology Servers	Shall	Maintain sets of standard terminologies.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	Each edge system is responsible for mapping from their local terminology to the standard NHIN terminologies.							1.4	3.3	4.4	
104	1	ACN-04.14	Terminology Servers	Shall	Maintain sets of local terminologies.	Data Transformation-Data Mapping/Translation	Edge	N/A	Infrastructure	No Reference	Each edge system is responsible for mapping from their local terminology to the standard NHIN terminologies.							1.4	3.3	4.4	
790	1	IBM-304-24	Terminology Servers	Should	Translate lab data to comply with HITSP or participant agreed upon content and messaging standards	Data Transformation-Data Mapping/Translation	Edge		EHR - Lab	3.4.1.5x	1.4 Data Repository Processes New Results							1.4	3.3	4.1	
905	1	IBM-309-13	Terminology Servers	Should	Translate lab results data to comply with HITSP or participant agreed upon content and messaging standards	Data Transformation-Data Mapping/Translation	Edge		EHR - Lab	3.4.3.4x	2.3 Data Repository Sends Historical Results Data							1.4	3.3	4.1	
1085																					
1079																					
420																					
1138																					
216																					
314																					
	977																				

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
SECURITY									
Authentication									
<ul style="list-style-type: none"> Enable authentication of an entity's users as well as independent users whenever location of information and/or data are exchanged within a nationwide health information network. (2.0) Enable an entity to register (provide authorization and establish authentication processes for) users to connect with a nationwide health information network in a manner consistent with all HIPAA and other applicable federal, state, and local privacy and security legislation/regulations. (2.1) Protect authentication credentials during transmission. (2.2) Provide mechanisms for non-repudiation when the policies of the parties exchanging data would require such service. (2.3) 									
	1.0	Authenticate entity access to NHIN interface	1.1	Authenticate entity to NHIN interface			IBM-209-02 NGIT-129 NGIT-094		
	2.0	Authenticate all users to NHIN interface	2.1	Authenticate user accesses into the system			ACN-07.6 ACN-07.6.1 and		<i>Edge systems should authenticate their own users. The strength of the</i>
	3.0	Authenticate all systems to NHIN interface	3.1	Verify authenticity of system sending data			ACN-07.6.2 and IBM-304-03	3.3	Generate authorization for re-linking
	4.0	Protect user and system authentication credentials during transmission from the user to the NHIN.					ACN-07.6.2 ACN-7.8.3		(Support secure mechanism for transmission of user credentials during authentication process.)
	5.0	Provide a mechanism for ensuring non-repudiation.	5.1	Provide a mechanism for ensuring non-repudiation.			ACN-07.7 and ACN-07.9		
	6.0	Authenticate Record Locator Service to remote record locator and receive error message if requesting locator is not authorized or if content of data request location is not verified.	6.1	Authenticate Record Locator Service			IBM-209-24 IBM-209-25		
Authorization									
<ul style="list-style-type: none"> Utilize a certification process with which any entity's health information users must conform for exchange of data within a nationwide health information network. (1.0) Facilitate management of an individual's permission/authorization to share information about location of health information or apply restrictions on access to specified health information. (3.0) Utilize standard authorization codes to convey permissions/authorizations to share data. (3.4) Enable an entity to de-identify and aggregate data, for research or other purposes, upon request (3.6) 									
	7.0	Authorize an entity's request for data	7.1	Allow NHIN-based users to access only data sets associated with their assigned roles.			IBM-209-07 NGIT-151 NGIT-005 and		<i>Ability for CDO to opt-out of biosurveillance activities.</i> (HIPAA Privacy Rule should

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
	8.0	Associate a single role with any one user session.					ACN-07.11.4		Architectural variation
	9.0	Provide NHIN administration capabilities (e.g., creation of permissions) to be executed only by authorized NHIN users.	9.1	Designate an administrator role covering administration of internal resources.			ACN-07.11.7 ACN-07.12.3 ACN-07.12.6 ACN.07.12.7		
	10.0	Provide consent management to capture an individual's consent to sharing data, make any changes in consent, and allow authorized access based on consent status.	10.1	Provide consent management to capture an individual's consent to sharing data, make any changes in consent, and allow authorized access based on consent status.			ACN-07.1 ACN-07.1.1 ACN-07.1.2 ACN-07.1.3 ACN-07.1.4 IBM-302-03		
	11.0	Provide an appropriate Edge System registration/certification capability before access to the NHIN is granted.	11.1	Establish user authorizations to use specific functions of the system			ACN-07.3.2 ACN-07.3.3 ACN-07.3 ACN-07.3.1		(Fully support registration requirements (i.e., key components, approvers, authorizations, out-of-band registration, etc.))
Confidentiality									
<ul style="list-style-type: none"> • Enable entities and/or users to provide permissions, authorizations, and/or restrictions to share location information/data. (3.1) • Enable changes to be made in permissions, authorizations, and restrictions as requested by applicable entity and/or user. (3.2) • Allow access to location of information and/or data based only on permission/authorization status or emergency access as defined by law. (3.3) • Enable participants in a nationwide health information network the ability to anonymize and re-link data to ensure its confidentiality, in accordance with policies of the relevant entities (e.g., public health departments). (3.5) 									
	12.0	Enforce NHIN security and privacy policies, HITSP security standards, and HIPAA and other federal, state, and local legislation/regulation					CSC-SEC-190 IBM-107-09 ACN-07.20 ACN-07.20.1 ACN-07.20.2		(Enable systems to securely transmit data outside of the health architecture and between entities within the health architecture)
	13.0	Messaging Handling Systems should support transport level security and protect confidentiality of data and services over the network using encryption.	13.1	All Edge Systems should support transport level security and protect confidentiality of data and services over the network using encryption.			CSC-SEC-10 NGIT-006		
					14.2	NHIN Interface should assure that randomized linker is attached to anonymized data before transmission and support re-linking for public health purposes.	IBM-102-07 NGIT-066 NGIT-069 NGIT-116		

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
Credentialing For High Level Functional Requirements, see Authentication	15.0	Register entities and system administrators to participate in the NHIN	15.1	Register patients, providers, public health users, system administrators to participate in the NHIN			CSC-SEC-240 ACN-04.3 ACN-04.6 and CSC-SEC-250	15.3	Ensure that credentialing information is accurate.
			16.1	Maintain the identities of its users, according to a written and approved security policy.			IBM-203-02		Verify user credentials across NHIN, and with National Provider Identifier and National Plan Identifier
			17.1	Provide look-up and reconciliation service for third parties					
INFORMATION LOCATION									
Identity/ Information Correlation									
<ul style="list-style-type: none"> Uniquely identify an individual through matching on various identifiers, such as last name, middle name, first name, date of birth, gender, etc. (4.1) Utilize a set of standard policies to resolve identity ambiguities, consistent with applicable tolerance levels for errors (4.2) 									
	18.0	Use the Record Locator Service to resolve (link and unlink) patient identity ambiguities	18.1	Provide method for clinician and locator system to agree on patient identity through patient trait matching, shared MPI or patient identifier matching.			CSC-ALL-320 ACN-02.1.3 ACN-02.1.4 and IBM-307-11 IBM-307-12		Establish valid identity for consumer by trusted parties, including health plans and plan sponsors; PHRs (via unique "tokens"
	19.0	Return unambiguous patient identities for all query results.					CSC-ALL-770 NGIT-008 IBM-307-08		
	20.0	Contain/maintain an index of unique patients participating in the NHIN.	20.1	Maintain latest available patient identifying information			ACN-02.1 NGIT-007 and CSC-ALL-180		Use blinded, secure RLS, such as through bi-gramming and other techniques to achieve
	21.0	Uniquely identify a person [through probabilistic matching on] by various identifiers, such as: - Last Name - Middle Name - First Name - Date of Birth - Gender	21.1	Uniquely identify a person by various identifiers, such as: - Last Name - Middle Name - First Name - Date of Birth - Gender			ACN-02.1.1 CSC-ALL-300 and IBM-209-17		(Use an agreed-upon list of unique data elements and data identifiers.) Use a patient matching scheme were the Edge MPI becomes a Person Locator Service by extending the
	22.0	Receive, validate, and update unique patient information from participating edge systems	22.1	Send demographic information to record locator to identify patient for query.			ACN-02.1.2 IBM-307-08 ACN-02.1.2.2 ACN-02.1.2.6		

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
	23.0	Return patient identifiers previously uploaded by data sources for a uniquely identified patient					CSC-ALL-770 CSC-ALL-280 IBM-307-09 NGIT-009		
	24.0	Maintain a unique organizational identifier for each participating edge system, creating, updating, and inactivating identifiers [for non-HIPAA covered entities].					ACN-05.2 ACN-05.2.1.1 ACN-05.2.1.2 ACN-05.2.1.3		
					25.2	Record Locator Service should match patient to respective sources of data when populating the PHR from the NHIN	IBM-205-05 IBM-207-05		
					26.2	CDO-CDO NHIN Interface should determine when multiple and or independently submitted data refer to the same case (patient) or event to minimize double counting for biosurveillance.	IBM-103-13		
					27.2	Consumer System-PHR should maintain an XDS repository following pre-population of PHR	IBM-205-19 IBM-207-19		
			28.1	Establish patient-provider relationships.			ACN-04.10		(Link parent/child records and family records. Link to vital statistics records. Also
					29.2	CDO should embed randomized data linker to allow authorized re-identification for Public Health	CSC-BIO-530		
Record Location									
<ul style="list-style-type: none"> Utilize a standard person identity/information correlation process to uniquely identify an individual. (4.0) Provide functionality that will locate where health information exists for identified individuals. (5.0) Utilize a standard, unique entity identifier (such as the ISO Object Identifier [OID] recommended by HITSP) to locate entities holding a specific individual's information. (5.1) 									
	30.0	Contain one Record Locator Service (RLS) for NHIN searches					IBM-205-06 IBM-209-13 IBM-207-06		Support multiple instances of an RLS, each of which could support different data

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
	31.0	Notify/return pointers to requesting edge systems that identified edge systems contain or do not contain the requested data					IBM-209-33 ACN-02.3.10 ACN-02.3.1 IBM-209-15 CSC-ALL-270		
	32.0	Support HITSP standard feeds as incoming queries to record locator service					IBM-205-08		
	33.0	Receive notification from remote marketplace for data location request message					IBM-209-26		
	34.0	Receive data locations from remote marketplaces					IBM-209-27		
	35.0	Query data sources for requested data and return data to requestor					NGIT-010		
DATA TRANSACTION									
Pull									
<ul style="list-style-type: none"> Provide notification concerning location of information, pointers to the locations, metadata describing the nature of available data (e.g., radiology report, dates of service, advance directives), or the data itself to the requestor depending on the structure of the network used and agreements in place. (Also applies to Data Transmission [Push]). (5.2) Enable standard information metadata (e.g., UML, XSD) to be included in message formats in order to convey, for example, sensitivity restrictions, individual permissions, and entity preferences. (6.3) 									
	36.0	Receive notification of data to be sent					IBM-102-02		
	37.0	Accept and respond to authenticated and authorized queries for data for a patient.	37.1	Receive requested data			CSC-ALL-750 and IBM-311-02	37.3	Leverage full data model and data dictionary (consistent metadata) as a basis for any kind of data retrieval (Leverage BRIDG meta-model as a standard means of exchanging relevant clinical trials-related data. Provide for semantic
	38.0	Accept lists of other SNOs to contact as part of queries, and query these other SNOs in addition to querying repositories within its SNO.	38.1	Use the NHIN Interface to query outside the SNO for health data for a patient.			CSC-ALL-780 and CSC-ALL-880		

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
	39.0	Identify the unique patient in request and locate system(s) containing the data requested	39.1	Receive location(s) where data are stored; browse and select relevant data location information from which to request data			CSC-ALL-40 CSC-ALL-780 ACN-02.3 IBM-307-21 IBM-307-25 IBM-307-29		
	40.0	Transmit request for a location to send data to requesting system	40.1	Transmit request to view data directly from a providing system			IBM-209-12 ACN-02.2 ACN-02.3.3		
	41.0	Aggregate appropriate records from NHIN query	41.1	Aggregate appropriate records from NHIN query			IBM-205-14 CSC-ALL-840 CSC-ALL-40		
			42.1	Accept update messages from other edge systems.			ACN-02.3.15		
			43.1	Return clinical data in response to authorized queries.			CSC-ALL-660		
Push									
									<ul style="list-style-type: none"> Support the ability to transport data, as directed, from one entity's system to another, such as from one personal health record to another personal health record, or from one provider's system to a personal health record. (6.6) Provide functionality that will enable data transactions to occur among authorized entities and/or users upon specific trigger events, such as to automatically send final lab results for any previously sent preliminary results, send any changes in medications prescribed, report medication errors, notify public health about the occurrence of a bio-hazard event, inform individuals about the availability of a clinical trial, determine hospital census for disaster planning, etc. (7.0)
	44.0	Deliver messages (along with any appropriate metadata) to destination organization(s)/requesting edge system(s) or notify sender they are undeliverable					CSC-ALL-430 IBM-102-10	44.3	Acknowledge receipt and retransmit if necessary. Information metadata should include standards such as UML and XSD.
					45.2	Data Analysis and Secondary Use Systems-Public Health receive anonymized health data from participating edge systems and transmit to Public Health systems	ACN-06-1.1.2 ACN-06.1.12 ACN-06.1.13 IBM-102-11 IBM-103-11 ACN-05.1.1.1 NGIT-159		

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
					45.2	Data Analysis and Secondary Use Systems-Public Health and Payer Systems communicate data (e.g., updates and instructions, potentially including list of essential data to be transmitted, trigger, timeframe, and data to be sent) directly to caregivers or others to monitor a previously detected event	IBM-106-03 IBM-104-02 NGIT-076 CSC-BIO-580 CSC-BIO-550 IBM-106-01 NGIT-159		
					46.2	Data Analysis and Secondary Use Systems-Public Health communicate (via multiple media) approved Public Health updates and alerts to public media, neighboring communities, and biosurveillance responders	IBM-106-05 IBM-106-06 IBM-107-01 NGIT-160 IBM-107-11		
					47.2	Care Delivery Organization(s) receive patient specific biosurveillance event response information message from Public Health to support event response	IBM-107-13		
			48.1	Receive new event location information, availability, and/or data from a repository or other edge system			IBM-306-01 IBM-306-02 IBM-209-10 ACN-06.1.1 IBM-209-10 IBM-211-01	48.3	Provide for real-time, bi-directional secure messaging between edge systems to enable quick and efficient communication
			49.1	Send new patient location, event location, availability information, and data, according to sensitivity restrictions, patient consent, and provider preferences			IBM-505-08 IBM-305-09 IBM-303-04 CSC-ALL-190 IBM-207-31 IBM-204-11		
					50.2	Consumer System-PHR should provide capability for consumer to transfer data from one PHR to another PHR	IBM-207-39 IBM-211-02 NGIT-099 and CSC-CE-430		
Audit and Logging									

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
									<ul style="list-style-type: none"> Enable entities and systems to transport updates, corrections, and amendments to health information in accordance with HIPAA requirements and internal policies. (6.8)
									<ul style="list-style-type: none"> Ensure that all parties involved in the transport of health information manage the connections with contingency plans, security incident procedures, ongoing evaluation and risk management, and retention of data and metadata (including audit logs) as required by state statutes and other requirements. (6.9)
									<ul style="list-style-type: none"> Enable entities to account for disclosures in accordance with HIPAA requirements if a covered entity; or provide an audit trail of accesses and disclosures if not a covered entity. (7.4)
									<ul style="list-style-type: none"> Log and audit all (intentional or unintentional) connections and disconnections to network services and all network configuration changes, generating alerts/notifications for system activity outside the normal range of monitoring levels/thresholds. (8.0)
									<ul style="list-style-type: none"> Retain logs for period of time determined by law, accrediting agencies, marketplace, and entities. (8.1)
									<ul style="list-style-type: none"> Protect audit data from unauthorized access/modification. (8.2)
									<ul style="list-style-type: none"> Generate evidence to support incident management (investigations) and response processes (corrective action). (8.3)
									<ul style="list-style-type: none"> Be guided in standards and policy adoption by regular risk assessments. (8.4)
	51.0	Log all interactions/transactions in accordance with HITSP standards for content and format of audit logging.	51.1	Log all interactions/transactions in accordance with HITSP standards for content and format of audit logging.			CSC-ALL-80 IBM-102-14 ACN-02.2.1 IBM-207-37 IBM-211-09 NGIT-011		<i>The only audit and logging functions performed by the network should be those associated with NHIN connection and</i>
	52.0	Retain logs for period of time determined by law, accrediting agencies, marketplace, and entities	52.1	Retain logs for period of time determined by law, accrediting agencies, marketplace, and entities			ACN-07.16.9 IBM-319-45 IBM-319-33		<i>(Destruction of logs)</i>
	53.0	Consolidate logs from NHIN systems					ACN-07.16.12		<i>(Cross-organizational logging)</i>
	54.0	Maintain log of updates to patient information location					NGIT-146		
	55.0	Protect audit data from unauthorized access/modification	55.1	Protect audit data from unauthorized access/modification			CSC-SEC-120 IBM319-42		
	56.0	Notify and log notifications and receive and log confirmations that requests for patient data are received and being processed (including timeout notifications)	56.1	Acknowledge receipt of data			ACN-02.2.3 ACN-02.2.4 ACN-02.3.11 ACN-02.3.2 ACN-02.3.4 ACN-02.3.5		
	57.0	Generate administrative and system monitoring reports					ACN-02.4 ACN-02.4.1		<i>(Address throughput of system given auditing/logging)</i>
	58.0	Generate alerts/notifications for system activity outside the normal range of monitoring levels/thresholds					ACN-02.4.3 ACN-07.16.14 ACN-		

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
	59.0	Log all relevant infrastructure level authentication attempts	59.1	Log all relevant system level authentication attempts			ACN-07.16.1 and ACN-07.16.2		
			60.1	Log all relevant system level access attempts			ACN-07.16.5		
	61.0	Log all configuration changes	61.1	Log all configuration changes			ACN-07.16.10		
	62.0	Log all modifications to consent status (for data sharing)	62.1	Log all modifications to consent status (for data sharing)			ACN-07.16.11 and ACN-07.16.12		
			63.1	Log all modifications to [legitimate need] access events			ACN-07.17.7		
	64.0	Generate evidence to support incident management (investigations) and response processes (corrective action)	63.1	Generate evidence to support incident management (investigations) and response processes (corrective action)			ACN-07.16.15 ACN-07.16.7 ACN-07.16.8		
	65.0	Conduct regular risk assessments	65.1	Conduct regular risk assessments			ACN-07.24 and NGIT-113		
					66.2	CDO-EMR should create an exception list when lab results can not be unequivocally be matched to an order/patient/etc.			
			67.1	Provide capability for easy retrieval of audit trail and present in a manner understandable to patient or proxy			IBM-320-01 IBM-320-02 IBM-320-03 IBM-320-04		
					68.2	Repositories should log interaction with clinician or data stager related to processing requests for historical lab results	IBM-309-14		
								69.3	Data version should enable exact recreation of a record as it existed at a particular point in time for legal and medical reviews
Data Access and Update									
									<ul style="list-style-type: none"> Enable time-sensitive data request/ response interactions to specific target systems (e.g., query of immunization registry, request for current medication list). (9.0) Support consistent methodology for granting and tracking access in applicable emergency situations (e.g., when normal authorizations for access are not feasible and special procedures are instituted to gain access to critical care data). (7.5)

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
	70.0	Configure environment to monitor, process and send matching patient care and any available resource utilization data					IBM-102-03		(Enable workflow and quality (cooperative work distributed across entities, e.g., ordering and results of lab tests or prescriptions))
	71.0	Accept and maintain updates to patient identifying information					CSC-ALL-200		
			72.1	Accept request to locate and retrieve data			CSC-CE-540	72.3	Provide for dynamic information access (direct request/response interactions to specific target systems, e.g., query of immunization registry)
					73.2	Consumer System-PHR should allow consumer to request that PHR be prepopulated with applicable data at applicable times	IBM-205-01 IBM-207-01	73.3	(Make available consumer health risk assessment and current health care conditions in support of a consumer's choice of health benefits, optimal contribution to their Health Savings Account, and in support of treatment and provider decisions.)
					74.2	Consumer System-PHR should allow consumer to select whether their PHR data will be available via the NHIN	IBM-208-01		
					75.2	Consumer System-PHR should adhere to laws governing how minors' records can be accessed by a third party across marketplaces	IBM-212-36		
			76.1	Notify requesting user if data exists in an identified edge system but has not been received in a timely period.			ACN-02.3.7		

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
					77.2	Health information intermediaries should allow payers, providers, patients, and other stakeholders the ability to share information to support medical research, drug safety and post-marketing drug surveillance, clinical trial recruitment and execution, public health surveillance, care management and other quality initiatives, and patient care.	ACN-01.10 ACN-01.11 ACN-01.12 ACN-01.14 ACN.01.15 ACN-01.9		(Enable consumers to gain insight into their health history in order to provide a better context for treatment, benefit, and provider decisions)
			78.1	Provide a "break-the-glass" function for authorized users to bypass normal security barriers during an emergency.			CSC-SEC-140	78.3	Support consistent methodology for granting access (e.g., role or system interface). Change "break-the-glass" to "structured, approved emergency access process"
			79.1	Provide a web interface if a system is not available to perform NHIN queries.			CSC-ALL-990 CSC-EHR-510		(Allow for establishment of systems based on Services-Oriented Architectures (SOA))
			80.1	Accept inserts, updates and amendments to persisted data.			CSC-ALL-710		
Data Routing									
<ul style="list-style-type: none"> Transport requests for and their responses to location of information, requests for data, data itself, and other types of messages (such as notifications of the availability of new data) to destinations using general industry-recognized transport types (e.g., Internet Protocol Version 6 [IPv6]) and authorized recipient's specified mode (e.g., e-fax vs. transaction) to and from electronic addresses that are unambiguously identified in a standardized manner. (6.0) 									
	81.0	Accept and route all authorized messages to designated edge systems.					CSC-ALL-410		(Support routing and alerts based on roles and organizational responsibilities)
			82.1	Send data feeds to NHIN Interface			IBM-208-04		
					83.2	CDO-CDO NHIN Interface should apply business rules for routing biosurveillance data	IBM-103-09 IBM-107-06 IBM-107-05		

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
	84.0	Send messages according to authorized recipient's specified mode (e.g., secure email, web application, EHR/responder system)					IBM-107-07	84.3	Support for auditable data exchanges for messages requiring confirmed delivery or acknowledgement of receipt.
			85.1	Specify method and destinations of message delivery			CSC-ALL-420 CSC-ALL-440		
Data Transaction Verification*	<i>This category is not on original ONC document, and seems to be addressed by some contractors in Data Content: Data Quality/Data Integrity</i>								
???-Configuration	<ul style="list-style-type: none"> Certification of an entity's ability to connect with a nationwide health information network should include a description of the level of participation for which an entity's information systems are capable., For example, a small provider may only be able to exchange data within a nationwide health information network via a gateway; another entity may only be able to exchange certain types of data electronically, or during certain hours. (1.1) 								
	86.0	Support the specification of level of participation of an organization (entity) with the NHIN					NGIT-002		
								87.3	Maintain registry of Edge Systems, including types of records and which the Edge may have.
DATA TRANSFORMATION									
Data Filtering	<ul style="list-style-type: none"> Enable data filtering to allow for subscription and un-subscription to specified or all available future clinical events and other applicable data. (7.2) 								
	88.0	Accept and apply filter rules	88.1	Support various filters for queried or returned data			NGIT-062 NGIT-063 NGIT-064	88.3	Capability to enable process that governs filtering capabilities
			89.1	Aggregate data for transmission as determined by HITSP implementation guide			NGIT-065 NGIT-059		
	90.0	Allow clinician to subscribe and un-subscribe to specified or all available future clinical events data for specified patient					IBM-318-01 IBM-318-02	90.3	Support hierarchical data structure and clarified metadata definitions to enable filtering
	91.0	Store provider preferences to automatically receive information					IBM-313-01 IBM-313-02 IBM-313-02		

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
			92.1	Provide clinician ability to query for results based on one or multiple criteria for a specified patient			IBM-307-32 IBM-307-30	92.3	Support medical supplies inventory and resource management (e.g., flu vaccines, bed count to support surge capacity and special needs)
Data Mapping/Translation									
									<ul style="list-style-type: none"> Communicate health information using HITSP-identified standard content and message formats (10.0) Enable mapping between various versions of a standard and multiple standards, mapping terminologies and code sets and supporting Americans with Disabilities Act Section 508 compliance (10.1)
	93.0	Transform data using HITSP standards to support meaningful communication across the NHIN					IBM-102-08 NGIT-100	93.3	Enable patients and clinicians to report adverse medical events and/or errors
			94.1	Receive data to parse into application system			IBM-209-34 IBM-209-39	94.3	Communicate with the NHIN using terminology standards used to support clinical research and drug approval/monitoring (such as CDISC and MedDRA)
			95.1	Communicate with the NHIN using HITSP standard content and message formats.			ACN-02.5 through ACN-02.5.2.9		
					96.2	Terminology servers should contain mapping of local terminologies to HITSP standard terminologies	ACN-04.11	96.3	Data mapping/translation between versions of a standard and between standards
					97.2	Terminology servers should present data to users in desired terminology	ACN-04.12	97.3	Evolutionary maturity among code sets
					98.2	Consumer System-PHR may offer 'translation' services for PHRs to provide clinical data in easy to read and understandable format and language	IBM-212-14	98.3	Capability to support Section 508 compliance (e.g., handicapped access, multiple language needs, etc.)
Data Rendering									
									<ul style="list-style-type: none"> Support display, entry, and retrieval of data in multiple ways as determined by the needs of the recipient (10.2)

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
	99.0	Support display, entry, and retrieval of data transmission in multiple languages	99.1	Support display, entry, and retrieval of data content in multiple languages			IBM-317-06 IBM-317-07 IBM-317-08		
	100.0	External user interfaces provide data transmission in a manner accessible for handicapped	100.1	Edge system provide accessibility for handicapped interaction with data content			IBM-317-10 and IBM-317-05	100.3	Enable data collection and presentation capabilities mandated by federal standards
			101.1	Display data in an easy to understand manner determined by the receiving entity or marketplace			IBM-306-11 IBM-306-12		
			102.1	Give providers and patients ability to view applicable information			ACN-01.1 through ACN01.8		
DATA CONTENT									
Data Content									
<ul style="list-style-type: none"> Support content (vocabulary and code sets), application protocols, and message formats used for the exchange of information within a nationwide health information network that conform to standard interoperability specifications. (6.1) 									
	103.0	Transmit well-formed messages that conform to a HITSP interoperability specification					CSC-ALL-50		
	104.0	Require HITSP standard message formats and implementation guidelines for queries and responses	104.1	Transmit well formed messages according to a HITSP specified implementation instruction when communicating with the NHIN Interface.			CSC-ALL-800 and CSC-ALL-60		
	105.0	Adhere to approved content standards as provided by HITSP when sending data	105.1	Adhere to approved content standards as provided by HITSP when sending data			IBM-305-10 and IBM-308-12		
	106.0	Send notification of new [lab result] event message that may include: patient identifying information, storing repository identifying information, storing repository marketplace, information necessary for indexing and restrictions for use, and other content	106.1	Send data that includes [results data] as well as information necessary for indexing and restrictions for use.			IBM-305-11 IBM-303-07		

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
					107.2	NHIN Administration-Data Stager (IBM) may support data staging on behalf of clinician	IBM-308-11 IBM-310-07 IBM-310-08		
Data Quality/Integrity									
		<ul style="list-style-type: none"> Provide information back to the authorized requestor if identity, location information, and/or data could not be determined and/or provided. (5.3) 							
		<ul style="list-style-type: none"> Verify the integrity of data transmission using general industry recognized methods. (6.2). 							
		<ul style="list-style-type: none"> Support the ability to include an error message service that notifies the requestor if authentication or authorization is not verified. (6.4) 							
		<ul style="list-style-type: none"> Provide the ability to send/receive/retransmit acknowledgment of data requests or data content transmissions. (6.7) 							
	108.0	Validate authenticity of (solicited or unsolicited) event location message (query and response) and transmit error message if not valid	108.1	Validate authenticity of (solicited or unsolicited) event location message (query and response) and transmit error message if not valid			IBM-316-12		
	109.0	Process acknowledgment of transmission or receipt of data content message and retransmit/receive if necessary	109.1	Process acknowledgment of transmission or receipt of data content message and retransmit/receive if necessary			IBM-102-15		
	110.0	Verify integrity and completeness of data received and transmit error message if necessary	110.1	Verify integrity and completeness of data received and transmit error message if necessary			IBM-305-03		
			111.1	Enforce non-repudiation of message or query origin			CSC-SEC-150		
Data Source									
		<ul style="list-style-type: none"> Identify the source of any externally-provided data in whatever form the data may take (e.g., aggregated, anonymized, or identifiable) (7.1) 							
			112.1	Identify source of externally-provided data			IBM-310-07 NGIT-104	112.3	Require common data dictionary and metadata
					113.2	NHIN Administration-Utilization Reporting System (IBM) should provide unit-level census and facility utilization data for emergency planning	IBM-101-11 IBM-101-12 IBM-101-13 IBM-106-10	113.3	Provide unit-level census data as specified in the Biosurveillance use case. Unit-level census data includes: unit name, number of patients by unit, number of beds available by unit, and emergency room triage marginal capacity as a percentage and head-count

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
					114.2	CDO-LIS should provide additional/revised patient data (demographics, clinical data, lab and radiology test orders and results) to monitor a previously detected event for biosurveillance	IBM-106-09 and related fcns		
Data Usage									
						<ul style="list-style-type: none"> Enable entities to acquire data to monitor a previously detected event, generate alerts/notifications, or perform similar functions. (7.3) 			
	115.0	Enable edge systems to acquire data to monitor a previously detected event, generate alerts/notifications to public health users, populate an Electronic Health Record, populate a Personal Health Record, etc.					ACN-03.3.1 IBM-106-4 ACN-03.1.1 ACN-06.1.8		
								116.3	Enable access to, automated collection of, and public health surveillance for current medical product and food safety information.
								117.3	Enable patients and their proxies to find and enroll in appropriate clinical trials. Enable providers and investigators to find and
								118.3	Capture clinical information as part of the normal health care interaction that can be used for clinical trials in a 21CFR Part 11 compliant
								119.3	Generate reports and derive insights from healthcare
								120.3	Provide for administrative services of billing and reporting

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					Architectural Variations
					121.2	Data Analysis and Secondary Use Systems should aggregate anonymized health data from participating edge systems for various public health purposes, clinical research, and drug outcome comparator studies	ACN-06.1.4 ACN-06.1 ACN-06.1.5 ACN-06.1.6 ACN-06.3		
DATA STORAGE									
Persistent									
<ul style="list-style-type: none"> Enable the ability to aggregate data from disparate sources to facilitate communications. For example, temporarily hold information as it is being collected to communicate a concise summary of the information; or permanently store data from uncoordinated sources across time to support a data registry. (11.0) 									
								122.3	Automatically purge/remove data as determined by policy/business rules
								124.3	Persistent information management (storing/sharing aggregated records from uncoordinated sources across time)
Transient									
<ul style="list-style-type: none"> Support based on an entity's query, the ability to temporarily hold and aggregate appropriate error messages or data until completely collected and ready for transmission to the requestor. (6.5) 									
	125.0	Hold and aggregate data or error messages received from the data repository as determined by the community.					IBM-310-05	125.3	Create ad hoc and specifically requested summary or accumulated data as a result of user-defined queries
								126.3	Ability to specify (limit) amount of data that can be stored as transient data on the system in terms of volume and size of expected requests
NON-FUNCTIONAL									
Accuracy									
Business Rules									
Performance									
Robustness									

Functional Categories	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
High Level Functional Requirements (Referenced to numeric sequence in NCVHS Report)		A NHIN should . . .		Edge systems should . . .					<i>Architectural Variations</i>
Scalability									

Functional Categories DRAFT 092006	#	Network Functionality A NHIN should . . .	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) <i>Architectural Variations</i>
SECURITY									
Authentication	1.0	Authenticate entity access to NHIN interface	1.1	Authenticate entity to NHIN interface			IBM-209-02 NGIT-129 NGIT-094		
	2.0	Authenticate all users to NHIN interface	2.1	Authenticate user accesses into the system			ACN-07.6 ACN-07.6.1 and CSC-SEC-50		<i>Edge systems should authenticate their own users. The strength of the authentication should be passed with the user information so that a responding Edge system may determine if that is sufficient for disclosure.</i>
	3.0	Authenticate all systems to NHIN interface	3.1	Verify authenticity of system sending data			ACN-07.6.2 and IBM-204-03	3.3	Generate authorization for re-linking
	4.0	Protect user and system authentication credentials during transmission from the user to the NHIN.					ACN-07.6.2 ACN-7.8.3		(Support secure mechanism for transmission of user credentials during authentication process.)
	5.0	Provide a mechanism for ensuring non-repudiation.	5.1	Provide a mechanism for ensuring non-repudiation.			ACN-07.7 and ACN-07.9		
	6.0	Authenticate Record Locator Service to remote record locator and receive error message if requesting locator is not authorized or if content of data request location is not verified.	6.1	Authenticate Record Locator Service			IBM-209-24 IBM-209-25		
Authorization	7.0	Authorize an entity's request for data	7.1	Allow NHIN-based users to access only data sets associated with their assigned roles.			IBM-209-07 NGIT-151 NGIT-005 and ACN-07.11.3		<i>Ability for CDO to opt-out of biosurveillance activities.</i> (HIPAA Privacy Rule should serve as the minimum standard for the use and disclosure of PHI from the NHIN or from Edge Systems. When a legal authority is not present, the patient or legal representative should execute a signed written authorization for disclosure. Management of authorization needs to include addition and revocation of authorizations.)

Functional Categories DRAFT 092006	#	Network Functionality A NHIN should . . .	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) Architectural Variations
	8.0	Associate a single role with any one user session.					ACN-07.11.4		Architectural variation
	9.0	Provide NHIN administration capabilities (e.g., creation of permissions) to be executed only by authorized NHIN users.	9.1	Designate an administrator role covering administration of internal resources.			ACN-07.11.7 ACN-07.12.3 ACN-07.12.6 ACN-07.12.7		
	10.0	Provide consent management to capture an individual's consent to sharing data, make any changes in consent, and allow authorized access based on consent status.	10.1	Provide consent management to capture an individual's consent to sharing data, make any changes in consent, and allow authorized access based on consent status.			ACN-07.1 ACN-07.1.1 ACN-07.1.2 ACN-07.1.3 ACN-07.1.4		
	11.0	Provide an appropriate Edge System registration/certification capability before access to the NHIN is granted.	11.1	Establish user authorizations to use specific functions of the system			ACN-07.3.2 ACN-07.3.3 ACN-07.3 ACN-07.3.1 and CSC-SEC-60		(Fully support registration requirements (i.e., key components, approvers, authorizations, out-of-band registration, etc.)) (Registration of prescribers and pharmacies. Certification of physician and pharmacy systems.) (Support the specific roles of research for access to patient and de-identification of data)
Confidentiality	12.0	Enforce NHIN security and privacy policies, HITSP security standards, and HIPAA and other federal, state, and local legislation/regulation					CSC-SEC-190 IBM-107-09 ACN-07.20 ACN-07.20.1 ACN-07.20.2		(Enable systems to securely transmit data outside of the health architecture and between entities within the health architecture)
	13.0	Messaging Handling Systems should support transport level security and protect confidentiality of data and services over the network using encryption.	13.1	All Edge Systems should support transport level security and protect confidentiality of data and services over the network using encryption.			CSC-SEC-10 NGIT-006		
					14.2	NHIN Interface should assure that randomized linker is attached to anonymized data before transmission and support re-linking for public health purposes	IBM-102-07 NGIT-066 NGIT-069 NGIT-116		

Functional Categories DRAFT 092006	#	Network Functionality A NHIN should . . .	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) <i>Architectural Variations</i>
Credentialing	15.0	Register entities and system administrators to participate in the NHIN	15.1	Register patients, providers, public health users, system administrators to participate in the NHIN			CSC-SEC-240 ACN-04.3 ACN-04.6	15.3	Ensure that credentialing information is accurate.
			16.1	Maintain the identities of its users, according to a written and approved security policy.			CSC-SEC-250		
			17.1	Provide look-up and reconciliation service for third parties			IBM-203-02		<i>Verify user credentials across NHIN, and with National Provider Identifier and National Plan Identifier Enumeration Systems</i>
INFORMATION LOCATION									
Identity/Information Correlation	18.0	Use the Record Locator Service to resolve (link and unlink) patient identity ambiguities	18.1	Provide method for clinician and locator system to agree on patient identity through patient trait matching, shared MPI or patient identifier matching.			CSC-ALL-320 ACN-02.1.3 ACN-02.1.4 and IBM-307-11 IBM-307-13 IBM-307-14		<i>Establish valid identity for consumer by trusted parties, including health plans and plan sponsors; PHRs (via unique "tokens" or similar mechanisms that express consumer's identity and willingness to exchange data)</i>
	19.0	Return unambiguous patient identities for all query results.					CSC-ALL-770 NGIT-008 IBM-307-08		
	20.0	Contain/maintain an index of unique patients participating in the NHIN.	20.1	Maintain latest available patient identifying information			ACN-02.1 NGIT-007 and CSC-ALL-180		<i>Use blinded, secure RLS, such as through bi-gramming and other techniques to achieve approximate matching and one way hashing</i>
	21.0	Uniquely identify a person [through probabilistic matching on] by various identifiers, such as: - Last Name - Middle Name - First Name - Date of Birth - Gender	21.1	Uniquely identify a person by various identifiers, such as: - Last Name - Middle Name - First Name - Date of Birth - Gender			ACN-02.1.1 CSC-ALL-300 and IBM-209-17		<i>(Use an agreed-upon list of unique data elements and data identifiers.) Use a patient matching scheme were the Edge MPI becomes a Person Locator Service by extending the correlating process to include the Edge identity as the context for the Person ID. Use a balanced matching algorithm (required to be a HITSP standard) so that correlation results will be identical, regardless of the sequence of matching initiation.</i>

Functional Categories DRAFT 092006	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
		A NHIN should . . .		Edge systems should . . .		Architectural Variations			
	22.0	Receive, validate, and update unique patient information from participating edge systems	22.1	Send demographic information to record locator to identify patient for query.			ACN-02.1.2 IBM-307-08 ACN-02.1.2.2 ACN-02.1.2.6		
	23.0	Return patient identifiers previously uploaded by data sources for a uniquely identified patient					CSC-ALL-770 CSC-ALL-280 IBM-307-09 NGIT-009		
	24.0	Maintain a unique organizational identifier for each participating edge system, creating, updating, and inactivating identifiers [for non-HIPAA covered entities].					ACN-05.2 ACN-05.2.1.1 ACN-05.2.1.2 ACN-05.2.1.3		
					25.2	Record Locator Service should match patient to respective sources of data when populating the PHR from the NHIN	IBM-205-05 IBM-207-05		
					26.2	CDO-CDO NHIN Interface should determine when multiple and or independently submitted data refer to the same case (patient) or event to minimize double counting for biosurveillance.	IBM-103-13		
					27.2	Consumer System-PHR should maintain an XDS repository following pre-population of PHR	IBM-205-19 IBM-207-19		
			28.1	Establish patient-provider relationships.			ACN-04.10		(Link parent/child records and family records. Link to vital statistics records. Also intentionally disassociate parent/child records.)
					29.2	CDO should embed randomized data linker to allow authorized re-identification for Public Health	CSC-BIO-530		
Record Location	30.0	Contain one Record Locator Service (RLS) for NHIN searches					IBM-205-06 IBM-209-13 IBM-207-06		Support multiple instances of an RLS, each of which could support different data domains (e.g., clinical, lab, claims, etc.). Combine results of individual RLS' to respond to queries.

Functional Categories DRAFT 092006	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
		A NHIN should . . .		Edge systems should . . .		Architectural Variations			
	31.0	Notify/return pointers to requesting edge systems that identified edge systems contain or do not contain the requested data					IBM-209-33 ACN-02.3.10 ACN-02.3.1 IBM-209-15 IBM-209-26		
	32.0	Support HITSP standard feeds as incoming queries to record locator service					IBM-205-08		
	33.0	Receive notification from remote marketplace for data location request message					IBM-209-26		
	34.0	Receive data locations from remote marketplaces					IBM-209-27		
	35.0	Query data sources for requested data and return data to requestor					NGIT-010		
DATA TRANSACTION									
Pull	36.0	Receive notification of data to be sent					IBM-102-02		
	37.0	Accept and respond to authenticated and authorized queries for data for a patient.	37.1	Receive requested data			CSC-ALL-750 and IBM-311-02	37.3	Leverage full data model and data dictionary (consistent metadata) as a basis for any kind of data retrieval (Leverage BRIDG meta-model as a standard means of exchanging relevant clinical trials-related data. Provide for semantic interoperability through use of caDSR and EVS)
	38.0	Accept lists of other SNOs to contact as part of queries, and query these other SNOs in addition to querying repositories within its SNO.	38.1	Use the NHIN Interface to query outside the SNO for health data for a patient.			CSC-ALL-780 and CSC-ALL-880		
	39.0	Identify the unique patient in request and locate system(s) containing the data requested	39.1	Receive location(s) where data are stored; browse and select relevant data location information from which to request data			CSC-ALL-40 CSC-ALL-780 ACN-02.3 IBM-307-21 IBM-209-25		
	40.0	Transmit request for a location to send data to requesting system	40.1	Transmit request to view data directly from a providing system			IBM-209-12 ACN-02.2 ACN-02.3.3		

Functional Categories DRAFT 092006	#	Network Functionality A NHIN should . . .	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) <i>Architectural Variations</i>
	41.0	Aggregate appropriate records from NHIN query	41.1	Aggregate appropriate records from NHIN query			IBM-205-14 CSC-ALL-840 CSC-ALL-40 ACN-02.3.15		
			42.1	Accept update messages from other edge systems.					
			43.1	Return clinical data in response to authorized queries.			CSC-ALL-660		
Push	44.0	Deliver messages (along with any appropriate metadata) to destination organization(s)/requesting edge system(s) or notify sender they are undeliverable					CSC-ALL-430 IBM-102-10	44.3	Acknowledge receipt and retransmit if necessary. Information metadata should include standards such as UML and XSD.
					45.2	Data Analysis and Secondary Use Systems-Public Health receive anonymized health data from participating edge systems and transmit to Public Health systems	ACN-06-1.1.2 ACN-06.1.12 ACN-06.1.13 IBM-102-11 IBM-103-11 ACN-05.1.1.1 NGIT-159		
					45.2	Data Analysis and Secondary Use Systems-Public Health and Payer Systems communicate data (e.g., updates and instructions, potentially including list of essential data to be transmitted, trigger, timeframe, and data to be sent) directly to caregivers or others to monitor a previously detected event	IBM-106-03 IBM-104-02 NGIT-076 CSC-BIO-580 CSC-BIO-550 IBM-106-01 NGIT-159		
					46.2	Data Analysis and Secondary Use Systems-Public Health communicate (via multiple media) approved Public Health updates and alerts to public media, neighboring communities, and biosurveillance responders	IBM-106-05 IBM-106-06 IBM-107-01 NGIT-160 IBM-107-11		

Functional Categories DRAFT 092006	#	Network Functionality A NHIN should . . .	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) <i>Architectural Variations</i>
					47.2	Care Delivery Organization(s) receive patient specific biosurveillance event response information message from Public Health to support event response	IBM-107-13		
			48.1	Receive new event location information, availability, and/or data from a repository or other edge system			IBM-306-01 IBM-306-02 IBM-209-10 ACN-06.1.1 IBM-209-10	48.3	Provide for real-time, bi-directional secure messaging between edge systems to enable quick and efficient communications among stakeholders
			49.1	Send new patient location, event location, availability information, and data, according to sensitivity restrictions, patient consent, and provider preferences			IBM-505-08 IBM-305-09 IBM-303-04 CSC-ALL-190 IBM-207-31 IBM-304-11		
					50.2	Consumer System-PHR should provide capability for consumer to transfer data from one PHR to another PHR	IBM-207-39 IBM-211-02 NGIT-099 and CSC-CE-430		
Audit and Logging	51.0	Log all interactions/transactions in accordance with HITSP standards for content and format of audit logging.	51.1	Log all interactions/transactions in accordance with HITSP standards for content and format of audit logging.			CSC-ALL-80 IBM-102-14 ACN-02.2.1 IBM-207-37 IBM-211-09 IBM-319-37 ACN-07.16 IBM-305-13 IBM-307-28		<i>The only audit and logging functions performed by the network should be those associated with NHIN connection and disconnection of an Edge system, whether intentional or unintentional, and the transactions to manage any information in an Edge Registry.</i>
	52.0	Retain logs for period of time determined by law, accrediting agencies, marketplace, and entities	52.1	Retain logs for period of time determined by law, accrediting agencies, marketplace, and entities			NGIT-011 ACN-07.16.9 IBM-319-45 IBM-319-33		(Destruction of logs)
	53.0	Consolidate logs from NHIN systems					ACN-07.16.12		(Cross-organizational logging)
	54.0	Maintain log of updates to patient information location					NGIT-146		
	55.0	Protect audit data from unauthorized access/modification	55.1	Protect audit data from unauthorized access/modification			CSC-SEC-120 IBM319-42		

Functional Categories DRAFT 092006	#	Network Functionality A NHIN should . . .	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) <i>Architectural Variations</i>
	56.0	Notify and log notifications and receive and log confirmations that requests for patient data are received and being processed (including timeout notifications)	56.1	Acknowledge receipt of data			ACN-02.2.3 ACN-02.2.4 ACN-02.3.11 ACN-02.3.2 ACN-02.3.4 ACN-02.3.5		
	57.0	Generate administrative and system monitoring reports					ACN-02.4 ACN-02.4.1		(Address throughput of system given auditing/logging requirements)
	58.0	Generate alerts/notifications for system activity outside the normal range of monitoring levels/thresholds					ACN-02.4.3 ACN-07.16.14 ACN-		
	59.0	Log all relevant infrastructure level authentication attempts	59.1	Log all relevant system level authentication attempts			ACN-07.16.1 and ACN-07.16.5		
			60.1	Log all relevant system level access attempts					
	61.0	Log all configuration changes	61.1	Log all configuration changes			ACN-07.16.10		
	62.0	Log all modifications to consent status (for data sharing)	62.1	Log all modifications to consent status (for data sharing)			ACN-07.16.11 and ACN-07.17.7		
			63.1	Log all modifications to [legitimate need] access events					
	64.0	Generate evidence to support incident management (investigations) and response processes (corrective action)	63.1	Generate evidence to support incident management (investigations) and response processes (corrective action)			ACN-07.16.15 ACN-07.16.7 ACN-07.16.8		
	65.0	Conduct regular risk assessments	65.1	Conduct regular risk assessments			ACN-07.24 and ACN-07.25 NGIT-113		
					66.2	CDO-EMR should create an exception list when lab results can not be unequivocally be matched to an order/patient/etc.			
			67.1	Provide capability for easy retrieval of audit trail and present in a manner understandable to patient or proxy			IBM-320-01 IBM-320-02 IBM-320-03 IBM-320-04		

Functional Categories DRAFT 092006	#	Network Functionality A NHIN should . . .	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) <i>Architectural Variations</i>
					68.2	Repositories should log interaction with clinician or data stager related to processing requests for historical lab results	IBM-309-14		
								69.3	Data version should enable exact recreation of a record as it existed at a particular point in time for legal and medical reviews
Data Access and Update	70.0	Configure environment to monitor, process and send matching patient care and any available resource utilization data					IBM-102-03		(Enable workflow and quality (cooperative work distributed across entities, e.g., ordering and results of lab tests or prescriptions)) (Enable messaging from patient to care provider's clinical workflow solution)
	71.0	Accept and maintain updates to patient identifying information					CSC-ALL-200		
			72.1	Accept request to locate and retrieve data			CSC-CE-540	72.3	Provide for dynamic information access (direct request/response interactions to specific target systems, e.g., query of immunization registry)
					73.2	Consumer System-PHR should allow consumer to request that PHR be prepopulated with applicable data at applicable times	IBM-205-01 IBM-207-01	73.3	(Make available consumer health risk assessment and current health care conditions in support of a consumer's choice of health benefits, optimal contribution to their Health Savings Account, and in support of treatment and provider decisions.)
					74.2	Consumer System-PHR should allow consumer to select whether their PHR data will be available via the NHIN	IBM-208-01		
					75.2	Consumer System-PHR should adhere to laws governing how minors' records can be accessed by a third party across marketplaces	IBM-212-36		

Functional Categories DRAFT 092006	#	Network Functionality A NHIN should . . .	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) <i>Architectural Variations</i>
			76.1	Notify requesting user if data exists in an identified edge system but has not been received in a timely period.			ACN-02.3.7		
					77.2	Health information intermediaries should allow payers, providers, patients, and other stakeholders the ability to share information to support medical research, drug safety and post-marketing drug surveillance, clinical trial recruitment and execution, public health surveillance, care management and other quality initiatives, and patient care.	ACN-01.10 ACN-01.11 ACN-01.12 ACN-01.14 ACN.01.15 ACN-01.9		(Enable consumers to gain insight into their health history in order to provide a better context for treatment, benefit, and provider decisions)
			78.1	Provide a "break-the-glass" function for authorized users to bypass normal security barriers during an emergency.			CSC-SEC-140	78.3	Support consistent methodology for granting access (e.g., role or system interface). Change "break-the-glass" to "structured, approved emergency access process"
			79.1	Provide a web interface if a system is not available to perform NHIN queries.			CSC-ALL-990 CSC-EHR-510		(Allow for establishment of systems based on Services-Oriented Architectures (SOA))
			80.1	Accept inserts, updates and amendments to persisted data.			CSC-ALL-710		
Data Routing	81.0	Accept and route all authorized messages to designated edge systems.					CSC-ALL-410		(Support routing and alerts based on roles and organizational responsibilities)
			82.1	Send data feeds to NHIN Interface			IBM-208-04		
					83.2	CDO-CDO NHIN Interface should apply business rules for routing biosurveillance data	IBM-103-09 IBM-107-06 IBM-107-05		
	84.0	Send messages according to authorized recipient's specified mode (e.g., secure email, web application, EHR/responder system)					IBM-107-07	84.3	Support for auditable data exchanges for messages requiring confirmed delivery or acknowledgement of receipt.

Functional Categories DRAFT 092006	#	Network Functionality A NHIN should . . .	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) Architectural Variations	
			85.1	Specify method and destinations of message delivery			CSC-ALL-420 CSC-ALL-440			
Data Transaction Verification*		<i>This category is not on original ONC document, and seems to be addressed by some contractors in Data Content: Data Quality/Data Integrity</i>								
???-Configuration	86.0	Support the specification of level of participation of an organization (entity) with the NHIN					NGIT-002			
								87.3	Maintain registry of Edge Systems, including types of records and which the Edge may have	
DATA TRANSFORMATION										
Data Filtering	88.0	Accept and apply filter rules	88.1	Support various filters for queried or returned data			NGIT-062 NGIT-063 NGIT-064	88.3	Capability to enable process that governs filtering capabilities	
			89.1	Aggregate data for transmission as determined by HITSP implementation guide			NGIT-065 NGIT-059			
	90.0	Allow clinician to subscribe and unsubscribe to specified or all available future clinical events data for specified patient					IBM-318-01 IBM-318-02	90.3	Support hierarchical data structure and clarified metadata definitions to enable filtering	
	91.0	Store provider preferences to automatically receive information					IBM-313-01 IBM-313-02 IBM-313-03			
			92.1	Provide clinician ability to query for results based on one or multiple criteria for a specified patient			IBM-307-32 IBM-307-30	92.3	Support medical supplies inventory and resource management (e.g., flu vaccines, bed count to support surge capacity and special needs)	
Data Mapping/Translation	93.0	Transform data using HITSP standards to support meaningful communication across the NHIN					IBM-102-08 NGIT-100	93.3	Enable patients and clinicians to report adverse medical events and/or errors	
			94.1	Receive data to parse into application system			IBM-209-34 IBM-209-39	94.3	Communicate with the NHIN using terminology standards used to support clinical research and drug approval/monitoring (such as CDISC and MedDRA)	

Functional Categories DRAFT 092006	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) <i>Architectural Variations</i>
			95.1	Communicate with the NHIN using HITSP standard content and message formats.			ACN-02.5 through ACN-02.5.2.9		
					96.2	Terminology servers should contain mapping of local terminologies to HITSP standard terminologies	ACN-04.11	96.3	Data mapping/translation between versions of a standard and between standards
					97.2	Terminology servers should present data to users in desired terminology	ACN-04.12	97.3	Evolutionary maturity among code sets
					98.2	Consumer System-PHR may offer 'translation' services for PHRs to provide clinical data in easy to read and understandable	IBM-212-14	98.3	Capability to support Section 508 compliance (e.g., handicapped access, multiple language needs, etc.)
Data Rendering	99.0	Support display, entry, and retrieval of data transmission in multiple languages	99.1	Support display, entry, and retrieval of data content in multiple languages			IBM-317-06 IBM-317-07 IBM-317-08		
	####	External user interfaces provide data transmission in a manner accessible for handicapped	100.1	Edge system provide accessibility for handicapped interaction with data content			IBM-317-10 and IBM-317-05	####	Enable data collection and presentation capabilities mandated by federal standards
			101.1	Display data in an easy to understand manner determined by the receiving entity or			IBM-306-11 IBM-306-12		
			102.1	Give providers and patients ability to view applicable information			ACN-01.1 through ACN01.8		
DATA CONTENT									
Data Content	####	Transmit well-formed messages that conform to a HITSP interoperability specification					CSC-ALL-50		
	####	Require HITSP standard message formats and implementation guidelines for queries and responses	104.1	Transmit well formed messages according to a HITSP specified implementation instruction when communicating with the NHIN Interface.			CSC-ALL-800 and CSC-ALL-60		
	####	Adhere to approved content standards as provided by HITSP when sending data	105.1	Adhere to approved content standards as provided by HITSP when sending data			IBM-305-10 and IBM-308-12		

Functional Categories DRAFT 092006	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) <i>Architectural Variations</i>
	####	Send notification of new [lab result] event message that may include: patient identifying information, storing repository identifying information, storing repository marketplace, information necessary for indexing and restrictions for use, and other content.	106.1	Send data that includes [results data] as well as information necessary for indexing and restrictions for use.			IBM-305-11 IBM-303-07		
					107.2	NHIN Administration-Data Stager (IBM) may support data staging on behalf of clinician	IBM-308-11 IBM-310-07 IBM-310-08		
Data Quality/Integrity	####	Validate authenticity of (solicited or unsolicited) event location message (query and response) and transmit error message if not valid	108.1	Validate authenticity of (solicited or unsolicited) event location message (query and response) and transmit error message if not valid			IBM-316-12		
	####	Process acknowledgment of transmission or receipt of data content message and retransmit/receive if necessary	109.1	Process acknowledgment of transmission or receipt of data content message and retransmit/receive if necessary			IBM-102-15		
	####	Verify integrity and completeness of data received and transmit error message if necessary	110.1	Verify integrity and completeness of data received and transmit error message if necessary			IBM-305-03		
			111.1	Enforce non-repudiation of message or query origin			CSC-SEC-150		
Data Source			112.1	Identify source of externally-provided data			IBM-310-07 NGIT-104	####	Require common data dictionary and metadata
					113.2	NHIN Administration-Utilization Reporting System (IBM) should provide unit-level census and facility utilization data for emergency planning	IBM-101-11 IBM-101-12 IBM-101-13 IBM-106-10	####	Provide unit-level census data as specified in the Biosurveillance use case. Unit-level census data includes: unit name, number of patients by unit, number of beds available by unit, and emergency room triage marginal capacity as a percentage and head-count.

Functional Categories DRAFT 092006	#	Network Functionality A NHIN should . . .	#	Functional requirements for GENERAL edge systems relating to networking Edge systems should . . .	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity) <i>Architectural Variations</i>
					114.2	CDO-LIS should provide additional/revised patient data (demographics, clinical data, lab and radiology test orders and results) to monitor a previously detected event for biosurveillance	IBM-106-09 and related fcns		
Data Usage	####	Enable edge systems to acquire data to monitor a previously detected event, generate alerts/notifications to publi health users, populate an Electronic Health Record, populate a Personal Health Record, etc.					ACN-03.3.1 IBM-106-4 ACN-03.1.1 ACN-06.1.8		
								####	Enable access to, automated collection of, and public health surveillance for current medical product and food safety information.
								####	Enable patients and their proxies to find and enroll in appropriate clinical trials. Enable providers and investigators to find and enroll their patients in clincial trials.
								####	Capture clinical information as part of the normal health care interaction that can be used for clinical trials in a 21CFR Part 11 compliant manner.
								####	Generate reports and derive insights from healthcare data
								####	Provide for administrative services of billing and reporting
					121.2	Data Analysis and Secondary Use Systems should ggregate anonymized health data from participating edge systems for various public health purposes, clinical research, and drug outcome comparator studies	ACN-06.1.4 ACN-06.1 ACN-06.1.5 ACN-06.1.6 ACN-06.3		

DATA STORAGE

Functional Categories DRAFT 092006	#	Network Functionality	#	Functional requirements for GENERAL edge systems relating to networking	#	Functional requirements for SPECIFIC edge systems relating to networking	ID from Original Source Spread sheet	#	Potential Gaps (or Specificity)
		A NHIN should . . .		Edge systems should . . .		<i>Architectural Variations</i>			
Persistent								####	Automatically purge/remove data as determined by policy/business rules
								####	Persistent information management (storing/sharing aggregated records from uncoordinated sources across time, e.g., medical summaries)
Transient	####	Hold and aggregate data or error messages received from the data repository as determined by the community.					IBM-310-05	####	Create ad hoc and specifically requested summary or accumulated data as a result of user-defined queries
								####	Ability to specify (limit) amount of data that can be stored as transient data on the system in terms of volume and size of expected requests
NON-FUNCTIONAL									
Accuracy									
Business Rules									
Performance									
Robustness									
Scalability									

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1028	NGIT-002	NHIN Administration-Organization Registration	1 Shall	Support the specification of level of participation of an organization (entity) with the NHIN	???-Configuration (NGIT)	Core	Infrastructure		N	Appears to be needed in order to determine connectivity capability of any entity
1029	NGIT-003	NHIN Administration-System Registration	1 Shall	Support physical communication configuration for an organization (entity)	???-Configuration (NGIT)	Core	Infrastructure			Out of scope
954	IBM-316-10	CDO-EMR	May	Store lab supplied unique lab order identification information	???-Unknown (IBM)	Edge	EHR - Lab		X	
334	CSC-ALL-50	CDO-CDO NHIN Interface	1 Shall	Transmit well formed messages according to a HITSP specified implementation instruction.	Data Content	Core	Infrastructure	IBM-303-05 IBM-303-06	N	Combined with related functions
351	CSC-ALL-800	CDO-CDO NHIN Interface	1 Shall	Require HITSP standard message formats and implementation guidelines for queries and responses.	Data Content	Core	Infrastructure	CSC-ALL-50 IBM-303-05 IBM-303-06	N	Seems to assume a specific architecture
803	IBM-305-10	RLS	1 Shall	Adhere to approved content standards as provided by HITSP when sending notification of new lab results to clinicians.	Data Content	Core	EHR - Lab		N	Appears to be an enhanced application function with respect to Data Access and
1120	NGIT-145	RLS	1 Shall	Maintain information on the location of patient data available through network services	Data Content	Core	Infrastructure			Seems to be a Record Location function
804	IBM-305-11	RLS	2 Should	Send notification of new lab result event message that may include: patient identifying information, storing repository identifying information, storing repository marketplace and other content	Data Content	Core	EHR - Lab		N	Appears to be an enhanced application function
336	CSC-ALL-60	All Edge Systems (CSC)	1 Shall	Transmit well formed messages according to a HITSP specified implementation instruction, when communicating with the NHIN Interface.	Data Content	Edge	Infrastructure	IBM-303-05 CSC-ALL-50 IBM-303-06	E	Combined
888	IBM-308-12	CDO-EMR	1 Shall	Adhere to approved content standards as provided by HITSP when sending request for lab result data to repository	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06	E	Combined
946	IBM-316-02	CDO-EMR	1 Shall	Adhere to approved content standards as provided by HITSP when sending lab orders to lab	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
759	IBM-303-01	CDO-LIS	1 Shall	Create preliminary, final and updated results for lab test.	Data Content	Edge	EHR - Lab	CSC-EHR-360 NGIT-119 NGIT-141	X	Appears to be an enhanced application function
763	IBM-303-05	CDO-LIS	1 Shall	Adhere to approved content standards as provided by HITSP when sending lab results data to the repository.	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-06	E	Combined
764	IBM-303-06	CDO-LIS	1 Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data.	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05	N	This combines all possible HITSP standards and could replace other more specific statements
765	IBM-303-07	CDO-LIS	1 Shall	Send data from the lab to the storing repository that includes results data as well as information necessary for indexing and restrictions for use.	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06	E	Unless assumed by HITSP standards, raise to generic function of: "Transmit data as well as information necessary for indexing and restrictions for use"
889	IBM-308-13	External User interfaces	1 Shall	Adhere to approved content standards as provided by HITSP when sending request for lab result data to repository	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06	E	Combined
887	IBM-308-11	NHIN Administration-Data Stager (IBM)	1 Shall	Adhere to approved content standards as provided by HITSP when sending request for lab result data to repository	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06	E	Combined
913	IBM-310-07	NHIN Administration-Data Stager (IBM)	1 Shall	Sends the identity of the data source to the requesting clinician if the data stager receives the data from the data source on behalf of the clinician	Data Content	Edge	EHR - Lab	NGIT-104	E	
914	IBM-310-08	NHIN Administration-Data Stager (IBM)	1 Shall	Transmit messages for failed searches to the requesting clinician if the data stager receives the data from the data source on behalf of the clinician	Data Content	Edge	EHR - Lab		E	Could be combined with more general function of NHIN notification of search results
780	IBM-304-14	Repositories	1 Shall	Adhere to approved content standards as provided by HITSP when sending information about lab result location to record locator	Data Content	Edge	EHR - Lab	IBM-303-05 IBM-303-06 CSC-ALL-60	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
904	IBM-309-12	Repositories	1 Shall	Conform to approved vocabulary, structure and messaging standards as provided by HITSP when transmitting lab result event data to EHRs	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06	E	Combined
890	IBM-308-14	CDO-EMR	2 Should	Include name of the requesting clinician; the HIPAA designated National Provider ID and name of the clinician's affiliated organization, and identifying information for the requesting marketplace as part of the data request transmission when sending request for lab result data to repository.	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06 IMB-308-15	E	Seems to be specificity that should be included in HITSP content and message format standards.
947	IBM-316-03	CDO-EMR	2 Should	Include name of the requesting clinician; the HIPAA designated National Provider ID and name of the clinician's affiliated organization; and identifying information for the requesting marketplace as part of the data request transmission when sending lab orders to lab.	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06 IBM-308-15	E	Seems to be specificity that should be included in HITSP content and message format standards.
1094	NGIT-115	CDO-EMR	2 Should	Identify providers associated in the care of the patient, and their relationship to patient and/or procedures	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06 IBM-308-15	X	Seems to be specificity that should be included in HITSP content and message format standards.
754	IBM-212-38	Consumer System-PHR	2 Should	Retain data according to SLAs	Data Content	Edge	CE - Consumer		X	Seems to fit under Persistent Data Storage
569	IBM-107-03	Data Analysis and Secondary Use Systems-Public Health	2 Should	Allow sender to specify type and urgency of biosurveillance "broadcast" messages to support event response	Data Content	Edge	Biosurveillance		E	
891	IBM-308-15	External User interfaces	2 Should	Include name of the requesting clinician; the HIPAA designated National Provider ID and name of the clinician's affiliated organization, and identifying information for the requesting marketplace as part of the data request transmission when sending request for lab result data to repository.	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06	E	Duplicative

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
892	IBM-308-16	NHIN Administration-Data Stager (IBM)	2 Should	Include name of the requesting clinician; the HIPAA designated National Provider ID and name of the clinician's affiliated organization, and identifying information for the requesting marketplace as part of the data request transmission when sending request for lab result data to repository.	Data Content	Edge	EHR - Lab	CSC-ALL-50 IBM-303-06 IBM-308-15	E	Duplicative
912	IBM-310-06	NHIN Administration-Data Stager (IBM)	2 Should	Inform requesting clinician that the transmission is incomplete if the stager sends data before all queried data sources respond	Data Content	Edge	EHR - Lab		E	Seems to suggest a specific architecture
435	CSC-EHR-380	CDO	May	Flag availability, and transmit lab results updates and corrections to the appropriate repositior(ies). The repository might be part of the same system, for example an EMR system, that received the results.	Data Content	Edge	EHR - Lab	CSC-EHR-360 NGIT-119 NGIT-141	X	Appears to be an enhanced application function
948	IBM-316-04	CDO-EMR	May	Indicate for lab to send result event messages to ordering clinician's EMR and include in lab order message to lab	Data Content	Edge	EHR - Lab	CSC-EHR-360 NGIT-119 NGIT-141	X	Appears to be an enhanced application function
949	IBM-316-05	CDO-EMR	May	Indicate to send result event availability notifications to ordering clinician's EMR and include in lab order message sent to lab.	Data Content	Edge	EHR - Lab	CSC-EHR-360 NGIT-119 NGIT-141	X	Appears to be an enhanced application function
950	IBM-316-06	CDO-EMR	May	Indicate for lab to send result availability notification to other clinicians and include in lab order message sent to lab	Data Content	Edge	EHR - Lab	CSC-EHR-360 NGIT-119 NGIT-141	X	Appears to be an enhanced application function
428	CSC-EHR-300	CDO-LIS	May	Report results including but not limited to: clinical chemistry, hematology, serology, and microbiology, radiology, cardiology, and neurology.	Data Content	Edge	EHR - Lab		X	
436	CSC-EHR-382	CDO-LIS	May	Flag availability, and transmit lab results updates and corrections to the appropriate Repositor(ies). The repository might be part of the LIS	Data Content	Edge	EHR - Lab	CSC-EHR-360 NGIT-119 NGIT-141	X	Appears to be an enhanced application function
960	IBM-316-16	CDO-LIS	May	Send unique identifier to facilitate electronic retrieval of lab results to clinician	Data Content	Edge	EHR - Lab		X	Seems to assume a specific RLS architecture
717	IBM-212-01	Consumer System-PHR	May	Be able to retrieve clinical notes	Data Content	Edge	CE - Consumer		X	
718	IBM-212-02	Consumer System-PHR	May	Be able to retrieve lab results	Data Content	Edge	CE - Consumer		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
720	IBM-212-04	Consumer System-PHR	May	Capture and maintain data on clinical encounters and outpatient and inpatient procedures, including date, facility, attending Health Care Provider, diagnoses procedures, and type of encounter	Data Content	Edge	CE - Consumer		X	
721	IBM-212-05	Consumer System-PHR	May	Capture and maintain the presence and/or absence of a history of major diseases among the PHR Account Holder's close blood relatives	Data Content	Edge	CE - Consumer		X	
722	IBM-212-06	Consumer System-PHR	May	Capture and maintain the PHR Account Holder's health problem list. Provide ability to manage the problem list over time	Data Content	Edge	CE - Consumer		X	
723	IBM-212-07	Consumer System-PHR	May	Capture and maintain the PHR Account Holder's list of known allergens and adverse reactions with all pertinent information	Data Content	Edge	CE - Consumer		X	
724	IBM-212-08	Consumer System-PHR	May	Capture and maintain the PHR Account Holder's immunizations in a way that can be easily viewed over time	Data Content	Edge	CE - Consumer		X	
729	IBM-212-13	Consumer System-PHR	May	Capture the PHR Account Holder's advanced directive as well as the date and circumstances under which the directives are provided, and/or the location and/or custodian's contact information for any legally attested records of advanced directives as appropriate	Data Content	Edge	CE - Consumer		X	
734	IBM-212-18	Consumer System-PHR	May	Display health data — both patient sourced and professionally sourced — with consumer-friendly terminology	Data Content	Edge	CE - Consumer		X	Seems to be Data Mapping/Translation function
749	IBM-212-33	Consumer System-PHR	May	Provide access to the PHR Account Holder's care plan(s)	Data Content	Edge	CE - Consumer		X	
750	IBM-212-34	Consumer System-PHR	May	Provide access to financial data from clinical and pharmacy sources	Data Content	Edge	CE - Consumer		X	
568	IBM-107-02	Data Analysis and Secondary Use Systems-Public Health	May	Provide and support template driven composition of biosurveillance event response "broadcast" messages to support event response	Data Content	Edge	Biosurveillance		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
527	IBM-102-15	CDO-CDO NHIN Interface	1 Shall	Process acknowledgment of accurate receipt from PH Agency and retransmit if necessary	Data Content-Data Quality/Data Integrity	Core	Bio		N	Raised to generic level and combined with related functions
542	IBM-103-15	CDO-CDO NHIN Interface	1 Shall	Process acknowledgment of accurate receipt from PH Agency and retransmit if necessary	Data Content-Data Quality/Data Integrity	Core	Bio	IBM-102-15		Duplicative
155	ACN-07	NHIN Overarching (ACN)	1 Shall	Provide appropriate security and privacy processes to protect healthcare data.	Data Content-Data Quality/Data Integrity	Core	Infrastructure		N	Vague; is more specific elsewhere
796	IBM-305-03	RLS	1 Shall	Verify integrity and completeness of content of new lab result event location message sent from lab data repository	Data Content-Data Quality/Data Integrity	Core	EHR - Lab		N	Raised to generic level and combined with related functions
797	IBM-305-04	RLS	1 Shall	Send error message to repository if authenticity not validated for repository sending new lab result event location message	Data Content-Data Quality/Data Integrity	Core	EHR - Lab	IBM-305-03	N	Combined
798	IBM-305-05	RLS	1 Shall	Send error message to repository if content not validated for new lab result event location message	Data Content-Data Quality/Data Integrity	Core	EHR - Lab	IBM-305-03	N	Combined
799	IBM-305-06	RLS	1 Shall	Send acknowledgement message to repository for successful transmission of new lab result event location notification message	Data Content-Data Quality/Data Integrity	Core	EHR - Lab	IBM-305-03	N	Combined
807	IBM-305-14	RLS	1 Shall	Receive acknowledgement of successful transmission of new lab results availability notification message from clinician EHR or web application	Data Content-Data Quality/Data Integrity	Core	EHR - Lab	IBM-305-03	N	Combined
842	IBM-307-22	RLS	1 Shall	Authenticate to remote marketplace record locator	Data Content-Data Quality/Data Integrity	Core	EHR - Lab		N	Seems to assume a specific RLS architecture
843	IBM-307-23	RLS	1 Shall	Receive error message from remote marketplace if requesting record locator not authenticated or if content of data location request message is not verified	Data Content-Data Quality/Data Integrity	Core	EHR - Lab		N	
844	IBM-307-24	RLS	1 Shall	Receive acknowledgement from remote marketplace for data location request message	Data Content-Data Quality/Data Integrity	Core	EHR - Lab	IBM-307-23	N	Combined
846	IBM-307-26	RLS	1 Shall	Send error message to remote marketplace if not authenticated or if consent of data locations message is not verified	Data Content-Data Quality/Data Integrity	Core	EHR - Lab	IBM-307-23	N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
847	IBM-307-27	RLS	1 Shall	Send acknowledgement to remote marketplace for successful receipt of data location message	Data Content-Data Quality/Data Integrity	Core	EHR - Lab	IBM-307-23	N	Combined
808	IBM-305-15	RLS	2 Should	Receive error messages from clinician EHR or web application if authenticity of record locator or content of new lab result event availability notification message not validated	Data Content-Data Quality/Data Integrity	Core	EHR - Lab	IBM-307-23	N	Combined
482	CSC-SEC-150	All Edge Systems (CSC)	1 Shall	Enforce non-repudiation of message or query origin	Data Content-Data Quality/Data Integrity	Edge	Infrastructure		E	Seems to fit under Authentication
494	CSC-SEC-30	All Edge Systems (CSC)	1 Shall	Send integrity verification information along with data sent over the network	Data Content-Data Quality/Data Integrity	Edge	Infrastructure		E	Combined with related functions
495	CSC-SEC-40	All Edge Systems (CSC)	1 Shall	Use integrity verification information to validate the integrity of data received across the network	Data Content-Data Quality/Data Integrity	Edge	Infrastructure	CSC-SEC-30	E	Combined
813	IBM-306-05	CDO-EMR	1 Shall	Validate integrity and completeness of new lab result event availability notification message	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	NGIT-122 CSC-SEC-30	E	Combined
815	IBM-306-07	CDO-EMR	1 Shall	Send acknowledgement message to record locator for successful transmission of new lab result event availability notification message	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-102-15	E	Combined
817	IBM-306-09	CDO-EMR	1 Shall	Send error messages to locator service if authenticity content integrity or completeness not validated for transmission of notifications	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-102-15	E	Combined
952	IBM-316-08	CDO-EMR	1 Shall	Receive acknowledgement of order receipt and unique order identifier or error message from lab	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-102-15	E	Combined
956	IBM-316-12	CDO-LIS	1 Shall	Authenticate entity sending lab order message	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-305-03	N/E	Seems to be needed at both levels
957	IBM-316-13	CDO-LIS	1 Shall	Validate integrity and completeness of lab order message	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	CSC-SEC-30	E	Combined
958	IBM-316-14	CDO-LIS	1 Shall	Correct lab order error message as necessary	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	CSC-SEC-30	X	
959	IBM-316-15	CDO-LIS	1 Shall	Send acknowledgement message of receipt of complete lab order to sending entity	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-102-15	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
548	IBM-104-06	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Send acknowledgment to senders that integrity, authenticity and completeness of results are acceptable.	Data Content-Data Quality/Data Integrity	Edge	Biosurveillance	NGIT-079	E	Combined
814	IBM-306-06	External User interfaces	1 Shall	Validate integrity and completeness of new lab result event availability notification message	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	CSC-SEC-30	E	Combined
816	IBM-306-08	External User interfaces	1 Shall	Send acknowledgement message to record locator for successful transmission of new lab result event availability notification message	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-102-15	E	Combined
818	IBM-306-10	External User interfaces	1 Shall	Send error messages to locator service if content integrity or completeness not validated for transmission of notifications	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	CSC-SEC-30	E	Combined
926	IBM-312-02	External User interfaces	1 Shall	Verify correct patient identity and correctness of lab results and error correct if necessary	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab		E	
927	IBM-312-03	External User interfaces	1 Shall	Send acknowledge receipt of lab results in web application to data repository or data manager system, depending upon sending entity	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab		E	
6	ACN-01.13	Health Information Intermediaries	1 Shall	Allow the pharmaceutical, medical products, and regulatory agencies to improve the processes for drug and device development, submission, approval, and safety monitoring.	Data Content-Data Quality/Data Integrity	Edge	Infrastructure		E	
1113	NGIT-136	Health Information Intermediaries	1 Shall	Verify integrity of unsolicited result transactions	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	CSC-SEC-30	E	Combined
576	IBM-107-10	NHIN Administration-Biosurveillance Responder System (IBM)	1 Shall	Receive biosurveillance event response "broadcast" messages	Data Content-Data Quality/Data Integrity	Edge	Biosurveillance		E	
908	IBM-310-02	NHIN Administration-Data Stager (IBM)	1 Shall	Acknowledge receipt of lab results from data repository	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-102-15	E	Combined
342	CSC-ALL-680	Repositories	1 Shall	Receive and validate the query request	Data Content-Data Quality/Data Integrity	Edge	Infrastructure	IBM-305-03 IBM-303-23	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
770	IBM-304-04	Repositories	1 Shall	Verify integrity and completeness of new lab result events message contents	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-305-03 IBM-303-23	E	Combined
771	IBM-304-05	Repositories	1 Shall	Send error message if lab authenticity is not verified	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-305-03 IBM-303-23	E	Combined
772	IBM-304-06	Repositories	1 Shall	Send error message if content is not verified for new lab result message	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-305-03 IBM-303-23	E	Combined
773	IBM-304-07	Repositories	1 Shall	Send acknowledgement message to sending lab for successful send of new lab result message	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-102-15	E	Combined
774	IBM-304-08	Repositories	1 Shall	Log receipt of new lab results event message from the performing lab	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab		E	
782	IBM-304-16	Repositories	1 Shall	Receive acknowledgement of successful transmission of new lab result event location message from locator service	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-102-15	E	Combined
783	IBM-304-17	Repositories	1 Shall	Receive error messages form locator service if authenticity of repository or content of new lab result event location message not validated	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-305-03 IBM-303-23	E	Combined
893	IBM-309-01	Repositories	1 Shall	Receive, parse and validate the lab results data query request	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab		E	
894	IBM-309-02	Repositories	1 Shall	Send acknowledgement to clinician or data stager regarding received data query request	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab	IBM-102-15	E	Combined
483	CSC-SEC-160	All Edge Systems (CSC)	2 Should	Use HITSP-specified security tokens for trusted computer-to-computer authentication, computer authorization, and encryption.	Data Content-Data Quality/Data Integrity	Edge	Infrastructure		E	Seems to fit under Authentication
437	CSC-EHR-390	Repositories	2 Should	Receive, acknowledge receipt, validate formats, and store or merge lab test results submitted to them, along with any supplied allowed or excluded provider lists.	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab		X	
768	IBM-304-02	Repositories	2 Should	Take proper action when lab results updates are sent (e.g. error correction, completeness, etc.) from the performing lab	Data Content-Data Quality/Data Integrity	Edge	EHR - Lab		X	
365	CSC-ALL-980	All Edge Systems (CSC)	May	Allow the clinician to notify the holder of suspect data	Data Content-Data Quality/Data Integrity	Edge	Infrastructure		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
425	CSC-CE-850	CDO	May	Acknowledge completeness of data, and produce an exception list of validation errors to allow for human resolution.	Data Content-Data Quality/Data Integrity	Edge	CE - Consumer		X	
553	IBM-105-02	CDO	May	Be able to receive request to re-identify specified patient data to support event detection	Data Content-Data Quality/Data Integrity	Edge	Bio		X	
353	CSC-ALL-820	CDO-CDO NHIN Interface	May	Accept and respond asynchronously to requests for data	Data Content-Data Source	Core	Infrastructure	CSC-ALL-810 IBM-106-104		Similar to other functions, such as bi-directional messaging; Non-Functional Combined
563	IBM-106-08	CDO-EMR	1 Shall	Provide additional/revised patient data (demographics, clinical data, lab and radiology test orders and results) to monitor a previously detected event	Data Content-Data Source	Edge	Bio		E	
1088	NGIT-104	CDO-EMR	1 Shall	Identify source of externally-provided data	Data Content-Data Source	Edge	CE - Consumer	IBM-310-07 NGIT-104	E	Requires source of data as standard data content
564	IBM-106-09	CDO-LIS	1 Shall	Provide additional/revised lab and radiology test orders and results to monitor a previously detected event	Data Content-Data Source	Edge	Bio		E	Combined
506	IBM-101-07	CDO-LIS--CDO lab	1 Shall	Provide lab order data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Lab order data include: order number, order test name, and date and time of order.	Data Content-Data Source	Edge	Bio		E	
507	IBM-101-08	CDO-LIS--CDO lab	1 Shall	Provide lab result data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Lab result data include: reporting lab ID, performing lab ID, report date/time, report status, collection date, collection method, organism, method type, result unit, test interpretation, and test status.	Data Content-Data Source	Edge	Bio		E	
508	IBM-101-09	CDO-LIS--Reference lab	1 Shall	Provide lab order data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Lab order data include: order number, order test name, and date and time of order.	Data Content-Data Source	Edge	Bio		E	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
509	IBM-101-10	CDO-LIS-- Reference lab	1 Shall	Provide lab result data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Lab result data include: reporting lab ID, performing lab ID, report date/time, report status, collection date, collection method, organism, method type, result unit, test interpretation, and test status.	Data Content-Data Source	Edge	Bio		E	
510	IBM-101-11	NHIN Administration-Utilization Reporting System (IBM)	1 Shall	Provide institution data as specified in the Biosurveillance use case. Institution data includes hospital system, main facility ID/name, physical facility address, and total number of beds in institution.	Data Content-Data Source	Edge	Biosurveillance		E	
511	IBM-101-12	NHIN Administration-Utilization Reporting System (IBM)	1 Shall	Provide unit-level census data as specified in the Biosurveillance use case. Unit-level census data includes: unit name, number of patients by unit, number of beds available by unit, and emergency room triage marginal capacity as a percentage and head-count.	Data Content-Data Source	Edge	Biosurveillance		E	
512	IBM-101-13	NHIN Administration-Utilization Reporting System (IBM)	1 Shall	Provide facility utilization data as specified in the Biosurveillance use case. Facility utilization data includes: admissions in last 24 hours at institution, discharges in last 24 hours at institution, deaths in last 24 hours at institution, date and time of report.	Data Content-Data Source	Edge	Biosurveillance		E	
565	IBM-106-10	NHIN Administration-Utilization Reporting System (IBM)	1 Shall	Provide additional/revised resource utilization data (institution data, unit level census data and facility utilization) to monitor a previously detected event	Data Content-Data Source	Edge	Biosurveillance		E	
112	ACN-04.7	Repositories	1 Shall	Store core clinical patient data.	Data Content-Data Source	Edge	Infrastructure		X	
361	CSC-ALL-945	Repositories	1 Shall	Accept and apply various filters as part of an incoming query, for example results for a specific Lab order number.	Data Content-Data Source	Edge	Infrastructure		X	
748	IBM-212-32	Consumer System-PHR	May	Offer the ability to read remote electronic medication or diagnostics monitoring devices	Data Content-Data Source	Edge	CE - Consumer		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments	
559	IBM-106-04	CDO-CDO NHIN Interface	1 Shall	Provide for real-time, bi-directional secure messaging between PH Agencies and CDOs to monitor a previously detected	Data Content-Data Usage	Core	Bio	ACN-03.3.1 ACN-03.1.1	N	Combined	
86	ACN-03.3.1	CDO-EMR	1 Shall	Enable edge systems to acquire data to populate a Electronic Health Record.	Data Content-Data Usage	Core	EHR - Lab	ACN-03.3.1 IBM-106-04	N	Combined	
76	ACN-03.1.1	Consumer System-PHR	1 Shall	Enable edge systems to acquire data to populate a Personal Health Record.	Data Content-Data Usage	Core	CE - Consumer	ACN-03.3.1 IBM-106-4	N	Combined	
141	ACN-06.1.4	Data Analysis and Secondary Use Systems	1 Shall	Aggregate anonymized health data from participating edge systems.	Data Content-Data Usage	Core	Bio	ACN-06.1.5	E	Definition needed for "anonymize" in light of using PHI in accordance with HIPAA requirements. If Data Analysis and Secondary Use Systems - Public Health are Edge Systems (which it seems like they should be), then these functions are E.	
133	ACN-06.1	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Aggregate anonymized patient health data for biosurveillance, drug and medical product safety monitoring, and use by regulators to support the review and approval of new drugs and device applications.	Data Content-Data Usage	Core	Bio		E		
142	ACN-06.1.5	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Generate aggregated anonymized data for federal public health agencies.	Data Content-Data Usage	Core	Bio	ACN-06.1.7 ACN-06.1.6	E		
143	ACN-06.1.6	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Generate aggregated anonymized data for state public health agencies.	Data Content-Data Usage	Core	Bio	ACN-06.1.5 ACN-06.1.7	E		
145	ACN-06.1.8	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Generate alerts/notifications to public health users based on public health algorithms.	Data Content-Data Usage	Core	Bio	ACN-06.1.9	E		
147	ACN-06.2	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Allow public health users to access aggregated anonymized health data.	Data Content-Data Usage	Core	Bio	ACN-03.3.1 ACN-03.1.1 IBM-106-04			Seems like Authentication

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
74	ACN-03	External User interfaces	1 Shall	Enable users to access healthcare data.	Data Content-Data Usage	Core	Infrastructure	ACN-03.3.1 ACN-03.1.1 IBM-106-04	X	Broad statement of purpose actualized at Edge
126	ACN-05.1.3	NHIN Administration	1 Shall	Establish Operational Agreements with all certified members.	Data Content-Data Usage	Core	Infrastructure			Seems to be policy
132	ACN-06	NHIN Overarching (ACN)	1 Shall	Generate reports and derive insights from healthcare data	Data Content-Data Usage	Core	Bio		X	Does not seem like a Networking function
85	ACN-03.3	CDO-EMR	1 Shall	Enable providers to access a patient's Electronic Health Record.	Data Content-Data Usage	Edge	CE, EHR		X	The following marked X seem to be exclusively Edge functions and in many cases X Data Rendering functions.
87	ACN-03.3.10	CDO-EMR	1 Shall	Enable providers to more easily report adverse drug reactions.	Data Content-Data Usage	Edge	EHR - Lab		X	
88	ACN-03.3.11	CDO-EMR	1 Shall	Capture clinical information as part of the normal health care interaction that can be used for clinical trials in a 21CFR Part 11 compliant manner.	Data Content-Data Usage	Edge	EHR - Lab		X	
89	ACN-03.3.2	CDO-EMR	1 Shall	Present patient demographic information as part of the Electronic Health Record.	Data Content-Data Usage	Edge	EHR - Lab		X	
90	ACN-03.3.3	CDO-EMR	1 Shall	Present patient financial and insurance information as part of the Electronic Health Record.	Data Content-Data Usage	Edge	EHR - Lab		X	
91	ACN-03.3.4	CDO-EMR	1 Shall	Present patient allergy information as part of the Electronic Health Record.	Data Content-Data Usage	Edge	EHR - Lab		X	
92	ACN-03.3.5	CDO-EMR	1 Shall	Present patient medication history as part of the Electronic Health Record.	Data Content-Data Usage	Edge	EHR - Lab		X	
93	ACN-03.3.6	CDO-EMR	1 Shall	Present patient conditions as part of the Electronic Health Record.	Data Content-Data Usage	Edge	EHR - Lab		X	
94	ACN-03.3.7	CDO-EMR	1 Shall	Present a list of patient procedures and surgeries as part of the Electronic Health Record.	Data Content-Data Usage	Edge	EHR - Lab		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
95	ACN-03.3.8	CDO-EMR	1 Shall	Present patient laboratory results as part of the Electronic Health Record.	Data Content-Data Usage	Edge	EHR - Lab		X	
96	ACN-03.3.9	CDO-EMR	1 Shall	Enable providers and investigators to find and enroll their patients in clinical trials.	Data Content-Data Usage	Edge	EHR - Lab		X	
921	IBM-311-06	CDO-EMR	1 Shall	Flag new results within EHR	Data Content-Data Usage	Edge	EHR - Lab		X	
77	ACN-03.1.2	Consumer System-PHR	1 Shall	Present patient demographic information as part of the Personal Health Record.	Data Content-Data Usage	Edge	CE - Consumer		X	
78	ACN-03.1.3	Consumer System-PHR	1 Shall	Present patient financial and insurance information as part of the Personal Health Record.	Data Content-Data Usage	Edge	CE - Consumer		X	
79	ACN-03.1.4	Consumer System-PHR	1 Shall	Present patient allergy information as part of the Personal Health Record.	Data Content-Data Usage	Edge	CE - Consumer		X	
80	ACN-03.1.5	Consumer System-PHR	1 Shall	Present patient medication history as part of the Personal Health Record.	Data Content-Data Usage	Edge	CE - Consumer		X	
81	ACN-03.1.6	Consumer System-PHR	1 Shall	Present patient conditions as part of the Personal Health Record.	Data Content-Data Usage	Edge	CE - Consumer		X	
82	ACN-03.1.7	Consumer System-PHR	1 Shall	Present a list of patient procedures and surgeries as part of the Personal Health Record.	Data Content-Data Usage	Edge	CE - Consumer		X	
83	ACN-03.2.1	Consumer System-PHR	1 Shall	Enable patient proxies to access the Personal Health Record of their associated patients.	Data Content-Data Usage	Edge	CE - Consumer		X	
84	ACN-03.2.2	Consumer System-PHR	1 Shall	Enable patients and their proxies to find and enroll in appropriate clinical trials	Data Content-Data Usage	Edge	CE - Consumer		X	
646	IBM-207-26	Consumer System-PHR	1 Shall	Allow for edits	Data Content-Data Usage	Edge	CE - Consumer	CSC-CE-570	X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
135	ACN-06.1.10	Data Analysis and Secondary Use Systems	1 Shall	Generate a relinking identifier for patients included in the anonymized data.	Data Content-Data Usage	Edge	Bio		X	If Data Analysis and Secondary Use Systems - Public Health are Edge Systems (which it seems like they should be), then these functions are exclusive to the Edge (X).
136	ACN-06.1.11	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Allow authorized public health users to access a patient's information using the relinking identifier.	Data Content-Data Usage	Edge	Bio		X	
139	ACN-06.1.2	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Generate anonymized health data.	Data Content-Data Usage	Edge	Bio		X	
144	ACN-06.1.7	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Generate aggregated anonymized data for local public health agencies.	Data Content-Data Usage	Edge	Bio	ACN-06.1.5 ACN-06.1.6	X	
146	ACN-06.1.9	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Generate alerts/notifications to public health users based on public health algorithms.	Data Content-Data Usage	Edge	Bio	ACN-06.1.8	X	
392	CSC-BIO-590	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Receive, acknowledge receipt, validate format, and log BIOSurveillance data	Data Content-Data Usage	Edge	Bio	IBM-104-05 NGIT-078 NGIT-077 IBM-104-03	X	
566	IBM-106-11	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Perform additional data mining to monitor a previously identified event	Data Content-Data Usage	Edge	Biosurveillance		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
106	ACN-04.16	External User interfaces	1 Shall	Present data to users in a usable, readable format.	Data Content-Data Usage	Edge	Infrastructure			Seems to be a Data Rendering function
154	ACN-06.3	Health Information Intermediaries	1 Shall	Aggregate anonymized patient health data to support clinical research, including cohort, longitudinal, placebo population, demonstration of efficacy, pharmacoeconomic, and drug outcome comparator studies.	Data Content-Data Usage	Edge	Infrastructure	ACN-06.1.4 ACN-06.1 ACN-06.1.5 ACN-06.1.6	E	Combined
105	ACN-04.15	Message Handling	1 Shall	Communicate patient health data to other edge systems in the NHIN standard message format.	Data Content-Data Usage	Edge	Infrastructure	CSC-ALL-50 IBM-303-05 IBM-303-06	N	Seems duplicative of functions in Data Content
362	CSC-ALL-950	All Edge Systems (CSC)	2 Should	Display the results of queries that it initiates if the query was initiated through a human user interface.	Data Content-Data Usage	Edge	Infrastructure		E	Seems to be a Data Rendering function
382	CSC-BIO-410	CDO	2 Should	Provide data management, including review of patient information to identify data elements necessary for BIOSurveillance, and automatic sharing with Public Health Agencies	Data Content-Data Usage	Edge	Bio		X	
447	CSC-EHR-480	CDO	2 Should	Receive query results, acknowledge them, validate their format, and report exceptions.	Data Content-Data Usage	Edge	EHR - Lab		X	
381	CSC-BIO-400	Data Analysis and Secondary Use Systems-Public Health	2 Should	Provide measurable utility to improve surveillance	Data Content-Data Usage	Edge	Bio		X	
363	CSC-ALL-960	All Edge Systems (CSC)	May	Persist the results of queries that it initiates.	Data Content-Data Usage	Edge	Infrastructure			Seems to be Data Storage
364	CSC-ALL-970	All Edge Systems (CSC)	May	Print the results of queries that it displays	Data Content-Data Usage	Edge	Infrastructure		X	
376	CSC-BIO-250	CDO	May	Provide institution data including Hospital System, Main Facility ID/name, physical facility address, and total number of beds in institution	Data Content-Data Usage	Edge	Bio	CSC-BIO-560		See Data Source
377	CSC-BIO-260	CDO	May	Provide Unit-level Census Data including unit name, number of patients by unit, number of beds available by unit, and emergency room triage marginal capacity as a percentage and head-count	Data Content-Data Usage	Edge	Bio	CSC-BIO-560		See Data Source

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
378	CSC-BIO-270	CDO	May	Provide Facility Utilization Data including admissions in last 24 hours at institution, discharges in last 24 hours at institution, deaths in last 24 hours at institution, date and time of report	Data Content-Data Usage	Edge	Bio	CSC-BIO-560		See Data Source
379	CSC-BIO-310	CDO	May	Provide information to support unique identification of data records (and avoid double counting)	Data Content-Data Usage	Edge	Bio	CSC-BIO-560		See Information Location
424	CSC-CE-810	CDO	May	Accept, acknowledge, validate format, and incorporate registration data, consumer-entered data, medication data, and/or consumer annotations.	Data Content-Data Usage	Edge	CE - Consumer		X	
448	CSC-EHR-490	CDO	May	Display, print and/or store query results on the local system, and possibly flag their availability. The display may include browsing and drill-down functions.	Data Content-Data Usage	Edge	EHR - Lab		X	
725	IBM-212-09	Consumer System-PHR	May	Enable the PHR Account Holder to add past and present information about other modalities of treatment used.	Data Content-Data Usage	Edge	CE - Consumer		X	
726	IBM-212-10	Consumer System-PHR	May	Enable the PHR Account Holder to self-report symptoms or concerns in a chronologically sortable diary.	Data Content-Data Usage	Edge	CE - Consumer		X	
727	IBM-212-11	Consumer System-PHR	May	Enable the PHR Account Holder to add information about religious/spiritual beliefs that he or she wants Health Care Providers to know.	Data Content-Data Usage	Edge	CE - Consumer		X	
728	IBM-212-12	Consumer System-PHR	May	Enable the PHR Account Holder to add information about personal health goals, next steps or other notes related to his or her health or conditions, or any other information he or she wants Health Care Providers to know.	Data Content-Data Usage	Edge	CE - Consumer		X	
732	IBM-212-16	Consumer System-PHR	May	Provide one-screen bulleted and printable health summary	Data Content-Data Usage	Edge	CE - Consumer		X	
733	IBM-212-17	Consumer System-PHR	May	Enable an Authorized PHR User to display laboratory and test results by means of flow sheets, graphs, or other tools that enable the discovery of trends.	Data Content-Data Usage	Edge	CE - Consumer		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
735	IBM-212-19	Consumer System-PHR	May	Provide multiple printer friendly functions to allow consumer to create hard copies of records	Data Content-Data Usage	Edge	CE - Consumer		X	
736	IBM-212-20	Consumer System-PHR	May	Track and graph tests over time	Data Content-Data Usage	Edge	CE - Consumer		X	
737	IBM-212-21	Consumer System-PHR	May	Offer patient education and self-care modules	Data Content-Data Usage	Edge	CE - Consumer		X	
738	IBM-212-22	Consumer System-PHR	May	Create and offer links to other educational sites	Data Content-Data Usage	Edge	CE - Consumer		X	
739	IBM-212-23	Consumer System-PHR	May	Offer secure electronic communication between consumer and provider	Data Content-Data Usage	Edge	CE - Consumer		X	
740	IBM-212-24	Consumer System-PHR	May	Offer provider initiated auto-reminders for the PHR Account Holder	Data Content-Data Usage	Edge	CE - Consumer		X	
741	IBM-212-25	Consumer System-PHR	May	Provide access to intake forms	Data Content-Data Usage	Edge	CE - Consumer		X	
742	IBM-212-26	Consumer System-PHR	May	Allow the consumer to request appointments with their care providers through PHR	Data Content-Data Usage	Edge	CE - Consumer		X	
743	IBM-212-27	Consumer System-PHR	May	Allow for preliminary screenings and follow-ups with secure messaging	Data Content-Data Usage	Edge	CE - Consumer		X	
744	IBM-212-28	Consumer System-PHR	May	Check drug-to-drug interactions	Data Content-Data Usage	Edge	CE - Consumer		X	
745	IBM-212-29	Consumer System-PHR	May	Check insurance coverage for prescribed drugs	Data Content-Data Usage	Edge	CE - Consumer		X	
746	IBM-212-30	Consumer System-PHR	May	Remind the PHR Account Holder about prescription renewals	Data Content-Data Usage	Edge	CE - Consumer		X	
747	IBM-212-31	Consumer System-PHR	May	Support biosurveillance and data mining activity	Data Content-Data Usage	Edge	CE - Consumer		X	
751	IBM-212-35	Consumer System-PHR	May	Offer health care cost estimate tools	Data Content-Data Usage	Edge	CE - Consumer		X	
439	CSC-EHR-410	RLS	1 Shall	Receive, acknowledge, validate format, and store patient demographic identifying information and updates and record locations.	Data Storage-Persistent Data Storage	Core	EHR - Lab	CSC-ALL-50 IBM-303-05 IBM-303-06		Seems duplicative of functions in Data Content
800	IBM-305-07	RLS	1 Shall	Store and index new lab result event location information by appropriate patient and other indices. Other indices are determined by the marketplace	Data Storage-Persistent Data Storage	Core	EHR - Lab			Seems duplicative of functions in Data Content

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1038	NGIT-054	CDO	1 Shall	Electronically collect demographic and clinical data for public health reporting	Data Storage-Persistent Data Storage	Edge	Bio	CSC-BIO-340 CSC-BIO-510	X	
919	IBM-311-04	CDO-EMR	1 Shall	Parse and validate lab results content	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	
920	IBM-311-05	CDO-EMR	1 Shall	Merge data into EHR	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	
953	IBM-316-09	CDO-EMR	1 Shall	Store lab order information	Data Storage-Persistent Data Storage	Edge	EHR - Lab	IBM-316-17	X	
761	IBM-303-03	CDO-LIS	1 Shall	Store lab test results in data repository and note restrictions for use (providers of care list, patient consent restrictions or sensitivity restrictions)	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	
961	IBM-316-17	CDO-LIS	1 Shall	Store lab order information	Data Storage-Persistent Data Storage	Edge	EHR - Lab	IBM-316-09	X	
1097	NGIT-118	CDO-LIS	1 Shall	Collect and persist laboratory result data to support electronic exchange with stakeholders	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	
1058	NGIT-073	CDO-Registration	1 Shall	Electronically collect census and utilization data to support public health reporting	Data Storage-Persistent Data Storage	Edge	Bio		X	
403	CSC-CE-560	Consumer System-PHR	1 Shall	Persist PHR information	Data Storage-Persistent Data Storage	Edge	CE - Consumer		X	
406	CSC-CE-590	Consumer System-PHR	1 Shall	Persist consumer edits and annotations to PHR information	Data Storage-Persistent Data Storage	Edge	CE - Consumer		X	
407	CSC-CE-600	Consumer System-PHR	1 Shall	Close PHR account when requested by authenticated consumer.	Data Storage-Persistent Data Storage	Edge	CE - Consumer	IBM-211-01	X	
408	CSC-CE-620	Consumer System-PHR	1 Shall	Notify customer that PHR account is closed	Data Storage-Persistent Data Storage	Edge	CE - Consumer	NGIT-098	X	
654	IBM-207-34	Consumer System-PHR	1 Shall	Import annotated/modified data into the PHR system	Data Storage-Persistent Data Storage	Edge	CE - Consumer		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1066	NGIT-082	Consumer System-PHR	1 Shall	Support creation of unique consumer account	Data Storage-Persistent Data Storage	Edge	CE - Consumer		X	
931	IBM-312-07	External User interfaces	1 Shall	Save lab results in local system	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	
1131	NGIT-156	Health Information Intermediaries	1 Shall	Electronically collect demographic and clinical data for public health reporting	Data Storage-Persistent Data Storage	Edge	Bio		X	
936	IBM-314-01	Repositories	1 Shall	Store multiple types of clinical data (Lab, Rx, diagnostic, procedure reports, genomic data, patient teaching, clinical progress notes, etc)	Data Storage-Persistent Data Storage	Edge	EHR - Lab	IBM-304-09	X	
937	IBM-314-02	Repositories	1 Shall	Store data from multiple types of media (video, audio, still images, unstructured text, coded data)	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	
940	IBM-314-05	Repositories	1 Shall	Store, maintain and have capability to retrieve data for amount of time required by law (Federal, state, local)	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	
549	IBM-104-07	Data Analysis and Secondary Use Systems-Public Health	2 Should	Store lab test results received from all participating Care Delivery Organizations	Data Storage-Persistent Data Storage	Edge	Biosurveillance		X	
938	IBM-314-03	Repositories	2 Should	Store all data using standard format and vocabulary	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	
939	IBM-314-04	Repositories	2 Should	Store, maintain and have capability to retrieve minimum set of data for lifetime of patient	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	
942	IBM-314-07	Repositories	2 Should	Provide ability to configure amount of time for data storage for each data type	Data Storage-Persistent Data Storage	Edge	EHR - Lab	IBM-103-01	X	
1117	NGIT-140	CDO-EMR	May	Receive, process, and persist laboratory result data	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	
412	CSC-CE-670	Consumer System-PHR	May	Establish a PHR account containing user authentication credentials	Data Storage-Persistent Data Storage	Edge	CE - Consumer		X	
1116	NGIT-139	Health Information Intermediaries	May	Collect and persist laboratory result data to support electronic exchange with stakeholders	Data Storage-Persistent Data Storage	Edge	EHR - Lab		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1132	NGIT-157	Payer Systems	May	Electronically collect demographic and clinical data for public health reporting	Data Storage-Persistent Data Storage	Edge	Bio		X	
517	IBM-102-05	CDO-CDO NHIN Interface	1 Shall	Aggregate all identified data associated with complete lab encounter	Data Storage-Transient Data	Core	Bio	IBM-103-05 IBM-310-05	N	Combined
532	IBM-103-05	CDO-CDO NHIN Interface	1 Shall	Aggregate all identified data associated with complete lab encounter	Data Storage-Transient Data	Core	Bio	IBM-102-05		Exact duplicate
911	IBM-310-05	NHIN Administration-Data Stager (IBM)	1 Shall	Hold and aggregate data or error messages received from the data repository as determined by the community. If the data stager receives the data from the data source on behalf of the clinician, the data stager may: 1) hold and aggregate data from each data source and transmit to clinician when all queried data sources have responded to the request 2) hold data received until a time limit specified by the marketplace has been met, sending the remaining response as they are received 2) immediately send data as it is received	Data Storage-Transient Data	Edge	EHR - Lab	IBM-102-05	E	Combined
514	IBM-102-02	CDO	1 Shall	Receive notification from PH Agency of data to be sent	Data Transaction-(Pull)	Core	Bio	IBM-103-02	N	This seems to be a function that applies even beyond public health, such as for new lab results, new PHR data, etc.
529	IBM-103-02	CDO	1 Shall	Receive notification from PH Agency of patient care data to be sent	Data Transaction-(Pull)	Core	Bio	IBM-102-02	N	Combined with other related functions
677	IBM-209-12	CDO	1 Shall	Transmit request to receive registration/medication history from PHR through NHIN	Data Transaction-(Pull)	Core	Infrastructure	ACN-02.2 ACN-02.3.3 IBM-307-21 IBM-307-45	N	Combined with other related functions

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
328	CSC-ALL-40	CDO-CDO NHIN Interface	1 Shall	Include initiating user and institution information with each query and pushed message.	Data Transaction-(Pull)	Core	Infrastructure	CSC-ALL-780 and other Data Content fcns	N	Requires source of data as standard data content (see Data Content). Combined with other related functions
345	CSC-ALL-750	CDO-CDO NHIN Interface	1 Shall	Accept and respond to authenticated and authorized queries for Lab results and/or other data for a patient.	Data Transaction-(Pull)	Core	Infrastructure	IBM-305-03 and other related Data Quality/Integrity fcns	E	See also Data Quality/Integrity
348	CSC-ALL-780	CDO-CDO NHIN Interface	1 Shall	Accept lists of other SNOs to contact as part of queries, and shall query the these other SNOs in addition to querying repositories within its SNO.	Data Transaction-(Pull)	Core	Infrastructure	CSC-ALL-40 and other Data Content fcns	N	Combined
349	CSC-ALL-790	CDO-CDO NHIN Interface	1 Shall	Only query indicated repositories within the SNO, unless an ambiguous query is made, requesting resolution of patient identity and repository locations.	Data Transaction-(Pull)	Core	Infrastructure			Seems to contraindicate CSC-ALL-780
354	CSC-ALL-840	CDO-CDO NHIN Interface	1 Shall	Aggregate query responses from multiple data sources and return a single aggregated response to the querying entity.	Data Transaction-(Pull)	Core	Infrastructure	IBM-209-33 CSC-ALL-840 IBM-207-14	N	Combined
415	CSC-CE-690	Consumer System-Consumer NHIN Interface	1 Shall	Accept queries from, and return results to, fully-qualified PHRs for registration and medication data.	Data Transaction-(Pull)	Core	CE - Consumer	IBM-305-03 and other related fcns	N	Combined
607	IBM-205-14	Consumer System-PHR	1 Shall	Aggregate appropriate records from NHIN query	Data Transaction-(Pull)	Core	Infrastructure	IBM-209-33 CSC-ALL-840 IBM-207-14	N	Combined
29	ACN-02.2	External User interfaces	1 Shall	Enable providers to request patient data from participating edge systems in the NHIN.	Data Transaction-(Pull)	Core	EHR - Lab	IBM-209-12 ACN-02.3.3 IBM-307-21 IBM-307-45	N	Combined
43	ACN-02.3.3	External User interfaces	1 Shall	Initiate a request for the identified edge system(s) to send the patient data to the requesting edge system.	Data Transaction-(Pull)	Core	CE, EHR	IBM-209-12 ACN-02.2 IBM-307-21 IBM-307-45	N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
34	ACN-02.3	RLS	1 Shall	Identify the unique patient in the user's request and locate the edge system(s) containing the patient data.	Data Transaction-(Pull)	Core	CE, EHR	CSC-ALL-40 CSC-ALL-780 IBM-307-21 IBM-307-25 IBM-307-29 IBM-307-45 and Data Content fcns	N	Combined
841	IBM-307-21	RLS	1 Shall	Query remote marketplace for data locations if clinician has specified to find data in one or more remote marketplaces	Data Transaction-(Pull)	Core	EHR - Lab	CSC-ALL-40 CSC-ALL-780 ACN-02.3 IBM-307-25 IBM-307-29 IBM-307-45 and Data Content fcns	N	Combined
845	IBM-307-25	RLS	1 Shall	Receive data locations from remote marketplace	Data Transaction-(Pull)	Core	EHR - Lab	CSC-ALL-40 CSC-ALL-780 ACN-02.3 IBM-307-21 IBM-307-29 IBM-307-45 and Data Content fcns	N	Combined
849	IBM-307-29	RLS	1 Shall	Send data location information from remote marketplace to authorized requesting clinician	Data Transaction-(Pull)	Core	EHR - Lab	CSC-ALL-40 CSC-ALL-780 ACN-02.3 IBM-307-21 IBM-307-25 IBM-307-45 and Data Content fcns	N	Combined
865	IBM-307-45	RLS	1 Shall	Receive request for lab test results location based on one or more criteria for patient specified query	Data Transaction-(Pull)	Core	EHR - Lab	CSC-ALL-40 CSC-ALL-780 ACN-02.3 IBM-307-21 IBM-307-25 IBM-307-29 and Data Content fcns	N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
866	IBM-307-46	RLS	1 Shall	Send error message to clinician if specified lab results not found	Data Transaction-(Pull)	Core	EHR - Lab			See Data Quality/Integrity
867	IBM-307-47	RLS	1 Shall	Send one or more result location (links) pointers to authorized clinician for the specified lab test result	Data Transaction-(Pull)	Core	EHR - Lab		E	Seems to assume a specific RLS architecture
874	IBM-307-54	RLS	1 Shall	Log interaction with clinician	Data Transaction-(Pull)	Core	EHR - Lab			Seems to be an Audit and Logging Function
352	CSC-ALL-810	CDO-CDO NHIN Interface	May	Communicate asynchronously with remote clinical data sources to handle varying response time characteristics of the data sources	Data Transaction-(Pull)	Core	Infrastructure			Similar to other functions, such as bi-directional messaging; Non-Functional
356	CSC-ALL-880	All Edge Systems (CSC)	1 Shall	Use the CDO NHIN Interface to query outside the SNO for health data for a patient.	Data Transaction-(Pull)	Edge	Infrastructure		E	
41	ACN-02.3.15	CDO	1 Shall	Accept update messages from other edge systems.	Data Transaction-(Pull)	Edge	Infrastructure		E	
673	IBM-209-08	CDO	1 Shall	Transmit request to view registration/medication history directly from PHR system	Data Transaction-(Pull)	Edge	CE - Consumer		E	
697	IBM-209-33	CDO-CDO NHIN Interface	1 Shall	Aggregate appropriate records	Data Transaction-(Pull)	Edge	CE - Consumer		E	Functions from this point forward appear to be Edge counterparts of Network functions Equivalent of N
870	IBM-307-50	CDO-EMR	1 Shall	Receive the data repository location(s) where the test results are stored	Data Transaction-(Pull)	Edge	EHR - Lab		E	Equivalent of N
875	IBM-307-55	CDO-EMR	1 Shall	Browse and select the relevant test results location information and select locations from which to request data	Data Transaction-(Pull)	Edge	EHR - Lab		E	Equivalent of N
877	IBM-308-01	CDO-EMR	1 Shall	Send request for historical lab test result content directly to data repository (local or remote) from EHR or web application	Data Transaction-(Pull)	Edge	EHR - Lab		E	Equivalent of N
881	IBM-308-05	CDO-EMR	1 Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data.	Data Transaction-(Pull)	Edge	EHR - Lab	IBM-308-06 CSC-CE-70 CSC-CE-790 CSC-CE-780		See Data Content

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
917	IBM-311-02	CDO-EMR	1 Shall	Receive requested historical lab test results into EHR	Data Transaction-(Pull)	Edge	EHR - Lab		X	
1086	NGIT-102	CDO-EMR	1 Shall	Process registration data received from CE	Data Transaction-(Pull)	Edge	CE - Consumer		X	
1087	NGIT-103	CDO-EMR	1 Shall	Process medication data received from CE	Data Transaction-(Pull)	Edge	CE - Consumer		X	
1090	NGIT-108	CDO-EMR	1 Shall	Receive and validate request for data from PHR	Data Transaction-(Pull)	Edge	CE - Consumer		X	
1092	NGIT-110	CDO-EMR	1 Shall	Support the transmission of registration & medication data	Data Transaction-(Pull)	Edge	CE - Consumer		X	
1107	NGIT-128	CDO-EMR	1 Shall	Transmit well formed query request for lab result data	Data Transaction-(Pull)	Edge	EHR - Lab	IBM-307-01		See Data Content
1123	NGIT-148	CDO-LIS	1 Shall	Receive and process well formed query for laboratory test results according to HITSP specified implementation instructions	Data Transaction-(Pull)	Edge	EHR - Lab			See Data Content
418	CSC-CE-740	Consumer System-PHR	1 Shall	Acknowledge receipt of and validate the format of received messages and requests	Data Transaction-(Pull)	Edge	CE - Consumer		X	
597	IBM-205-04	Consumer System-PHR	1 Shall	Transmit request for registration/medication history data to data/network systems to query documents from the NHIN	Data Transaction-(Pull)	Edge	CE - Consumer	NGIT-085 NGIT-086 NGIT-088 NGIT-087	E	Equivalent of N
611	IBM-205-18	Consumer System-PHR	1 Shall	Use a medication transaction broker to pre-populate PHR with registration and medication history data	Data Transaction-(Pull)	Edge	CE - Consumer		E	Equivalent of N
634	IBM-207-14	Consumer System-PHR	1 Shall	Aggregate appropriate records from NHIN query	Data Transaction-(Pull)	Edge	CE - Consumer		E	Equivalent of N
1073	NGIT-089	Consumer System-PHR	1 Shall	Receive and process registration data	Data Transaction-(Pull)	Edge	CE - Consumer	CSC-CE-730 IBM-205-21 IBM-207-21	X	
1074	NGIT-090	Consumer System-PHR	1 Shall	Receive and process medication data	Data Transaction-(Pull)	Edge	CE - Consumer	CSC-CE-730 IBM-205-21 IBM-207-21	X	
1075	NGIT-091	Consumer System-PHR	1 Shall	Acknowledge receipt of data	Data Transaction-(Pull)	Edge	CE - Consumer	IBM-205-23 IBM-207-23		See Data Quality/Integrity

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1077	NGIT-093	Consumer System-PHR	1 Shall	Provide listing of lab result transactions received but not processed or loaded into EMR	Data Transaction-(Pull)	Edge	CE - Consumer		X	
1080	NGIT-096	Consumer System-PHR	1 Shall	Transmit registration data to authorized system	Data Transaction-(Pull)	Edge	CE - Consumer	IBM-207-04 CSC-CE-770	X	
1081	NGIT-097	Consumer System-PHR	1 Shall	Transmit medication data to authorized system	Data Transaction-(Pull)	Edge	CE - Consumer	IBM-207-04 CSC-CE-770	X	
822	IBM-307-02	External User interfaces	1 Shall	Query locator system for laboratory (historical) test results location	Data Transaction-(Pull)	Edge	EHR - Lab		E	Equivalent of N
871	IBM-307-51	External User interfaces	1 Shall	Receive the data repository location(s) where the test results are stored	Data Transaction-(Pull)	Edge	EHR - Lab	IBM-307-50	E	Equivalent of N
876	IBM-307-56	External User interfaces	1 Shall	Browse and select the relevant test results location information and select locations from which to request data	Data Transaction-(Pull)	Edge	EHR - Lab	IBM-307-55	E	Equivalent of N
878	IBM-308-02	External User interfaces	1 Shall	Send request for historical lab test result content directly to data repository (local or remote) from EHR or web application	Data Transaction-(Pull)	Edge	EHR - Lab	IBM-308-01	E	Equivalent of N
882	IBM-308-06	External User interfaces	1 Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data.	Data Transaction-(Pull)	Edge	EHR - Lab	IBM-308-05 CSC-CE-70 CSC-CE-790 CSC-CE-780		See Data Content
925	IBM-312-01	External User interfaces	1 Shall	Receive laboratory test results in web application from data repository or data stager	Data Transaction-(Pull)	Edge	EHR - Lab	IBM-311-02	E	Equivalent of N
1109	NGIT-130	External User interfaces	1 Shall	Transmit well formed query request for lab result data	Data Transaction-(Pull)	Edge	EHR - Lab	IBM-209-08	E	Equivalent of N
1124	NGIT-149	Health Information Intermediaries	1 Shall	Receive and process well formed query for laboratory test results according to HITSP specified implementation instructions	Data Transaction-(Pull)	Edge	EHR - Lab			See Data Content
1130	NGIT-155	Health Information Intermediaries	1 Shall	Transmit well formed result messages according to a HITSP specified implementation instruction.	Data Transaction-(Pull)	Edge	EHR - Lab			See Data Content
886	IBM-308-10	NHIN Administration-Data Stager (IBM)	1 Shall	Transmit request for lab data repository on behalf of the clinician	Data Transaction-(Pull)	Edge	EHR - Lab	IBM-209-08	E	Equivalent of N

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
907	IBM-310-01	NHIN Administration-Data Stager (IBM)	1 Shall	Receive requested lab results form data repository if acting on behalf of the requesting clinician	Data Transaction-(Pull)	Edge	EHR - Lab		E	Equivalent of N
910	IBM-310-04	NHIN Administration-Data Stager (IBM)	1 Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data	Data Transaction-(Pull)	Edge	EHR - Lab			See Data Content
902	IBM-309-10	Repositories	1 Shall	Transmit lab results requested by an ordering clinician or other authorized provider of care for an identified patient to the requesting entity (clinician or data stager)	Data Transaction-(Pull)	Edge	EHR - Lab		E	Equivalent of N
879	IBM-308-03	CDO-EMR	2 Should	Submit request for lab test results through a data stager	Data Transaction-(Pull)	Edge	EHR - Lab		E	Equivalent of N
880	IBM-308-04	External User interfaces	2 Should	Submit request for lab test results through a data stager	Data Transaction-(Pull)	Edge	EHR - Lab		E	Equivalent of N
340	CSC-ALL-660	Repositories	2 Should	Return clinical data in response to authorized queries.	Data Transaction-(Pull)	Edge	Infrastructure		E	
446	CSC-EHR-470	Repositories	2 Should	Receive, acknowledge, and validate the format of queries, control access, process queries, and filter and return results.	Data Transaction-(Pull)	Edge	EHR - Lab		X	
355	CSC-ALL-870	All Edge Systems (CSC)	May	Use the CDO NHIN Interface to query health data for a patient within a SNO.	Data Transaction-(Pull)	Edge	Infrastructure	CSC-ALL-880	E	Equivalent of N
422	CSC-CE-780	CDO	May	Transmit a query that are formatted according to HITSP standards and implementation guides, for consumer health data to a PHR system. The query will contain the PHR location and patient/consumer provided credentials.	Data Transaction-(Pull)	Edge	CE - Consumer	IBM-308-05 IBM-308-06 CSC-CE-790 CSC-CE-70		See Data Quality/Integrity
423	CSC-CE-790	CDO	May	Receive the data results, that are formatted according to HITSP standards and implementation guides, from a query to a PHR system	Data Transaction-(Pull)	Edge	CE - Consumer	IBM-308-05 IBM-308-06 CSC-CE-780 CSC-CE-70		See Data Quality/Integrity
426	CSC-CE-870	CDO	May	Accept provider/operator-mediated authorized requests over the NHIN for data to be subsequently transferred to a patient's PHR. These requests must stipulate that the results will be viewed by the patient.	Data Transaction-(Pull)	Edge	CE - Consumer		E	"May" function may not be minimum essential

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
427	CSC-CE-890	CDO	May	Under provider/operator control, transmit data that is formatted according to HITSP standards and implementation guides, accompanied by the patient's credentials, to a patient's PHR	Data Transaction-(Pull)	Edge	CE - Consumer	IBM-308-05 IBM-308-06 CSC-CE-780 CSC-CE-70		See Data Quality/Integrity
443	CSC-EHR-440	CDO	May	Query the NHIN Interface for historical lab results. Queries contain the identity and organization of the requester, and may contain a filtering specification, such as to return only results from a specified order number.	Data Transaction-(Pull)	Edge	EHR - Lab			See Data Filtering
554	IBM-105-03	CDO	May	Be able to provide re-identified data for specific patients upon authorized request to Public Health agencies to support event detection	Data Transaction-(Pull)	Edge	Bio		E	"May" function may not be minimum essential
1122	NGIT-147	CDO-EMR	May	Receive and process well formed query for laboratory test results according to HITSP specified implementation instructions	Data Transaction-(Pull)	Edge	EHR - Lab	IBM-308-05 IBM-308-06 CSC-CE-780 CSC-CE-70		See Data Quality/Integrity
413	CSC-CE-678	Consumer System-PHR	May	Input data from, or store data to, offline storage devices	Data Transaction-(Pull)	Edge	CE - Consumer		X	
414	CSC-CE-680	Consumer System-PHR	May	Query other PHRs for accessible data using consumer provided credentials	Data Transaction-(Pull)	Edge	CE - Consumer			See Credentialing
638	IBM-207-18	Consumer System-PHR	May	Use a medication transaction broker to pull updated registration and medication history data into the PHR	Data Transaction-(Pull)	Edge	CE - Consumer		X	
711	IBM-211-04	Consumer System-PHR	May	Import standardized data when creating a new PHR account	Data Transaction-(Pull)	Edge	CE - Consumer	IBM-308-05 IBM-308-06 CSC-CE-780 CSC-CE-70		See Data Quality/Integrity
552	IBM-105-01	Data Analysis and Secondary Use Systems-Public Health	May	Be able to request re-identification of specified patient data to support event detection	Data Transaction-(Pull)	Edge	Biosurveillance			"May" function may not be minimum essential
555	IBM-105-04	Data Analysis and Secondary Use Systems-Public Health	May	Be able to receive re-identified data for specific patients upon authorized request from CDOs to support event detection	Data Transaction-(Pull)	Edge	Biosurveillance		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
570	IBM-107-04	NHIN Administration-Biosurveillance Responder System (IBM)	May	Allows biosurveillance responder to subscribe to receive biosurveillance event response messages as secure email and/or directly into web application to support event response	Data Transaction-(Pull)	Edge	Biosurveillance		X	
337	CSC-ALL-600	Repositories	May	Use the identity of the querying organization and originator in determining which records it will return, based on its own policies.	Data Transaction-(Pull)	Edge	Infrastructure		X	
339	CSC-ALL-650	Repositories	May	Accept queries for clinical data, from authorized providers of care	Data Transaction-(Pull)	Edge	Infrastructure		E	Equivalent of N
332	CSC-ALL-430	CDO-CDO NHIN Interface	1 Shall	Deliver messages to destination organizations, or notify the sender that they are "Undeliverable".	Data Transaction-(Push)	Core	Infrastructure	IBM-102-10 ACN-02.3.12 CSC-ALL-300 CSC-ALL-400 CSC-EHR-420	N	Combined
522	IBM-102-10	CDO-CDO NHIN Interface	1 Shall	Transmit the matching and normalized data along with any appropriate metadata (e.g., limited patient demographics) to appropriate public health agencies	Data Transaction-(Push)	Core	Bio	CSC-ALL-430 ACN-02.3.12 CSC-ALL-300 CSC-ALL-400 CSC-EHR-420	N	Combined and assume matching and normalization are conducted at Edge System (X) Exact duplicate
537	IBM-103-10	CDO-CDO NHIN Interface	1 Shall	Transmit the matching and normalized data along with any appropriate metadata (e.g., limited patient demographics) to appropriate public health agencies	Data Transaction-(Push)	Core	Bio	IBM-102-10		
713	IBM-211-06	Consumer System-PHR	1 Shall	Follow data encryption standards governed by HITSP	Data Transaction-(Push)	Core	Infrastructure			Seems to belong under Security
140	ACN-06.1.3	Data Analysis and Secondary Use Systems	1 Shall	Receive anonymized health data from participating edge systems.	Data Transaction-(Push)	Core	Bio	IBM-102-11 IBM-103-11 ACN-05.1.1.1 NGIT-159 CSC-BIO-560 ACN-06.1.12 ACN-06.1.13	E	Definition needed for "anonymize" in light of using PHI in accordance with HIPAA requirements
137	ACN-06.1.12	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Transmit aggregated anonymized data to public health systems within 24 hours of generation.	Data Transaction-(Push)	Core	Bio	IBM-102-11 IBM-103-11 ACN-05.1.1.1 NGIT-159 CSC-BIO-560 ACN-06.1.3 ACN-06.1.13	E	Seems that 24 hour specification is policy

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
138	ACN-06.1.13	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Transmit aggregated anonymized data to public health systems in formats defined by the public health agencies.	Data Transaction-(Push)	Core	Bio	IBM-102-11 IBM-103-11 ACN-05.1.1.1 NGIT-159 CSC-BIO-560 ACN-06.1.3 ACN-06-1.12	E	
558	IBM-106-03	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Communicate directly to care givers via secure NHIN messaging to provide updates and instructions to monitor a previously detected event	Data Transaction-(Push)	Core	Biosurveillance	IBM-104-02 NGIT-076 CSC-BIO-580 CSC-BIO-550 IBM-106-01 NGIT-159	E	
610	IBM-205-17	Repositories	1 Shall	Transmit data according to HITSP standards	Data Transaction-(Push)	Core	Infrastructure	IBM-207-17 IBM-207-16		See Data Content
793	IBM-304-27	RLS	1 Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data.	Data Transaction-(Push)	Core	EHR - Lab			See Data Content
794	IBM-305-01	RLS	1 Shall	Receive new lab result event (file) location information and related information from lab data repository	Data Transaction-(Push)	Core	EHR - Lab	IBM-209-10 ACN-06.1.1 IBM-311-01 NGIT-135 IBM-304-01 CSC-EHR-370 CSC-ALL-380 NGIT-121 NGIT-126 NGIT-127	E	Raised to generic level and combined with related functions

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
801	IBM-305-08	RLS	1 Shall	Automatically send notification of new lab test result event availability to clinicians EHR or web application (local or remote marketplace) if appropriate according to sensitivity restrictions and patient consent restrictions	Data Transaction- (Push)	Core	EHR - Lab	IBM-305-09 IBM-303-04 CSC-ALL-190 IBM-207-31 IBM-304-11 IBM-304-18 IBM-304-19 IBM-304-20 CSC-EHR-400 CSC-ALL-380 CSC-EHR-422 NGIT-142 IBM-316-01	E	Raised to generic level and combined with related functions
802	IBM-305-09	RLS	1 Shall	Automatically send notification of new lab test result event availability to clinicians EHR or web application dependent on provider preferences to receive or not receive notification of new lab result events automatically and specifications of lab order message	Data Transaction- (Push)	Core	EHR - Lab	IBM-305-08 IBM-303-04 CSC-ALL-190 IBM-207-31 IBM-304-11 IBM-304-18 IBM-304-19 IBM-304-20 CSC-EHR-400 CSC-ALL-380 CSC-EHR-422 NGIT-142 IBM-316-01	E	Combined
329	CSC-ALL-400	All Edge Systems (CSC)	1 Shall	Use the NHIN Interface as the intermediary for the distribution of messages to entities in other SNOs.	Data Transaction- (Push)	Edge	Infrastructure	IBM-102-10 ACN-02.3.12 CSC-ALL-300 CSC-ALL-430 CSC-EHR-420	N	Seems to describe a specific type of architecture
675	IBM-209-10	CDO	1 Shall	Receive registration/medication history to view via web portal	Data Transaction- (Push)	Edge	CE - Consumer	ACN-06.11 IBM-311-01	E	Raised to generic level and combined with related functions

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
134	ACN-06.1.1	CDO-CDO NHIN Interface	1 Shall	Receive health data from participating edge systems.	Data Transaction- (Push)	Edge	Bio	IBM-209-10 IBM-305-01 IBM-311-01 NGIT-135 IBM-304-01 CSC-EHR-370 CSC-ALL-380 NGIT-121 NGIT-126 NGIT-127	E	Combined
916	IBM-311-01	CDO-EMR	1 Shall	Automatically Receive new lab test results into EHR as ordering clinician or provider of care	Data Transaction- (Push)	Edge	EHR - Lab	IBM-209-10 ACN-06.1.1 IBM-209-10 NGIT-135 IBM-304-01 CSC-EHR-370 CSC-ALL-380 NGIT-121 NGIT-126 NGIT-127	E	Combined
945	IBM-316-01	CDO-EMR	1 Shall	Send new, updated or canceled lab test orders to lab	Data Transaction- (Push)	Edge	EHR - Lab	IBM-305-08 IBM-303-04 CSC-ALL-190 IBM-207-31 IBM-304-11 IBM-304-18 IBM-304-19 IBM-304-20 CSC-EHR-400 CSC-ALL-380 CSC-EHR-422 NGIT-142	E	
951	IBM-316-07	CDO-EMR	1 Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data	Data Transaction- (Push)	Edge	EHR - Lab			See Data Content
762	IBM-303-04	CDO-LIS	1 Shall	Securely transmit lab result messages to the data repository of the storing entity (if another entity maintains lab data for storage and retrieval for the performing lab for the purposes of the NHIN, the performing lab)	Data Transaction- (Push)	Edge	EHR - Lab			Seems to describe a specific type of architecture

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
310	CSC-ALL-190	CDO-Registration	1 Shall	Push patient demographic identifying information and updates to the Record Locator Service.	Data Transaction-(Push)	Edge	Infrastructure	IBM-305-08 IBM-303-04 IBM-316-01 IBM-207-31 IBM-304-11 IBM-304-18 IBM-304-19 IBM-304-20 CSC-EHR-400 CSC-ALL-380 CSC-EHR-422 NGIT-142	E	Raised to generic level and combined with related functions
651	IBM-207-31	Consumer System-PHR	1 Shall	Transmit consumer modified registration and medication history data to the PHR	Data Transaction-(Push)	Edge	CE - Consumer	IBM-305-08 IBM-303-04 IBM-316-01 CSC-ALL-190 IBM-304-11 IBM-304-18 IBM-304-19 IBM-304-20 CSC-EHR-400 CSC-ALL-380 CSC-EHR-422 NGIT-142	E	Combined
653	IBM-207-33	Consumer System-PHR	1 Shall	Transmit data according to HITSP standards	Data Transaction-(Push)	Edge	CE - Consumer	IBM-207-32		See Data Content
674	IBM-209-09	Consumer System-PHR	1 Shall	Provide appropriate PHR data in HITSP approved format - CDA compliant - when viewing directly from PHR system/web portal	Data Transaction-(Push)	Edge	CE - Consumer			See Data Content
710	IBM-211-03	Consumer System-PHR	1 Shall	Export PHR data in a standardized format	Data Transaction-(Push)	Edge	CE - Consumer			See Data Content
544	IBM-104-02	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Send biosurveillance participating Care Delivery Organizations a list of essential data that must be transmitted to Public Health Agencies. The notification will include the trigger to send the data, the timeframe for sending, and data to be sent.	Data Transaction-(Push)	Edge	Biosurveillance	NGIT-076 CSC-BIO-580 CSC-BIO-550 IBM-106-01	E	See Data Content

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
557	IBM-106-02	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Update algorithms to track the confirmed number, location and rate of spread to monitor a previously detected event	Data Transaction-(Push)	Edge	Biosurveillance		X	
560	IBM-106-05	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Communicate approved PH updates and alerts to the public media via secure NHIN messaging to monitor a previously detected event	Data Transaction-(Push)	Edge	Biosurveillance	IBM-106-06 IBM-107-01 NGIT-160 IBM-106-03	E	Raised to generic level and combined with related functions
561	IBM-106-06	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Communicate approved PH updates and alerts to neighboring communities via secure NHIN messaging to monitor a previously detected event	Data Transaction-(Push)	Edge	Biosurveillance	IBM-106-05 IBM-107-01 NGIT-160 IBM-106-03	E	Combined
567	IBM-107-01	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Publish biosurveillance event response "broadcast" messages to authorized biosurveillance responders who have subscribed to receive the broadcast messages to support event response	Data Transaction-(Push)	Edge	Biosurveillance	IBM-106-06 IBM-106-05 NGIT-160 IBM-106-03	E	Combined
1112	NGIT-135	Health Information Intermediaries	1 Shall	Receive and process well formed laboratory test results according to HITSP specified standards and implementation instructions	Data Transaction-(Push)	Edge	EHR - Lab	IBM-209-10 ACN-06.1.1 IBM-209-10 IBM-311-01 IBM-304-01 CSC-EHR-370 CSC-ALL-380 NGIT-121 NGIT-126 NGIT-127	E	Combined; see also Data Content
1135	NGIT-160	Health Information Intermediaries	1 Shall	Transmit data to support public health biosurveillance	Data Transaction-(Push)	Edge	Bio	IBM-106-06 IBM-107-01 IBM-106-05 IBM-106-03	E	Combined
38	ACN-02.3.12	Message Handling	1 Shall	Send the requested patient data to the provider at the requesting edge system.	Data Transaction-(Push)	Edge	CE, EHR	IBM-102-10 ACN-02.3.12 CSC-ALL-300 CSC-ALL-430 CSC-ALL-400 CSC-EHR-420	N	
700	IBM-209-36	Repositories	1 Shall	Transmit data according to HITSP standards	Data Transaction-(Push)	Edge	CE - Consumer	IBM-205-16 IBM-209-35		See Data Content

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
767	IBM-304-01	Repositories	1 Shall	Receive new lab test result event messages from the performing lab as well as information necessary for indexing	Data Transaction-(Push)	Edge	EHR - Lab	IBM-209-10 ACN-06.1.1 IBM-209-10 IBM-311-01 NGIT-135 CSC-EHR-370 CSC-ALL-380 NGIT-121 NGIT-126 NGIT-127	E	Combined
777	IBM-304-11	Repositories	1 Shall	Securely send lab result event location and related information to locator service	Data Transaction-(Push)	Edge	EHR - Lab	IBM-305-08 IBM-303-04 IBM-316-01 CSC-ALL-190 IBM-207-31 IBM-304-18 IBM-304-19 IBM-304-20 CSC-EHR-400 CSC-ALL-380 CSC-EHR-422 NGIT-142	E	Combined
784	IBM-304-18	Repositories	1 Shall	Automatically transmit lab test results to EHR of ordering provider (in local or remote marketplace)	Data Transaction-(Push)	Edge	EHR - Lab	IBM-304-21 IBM-305-08 IBM-303-04 IBM-316-01 CSC-ALL-190 IBM-207-31 IBM-304-11 IBM-304-19 IBM-304-20 CSC-EHR-400 CSC-ALL-380 CSC-EHR-422 NGIT-142	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
785	IBM-304-19	Repositories	1 Shall	Automatically transmit lab test results to EHR of other providers of care who are not ordering clinician (local or remote marketplace) if appropriate according to sensitivity restrictions and patient consent restrictions	Data Transaction- (Push)	Edge	EHR - Lab	IBM-304-22 IBM-305-08 IBM-303-04 IBM-316-01 CSC-ALL-190 IBM-207-31 IBM-304-11 IBM-304-18 IBM-304-20 CSC-EHR-400 CSC-ALL-380 CSC-EHR-422 NGIT-142	E	Combined
786	IBM-304-20	Repositories	1 Shall	Transmit lab test results to providers (in local or remote marketplace) in real time as received from performing lab	Data Transaction- (Push)	Edge	EHR - Lab	IBM-305-08 IBM-303-04 IBM-316-01 CSC-ALL-190 IBM-207-31 IBM-304-11 IBM-304-18 IBM-304-19 CSC-EHR-400 CSC-ALL-380 CSC-EHR-422 NGIT-142	E	Combined; relates to policy
789	IBM-304-23	Repositories	1 Shall	Adhere to approved content standards as provided by HITSP when sending lab results data to clinician.	Data Transaction- (Push)	Edge	EHR - Lab			See Data Content
791	IBM-304-25	Repositories	1 Shall	Conform to approved, vocabulary, structure, privacy, security and messaging standards as provided by HITSP when transmitting patient data.	Data Transaction- (Push)	Edge	EHR - Lab			See Data Content
944	IBM-315-02	Repositories	1 Shall	Transmit minimum data set in standard messaging format and standard vocabulary as recommended by HITSP or as determined by the marketplace if no standards exist	Data Transaction- (Push)	Edge	EHR - Lab			See Data Content

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
434	CSC-EHR- CDO 370		2 Should	Receive Lab Results pushed to them, acknowledge receipt, and validate their format.	Data Transaction- (Push)	Edge	EHR - Lab	IBM-209-10 ACN-06.1.1 IBM-209-10 IBM-311-01 NGIT-135 IBM-304-01 CSC-ALL-380 NGIT-121 NGIT-126 NGIT-127	E	Combined
438	CSC-EHR- CDO 400		2 Should	Push patient demographic identifying information and updates and record locations to the Record Locator Service, if they are not already the same system.	Data Transaction- (Push)	Edge	EHR - Lab	IBM-305-08 IBM-303-04 IBM-316-01 CSC-ALL-190 IBM-207-31 IBM-304-11 IBM-304-18 IBM-304-19 IBM-304-20 CSC-ALL-380 CSC-EHR-422 NGIT-142	E	Combined
943	IBM-315- 01	Repositories	2 Should	Transmit all data in standard messaging format using standard vocabulary as recommended by HITSP or as determined by the marketplace if no standards exist	Data Transaction- (Push)	Edge	EHR - Lab			See Data Content
326	CSC-ALL- 380	All Edge Systems (CSC)	May	Exchange messages with any other edge entity	Data Transaction- (Push)	Edge	Infrastructure	See #4 and #5	E	Combined
327	CSC-ALL- 390	All Edge Systems (CSC)	May	Use the NHIN Interface as the intermediary for the distribution of messages to other entities within the SNO.	Data Transaction- (Push)	Edge	Infrastructure	CSC-ALL-400		Exact duplicate
440	CSC-EHR- CDO 420		May	Send Notification messages and/or Lab results to specified organizations	Data Transaction- (Push)	Edge	EHR - Lab	IBM-102-10 ACN-02.3.12 CSC-ALL-300 CSC-ALL-400 CSC-ALL-430	N	Combined
580	IBM-107- 14	CDO	May	Receive patient specific biosurveillance event response information message from Public Health to support event response	Data Transaction- (Push)	Edge	Bio	NGIT-077 IBM-107-13	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1100	NGIT-121	CDO-EMR	May	Receive and process well formed laboratory test results according to HITSP specified standards and implementation instructions	Data Transaction-(Push)	Edge	EHR - Lab	IBM-209-10 ACN-06.1.1 IBM-209-10 IBM-311-01 NGIT-135 IBM-304-01 CSC-EHR-370 CSC-ALL-380 NGIT-126 NGIT-127	E	Combined
1105	NGIT-126	CDO-EMR	May	Receive notification of new test results	Data Transaction-(Push)	Edge	EHR - Lab	IBM-306-01 IBM-209-10 ACN-06.1.1 IBM-209-10 IBM-311-01 NGIT-135 IBM-304-01 CSC-EHR-370 CSC-ALL-380 NGIT-121 NGIT-127	E	Combined
441	CSC-EHR-CDO-LIS 422		May	Send Notification messages and/or Lab results to specified organizations	Data Transaction-(Push)	Edge	EHR - Lab	IBM-305-08 IBM-303-04 IBM-316-01 CSC-ALL-190 IBM-207-31 IBM-304-11 IBM-304-18 IBM-304-19 IBM-304-20 CSC-ALL-380 CSC-EHR-400 NGIT-142	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1119	NGIT-142	CDO-LIS-- Reference lab	May	Transmit well formed result notification message according to HITSP specified standards and implementation instructions	Data Transaction-(Push)	Edge	EHR - Lab	IBM-305-08 IBM-303-04 IBM-316-01 CSC-ALL-190 IBM-207-31 IBM-304-11 IBM-304-18 IBM-304-19 IBM-304-20 CSC-ALL-380 CSC-EHR-400 CSC-EHR-422	E	Combined
659	IBM-207-39	Consumer System-PHR	May	Receive request from consumer to transfer registration and medication history to another PHR when closing initial PHR	Data Transaction-(Push)	Edge	CE - Consumer	NGIT-099 IBM-211-02	E	Combined
709	IBM-211-02	Consumer System-PHR	May	Transfer registration and medication history data to a different provider of services	Data Transaction-(Push)	Edge	CE - Consumer	NGIT-099 IBM-207-39	E	Combined
577	IBM-107-11	Data Analysis and Secondary Use Systems-Public Health	May	Provide capability for secure, instant text or audio messaging or video conferencing between Public Health and authorized Responder to support event response	Data Transaction-(Push)	Edge	Biosurveillance	IBM-107-12	E	Combined
579	IBM-107-13	Data Analysis and Secondary Use Systems-Public Health	May	Send patient-specific biosurveillance event response information messages to patient's provider according to authorized provider's specification (secure email, web application, EHR, etc) to support event response	Data Transaction-(Push)	Edge	Biosurveillance	NGIT-077 IBM-107-14	E	Combined
1106	NGIT-127	External User interfaces	May	Receive notification of new test results	Data Transaction-(Push)	Edge	EHR - Lab	IBM-306-02 IBM-209-10 ACN-06.1.1 IBM-209-10 IBM-311-01 NGIT-135 IBM-304-01 CSC-EHR-370 CSC-ALL-380 NGIT-121 NGIT-126	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
578	IBM-107-12	NHIN Administration-Biosurveillance Responder System (IBM)	May	Provide capability for secure, instant text or audio messaging or video conferencing between Public Health and authorized Responder to support event response	Data Transaction-(Push)	Edge	Biosurveillance	IBM-107-11		Exact duplicate
1134	NGIT-159	Payer Systems	May	Transmit data to support public health biosurveillance	Data Transaction-(Push)	Edge	Bio	IBM-104-02 NGIT-076 CSC-BIO-580 CSC-BIO-550 IBM-106-01	E	Combined
350	CSC-ALL-80	CDO-CDO NHIN Interface	1 Shall	Log all interactions.	Data Transaction-Audit & Logging	Core	Infrastructure	IBM-102-14 NGIT-011 ACN-02.2.2 ACN-02.2.1	N	Combined
479	CSC-SEC-120	CDO-CDO NHIN Interface	1 Shall	Protect audit data from unauthorized access/modification	Data Transaction-Audit & Logging	Core	Infrastructure	IBM-319-42 IBM-319-48	N	Combined
526	IBM-102-14	CDO-CDO NHIN Interface	1 Shall	Log Interaction between organization and PH AGENCY	Data Transaction-Audit & Logging	Core	Bio	CSC-ALL-80 NGIT-011 ACN-02.2.2 ACN-02.2.1	N	Combined
1037	NGIT-011	CDO-CDO NHIN Interface	1 Shall	Maintain history of network transactions	Data Transaction-Audit & Logging	Core	Infrastructure	ACN-07.16.9 IBM-319-45 IBM-319-33	N	Combined
1009	IBM-319-36	CDO-LIS	1 Shall	Create audit entry for each transaction	Data Transaction-Audit & Logging	Core	EHR - Lab		X	
1011	IBM-319-38	CDO-LIS	1 Shall	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core	EHR - Lab		N	See also Data Content
1013	IBM-319-40	CDO-LIS	1 Shall	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core	EHR - Lab		N	See also Data Content
1015	IBM-319-42	CDO-LIS	1 Shall	Not allow edits to audit entries	Data Transaction-Audit & Logging	Core	EHR - Lab	CSC-SEC-120 IBM-319-48	N	Combined
1017	IBM-319-44	CDO-LIS	1 Shall	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Core	EHR - Lab		X	
1019	IBM-319-46	CDO-LIS	1 Shall	Provide capability to print audit trail	Data Transaction-Audit & Logging	Core	EHR - Lab		X	
1021	IBM-319-48	CDO-LIS	1 Shall	Display audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Core	EHR - Lab	IBM-319-42 IBM-319-48 CSC-SEC-120	N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
30	ACN-02.2.1	NHIN Administration-Audit Trail	1 Shall	Log requests for patient data.	Data Transaction-Audit & Logging	Core	CE, EHR	IBM-102-14 NGIT-011 ACN-02.2.2 CSC-ALL-80	N	Combined
32	ACN-02.2.3	NHIN Administration-Audit Trail	1 Shall	Notify the requesting edge system that it received the request for patient data.	Data Transaction-Audit & Logging	Core	CE, EHR	ACN-02.2.4 ACN-2.11 ACN-02.3.2 ACN-02.3.4 ACN-02.3.5 ACN-2.3.6 ACN-02.3.8	N	Combined. See also Data Quality/Integrity
33	ACN-02.2.4	NHIN Administration-Audit Trail	1 Shall	Log notifications.	Data Transaction-Audit & Logging	Core	CE, EHR	ACN-02.2.4 ACN-2.11 ACN-02.3.2 ACN-02.3.4 ACN-02.3.5 ACN-2.3.6 ACN-02.3.8	N	Combined
37	ACN-02.3.11	NHIN Administration-Audit Trail	1 Shall	Log notifications sent to the requesting systems about requests being processed.	Data Transaction-Audit & Logging	Core	CE, EHR	ACN-02.2.4 ACN-2.11 ACN-02.3.2 ACN-02.3.4 ACN-02.3.5 ACN-2.3.6 ACN-02.3.8	N	Combined
42	ACN-02.3.2	NHIN Administration-Audit Trail	1 Shall	Log the notification sent to the user.	Data Transaction-Audit & Logging	Core	CE, EHR	ACN-02.2.4 ACN-2.11 ACN-02.3.4 ACN-02.3.5 ACN-2.3.6 ACN-02.3.8	N	Combined
44	ACN-02.3.4	NHIN Administration-Audit Trail	1 Shall	Log requests sent to identified systems.	Data Transaction-Audit & Logging	Core	CE, EHR	ACN-02.2.4 ACN-2.11 ACN-02.3.4 ACN-02.3.5 ACN-2.3.6 ACN-02.3.8	N	Combined
45	ACN-02.3.5	NHIN Administration-Audit Trail	1 Shall	Receive confirmation from an edge system that it received the request for patient data.	Data Transaction-Audit & Logging	Core	CE, EHR	ACN-02.2.4 ACN-2.11 ACN-02.3.4 ACN-02.3.5 ACN-2.3.6 ACN-02.3.8	N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
46	ACN-02.3.6	NHIN Administration-Audit Trail	1 Shall	Log confirmations from edge systems.	Data Transaction-Audit & Logging	Core	CE, EHR	ACN-02.2.4 ACN-2.11 ACN-02.3.4 ACN-02.3.5 ACN-2.3.6 ACN-02.3.8	N	Combined
48	ACN-02.3.8	NHIN Administration-Audit Trail	1 Shall	Log timeout notifications sent to the user.	Data Transaction-Audit & Logging	Core	CE, EHR	ACN-02.2.4 ACN-2.11 ACN-02.3.4 ACN-02.3.5 ACN-2.3.6 ACN-02.3.8	N	Combined
50	ACN-02.4	NHIN Administration-Audit Trail	1 Shall	Generate administrative reports.	Data Transaction-Audit & Logging	Core	Infrastructure	ACN-02.4.1	N	Combined
51	ACN-02.4.1	NHIN Administration-Audit Trail	1 Shall	Generate system monitoring reports.	Data Transaction-Audit & Logging	Core	Infrastructure	ACN-02.4	N	Combined
53	ACN-02.4.3	NHIN Administration-Audit Trail	1 Shall	Generate alerts/notifications for activity outside the normal range of monitoring levels.	Data Transaction-Audit & Logging	Core	Biosurveillance	ACN-07.16.14 ACN-07.16.15	N	Combined
198	ACN-07.16.1	NHIN Administration-Audit Trail	1 Shall	Log all relevant infrastructure level authentication attempts.	Data Transaction-Audit & Logging	Core	Infrastructure		N	
199	ACN-07.16.10	NHIN Administration-Audit Trail	1 Shall	Log all configuration changes.	Data Transaction-Audit & Logging	Core	Infrastructure		N	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
200	ACN-07.16.11	NHIN Administration-Audit Trail	1 Shall	Log all modifications to consent status (for data sharing).	Data Transaction-Audit & Logging	Core	Infrastructure		N	Suggest defining "consent" in this context or using another term in order to distinguish from the "consent" permitted but not required by HIPAA (§ 164.506(b))
201	ACN-07.16.12	NHIN Administration-Audit Trail	1 Shall	Consolidate logs from NHIN systems in a central repository.	Data Transaction-Audit & Logging	Core	Infrastructure		N	
203	ACN-07.16.14	NHIN Administration-Audit Trail	1 Shall	Allow thresholds to be set to determine activities requiring further investigation.	Data Transaction-Audit & Logging	Core	Infrastructure	ACN-02.4.3 ACN-07.16.14	N	
204	ACN-07.16.15	NHIN Administration-Audit Trail	1 Shall	Generate notifications based on anomalous system activity.	Data Transaction-Audit & Logging	Core	Infrastructure	ACN-02.4.3 ACN-07.16.14	N	Combined
205	ACN-07.16.16	NHIN Administration-Audit Trail	1 Shall	Generate evidence to support incident management and response processes.	Data Transaction-Audit & Logging	Core	Infrastructure		N	
206	ACN-07.16.2	NHIN Administration-Audit Trail	1 Shall	Log all relevant system level authentication attempts.	Data Transaction-Audit & Logging	Core	Infrastructure		E	
207	ACN-07.16.3	NHIN Administration-Audit Trail	1 Shall	Log all relevant application level authentication attempts.	Data Transaction-Audit & Logging	Core	Infrastructure		X	
209	ACN-07.16.5	NHIN Administration-Audit Trail	1 Shall	Log all relevant system level access events.	Data Transaction-Audit & Logging	Core	Infrastructure	ACN-07.16.4	E	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
210	ACN-07.16.6	NHIN Administration-Audit Trail	1 Shall	Log all relevant application level access events.	Data Transaction-Audit & Logging	Core	Infrastructure		X	
211	ACN-07.16.7	NHIN Administration-Audit Trail	1 Shall	Log all relevant user management events.	Data Transaction-Audit & Logging	Core	Infrastructure	ACN-07.16.8	N	Combined
212	ACN-07.16.8	NHIN Administration-Audit Trail	1 Shall	Log details necessary to support investigations and corrective action.	Data Transaction-Audit & Logging	Core	Infrastructure	ACN-07.16.7	N	Combined
213	ACN-07.16.9	NHIN Administration-Audit Trail	1 Shall	Retain logs for a period of time as defined in the retention standard.	Data Transaction-Audit & Logging	Core	Infrastructure		N	
657	IBM-207-37	NHIN Administration-Audit Trail	1 Shall	Create an audit log for updated data fields	Data Transaction-Audit & Logging	Core	Infrastructure	IBM-102-14 NGIT-011 ACN-02.2.2 ACN-02.2.1	N	Combined
716	IBM-211-09	NHIN Administration-Audit Trail	1 Shall	Log interaction	Data Transaction-Audit & Logging	Core	Infrastructure	IBM-205-24 IBM-207-24 IBM-209-41	N	Combined
1010	IBM-319-37	NHIN Administration-Data Stager (IBM)	1 Shall	Create audit entry for each transaction	Data Transaction-Audit & Logging	Core	EHR - Lab	IBM-102-14 NGIT-011 ACN-02.2.2 ACN-02.2.1	N	Combined
1012	IBM-319-39	NHIN Administration-Data Stager (IBM)	1 Shall	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core	EHR - Lab			See Data Content
1014	IBM-319-41	NHIN Administration-Data Stager (IBM)	1 Shall	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core	EHR - Lab			See Data Content
1016	IBM-319-43	NHIN Administration-Data Stager (IBM)	1 Shall	Not allow edits to audit entries	Data Transaction-Audit & Logging	Core	EHR - Lab	IBM-319-42 IBM-319-48	N	Combined
1018	IBM-319-45	NHIN Administration-Data Stager (IBM)	1 Shall	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Core	EHR - Lab		N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1020	IBM-319-47	NHIN Administration-Data Stager (IBM)	1 Shall	Provide capability to print audit trail	Data Transaction-Audit & Logging	Core	EHR - Lab	IBM-319-46		Exact duplicate
1022	IBM-319-49	NHIN Administration-Data Stager (IBM)	1 Shall	Display audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Core	EHR - Lab	IBM-319-42 IBM-319-48	N	Combined
197	ACN-07.16	NHIN Overarching (ACN)	1 Shall	Log system and user interactions.	Data Transaction-Audit & Logging	Core	Infrastructure	IBM-102-14 NGIT-011 ACN-02.2.2 ACN-02.2.1	N	Combined
272	ACN-07.24	NHIN Overarching (ACN)	1 Shall	Conduct regular risk assessments.	Data Transaction-Audit & Logging	Core	Infrastructure		N	
1110	NGIT-131	Portal NHIN Interface (NGIT)	1 Shall	Maintain a log of interactions with external data systems	Data Transaction-Audit & Logging	Core	EHR - Lab		X	
806	IBM-305-13	RLS	1 Shall	Log notifications of new lab result events availability sent to clinicians	Data Transaction-Audit & Logging	Core	EHR - Lab	IBM-102-14 NGIT-011 ACN-02.2.2 ACN-02.2.1	N	Combined
848	IBM-307-28	RLS	1 Shall	Log interaction with remote marketplace	Data Transaction-Audit & Logging	Core	EHR - Lab	CSC-ALL-310	N	Combined
1002	IBM-319-29	RLS	1 Shall	Create audit entry for each transaction	Data Transaction-Audit & Logging	Core	EHR - Lab	IBM-102-14 NGIT-011 ACN-02.2.2 ACN-02.2.1	N	Combined
1003	IBM-319-30	RLS	1 Shall	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core	EHR - Lab			See Data Content
1004	IBM-319-31	RLS	1 Shall	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Core	EHR - Lab			See Data Content
1005	IBM-319-32	RLS	1 Shall	Not allow edits to audit entries	Data Transaction-Audit & Logging	Core	EHR - Lab	IBM-319-42 IBM-319-48	N	Combined
1006	IBM-319-33	RLS	1 Shall	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Core	EHR - Lab		N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1007	IBM-319-34	RLS	1 Shall	Provide capability to print audit trail	Data Transaction-Audit & Logging	Core	EHR - Lab	IBM-319-46		Exact duplicate
1008	IBM-319-35	RLS	1 Shall	Display audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Core	EHR - Lab	IBM-319-48		Exact duplicate
1121	NGIT-146	RLS	1 Shall	Maintain log of updates to patient-record locator index	Data Transaction-Audit & Logging	Core	Infrastructure		N	
1065	NGIT-080	NHIN Administration-Audit Trail	May	Maintain log of transactions between data suppliers and receivers	Data Transaction-Audit & Logging	Core	Bio	IBM-102-14 NGIT-011 ACN-02.2.2 CSC-ALL-80	N	Combined
541	IBM-103-14	CDO-CDO NHIN Interface		Log Interaction between organization and PH AGENCY	Data Transaction-Audit & Logging	Core	Bio	IBM-102-14 NGIT-011 ACN-02.2.2 CSC-ALL-80	N	Combined
410	CSC-CE-640	All Edge Systems (CSC)	1 Shall	Log all account and account data accesses	Data Transaction-Audit & Logging	Edge	CE - Consumer		E	Equivalent of N
478	CSC-SEC-110	All Edge Systems (CSC)	1 Shall	Protect audit data and other logged protected health information from unauthorized access and from any modification	Data Transaction-Audit & Logging	Edge	Infrastructure		E	Equivalent of N
499	CSC-SEC-90	All Edge Systems (CSC)	1 Shall	Create an audit trail with sufficient information to trace each operation back to the originator, with the ability to audit according to requirements and local policy.	Data Transaction-Audit & Logging	Edge	Infrastructure		E	Equivalent of N
214	ACN-07.17	CDO	1 Shall	Log system and user interactions.	Data Transaction-Audit & Logging	Edge	Infrastructure		E	Equivalent of N
273	ACN-07.25	CDO	1 Shall	Conduct regular risk assessments.	Data Transaction-Audit & Logging	Edge	Infrastructure		E	Equivalent of N
974	IBM-319-01	CDO	1 Shall	Create audit entry for each transaction	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
975	IBM-319-02	CDO	1 Shall	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Edge	EHR - Lab			See Data Content
976	IBM-319-03	CDO	1 Shall	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Edge	EHR - Lab			See Data Content
977	IBM-319-04	CDO	1 Shall	Not allow edits to audit entries	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
978	IBM-319-05	CDO	1 Shall	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
979	IBM-319-06	CDO	1 Shall	Provide capability to print audit trail	Data Transaction-Audit & Logging	Edge	EHR - Lab		X	
980	IBM-319-07	CDO	1 Shall	Display audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
872	IBM-307-52	CDO-EMR	1 Shall	Log location request interaction with locator service	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
923	IBM-311-08	CDO-EMR	1 Shall	Log receipt of lab test results	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
955	IBM-316-11	CDO-EMR	1 Shall	Log lab order interaction with lab	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
1089	NGIT-107	CDO-EMR	1 Shall	Log interactions of system receiving data from external (PHR) sources	Data Transaction-Audit & Logging	Edge	CE - Consumer		E	Equivalent of N
1093	NGIT-113	CDO-EMR	1 Shall	Create an exception list when lab results cannot be unequivocally be matched to an order/patient/etc.	Data Transaction-Audit & Logging	Edge	EHR - Lab	IBM-311-09 IBM-209-38	E	
1102	NGIT-123	CDO-EMR	1 Shall	Acknowledge receipt of lab result data	Data Transaction-Audit & Logging	Edge	EHR - Lab	IBM-311-07 IBM-102-15		See Data Quality/Integrity
1103	NGIT-124	CDO-EMR	1 Shall	Maintain a log of interactions with external data systems	Data Transaction-Audit & Logging	Edge	EHR - Lab		X	
760	IBM-303-02	CDO-LIS	1 Shall	Log creation of test results	Data Transaction-Audit & Logging	Edge	EHR - Lab		X	
766	IBM-303-08	CDO-LIS	1 Shall	Log transmission of new lab result event message to the storing entities data repository	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	
1099	NGIT-120	CDO-LIS	1 Shall	Maintain log of interactions with external data systems and/or networks	Data Transaction-Audit & Logging	Edge	EHR - Lab		X	
1076	NGIT-092	Consumer System-PHR	1 Shall	Maintain log of interactions with external data systems	Data Transaction-Audit & Logging	Edge	CE - Consumer		X	
550	IBM-104-08	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Log receipt of lab test results	Data Transaction-Audit & Logging	Edge	Biosurveillance		E	
551	IBM-104-09	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Log storage of lab test results	Data Transaction-Audit & Logging	Edge	Biosurveillance		X	
873	IBM-307-53	External User interfaces	1 Shall	Log location request interaction with locator service	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
928	IBM-312-04	External User interfaces	1 Shall	Log interaction with data repository or data stager related to receiving results	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	
988	IBM-319-15	External User interfaces	1 Shall	Create audit entry for each transaction	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	
989	IBM-319-16	External User interfaces	1 Shall	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Edge	EHR - Lab			See Data Content
990	IBM-319-17	External User interfaces	1 Shall	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Edge	EHR - Lab			See Data Content
991	IBM-319-18	External User interfaces	1 Shall	Not allow edits to audit entries	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	
992	IBM-319-19	External User interfaces	1 Shall	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	
993	IBM-319-20	External User interfaces	1 Shall	Provide capability to print audit trail	Data Transaction-Audit & Logging	Edge	EHR - Lab		X	
994	IBM-319-21	External User interfaces	1 Shall	Display audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	
995	IBM-319-22	External User interfaces	1 Shall	Create audit entry for each transaction	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	
996	IBM-319-23	External User interfaces	1 Shall	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Edge	EHR - Lab	IBM-319-16		Exact duplicate
997	IBM-319-24	External User interfaces	1 Shall	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Edge	EHR - Lab	IBM-319-17		Exact duplicate
998	IBM-319-25	External User interfaces	1 Shall	Not allow edits to audit entries	Data Transaction-Audit & Logging	Edge	EHR - Lab	IBM-319-18		Exact duplicate
999	IBM-319-26	External User interfaces	1 Shall	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Edge	EHR - Lab	IBM-319-19		Exact duplicate
1000	IBM-319-27	External User interfaces	1 Shall	Provide capability to print audit trail	Data Transaction-Audit & Logging	Edge	EHR - Lab	IBM-319-20		Exact duplicate
1001	IBM-319-28	External User interfaces	1 Shall	Displays audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Edge	EHR - Lab	IBM-319-21		Exact duplicate

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1023	IBM-320-01	External User interfaces	1 Shall	Provide capability for easy retrieval of audit trail by patient or proxy	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Consolidated w/IBM-320-02, IBM-320-03, and IBM-320-04 Also suggest reconciling with HIPAA right to accounting for disclosures except for TPO (§164.528)
1024	IBM-320-02	External User interfaces	1 Shall	Present audit trail in manner understandable to patient or proxy (as determined by law, accrediting agencies, and marketplace)	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Consolidated w/IBM-320-01, IBM-320-03, and IBM-320-04
1025	IBM-320-03	External User interfaces	1 Shall	Provide capability for a patient or proxy to determine organizations that have shared their information	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Consolidated w/IBM-320-02, IBM-320-01, and IBM-320-04
1026	IBM-320-04	External User interfaces	1 Shall	Provide capability for patient or proxy to determine organizations and individuals within organizations that have received their information as well as those who have requested to receive their information but were denied	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Consolidated w/IBM-320-02, IBM-320-03, and IBM-320-01
1114	NGIT-137	Health Information Intermediaries	1 Shall	Acknowledge receipt of lab result data	Data Transaction-Audit & Logging	Edge	EHR - Lab	IBM-102-15	E	Equivalent of N. See also Data Quality/Integrity
1115	NGIT-138	Health Information Intermediaries	1 Shall	Maintain a log of interactions with external data systems	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
215	ACN-07.17.1	NHIN Administration-Audit Trail	1 Shall	Log all relevant infrastructure level authentication attempts.	Data Transaction-Audit & Logging	Edge	Infrastructure		E	Equivalent of N
217	ACN-07.17.11	NHIN Administration-Audit Trail	1 Shall	Log all configuration changes.	Data Transaction-Audit & Logging	Edge	Infrastructure		E	Equivalent of N
218	ACN-07.17.12	NHIN Administration-Audit Trail	1 Shall	Log all modifications to consent status (for data sharing).	Data Transaction-Audit & Logging	Edge	Infrastructure		E	Equivalent of N
224	ACN-07.17.2	NHIN Administration-Audit Trail	1 Shall	Log all relevant system level authentication attempts.	Data Transaction-Audit & Logging	Edge	Infrastructure	ACN-07.16.2		Exact duplicate

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
225	ACN-07.17.3	NHIN Administration-Audit Trail	1 Shall	Log all relevant application level authentication attempts.	Data Transaction-Audit & Logging	Edge	Infrastructure		X	
227	ACN-07.17.5	NHIN Administration-Audit Trail	1 Shall	Log all relevant system level access events.	Data Transaction-Audit & Logging	Edge	Infrastructure	ACN-07.17.4	E	Equivalent of N
228	ACN-07.17.6	NHIN Administration-Audit Trail	1 Shall	Log all relevant application level access events.	Data Transaction-Audit & Logging	Edge	Infrastructure		X	
229	ACN-07.17.7	NHIN Administration-Audit Trail	1 Shall	Log all modifications to legitimate need access events.	Data Transaction-Audit & Logging	Edge	Infrastructure		E	Seems as though all modifications to access events should be logged to identify those that are not legitimate
230	ACN-07.17.8	NHIN Administration-Audit Trail	1 Shall	Log all relevant user management events.	Data Transaction-Audit & Logging	Edge	Infrastructure		E	Equivalent of N
231	ACN-07.17.9	NHIN Administration-Audit Trail	1 Shall	Log details necessary to support investigations and corrective action.	Data Transaction-Audit & Logging	Edge	Infrastructure		E	Equivalent of N
463	CSC-NFR-210	NHIN Administration-Audit Trail	1 Shall	Provide easy to use interface to message history logs and support rebuilding of patient medical records at specific points in time	Data Transaction-Audit & Logging	Edge	Infrastructure		X	
464	CSC-NFR-220	NHIN Administration-Audit Trail	1 Shall	Comply with legal and regulatory requirements for retention of clinical data.	Data Transaction-Audit & Logging	Edge	Infrastructure		X	Doesn't seem to relate to Audit & Logging
909	IBM-310-03	NHIN Administration-Data Stager (IBM)	1 Shall	Log interaction with data repository related to receiving results	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
915	IBM-310-09	NHIN Administration-Data Stager (IBM)	1 Shall	Log interaction with clinician related to transmitting results	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
776	IBM-304-10	Repositories	1 Shall	Log storage of the new lab result events in the data repository	Data Transaction-Audit & Logging	Edge	EHR - Lab		X	
781	IBM-304-15	Repositories	1 Shall	Log interaction with locator system for lab result location message	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
792	IBM-304-26	Repositories	1 Shall	Log transmission of new lab test result message to provider's EHR	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
906	IBM-309-14	Repositories	1 Shall	Log interaction with clinician or data stager related to processing requests for historical lab results	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	
981	IBM-319-08	Repositories	1 Shall	Create audit entry for each transaction	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
982	IBM-319-09	Repositories	1 Shall	Include audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Edge	EHR - Lab			See Data Content
983	IBM-319-10	Repositories	1 Shall	Format audit content as recommended by HITSP standards or as determined by the marketplace if no standards are available	Data Transaction-Audit & Logging	Edge	EHR - Lab			See Data Content
984	IBM-319-11	Repositories	1 Shall	Not allow edits to audit entries	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
985	IBM-319-12	Repositories	1 Shall	Store audit entry for amount of time determined by law, accrediting agencies, marketplace and entity	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
986	IBM-319-13	Repositories	1 Shall	Provide Capability to print audit trail	Data Transaction-Audit & Logging	Edge	EHR - Lab		X	
987	IBM-319-14	Repositories	1 Shall	Display audit trail only to those authorized to view the audit trail	Data Transaction-Audit & Logging	Edge	EHR - Lab		E	Equivalent of N
449	CSC-EHR-500	All Edge Systems (CSC)	2 Should	Log all interactions.	Data Transaction-Audit & Logging	Edge	EHR - Lab	CSC-SEC-85	E	Equivalent of N
498	CSC-SEC-85	All Edge Systems (CSC)	2 Should	Log all interactions.	Data Transaction-Audit & Logging	Edge	Infrastructure	CSC-EHR-500	E	Equivalent of N
390	CSC-BIO-570	CDO	2 Should	Log interaction between CDO systems and PH Agencie(s)	Data Transaction-Audit & Logging	Edge	Bio		E	Equivalent of N
1104	NGIT-125	CDO-EMR	2 Should	Provide listing of lab result transactions received but not processed or loaded into EMR	Data Transaction-Audit & Logging	Edge	EHR - Lab		X	
515	IBM-102-03	CDO-CDO NHIN Interface	1 Shall	Configure environment to monitor, process and send matching patient care and any HL7 available resource utilization data	Data Transaction-Data Access and Update	Core	Bio		N	Raised to generic level (e.g., could be NCPDP message)
530	IBM-103-03	CDO-CDO NHIN Interface	1 Shall	Configure environment to monitor, process and send matching patient care and any HL7 available resource utilization data	Data Transaction-Data Access and Update	Core	Bio	IBM-102-03		Exact duplicate
662	IBM-208-02	CDO-CDO NHIN Interface	1 Shall	Publish the appropriate data via the NHIN if the consumer opts in to the NHIN	Data Transaction-Data Access and Update	Core	Infrastructure		X	Seems to assume a specific policy

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
312	CSC-ALL-200	RLS	1 Shall	Accept and maintain updates to patient identifying information.	Data Transaction-Data Access and Update	Core	Infrastructure		N	Seems to belong under Information Location
401	CSC-CE-540	Consumer System-PHR	1 Shall	Accept consumer request to locate and retrieve their PHR data from another PHR	Data Transaction-Data Access and Update	Edge	CE - Consumer		E	Raised to generic level
402	CSC-CE-550	Consumer System-PHR	1 Shall	Present information in PHR to the consumer including date and source of data	Data Transaction-Data Access and Update	Edge	CE - Consumer		X	
405	CSC-CE-580	Consumer System-PHR	1 Shall	Enable consumer to annotate non-user-modifiable data.	Data Transaction-Data Access and Update	Edge	CE - Consumer	IBM-207-27	X	
416	CSC-CE-70	Consumer System-PHR	1 Shall	Provide a secure electronic patient demographic and health history which can be accessed, viewed and updated by the consumer and shared with others at the consumer's choice	Data Transaction-Data Access and Update	Edge	CE - Consumer		X	
581	IBM-201-01	Consumer System-PHR	1 Shall	Display home page of selected PHR to consumer	Data Transaction-Data Access and Update	Edge	CE - Consumer		X	
594	IBM-205-01	Consumer System-PHR	1 Shall	Allow consumer to request that PHR be pre-populated with registration and medication history data for the first time (either through the NHIN or medication transaction brokers)	Data Transaction-Data Access and Update	Edge	CE - Consumer		E	Consolidate w/IBM-207-01
621	IBM-207-01	Consumer System-PHR	1 Shall	Request that PHR be populated with up-to-date (i.e. not initial pre-populated) registration and medication history data (either through the NHIN or medication	Data Transaction-Data Access and Update	Edge	CE - Consumer		E	Consolidate w/IBM-205-01
661	IBM-208-01	Consumer System-PHR	1 Shall	Allow the consumer to select whether their PHR data will be available via the NHIN	Data Transaction-Data Access and Update	Edge	Infrastructure		E	
752	IBM-212-36	Consumer System-PHR	1 Shall	Adhere to the laws (federal, state, local, and business) governing how minors' records can be accessed by a third party across marketplaces	Data Transaction-Data Access and Update	Edge	CE - Consumer		E	Is adherence to law a functionality that needs to be expressly stated?
47	ACN-02.3.7	External User interfaces	1 Shall	Notify requesting user if data exists in an identified edge system but has not been received in a timely period.	Data Transaction-Data Access and Update	Edge	CE, EHR		E	
3	ACN-01.10	Health Information Intermediaries	1 Shall	Allow payers, providers, patients and other stakeholders the ability to share information to support medical research.	Data Transaction-Data Access and Update	Edge	Infrastructure		E	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
4	ACN-01.11	Health Information Intermediaries	1 Shall	Allow payers, providers, patients and other stakeholders the ability to share information to support drug safety and post-marketing drug surveillance.	Data Transaction-Data Access and Update	Edge	Infrastructure		E	
5	ACN-01.12	Health Information Intermediaries	1 Shall	Allow payers, providers, patients, and other stakeholders to improve the processes needed for clinical trial recruitment and execution.	Data Transaction-Data Access and Update	Edge	Infrastructure		E	
7	ACN-01.14	Health Information Intermediaries	1 Shall	Allow payers, providers, patients and other stakeholders the ability to share information to support public health surveillance.	Data Transaction-Data Access and Update	Edge	Infrastructure		E	Consolidated for multiple purposes
8	ACN-01.15	Health Information Intermediaries	1 Shall	Allow payers, providers, patients and other stakeholders the ability to share information to support care management and other quality initiatives.	Data Transaction-Data Access and Update	Edge	Infrastructure		E	
16	ACN-01.9	Health Information Intermediaries	1 Shall	Allow payers, providers, patients and other stakeholders the ability to share information to support patient care.	Data Transaction-Data Access and Update	Edge	Infrastructure		E	
49	ACN-02.3.9	Message Handling	1 Shall	Wait a specified configurable time for a request to be returned.	Data Transaction-Data Access and Update	Edge	Infrastructure		X	
98	ACN-04	NHIN Administration	1 Shall	Perform core functions needed to share data in the NHIN.	Data Transaction-Data Access and Update	Edge	Infrastructure			Seems vague
1	ACN-01	NHIN Overarching (ACN)	1 Shall	Support at least a minimum set of functionality for participants.	Data Transaction-Data Access and Update	Edge	Infrastructure			Seems vague
753	IBM-212-37	Consumer System-PHR	2 Should	Provide Service Level Agreement to Consumer regarding availability of PHR service	Data Transaction-Data Access and Update	Edge	CE - Consumer			Out of scope
481	CSC-SEC-140	All Edge Systems (CSC)	May	Provide a "break-the-glass" function for authorized users to bypass normal security barriers during an emergency. If implemented, this should not be accomplished by using a generic login that obscures the identity of the user.	Data Transaction-Data Access and Update	Edge	Infrastructure		E	Required by HIPAA (§164.312(a)(2)(ii)). Seems to belong under Security.
393	CSC-CE-100	Consumer System-PHR	May	Contain the following data linked to a patient ID: demographic data; financial information sufficient for insurance eligibility checking and claims processing; basic clinical information including allergies and medication history	Data Transaction-Data Access and Update	Edge	CE - Consumer		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
396	CSC-CE-430	Consumer System-PHR	May	Have the capability for consumers to transfer their data from one PHR to another PHR	Data Transaction-Data Access and Update	Edge	CE - Consumer	IBM-207-39 IBM-211-02 NGIT-099		See Data Transaction (Push)
719	IBM-212-03	Consumer System-PHR	May	Allow for modifications and annotations in lab results, clinical notes, etc.	Data Transaction-Data Access and Update	Edge	CE - Consumer		X	
731	IBM-212-15	Consumer System-PHR	May	Allow consumer to hide clinical data, lab results, family history, etc.	Data Transaction-Data Access and Update	Edge	CE - Consumer		X	
366	CSC-ALL-990	External User interfaces	May	Provide a web interface if an EMR system is not available to perform NHIN queries.	Data Transaction-Data Access and Update	Edge	Infrastructure	CSC-EHR-510	E	Combined
450	CSC-EHR-510	External User interfaces	May	Provide web-based or other application interfaces to process lab results, if an EMR system with the necessary capabilities is not available.	Data Transaction-Data Access and Update	Edge	EHR - Lab	CSC-ALL-990	E	Combined
344	CSC-ALL-710	Repositories	May	Accept inserts, updates and deletes to persisted data.	Data Transaction-Data Access and Update	Edge	Infrastructure		E	Required by HIPAA (§164.526), although seems like "delete" should be "mask" to ensure there is evidence of data existence in the event of previous action
664	IBM-208-04	CDO	1 Shall	Send HL7 feeds to NHIN Interface	Data Transaction-Data Routing	Core	Infrastructure		E	Raised to generic level (e.g., could be NCPDP message)
311	CSC-ALL-20	CDO-CDO NHIN Interface	1 Shall	Maintain a local list of URLs for other SNOs and entities that it is authorized to query and to send messages.	Data Transaction-Data Routing	Core	Infrastructure		X	
330	CSC-ALL-410	CDO-CDO NHIN Interface	1 Shall	Accept and route all authorized messages to designated edge systems.	Data Transaction-Data Routing	Core	Infrastructure		N	
521	IBM-102-09	CDO-CDO NHIN Interface	1 Shall	Apply business rules to determine which of all of the registered (local, state and federal) public agencies need to be notified for each data request	Data Transaction-Data Routing	Core	Bio	IBM-107-06 IBM-107-05 NGIT-071	N	Combined
536	IBM-103-09	CDO-CDO NHIN Interface	1 Shall	Apply business rules to determine which of all of the registered (local, state and federal) public agencies need to be notified for each data request	Data Transaction-Data Routing	Core	Bio	IBM-102-09		Exact duplicate

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1056	NGIT-071	CDO-CDO NHIN Interface	1 Shall	Support business rules for routing biosurveillance data to specific public health agencies	Data Transaction-Data Routing	Core	Bio	IBM-103-09 IBM-107-06 IBM-107-05	N	Combined
571	IBM-107-05	Message Handling	2 Should	Determine entities to receive biosurveillance event response "broadcast" messages based on authorization by sender and subscription by receiver to support event response	Data Transaction-Data Routing	Core	Biosurveillance	IBM-102-09 IBM-107-06 NGIT-071	N	Combined
572	IBM-107-06	Message Handling	2 Should	Determine entities to receive biosurveillance event response "broadcast" message based on one or more business rules (e.g. location of outbreak, severity of event, etc) to support event response	Data Transaction-Data Routing	Core	Biosurveillance	IBM-102-09 IBM-107-05 NGIT-071	N	Combined
573	IBM-107-07	Message Handling	May	Send biosurveillance event response "broadcast" messages according to authorized recipient's specified mode (secure email, web application, EHR/responder system)	Data Transaction-Data Routing	Core	Biosurveillance		N	Seems this should apply to any application
704	IBM-209-40	CDO	1 Shall	Send confirmation acknowledging receipt of registration/medication history data	Data Transaction-Data Routing	Edge	CE - Consumer			See Data Quality/Integrity
331	CSC-ALL-420	All Edge Systems (CSC)	May	Determine the method of message delivery to the final destinations.	Data Transaction-Data Routing	Edge	Infrastructure	CSC-ALL-440	E	Combined
333	CSC-ALL-440	All Edge Systems (CSC)	May	Specify multiple destinations for a message, in order that the message transmission system may distribute the messages	Data Transaction-Data Routing	Edge	Infrastructure	CSC-ALL-420	E	Combined
430	CSC-EHR-310	CDO	May	Collect and persist information, provided by the patient, regarding providers to be notified, or excluded from notification, of availability of Lab results	Data Transaction-Data Routing	Edge	EHR - Lab		X	
431	CSC-EHR-330	CDO	May	Collect and persist information, provided by the patient, regarding providers to be allowed, or excluded from, access to Lab results	Data Transaction-Data Routing	Edge	EHR - Lab		X	
1055	NGIT-070	CDO-EMR	May	Specify destination(s) for transmission of biosurveillance data	Data Transaction-Data Routing	Edge	Bio		X	
701	IBM-209-37	CDO	1 Shall	Confirm integrity of imported data	Data Transaction-Data Transaction Verification	Edge	CE - Consumer			See Data Quality/Integrity
714	IBM-211-07	Consumer System-PHR	1 Shall	Transmit confirmation that PHR has been closed (or closed and transferred)	Data Transaction-Data Transaction Verification	Edge	CE - Consumer			See Data Quality/Integrity

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
715	IBM-211-08	Consumer System-PHR	May	Transmit notification that PHR data has been transferred to another vendor	Data Transaction-Data Transaction Verification	Edge	CE - Consumer	CSC-CE-630		See Data Quality/Integrity
1046	NGIT-062	CDO-CDO NHIN Interface	1 Shall	Accept a filter rule defined by public health agencies	Data Transformation-Data Filtering	Core	Bio	NGIT-063	N	Combined
1047	NGIT-063	CDO-CDO NHIN Interface	1 Shall	Apply filter rule changes	Data Transformation-Data Filtering	Core	Bio	NGIT-062	N	Combined
1048	NGIT-064	CDO-CDO NHIN Interface	1 Shall	Filter collected data records to identify biosurveillance data	Data Transformation-Data Filtering	Core	Bio	IBM-103-04 IBM-102-04 NGIT-061 NGIT-062 NGIT-059	N	Combined
1049	NGIT-065	CDO-CDO NHIN Interface	1 Shall	Aggregate data for transmission as determined by HITSP implementation guide	Data Transformation-Data Filtering	Core	Bio	NGIT-062 NGIT-059	E	Combined
972	IBM-318-01	External User interfaces	1 Shall	Allow clinician to subscribe to specified or all available future clinical events data for specified patient (vs. flag in registry)	Data Transformation-Data Filtering	Core	EHR - Lab	IBM-318-02	N	Combined
973	IBM-318-02	External User interfaces	1 Shall	Allow clinician to un-subscribe to future clinical events data for specified patient	Data Transformation-Data Filtering	Core	EHR - Lab	IBM-318-01	N	Combined
864	IBM-307-44	RLS	1 Shall	Receive request for lab test results location based on lab order number or other unique lab test identifier	Data Transformation-Data Filtering	Core	EHR - Lab			See Information Location
932	IBM-313-01	NHIN Administration-User Registration	2 Should	Store provider preferences to automatically receive new lab result events in EHR when provider is ordering clinician	Data Transformation-Data Filtering	Core	EHR - Lab	IBM-313-02 IBM-313-03 IBM-313-04	N	Seems to describe a specific type of architecture
933	IBM-313-02	NHIN Administration-User Registration	2 Should	Store provider preferences to automatically receive new lab result events into EHR when provider is not the ordering clinician	Data Transformation-Data Filtering	Core	EHR - Lab	IBM-313-01 IBM-313-03 IBM-313-04	N	Seems to describe a specific type of architecture
934	IBM-313-03	NHIN Administration-User Registration	2 Should	Store provider preferences to automatically receive notification of new lab result events into EHR or Web application when provider is ordering clinician	Data Transformation-Data Filtering	Core	EHR - Lab	IBM-313-02 IBM-313-01 IBM-313-04	N	Seems to describe a specific type of architecture
935	IBM-313-04	NHIN Administration-User Registration	2 Should	Store provider preferences to automatically receive notification of new lab result events into EHR or Web application when provider is not ordering clinician	Data Transformation-Data Filtering	Core	EHR - Lab	IBM-313-02 IBM-313-03 IBM-313-01	N	Seems to describe a specific type of architecture

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
850	IBM-307-30	CDO-EMR	1 Shall	Provide ability for clinician to request all available data (from local and remote communities) for specified patient	Data Transformation-Data Filtering	Edge	EHR - Lab	IBM-307-43 IBM-307-32	E	Combined
562	IBM-106-07	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Send requests to inventory status of medical supplies to monitor a previously detected event	Data Transformation-Data Filtering	Edge	Biosurveillance		X	
851	IBM-307-31	External User interfaces	1 Shall	Provide ability for clinician to request all available data (from local and remote communities) for specified patient	Data Transformation-Data Filtering	Edge	EHR - Lab	IBM-307-30		Exact duplicate
863	IBM-307-43	External User interfaces	1 Shall	Provide clinician ability to request for specific lab test results based on order number or other unique test result identification	Data Transformation-Data Filtering	Edge	EHR - Lab	IBM-307-30 IBM-307-32	E	Combined
852	IBM-307-32	CDO-EMR	2 Should	Provide clinician ability to query for results based on one or multiple criteria for a specified patient	Data Transformation-Data Filtering	Edge	EHR - Lab	IBM-307-34 IBM-307-36 IBM-307-38 IBM-307-40 IBM-307-42		
853	IBM-307-33	External User interfaces	2 Should	Provide clinician ability to query for results based on one or multiple criteria for a specified patient	Data Transformation-Data Filtering	Edge	EHR - Lab	IBM-307-32		Exact duplicate
855	IBM-307-35	External User interfaces	2 Should	Provide clinician ability to query for lab results based on a specified date range for a specified patient	Data Transformation-Data Filtering	Edge	EHR - Lab	IBM-307-30 IBM-307-32	E	Combined
857	IBM-307-37	External User interfaces	2 Should	Provide clinician ability to query for lab results based on one or more types of lab data (chemistry, hematology, pathology, etc) for a specified patient	Data Transformation-Data Filtering	Edge	EHR - Lab	IBM-307-30 IBM-307-32	E	Combined
341	CSC-ALL-670	Repositories	2 Should	Support various filters for querying data, including filtering on a specific order number.	Data Transformation-Data Filtering	Edge	Infrastructure	IBM-307-35 IBM-307-37 CSC-ALL-930	E	Combined
360	CSC-ALL-930	All Edge Systems (CSC)	May	Specify various filters for returned data, for example filtering results on a specific lab order number.	Data Transformation-Data Filtering	Edge	Infrastructure	IBM-307-35 IBM-307-37 CSC-ALL-670	E	Combined
1039	NGIT-055	CDO	May	Filter collected data records to identify biosurveillance data	Data Transformation-Data Filtering	Edge	Bio	CSC-BIO-340 CSC-BIO-500 NGIT-056	X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1041	NGIT-057	CDO	May	Accept a filter rule defined by public health agencies	Data Transformation-Data Filtering	Edge	Bio		X	
1042	NGIT-058	CDO	May	Apply filter rule changes	Data Transformation-Data Filtering	Edge	Bio		X	
1043	NGIT-059	CDO	May	Aggregate data for transmission as determined by HITSP implementation guide	Data Transformation-Data Filtering	Edge	Bio	NGIT-065	E	Combined
1059	NGIT-074	CDO-Registration	May	Filter collected data records to identify biosurveillance data	Data Transformation-Data Filtering	Edge	Bio		X	
1060	NGIT-075	CDO-Registration	May	Aggregate and format census data for transmission to public health agencies	Data Transformation-Data Filtering	Edge	Bio		X	
859	IBM-307-39	External User interfaces	May	Provide clinician ability to query for lab results based on one or more specified lab tests for a specified patient	Data Transformation-Data Filtering	Edge	EHR - Lab	IBM-307-30 IBM-307-32	E	Combined
861	IBM-307-41	External User interfaces	May	Provide clinician ability to query for lab results based on one, more or all local or remote marketplaces for a specified patient	Data Transformation-Data Filtering	Edge	EHR - Lab	IBM-307-30 IBM-307-32	E	Combined
520	IBM-102-08	CDO-CDO NHIN Interface	1 Shall	Transform data using approved standards as provided by HITSP or as agreed upon with ONC for the Architecture Prototype	Data Transformation-Data Mapping/Translation	Core	Bio	NGIT-068 NGIT-072 IBM-103-08 NGIT-100	N	Combined; location of service depends on NHIN architecture
1084	NGIT-100	Consumer System-Consumer NHIN Interface	1 Shall	Support translating data into appropriate standards for incorporating data into EHRs	Data Transformation-Data Mapping/Translation	Core	CE - Consumer	IBM-102-08	N	Combined
698	IBM-209-34	CDO	1 Shall	Receive registration/medication history to parse into EHR system via NHIN	Data Transformation-Data Mapping/Translation	Edge	CE - Consumer	IBM-209-39	E	Combined
703	IBM-209-39	CDO	1 Shall	Parse and validate results content	Data Transformation-Data Mapping/Translation	Edge	CE - Consumer	IBM-209-34	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
608	IBM-205-15	Consumer System-PHR	1 Shall	Receive registration/medication history to pre-populate PHR via NHIN	Data Transformation-Data Mapping/Translation	Edge	Infrastructure			Doesn't seem to relate to Data Mapping/Translation
635	IBM-207-15	Consumer System-PHR	1 Shall	Receive registration/medication history to update PHR via NHIN	Data Transformation-Data Mapping/Translation	Edge	CE - Consumer			Doesn't seem to relate to Data Mapping/Translation
54	ACN-02.5	Terminology Servers	1 Shall	Communicate in the NHIN using defined standards.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	General form of ACN-02.5.11 through ACN-02.5.2.9	E	Combined
55	ACN-02.5.1	Terminology Servers	1 Shall	Communicate in the NHIN using standard message formats.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	General form of ACN-02.5.11 through ACN-02.5.2.9	E	Combined
56	ACN-02.5.1.1	Terminology Servers	1 Shall	Communicate with the NHIN using Health Level 7 (HL7) version 3 messages.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
57	ACN-02.5.1.2	Terminology Servers	1 Shall	Communicate with the NHIN using Health Level 7 (HL7) Clinical Document Architecture (CDA) messages.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
58	ACN-02.5.1.3	Terminology Servers	1 Shall	Communicate with the NHIN using NCPDP Script (v8.1 or greater) messages.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
59	ACN-02.5.1.4	Terminology Servers	1 Shall	Communicate with the NHIN using HIPAA approved transactions.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
60	ACN-02.5.2	Terminology Servers	1 Shall	Communicate with the NHIN using standard terminology.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
61	ACN-02.5.2.1	Terminology Servers	1 Shall	Communicate with the NHIN using Health Level 7 (HL7) vocabulary standards for demographic information.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
62	ACN-02.5.2.10	Terminology Servers	1 Shall	Communicate with the NHIN using LOINC vocabulary standards for laboratory test codes.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
63	ACN-02.5.2.11	Terminology Servers	1 Shall	Communicate with the NHIN using terminology standards (such as CDISC and MedDRA) used to support clinical research and drug approval/monitoring.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
64	ACN-02.5.2.12	Terminology Servers	1 Shall	Communicate with the NHIN using ICD-9 vocabulary standards for diagnosis.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
65	ACN-02.5.2.2	Terminology Servers	1 Shall	Communicate with the NHIN using Health Level 7 (HL7) vocabulary standards for units of measure.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
66	ACN-02.5.2.3	Terminology Servers	1 Shall	Communicate with the NHIN using Health Level 7 (HL7) vocabulary standards for immunizations.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
67	ACN-02.5.2.4	Terminology Servers	1 Shall	Communicate with the NHIN using Health Level 7 (HL7) vocabulary standards for clinical encounters.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
68	ACN-02.5.2.5	Terminology Servers	1 Shall	Communicate with the NHIN using The College of American Pathologists Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) for laboratory result contents.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
69	ACN-02.5.2.6	Terminology Servers	1 Shall	Communicate with the NHIN using The College of American Pathologists Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) for non-laboratory interventions and procedures.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
70	ACN-02.5.2.7	Terminology Servers	1 Shall	Communicate with the NHIN using The College of American Pathologists Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) for anatomy.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
71	ACN-02.5.2.8	Terminology Servers	1 Shall	Communicate with the NHIN using The College of American Pathologists Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) for diagnosis and problems.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
72	ACN-02.5.2.9	Terminology Servers	1 Shall	Communicate with the NHIN using a set of federal terminologies related to medications, including: -The Food and Drug Administration's names and codes for ingredients -Manufactured dosage forms, drug products and medication packages -The National Library of Medicine's RxNORM for describing clinical drugs -The Veterans Administration's National Drug File Reference Terminology (NDF-RT) for specific drug classifications.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure	See ACN-02.5 and ACN-02.5.1	E	Combined
101	ACN-04.11	Terminology Servers	1 Shall	Contain mappings of local terminologies to NHIN standard terminologies.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure		E	Suggest revision to HITSP standard terminologies.
102	ACN-04.12	Terminology Servers	1 Shall	Present data to users in standard terminologies.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure		E	Revise to present data as desired by users because some users may prefer to have data presented in local terminology

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
103	ACN-04.13	Terminology Servers	1 Shall	Maintain sets of standard terminologies.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure		X	
104	ACN-04.14	Terminology Servers	1 Shall	Maintain sets of local terminologies.	Data Transformation-Data Mapping/Translation	Edge	Infrastructure		X	
387	CSC-BIO-540	CDO	2 Should	Transform data into approved HITSP standards using their implementation guidelines	Data Transformation-Data Mapping/Translation	Edge	Bio		X	
790	IBM-304-24	Terminology Servers	2 Should	Translate lab data to comply with HITSP or participant agreed upon content and messaging standards	Data Transformation-Data Mapping/Translation	Edge	EHR - Lab		X	
905	IBM-309-13	Terminology Servers	2 Should	Translate lab results data to comply with HITSP or participant agreed upon content and messaging standards	Data Transformation-Data Mapping/Translation	Edge	EHR - Lab		X	
1051	NGIT-067	CDO-EMR	May	Transform data into approved standards	Data Transformation-Data Mapping/Translation	Edge	Bio		X	
648	IBM-207-28	Consumer System-PHR	May	Map information entered by PHR Account Holders to controlled, standardized code sets or nomenclature when feasible	Data Transformation-Data Mapping/Translation	Edge	CE - Consumer		X	
730	IBM-212-14	Consumer System-PHR	May	Offer 'translation' services to provide clinical data in easy to read and understandable format and language	Data Transformation-Data Mapping/Translation	Edge	CE - Consumer		E	
967	IBM-317-06	External User interfaces	1 Shall	Support multiple languages	Data Transformation-Data Rendering	Core	EHR - Lab	IBM-317-06 through IBM-317-19	N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
968	IBM-317-07	External User interfaces	1 Shall	Display content in language designated by user	Data Transformation-Data Rendering	Core	EHR - Lab	IBM-317-06 through IBM-317-19	N	Combined
969	IBM-317-08	External User interfaces	1 Shall	Support data entry in language designated by user	Data Transformation-Data Rendering	Core	EHR - Lab	IBM-317-06 through IBM-317-19	N	Combined
970	IBM-317-09	External User interfaces	1 Shall	Display retrieved data in language specified by user	Data Transformation-Data Rendering	Core	EHR - Lab	IBM-317-06 through IBM-317-19	N	Combined
971	IBM-317-10	External User interfaces	1 Shall	Provide accessibility for handicapped	Data Transformation-Data Rendering	Core	EHR - Lab	IBM-317-05	N	
962	IBM-317-01	CDO	1 Shall	Support multiple languages	Data Transformation-Data Rendering	Edge	EHR - Lab	IBM-317-01 through IBM-317-04	E	Combined and Equivalent of N
963	IBM-317-02	CDO	1 Shall	Display content in language designated by user	Data Transformation-Data Rendering	Edge	EHR - Lab	IBM-317-01 through IBM-317-04	E	Combined and Equivalent of N
964	IBM-317-03	CDO	1 Shall	Support data entry in language designated by user	Data Transformation-Data Rendering	Edge	EHR - Lab	IBM-317-01 through IBM-317-04	E	Combined and Equivalent of N
965	IBM-317-04	CDO	1 Shall	Display retrieved data in language specified by user	Data Transformation-Data Rendering	Edge	EHR - Lab	IBM-317-01 through IBM-317-04	E	Combined and Equivalent of N
966	IBM-317-05	CDO	1 Shall	Provide accessibility for handicapped	Data Transformation-Data Rendering	Edge	EHR - Lab	IBM-317-10	E	Equivalent of N
819	IBM-306-11	CDO-EMR	1 Shall	Display notification of new lab result event. The display is easy to understand and the displayed content is determined by the receiving entity.	Data Transformation-Data Rendering	Edge	EHR - Lab	IBM-306-12	E	Combined
2	ACN-01.1	External User interfaces	1 Shall	Allow patients access to their personal health record (PHR).	Data Transformation-Data Rendering	Edge	CE - Consumer	ACN-01.2	E	Combined
9	ACN-01.2	External User interfaces	1 Shall	Allow providers access to view information on specific patients.	Data Transformation-Data Rendering	Edge	CE, EHR	ACN-01.1	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
10	ACN-01.3	External User interfaces	1 Shall	Allow patients and providers to view medication history.	Data Transformation-Data Rendering	Edge	CE, EHR	General form of ACN-01.1 and ACN-01.2 and Equivalent of Specific ACN-01.3 through ACN01.8	E	Combined
11	ACN-01.4	External User interfaces	1 Shall	Allow patients and providers to view allergy history.	Data Transformation-Data Rendering	Edge	CE, EHR		E	Combined
12	ACN-01.5	External User interfaces	1 Shall	Allow patients and providers to view and edit their demographic information.	Data Transformation-Data Rendering	Edge	CE, EHR		E	Combined
13	ACN-01.6	External User interfaces	1 Shall	Allow providers to view laboratory result and order information.	Data Transformation-Data Rendering	Edge	EHR - Lab	IBM-312-05	E	Combined
14	ACN-01.7	External User interfaces	1 Shall	Allow providers to view radiology reports.	Data Transformation-Data Rendering	Edge	EHR - Lab		E	Combined
15	ACN-01.8	External User interfaces	1 Shall	Allow providers to view medical images and other imaged materials.	Data Transformation-Data Rendering	Edge	EHR - Lab		E	Combined
820	IBM-306-12	External User interfaces	1 Shall	Display notification of new lab result event. The display is easy to understand and the displayed content is determined by the marketplace.	Data Transformation-Data Rendering	Edge	EHR - Lab	IBM-306-11	E	Combined
930	IBM-312-06	External User interfaces	1 Shall	Print lab results from web application	Data Transformation-Data Rendering	Edge	EHR - Lab		X	
39	ACN-02.3.13	Message Handling	1 Shall	Aggregate request results into a consolidated message.	Data Transformation-Data Rendering	Edge	CE, EHR	IBM-205-14 CSC-ALL-840	N	See Push
40	ACN-02.3.14	Message Handling	1 Shall	Format the received data in a way which is understandable to the end user	Data Transformation-Data Rendering	Edge	CE, EHR		X	
325	CSC-ALL-320	CDO-CDO NHIN Interface	1 Shall	Use the Record Locator Service to resolve patient indentiy amibiguities.	Information Location-Identity/Information Correlation	Core	Infrastructure	ACN-02.1.3	N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
347	CSC-ALL-770	CDO-CDO NHIN Interface	1 Shall	Return unambiguous patient identities for all query results.	Information Location-Identity/Information Correlation	Core	Infrastructure	NGIT-009 NGIT-008 CSC-ALL-280	N	Combined
18	ACN-02.1	MPI	1 Shall	Contain an index of unique patients participating in the NHIN.	Information Location-Identity/Information Correlation	Core	Infrastructure		N	Assumes an architecture
19	ACN-02.1.1	MPI	1 Shall	Uniquely identify a person by some or all of the following attributes: - Last Name - Middle Name - First Name - Date of Birth - Gender - Place of Birth - Social Security Number - Mother's Maiden Name - Address	Information Location-Identity/Information Correlation	Core	Infrastructure	CSC-ALL-300	N	
20	ACN-02.1.2	MPI	1 Shall	Receive unique patient information from participating edge systems.	Information Location-Identity/Information Correlation	Core	Infrastructure	IBM-307-08 ACN-02.1.2.2 ACN-02.1.2.5 NGIT-007	N	Combine. Seems to assume an architecture
21	ACN-02.1.2.1	MPI	1 Shall	Add new patient identifier information to the patient index.	Information Location-Identity/Information Correlation	Core	Infrastructure	IBM-307-08 ACN-02.1.2.2	N	Combine
22	ACN-02.1.2.2	MPI	1 Shall	Update patient identifier information in the patient index.	Information Location-Identity/Information Correlation	Core	Infrastructure	ACN-02.1.2 IBM-307-08	N	Combine
23	ACN-02.1.2.3	MPI	1 Shall	Add patient consent information to the patient index for patients willing to share their data.	Information Location-Identity/Information Correlation	Core	Infrastructure			Seems to assume an architecture and includes policy
24	ACN-02.1.2.4	MPI	1 Shall	Add patient dissent information to the patient index for patients not willing to share their data.	Information Location-Identity/Information Correlation	Core	CE - Consumer			Seems to assume an architecture and includes policy
25	ACN-02.1.2.5	MPI	1 Shall	Receive patient information when sent from edge systems.	Information Location-Identity/Information Correlation	Core	Infrastructure	IBM-307-08 ACN-02.1.2.2		Very similar

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
26	ACN-02.1.2.6	MPI	1 Shall	Validate patient information when sent from edge systems.	Information Location-Identity/Information Correlation	Core	Infrastructure	ACN-02.1.2 IBM-307-08 ACN-02.1.2.2	N	Combined
27	ACN-02.1.3	MPI	1 Shall	Link patient identifiers for a patient that exists in multiple edge systems.	Information Location-Identity/Information Correlation	Core	Infrastructure	CSC-ALL-320 ACN-02.1.4	N	Combined
28	ACN-02.1.4	MPI	1 Shall	Unlink patient identifiers for patients incorrectly linked to other patients.	Information Location-Identity/Information Correlation	Core	Infrastructure	CSC-ALL-320 ACN-02.1.3	N	Combined
831	IBM-307-11	MPI	1 Shall	Provide method for clinician and locator system to agree on patient identity through patient trait matching, shared MPI or patient identifier matching (as determined by the marketplace)	Information Location-Identity/Information Correlation	Core	EHR - Lab	IBM-307-12 CSC-ALL-320 and other related fcns	E	Combined
1033	NGIT-007	MPI	1 Shall	Maintain index of patients registered at participating entities	Information Location-Identity/Information Correlation	Core	Infrastructure	IBM-307-08 ACN-02.1.2.2 ACN-02.1.2.5	N	Combine. Seems to assume an architecture
1034	NGIT-008	MPI	1 Shall	Determine unambiguous match of patient identities supported by entities associated with the network	Information Location-Identity/Information Correlation	Core	Infrastructure	NGIT-134 CSC-ALL-770 IBM-307-08	N	Combined
1035	NGIT-009	MPI	1 Shall	Return patient identifiers previously uploaded by data sources for a uniquely identified patient	Information Location-Identity/Information Correlation	Core	Infrastructure	CSC-ALL-280 IBM-307-09	N	Combined
127	ACN-05.2	NHIN Administration-Organization Registration	1 Shall	Maintain a unique organizational identifier for each participating edge system and provider organization.	Information Location-Identity/Information Correlation	Core	Infrastructure	ACN-05.2.1.1 ACN-05.2.1.2 ACN-05.2.1.3	N	Isn't this the HIPAA NPI? Assume identifier needed for non-covered entities. Combined w/related fcns
128	ACN-05.2.1	NHIN Administration-Organization Registration	1 Shall	Maintain a list of certified members.	Information Location-Identity/Information Correlation	Core	Infrastructure			See Credentialing
129	ACN-05.2.1.1	NHIN Administration-Organization Registration	1 Shall	Create new organization identifiers.	Information Location-Identity/Information Correlation	Core	Infrastructure	ACN-05.2 ACN-05.2.1.2 ACN-05.2.1.3	N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
130	ACN-05.2.1.2	NHIN Administration-Organization Registration	1 Shall	Update organization identifiers.	Information Location-Identity/Information Correlation	Core	Infrastructure	ACN-05.2.1.1 ACN-05.2 ACN-05.2.1.3	N	Combined
131	ACN-05.2.1.3	NHIN Administration-Organization Registration	1 Shall	Inactivate organization identifiers.	Information Location-Identity/Information Correlation	Core	Infrastructure	ACN-05.2.1.1 ACN-05.2.1.2 ACN-05.2	N	Combined
17	ACN-02	NHIN Overarching (ACN)	1 Shall	Facilitate the exchange of accurate and reliable health information.	Information Location-Identity/Information Correlation	Core	Infrastructure			Very general
320	CSC-ALL-280	RLS	1 Shall	Return actual identity values matched.	Information Location-Identity/Information Correlation	Core	Infrastructure	NGIT-009 NGIT-008 CSC-ALL-770 IBM-307-09 IBM-207-05	N	Combined
598	IBM-205-05	RLS	1 Shall	Match patient to respective sources of data when pre-populating the PHR from the NHIN	Information Location-Identity/Information Correlation	Core	Infrastructure	IBM-205-05	E	See also Data Access & Update. Combined
625	IBM-207-05	RLS	1 Shall	Match patient to respective sources of data when updating the PHR from the NHIN	Information Location-Identity/Information Correlation	Core	Infrastructure	IBM-205-05	E	See also Data Access & Update. Combined
828	IBM-307-08	RLS	1 Shall	Receive demographic information for patient for query	Information Location-Identity/Information Correlation	Core	EHR - Lab	ACN-02.1.2	N	Combined
829	IBM-307-09	RLS	1 Shall	Return one or more patients to the requesting clinician who meet the community defined minimum level of matching probability	Information Location-Identity/Information Correlation	Core	EHR - Lab	NGIT-009 NGIT-008 CSC-ALL-770 CSC-ALL-280		Combined
830	IBM-307-10	RLS	1 Shall	Returns error message if no patients are found who meet the community defined minimum level of matching probability	Information Location-Identity/Information Correlation	Core	EHR - Lab			See Data Quality/Integrity
540	IBM-103-13	CDO-CDO NHIN Interface	2 Should	Minimize double counting. The system should be able to determine when multiple and or independently submitted data refer to the same case (patient) or event.	Information Location-Identity/Information Correlation	Core	Bio	IBM-102-13	E	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
656	IBM-207-36	Consumer System-PHR	May	Publish the appropriate links with updated data back to the record locator	Information Location-Identity/Information Correlation	Core	Infrastructure	ACN-02.1.2.2	N	Combined
	IBM-208-0	Consumer System-PHR	May	Publish the appropriate links back to the record locator	Information Location-Identity/Information Correlation	Core	Infrastructure	ACN-02.1.3	N	Combined
712	IBM-211-05	Consumer System-PHR	May	Publish the appropriate links with updated data back to the record locator	Information Location-Identity/Information Correlation	Core	Infrastructure	IBM-207-36		Exact duplicate
323	CSC-ALL-300	RLS	May	Use various identifiers in determining patient identity	Information Location-Identity/Information Correlation	Core	Infrastructure	CSC-ALL-290 ACN-02.1.1	N	Combined
826	IBM-307-06	CDO-EMR	1 Shall	Send demographic information to record locator to identify patient for query. Data required is determined by the community.	Information Location-Identity/Information Correlation	Edge	EHR - Lab	CSC-ALL-770 CSC-ALL-280 IBM-307-09 NGIT-009 NGIT-008 IBM-307-11	E	Equivalent of N
833	IBM-307-13	CDO-EMR	1 Shall	Provide ability for clinician to browse potential matches and confirm the correct patient for data location retrieval to locator system	Information Location-Identity/Information Correlation	Edge	EHR - Lab	IBM-307-11	E	Equivalent of N
309	CSC-ALL-180	CDO-Registration	1 Shall	Maintain latest available patient identifying information	Information Location-Identity/Information Correlation	Edge	Infrastructure	ACN-02.1 NGIT-007	E	Equivalent of N
612	IBM-205-19	Consumer System-PHR	1 Shall	Maintain an XDS repository following pre-population	Information Location-Identity/Information Correlation	Edge	CE - Consumer		E	
613	IBM-205-20	Consumer System-PHR	1 Shall	Publish the appropriate links back to the record locator	Information Location-Identity/Information Correlation	Edge	CE - Consumer	IBM-207-20		
755	IBM-301-01	External User interfaces	1 Shall	Prompt consumer or proxy for identification data for NHIN	Information Location-Identity/Information Correlation	Edge	EHR - Lab			

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
827	IBM-307-07	External User interfaces	1 Shall	Send demographic information to record locator to identify patient for query. Data required is determined by the community.	Information Location-Identity/Information Correlation	Edge	EHR - Lab	ACN-02.1.2 IBM-307-08 ACN-02.1.2.2 ACN-02.1.2.6 CSC-910	E	Equivalent of N
834	IBM-307-14	External User interfaces	1 Shall	Provide ability for clinician to browse potential matches and confirm the correct patient for data location retrieval to locator system	Information Location-Identity/Information Correlation	Edge	EHR - Lab	CSC-ALL-320 ACN-02.1.3 ACN-02.1.4 and IBM-307-11 IBM-307-13 IBM-307-14	E	Equivalent of N
113	ACN-04.8	MPI	1 Shall	Uniquely identify a person by some or all of the following attributes: - Last Name - Middle Name - First Name - Date of Birth - Gender - Place of Birth - Social Security Number - Mother's Maiden Name - Address	Information Location-Identity/Information Correlation	Edge	Infrastructure	ACN-02.1.1 CSC-ALL-300	E	Equivalent of N
114	ACN-04.9	MPI	1 Shall	Uniquely identify a provider by some or all of the following attributes: - Provider OID - Name - Role - Provider Organization - DEA # - License # - State Licensed In	Information Location-Identity/Information Correlation	Edge	Infrastructure	ACN-05.2	E	Equivalent of N. Should'n provider identifier be HIPAA NPI?
100	ACN-04.10	NHIN Administration-Consumer Authorization	1 Shall	Establish patient-provider relationships.	Information Location-Identity/Information Correlation	Edge	Infrastructure		E	
386	CSC-BIO-530	CDO	2 Should	Embed randomized data linker to allow authorized re-identification	Information Location-Identity/Information Correlation	Edge	Bio	CSC-BIO-100	E	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
429	CSC-EHR-305	CDO	2 Should	Collect and update patient demographic identity information.	Information Location-Identity/Information Correlation	Edge	EHR - Lab	ACN-02.1.2 IBM-307-08 ACN-02.1.2.2 ACN-02.1.2.6 and IBM-307-07	E	Combined
368	CSC-BIO-030	Data Analysis and Secondary Use Systems-Public Health	2 Should	Receive sufficient and accurate information enabling them to effectively respond to and manage public health events--for early detection, situational awareness, rapid response, automatic maximum data sharing	Information Location-Identity/Information Correlation	Edge	Bio		X	
358	CSC-ALL-910	All Edge Systems (CSC)	May	Submit various identifiers to the NHIN Interface, to aid in ascertaining patient identity.	Information Location-Identity/Information Correlation	Edge	Infrastructure	IBM-307-07	E	Combined
359	CSC-ALL-920	All Edge Systems (CSC)	May	Interact with clinicians to determine identity of patients, using some form of local MPI, but this is not allowed for identities from other SNOs.	Information Location-Identity/Information Correlation	Edge	Infrastructure		X	Policy
370	CSC-BIO-100	CDO	May	Relink anonymized data to patients when requested by authorized public health officials for investigations, or use intermediaries to do so	Information Location-Identity/Information Correlation	Edge	Bio	CSC-BIO-530		Combined
373	CSC-BIO-210	CDO	May	Provide patient demographic data including encounter date, patient information, date/time of last record update	Information Location-Identity/Information Correlation	Edge	Bio	IBM-101-01 IBM-101-03 IBM-101-05		Seems like more than Identity/Information Correlation
374	CSC-BIO-220	CDO	May	Provide clinical data including patient class, diagnosis/injury code, diagnostic type, diagnostic date and time, discharge disposition, chief complaint, date and time of first signs of illness	Information Location-Identity/Information Correlation	Edge	Bio	IBM-101-02 IBM-101-04 IBM-101-06		Seems like more than Identity/Information Correlation
375	CSC-BIO-240	CDO	May	Provide Laboratory and Radiology Test Results including reporting lab ID, performing lab ID, report data/time, report status, collection date, collection method, specimen site, test ordered, test results, organism identified/result other than organism, method type, result unit, test interpretation, susceptibility test interpretation, test status	Information Location-Identity/Information Correlation	Edge	Bio			Seems like more than Identity/Information Correlation

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
639	IBM-207-19	Consumer System-PHR	May	Maintain an XDS repository following pre-population	Information Location-Identity/Information Correlation	Edge	CE - Consumer	IBM-205-19		Exact duplicate
445	CSC-EHR-MPI 460		May	Be used locally within a CDO or SNO to allow a clinician to browse and select from among candidate patient matches.	Information Location-Identity/Information Correlation	Edge	EHR - Lab		X	Equivalent of N and E
599	IBM-205-06	CDO-CDO NHIN Interface	1 Shall	Contain one Record Locator Service (RLS) for NHIN searches	Information Location-Record Location	Core	Infrastructure	IBM-207-06 IBM-209-13	N	
600	IBM-205-07	CDO-CDO NHIN Interface	1 Shall	Require that the requesting institution provide appropriate demographic information (presumably brokered by the PHR vendor in this instance) to query data in the NHIN. Data required is determined by the community.	Information Location-Record Location	Core	Infrastructure	IBM-207-07 IBM-209-14		See Identity/Information Correlation. Why is this coming only from PHR vendor?
626	IBM-207-06	CDO-CDO NHIN Interface	1 Shall	Contain one Record Locator Service (RLS) for NHIN searches	Information Location-Record Location	Core	Infrastructure	IBM-205-06 IBM-209-13		Exact duplicates
678	IBM-209-13	CDO-CDO NHIN Interface	1 Shall	Contain one Record Locator Service (RLS) for NHIN searches	Information Location-Record Location	Core	Infrastructure	IBM-205-06 IBM-209-13		Exact duplicates
680	IBM-209-15	CDO-CDO NHIN Interface	1 Shall	Specify what marketplaces the Record Locator should search	Information Location-Record Location	Core	Infrastructure	IBM-209-33 ACN-02.3.10 ACN-02.3.1 CSC-ALL-270	N	
36	ACN-02.3.10	Message Handling	1 Shall	Notify requesting edge systems that identified edge systems contain the requested data.	Information Location-Record Location	Core	Infrastructure	IBM-209-33 IBM-209-15 ACN-02.3.1 CSC-ALL-270	N	
35	ACN-02.3.1	NHIN Administration-Audit Trail	1 Shall	Notify users when edge systems do not contain any data about the requested patient.	Information Location-Record Location	Core	CE, EHR	IBM-209-33 ACN-02.3.10 IBM-209-15 CSC-ALL-270	N	
319	CSC-ALL-270	RLS	1 Shall	Return pointers that enable retrieval of patient records from data sources / repositories	Information Location-Record Location	Core	Infrastructure	IBM-209-33 ACN-02.3.10 ACN-02.3.1 IBM-209-15	N	
601	IBM-205-08	RLS	1 Shall	Support HL7 R2.4 and 3.0 feeds as incoming queries	Information Location-Record Location	Core	Infrastructure	IBM-207-08 IBM-209-16	N	Other HITSP standards may also have such feeds

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
602	IBM-205-09	RLS	1 Shall	Return one or more patients to the requesting consumer who meet the community defined minimum level of matching probability	Information Location-Record Location	Core	Infrastructure	IBM-207-09 IBM-209-18		See Identity/Information Correlation.
604	IBM-205-11	RLS	1 Shall	Not return any clinical data; RLS shall only present links to appropriate records for NHIN queries	Information Location-Record Location	Core	Infrastructure	IBM-207-11 IBM-209-20 IBM-209-33 ACN-02.3.10 ACN-02.3.1 IBM-209-15	N	Combined
606	IBM-205-13	RLS	1 Shall	Present the retrieved records to allow for aggregation	Information Location-Record Location	Core	Infrastructure			Seems contradictory to IBM-205-11 and CSC-CE-480
633	IBM-207-13	RLS	1 Shall	Present the retrieved records to allow for aggregation	Information Location-Record Location	Core	Infrastructure	IBM-209-22 IBM-205-13		Exact duplicate
665	IBM-208-05	RLS	1 Shall	Maintain list of published documents	Information Location-Record Location	Core	Infrastructure			Seems to assume an architecture
682	IBM-209-17	RLS	1 Shall	Employ probabilistic matching for patient queries	Information Location-Record Location	Core	Infrastructure			Should be included in Identity/Information Correlation
687	IBM-209-23	RLS	1 Shall	Also query remote marketplaces if such a request is made by the CDO administrator	Information Location-Record Location	Core	Infrastructure	IBM-209-15	N	Combined
690	IBM-209-26	RLS	1 Shall	Receive notification from remote marketplace for data location request message	Information Location-Record Location	Core	Infrastructure		N	
691	IBM-209-27	RLS	1 Shall	Receive data locations from remote marketplaces	Information Location-Record Location	Core	Infrastructure		N	
692	IBM-209-28	RLS	1 Shall	Send error message to remote marketplace(s) if not authenticated or if content of data locations are not verified	Information Location-Record Location	Core	Infrastructure			See Security: Authentication
693	IBM-209-29	RLS	1 Shall	Send acknowledgement to remote marketplace for successful receipt of data location message	Information Location-Record Location	Core	Infrastructure	IBM-305-03		See Data Quality/Integrity
694	IBM-209-30	RLS	1 Shall	Log interaction with remote marketplace	Information Location-Record Location	Core	Infrastructure			See Audit & Logging

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
695	IBM-209-31	RLS	1 Shall	Send data location information from remote marketplace to authorized requesting CDO administrator	Information Location-Record Location	Core	Infrastructure	ACN-02.3.10 IBM-209-33 IBM-209-15 ACN-02.3.1 CSC-ALL-270	N	Combined
1036	NGIT-010	RLS	1 Shall	Query data sources for requested data and return data to requestor	Information Location-Record Location	Core	Infrastructure		N	
444	CSC-EHR-450	CDO-CDO NHIN Interface	May	Route queries to the Record Locator Service in order to resolve patient identity ambiguities and locate records. Record locations returned to the NHIN Interface are used for routing the query to the proper repositories for processing.	Information Location-Record Location	Core	EHR - Lab		E	See Identity/Information Correlation
397	CSC-CE-480	Consumer System-PHR	1 Shall	Not store location information in the Patient Matching service.	Information Location-Record Location	Edge	CE - Consumer	IBM-205-11 CSC-ALL-270	N	Combined
124	ACN-05.1.2	NHIN Overarching (ACN)	1 Shall	Ensure that data integrity is maintained.	Non-Functional-Accuracy	Core	Infrastructure			
316	CSC-ALL-240	RLS	1 Shall	Match patient Identities with a rate of false positive identifications less than one in 100,000.	Non-Functional-Accuracy	Core	Infrastructure			
451	CSC-NFR-10	All Edge Systems (CSC)	1 Shall	Ensure that essential clinical data (to be defined by the SNO) maintains accuracy to of no less than 99.99%, where accuracy is defined as: data displayed to user is semantically equal to the version stored in original data source	Non-Functional-Accuracy	Edge	Infrastructure			
618	IBM-205-25	Consumer System-PHR	1 Shall	Review and validate populated PHR record	Non-Functional-Accuracy	Edge	CE - Consumer			

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
645	IBM-207-25	Consumer System-PHR	1 Shall	Review and validate updated PHR record	Non-Functional-Accuracy	Edge	CE - Consumer			
650	IBM-207-30	Consumer System-PHR	1 Shall	Receive modified registration and medication history, if appropriate, back from the consumer	Non-Functional-Accuracy	Edge	CE - Consumer			
462	CSC-NFR-20	Health Information Intermediaries	1 Shall	Support patient safety through transmitting clinical data fully and accurately, by logging and making displayable all intermediate data transformations	Non-Functional-Accuracy	Edge	Infrastructure			
595	IBM-205-02	Consumer System-PHR	May	Confirm with the consumer that the system will request information from data and network systems	Non-Functional-Accuracy	Edge	CE - Consumer	IBM-207-02		
596	IBM-205-03	Consumer System-PHR	May	Receive and validate the query request	Non-Functional-Accuracy	Edge	CE - Consumer	IBM-207-03		
649	IBM-207-29	Consumer System-PHR	May	Restrict how data fields will be annotated/modified.	Non-Functional-Accuracy	Edge	CE - Consumer			
308	CSC-ALL-10	CDO-CDO NHIN Interface	1 Shall	Be shared between all entities in a single RHIO or SNO. There is only one NHIN Interface in a SNO, and it is used for all communications with other SNOs over the NHIN.	Non-Functional-Business Rules	Core	Infrastructure			
346	CSC-ALL-760	CDO-CDO NHIN Interface	1 Shall	Use the Record Locator Service to resolve ambiguities in the patient's identity, and to locate repositories of data, within the SNO, for that patient.	Non-Functional-Business Rules	Core	Infrastructure			
115	ACN-05	NHIN Overarching (ACN)	1 Shall	Enforce membership rules for edge systems.	Non-Functional-Business Rules	Core	Infrastructure			
313	CSC-ALL-210	RLS	1 Shall	Store only patient names and demographics, along with pointers to Repositories containing data for the Patient.	Non-Functional-Business Rules	Core	Infrastructure			
315	CSC-ALL-230	RLS	1 Shall	Not maintain pointers to individual health records, for example not maintain a separate pointer to a particular Lab order.	Non-Functional-Business Rules	Core	Infrastructure			
318	CSC-ALL-260	RLS	1 Shall	Not allow clinician interaction to ascertain the identities of patients in other SNOs.	Non-Functional-Business Rules	Core	Infrastructure			
465	CSC-NFR-230	CDO-CDO NHIN Interface	2 Should	Entail low Deployment and Operational Costs, commensurate with technology and investment capacity of the health market.	Non-Functional-Business Rules	Core	Infrastructure			

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
369	CSC-BIO-070	All Edge Systems (CSC)	1 Shall	Use HITSP implementation guidelines to implement interoperable solutions	Non-Functional-Business Rules	Edge	Bio			
395	CSC-CE-400	Consumer System-PHR	1 Shall	Only be allowed to query the NHIN interface, and be queriable over the NHIN, if it is a full member of a SNO.	Non-Functional-Business Rules	Edge	CE - Consumer			
335	CSC-ALL-550	Repositories	2 Should	Exist within a SNO, but are Edge systems and not essential to the NHIN.	Non-Functional-Business Rules	Edge	Infrastructure			
118	ACN-05.1.1.1	Data Analysis and Secondary Use Systems	1 Shall	Make public health information available within 24 hours of creation.	Non-Functional-Performance	Core	Infrastructure	IBM-102-11 IBM-103-11 ACN-06.1.12 NGIT-159 CSC-BIO-560		
119	ACN-05.1.1.2	Message Handling	1 Shall	Respond to message requests within an agreed upon time.	Non-Functional-Performance	Core	Infrastructure	ACN-05.1.1.3		
574	IBM-107-08	Message Handling	1 Shall	Send biosurveillance event response 'broadcast' messages in real time	Non-Functional-Performance	Core	Biosurveillance			
116	ACN-05.1	NHIN Administration	1 Shall	Abide by Service Level Agreements (SLA).	Non-Functional-Performance	Core	Infrastructure			
121	ACN-05.1.1.4	NHIN Administration	1 Shall	Respond to non-messaging requests for information within an agreed upon time.	Non-Functional-Performance	Core	Infrastructure			
605	IBM-205-12	RLS	1 Shall	Send result location (links) pointers for data located in local community repositories to authorized clinician within 5 seconds of receiving the request	Non-Functional-Performance	Core	Infrastructure			

ID- ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... <i>(Added by NCVHS)</i>	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
632	IBM-207- 12	RLS	1 Shall	Send result location (links) pointers for data located in local community repositories to authorized clinician within 5 seconds of receiving the request	Non-Functional- Performance	Core	Infrastructure			
685	IBM-209- 21	RLS	1 Shall	Send result location (links) pointers for data located in local community repositories to authorized clinician within 5 seconds of receiving the request	Non-Functional- Performance	Core	Infrastructure			
696	IBM-209- 32	RLS	1 Shall	Send data location information from remote marketplace to authorized requesting clinician within 30 seconds of receiving request	Non-Functional- Performance	Core	Infrastructure			
805	IBM-305- 12	RLS	1 Shall	Send notifications of new lab test result availability in real time when received from repository	Non-Functional- Performance	Core	EHR - Lab			
868	IBM-307- 48	RLS	1 Shall	Send result location (links) pointers for data located in local community repositories to authorized clinician within <u>5 seconds</u> of receiving the request	Non-Functional- Performance	Core	EHR - Lab			

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
869	IBM-307-49	RLS	1 Shall	Send data location information from remote marketplace to authorized requesting clinician within <u>30 seconds</u> of receiving request	Non-Functional-Performance	Core	EHR - Lab			
470	CSC-NFR-40	CDO-CDO NHIN Interface	2 Should	Be efficient and not consume more computer resources than is directly useful to the data exchange process [Efficiency]	Non-Functional-Performance	Core	Infrastructure			
676	IBM-209-11	CDO	1 Shall	Present data within via web portal in 5 seconds	Non-Functional-Performance	Edge	CE - Consumer			
615	IBM-205-22	Consumer System-PHR	1 Shall	Present retrieved data from medication brokers within 5 seconds	Non-Functional-Performance	Edge	CE - Consumer			
642	IBM-207-22	Consumer System-PHR	1 Shall	Present retrieved data from medication brokers within 5 seconds	Non-Functional-Performance	Edge	CE - Consumer			
120	ACN-05.1.1.3	Message Handling	1 Shall	Respond to message requests within an agreed upon time.	Non-Functional-Performance	Edge	Infrastructure	ACN-05.1.1.2		
122	ACN-05.1.1.5	NHIN Administration	1 Shall	Respond to non-messaging requests for information within an agreed upon time.	Non-Functional-Performance	Edge	Infrastructure			

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
779	IBM-304-13	Repositories	1 Shall	Send lab result event location and related information to locator service in real time as received from lab	Non-Functional-Performance	Edge	EHR - Lab			
903	IBM-309-11	Repositories	1 Shall	Transmit lab results requested by a clinician (clinician or data stager) within <u>5 seconds</u> of successful receipt of request	Non-Functional-Performance	Edge	EHR - Lab			
469	CSC-NFR-30	Health Information Intermediaries	2 Should	Comply with "service level agreements" based on end-user / health market specified quality-of-service agreements	Non-Functional-Performance	Edge	Infrastructure			
523	IBM-102-11	CDO	1 Shall	Send biosurveillance data within 24 hours of the event	Non-Functional-Performance		Bio	IBM-103-11 CSC-BIO-010 NGIT-159 CSC-BIO-110		
457	CSC-NFR-150	CDO-CDO NHIN Interface	1 Shall	Be extensible to new message types in a modular fashion; without requiring any changes to the application for the heretofore handled messages	Non-Functional-Robustness	Core	Infrastructure			
460	CSC-NFR-180	CDO-CDO NHIN Interface	1 Shall	Provide testing facilities to enable verification of new functionality before deployment to production environments [Testability]	Non-Functional-Robustness	Core	Infrastructure			
461	CSC-NFR-190	CDO-CDO NHIN Interface	1 Shall	Provide for remote monitoring of operations, detection of potential problems, and preventive maintenance measures [Manageability]	Non-Functional-Robustness	Core	Infrastructure			
232	ACN-07.18	NHIN Overarching (ACN)	1 Shall	Implement security best practices at all levels in the NHIN environment.	Non-Functional-Robustness	Core	Infrastructure			
233	ACN-07.18.1	NHIN Overarching (ACN)	1 Shall	Ensure that only required components are enabled/activated for NHIN infrastructure.	Non-Functional-Robustness	Core	Infrastructure	ACN-07.18.2 ACN-07.18.3		

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
236	ACN-07.18.4	NHIN Overarching (ACN)	1 Shall	Enforce compliance with an established password policy.	Non-Functional-Robustness	Core	Infrastructure			
237	ACN-07.18.5	NHIN Overarching (ACN)	1 Shall	Ensure that the system is protected against the introduction of malware into the environment.	Non-Functional-Robustness	Core	Infrastructure			
238	ACN-07.18.6	NHIN Overarching (ACN)	1 Shall	Ensure that only required application functionalities are enabled/activated.	Non-Functional-Robustness	Core	Infrastructure			
239	ACN-07.18.7	NHIN Overarching (ACN)	1 Shall	Limit functionality that can be accessed remotely.	Non-Functional-Robustness	Core	Infrastructure			
240	ACN-07.18.8	NHIN Overarching (ACN)	1 Shall	Ensure that data is transmitted securely between system endpoints.	Non-Functional-Robustness	Core	Infrastructure			
241	ACN-07.18.9	NHIN Overarching (ACN)	1 Shall	Secure all hardware against damage and unauthorized modification.	Non-Functional-Robustness	Core	Infrastructure			
242	ACN-07.19	NHIN Overarching (ACN)	1 Shall	Ensure that controls are applied to prevent unauthorized access to the network.	Non-Functional-Robustness	Core	Infrastructure			
243	ACN-07.19.1	NHIN Overarching (ACN)	1 Shall	Ensure that controls are applied to prevent unauthorized traffic from entering the network.	Non-Functional-Robustness	Core	Infrastructure			
244	ACN-07.19.2	NHIN Overarching (ACN)	1 Shall	Segregate the network by environments, including but not limited to development, testing and production.	Non-Functional-Robustness	Core	Infrastructure			

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
452	CSC-NFR-100	CDO-CDO NHIN Interface	2 Should	Allow users to install and operate with not more than 4 hours of training [Ease of learning]	Non-Functional-Robustness	Core	Infrastructure			
456	CSC-NFR-140	CDO-CDO NHIN Interface	2 Should	Be configurable and extendable to support existing and new workflows	Non-Functional-Robustness	Core	Infrastructure			
458	CSC-NFR-160	CDO-CDO NHIN Interface	2 Should	Enable remote troubleshooting and deployment of application fixes (patches) [Supportable]	Non-Functional-Robustness	Core	Infrastructure			
459	CSC-NFR-170	CDO-CDO NHIN Interface	2 Should	Enable problems to be traced and analyzed, so that they can be resolved [Maintainable]	Non-Functional-Robustness	Core	Infrastructure			
473	CSC-NFR-70	CDO-CDO NHIN Interface	2 Should	Support reliable messaging between edge applications that are engaged in the data exchange process	Non-Functional-Robustness	Core	Infrastructure			
474	CSC-NFR-80	CDO-CDO NHIN Interface	2 Should	Plan and implement recovery procedures in case of failure of any of its discrete architectural components; recovery times range from near-real time to deferred based on the requirements (and investment) of the health markets [High Availability]	Non-Functional-Robustness	Core	Infrastructure			
475	CSC-NFR-90	CDO-CDO NHIN Interface	2 Should	Tolerate errors in data exchange messages and files, as well as other exception conditions, and not disrupt other edge applications in the user work environment. [Fault tolerance]	Non-Functional-Robustness	Core	Infrastructure			
255	ACN-07.21	CDO	1 Shall	Implement security best practices at all levels in the Edge Systems environment.	Non-Functional-Robustness	Edge	Infrastructure			
256	ACN-07.21.1	CDO	1 Shall	Ensure that only required components are enabled/activated for Edge System infrastructure .	Non-Functional-Robustness	Edge	Infrastructure			
257	ACN-07.21.2	CDO	1 Shall	Ensure that only required components are enabled/activated for Edge System operating systems.	Non-Functional-Robustness	Edge	Infrastructure			
258	ACN-07.21.3	CDO	1 Shall	Ensure that only required components are enabled/activated for Edge System applications.	Non-Functional-Robustness	Edge	Infrastructure			

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
260	ACN-07.21.5	CDO	1 Shall	Ensure that the system is protected against the introduction of malware into the environment.	Non-Functional-Robustness	Edge	Infrastructure			
261	ACN-07.21.6	CDO	1 Shall	Ensure that only required application functionalities are enabled/activated.	Non-Functional-Robustness	Edge	Infrastructure			
262	ACN-07.21.7	CDO	1 Shall	Limit functionality that can be accessed remotely.	Non-Functional-Robustness	Edge	Infrastructure			
263	ACN-07.21.8	CDO	1 Shall	Ensure that data is transmitted securely between system endpoints.	Non-Functional-Robustness	Edge	Infrastructure			
267	ACN-07.22.2	CDO	1 Shall	Segregate the network by environments, including but not limited to development, testing and production.	Non-Functional-Robustness	Edge	Infrastructure			
286	ACN-07.32	CDO	1 Shall	Ensure that the system is protected against the introduction of malware into the environment.	Non-Functional-Robustness	Edge	Infrastructure			
289	ACN-07.33.2	CDO	1 Shall	Segregate the network by environments, including but not limited to development, testing and production.	Non-Functional-Robustness	Edge	Infrastructure			
290	ACN-07.34	CDO	1 Shall	Ensure that data is transmitted securely between system endpoints.	Non-Functional-Robustness	Edge	Infrastructure			
123	ACN-05.1.1.6	NHIN Administration	1 Shall	Notify the NHIN of any relevant changes to their system.	Non-Functional-Robustness	Edge	Infrastructure			

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
476	CSC-NFR-95	All Edge Systems (CSC)	2 Should	Tolerate problems caused by duplicate data received from one or several sources [Fault tolerance]	Non-Functional-Robustness	Edge	Infrastructure			
468	CSC-NFR-260	All Edge Systems (CSC)	May	Allow the data exchange services and policies of the local CDO to be discovered electronically	Non-Functional-Robustness	Edge	Infrastructure			
317	CSC-ALL-250	MPI	May	Allow for clinician interaction to ascertain the identities of patients within the SNO	Non-Functional-Robustness	Edge	Infrastructure			
73	ACN-02.6	NHIN Overarching (ACN)	1 Shall	Process and communicate data to scale as edge systems grow over time.	Non-Functional-Scalability	Core	Infrastructure			
472	CSC-NFR-60	CDO-CDO NHIN Interface	2 Should	Be modularly expandable to support higher transaction volumes as usage of the NHIN increases	Non-Functional-Scalability	Core	Infrastructure			
658	IBM-207-38	Consumer System-PHR	1 Shall	Receive request from consumer to close PHR account	Non-Functional-Scalability	Edge	CE - Consumer			
471	CSC-NFR-50	Health Information Intermediaries	2 Should	Support modular addition of processing and storage resources to cater to additional users as the usage of the NHIN increases	Non-Functional-Scalability	Edge	Infrastructure			
667	IBM-209-02	CDO	1 Shall	Submit authentication information to the NHIN Interface [to view/access registration/medication history]	Security-Authentication	Core	Infrastructure		E	
1030	NGIT-004	CDO-CDO NHIN Interface	1 Shall	Authenticate entity for NHIN data request	Security-Authentication	Core	Infrastructure	NGIT-129 NGIT-094	N	Combined
1108	NGIT-129	CDO-CDO NHIN Interface	1 Shall	Authenticate entity for NHIN access	Security-Authentication	Core		IBM-209-02 NGIT-094	N	Combined
1078	NGIT-094	Consumer System-Consumer NHIN Interface	1 Shall	Authenticate entity requesting data	Security-Authentication	Core	CE - Consumer	IBM-209-02 NGIT-129	N	Combined
297	ACN-07.6	External User interfaces	1 Shall	Provide a secure and robust user authentication mechanism.	Security-Authentication	Core	Infrastructure	ACN-07.6.1	N	Combined. "Secure and robust" probably a policy issue.

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
298	ACN-07.6.1	External User interfaces	1 Shall	Authenticate all users before a connection to the NHIN is allowed.	Security-Authentication	Core	Infrastructure	CSC-SEC-50 ACN-07.6	N	Combined
299	ACN-07.6.2	External User interfaces	1 Shall	Protect user authentication credentials during transmission from the user to the NHIN.	Security-Authentication	Core	Infrastructure	ACN-07.8.3	N	Combined
300	ACN-07.6.3	External User interfaces	1 Shall	Require multiple-factor authentication for users.	Security-Authentication	Core	Infrastructure			Seems to suggest policy (and more stringent requirement than HIPAA at §164.312(d)) Seems to suggest an architecture such as single sign on Seems to suggest an architecture of membership. See also Credentialing See also Credentialing
301	ACN-07.6.4	External User interfaces	1 Shall	Permit single session authentication that allows user access to different applications within the NHIN.	Security-Authentication	Core	Infrastructure			
125	ACN-05.1.2.1	NHIN Administration-Organization Registration	1 Shall	Accept data only from certified members.	Security-Authentication	Core	Infrastructure			
1027	NGIT-001	NHIN Administration-Organization Registration	1 Shall	Support the definition of organizations (entities) connecting to a NHIN	Security-Authentication	Core	Infrastructure			
302	ACN-07.7	NHIN Overarching (ACN)	1 Shall	Provide a mechanism for ensuring non-repudiation.	Security-Authentication	Core	Infrastructure		N	Not explicitly required by HIPAA
303	ACN-07.8	NHIN Overarching (ACN)	1 Shall	Provide a secure and robust system authentication mechanism.	Security-Authentication	Core	Infrastructure	ACN-7.8.1 ACN-07.8.2	N	Combined
304	ACN-07.8.1	NHIN Overarching (ACN)	1 Shall	Authenticate all systems before connection to the NHIN is allowed.	Security-Authentication	Core	Infrastructure	ACN-7.8 ACN-07.8.2	N	
305	ACN-07.8.2	NHIN Overarching (ACN)	1 Shall	Enforce mutual authentication between the NHIN and any Edge System.	Security-Authentication	Core	Infrastructure	ACN-7.8.1 ACN-07.8	N	
306	ACN-07.8.3	NHIN Overarching (ACN)	1 Shall	Protect system authentication credentials during transmission between Edge Systems and the NHIN.	Security-Authentication	Core	Infrastructure	ACN-07.6.2	N	Exists for users and systems, but not entities. Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
688	IBM-209-24	RLS	1 Shall	Authenticate to the remote record locator	Security-Authentication	Core	Infrastructure	IBM-209-25	N	Combined
689	IBM-209-25	RLS	1 Shall	Receive error message if requesting locator is not authorized or if content of data request location is not verified	Security-Authentication	Core	Infrastructure	IBM-209-24	N	Combined
795	IBM-305-02	RLS	1 Shall	Verify authenticity of lab data repository sending new lab result location information	Security-Authentication	Core	EHR - Lab	See Functions #2 on Categorization	N	Raised to generic level and combined with related functions
825	IBM-307-05	RLS	1 Shall	Authenticates clinician requesting lab result location or sends message that not authenticated	Security-Authentication	Core	EHR - Lab	See Functions #2 on Categorization	N	Raised to generic level and combined with related functions
372	CSC-BIO-120	All Edge Systems (CSC)	1 Shall	Provide levels of confidentiality, integrity, and availability meeting legal, regulatory requirements and protecting information appropriate with its value	Security-Authentication	Edge	Bio			Seems very broad
496	CSC-SEC-50	All Edge Systems (CSC)	1 Shall	Authenticate user accesses into the system	Security-Authentication	Edge	Infrastructure	ACN-07.6.1 CSC-EHR-430	E	Equivalent of N. Combined
307	ACN-07.9	CDO	1 Shall	Provide a mechanism for ensuring non-repudiation.	Security-Authentication	Edge	Infrastructure	ACN-07.7	E	Equivalent of N
442	CSC-EHR-430	CDO	1 Shall	Authorize and authenticate users making use of CDO Systems and the NHIN Interface.	Security-Authentication	Edge	EHR - Lab	CSC-SEC-50	E	Combined
666	IBM-209-01	CDO	1 Shall	Submit authentication information to the PHR provider [to view/access registration/medication history]	Security-Authentication	Edge	CE - Consumer	ACN-07.6.1 CSC-EHR-430	E	Equivalent of N
811	IBM-306-03	CDO-EMR	1 Shall	Authenticate record locator sending notification of new lab result event messages	Security-Authentication	Edge	EHR - Lab	IBM-209-24	E	Equivalent of N. Applies to all Edge Systems
823	IBM-307-03	CDO-EMR	1 Shall	Submit authentication information to locator system when querying for lab results location	Security-Authentication	Edge	EHR - Lab	IBM-209-24	E	Equivalent of N. Applies to all Edge Systems
883	IBM-308-07	CDO-EMR	1 Shall	Submit authentication information to the data repository if sending data request directly to data repository	Security-Authentication	Edge	EHR - Lab	IBM-209-02 NGIT-129 NGIT-094 and IBM-311-03	E	Equivalent of N. Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
918	IBM-311-03	CDO-EMR	1 Shall	Authenticate entity sending lab results to EMR	Security-Authentication	Edge	EHR - Lab	IBM-209-02 NGIT-129 NGIT-094 and IBM-308-07	E	Equivalent of N. Combined
583	IBM-201-03	Consumer System-PHR	1 Shall	Accept first time log-in identification data from consumer	Security-Authentication	Edge	CE - Consumer		X	
585	IBM-201-05	Consumer System-PHR	1 Shall	Prompt consumer to create a unique log-in mechanism after first time validation	Security-Authentication	Edge	CE - Consumer		X	
584	IBM-201-04	Consumer System-PHR--PHR Registration info	1 Shall	Reconcile consumer provided first time log-in information and authenticate consumer. 1) allow the consumer to proceed or 2) reject consumer	Security-Authentication	Edge	CE - Consumer		X	
586	IBM-202-01	Consumer System-PHR--PHR Registration info	1 Shall	Prompt consumer for uniquely identifying information when logging in (not first time)	Security-Authentication	Edge	CE - Consumer		X	
592	IBM-204-01	Consumer System-PHR--PHR Registration info	1 Shall	Prompt consumer for uniquely identifying information during log-in (not first time)	Security-Authentication	Edge	CE - Consumer	IBM-206-01 IBM-210-01	X	Exact duplicate
593	IBM-204-02	Consumer System-PHR--PHR Registration info	1 Shall	Establish consumer's identity and authorize based on information provided	Security-Authentication	Edge	CE - Consumer	IBM-202-02 IBM-206-02 IBM-210-02 NGIT-101	X	
546	IBM-104-04	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Authenticate sender of public health data	Security-Authentication	Edge	Biosurveillance	IBM-209-02 NGIT-129 NGIT-094 and IBM-311-03	E	Equivalent of N and other E. Combined
812	IBM-306-04	External User interfaces	1 Shall	Authenticate record locator sending notification of new lab result event messages	Security-Authentication	Edge	EHR - Lab	IBM-209-24 IBM-209-25	E	Equivalent of N and other E. Combined
824	IBM-307-04	External User interfaces	1 Shall	Submit authentication information to locator system when querying for lab results location	Security-Authentication	Edge	EHR - Lab	IBM-209-24 IBM-209-25	E	Equivalent of N and other E. Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
884	IBM-308-08	External User interfaces	1 Shall	Submit authentication information to the data repository if sending data request directly to data repository	Security-Authentication	Edge	EHR - Lab	ACN-07.6 ACN-07.6.1 and CSC-SEC-50	E	Equivalent of N and other E. Combined
1137	NGIT-162	External User interfaces	1 Shall	Authenticate user requesting data	Security-Authentication	Edge	EHR - Lab	ACN-07.6 ACN-07.6.1 and CSC-SEC-50	E	Equivalent of N and other E. Combined
885	IBM-308-09	NHIN Administration-Data Stager (IBM)	1 Shall	Authenticate to data repository if submitting request for lab results on behalf of clinician	Security-Authentication	Edge	EHR - Lab	ACN-07.6 ACN-07.6.1 and CSC-SEC-50	E	Equivalent of N and other E. Combined
1125	NGIT-150	Payer Systems	1 Shall	Authenticate user requesting data	Security-Authentication	Edge		ACN-07.6 ACN-07.6.1 and CSC-SEC-50	E	Rare mention of payer systems. Seems like this should not differ from any other systems
769	IBM-304-03	Repositories	1 Shall	Verify authenticity of lab sending new lab result events	Security-Authentication	Edge	EHR - Lab	IBM-309-03	E	Equivalent of N. Combined
778	IBM-304-12	Repositories	1 Shall	Authenticate to locator service when sending lab result event location information	Security-Authentication	Edge	EHR - Lab	IBM-209-24 IBM-209-25	E	Equivalent of N and other E. Combined
895	IBM-309-03	Repositories	1 Shall	Authenticate system sending request for lab data	Security-Authentication	Edge	EHR - Lab	IBM-304-03	E	Equivalent of N. Combined
1136	NGIT-161	Consumer System-	1 Shall	Authenticate the requesting data from external systems	Security-Authentication		CE - Consumer			This is authentication of data instead of entity, user, or system
177	ACN-07.12	CDO	1 Shall	Control Edge System access through structured Role Based Access Control (RBAC).	Security-Authorization	Core	Infrastructure			Seems to be policy in specifying a type of access control to which to authorize (even though RBAC seems to make sense)
178	ACN-07.12.1	CDO	1 Shall	Implement a RBAC model which is scalable and flexible.	Security-Authorization	Core	Infrastructure			

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
670	IBM-209-05	CDO-CDO NHIN Interface	1 Shall	Maintain a list of authorized users that can access the consumer's PHR data from the NHIN hub	Security-Authorization	Core	Infrastructure			Maintenance of list seems like a specific architecture
672	IBM-209-07	CDO-CDO NHIN Interface	1 Shall	Authorize (or not) provider's request to access consumer's PHR data via the NHIN	Security-Authorization	Core	Infrastructure	NGIT-005 NGIT-151 ACN-07.11.3	N	Raised to generic level and combined with related functions
1031	NGIT-005	CDO-CDO NHIN Interface	1 Shall	Authorize an entity's request for data	Security-Authorization	Core	Infrastructure	IBM-209-07 NGIT-151 ACN-07.11.3	N	Raised to generic level and combined with related functions
1126	NGIT-151	CDO-CDO NHIN Interface	1 Shall	Authorize an entity's request for laboratory data	Security-Authorization	Core	EHR - Lab	NGIT-005 IBM-209-07 ACN07.11.3	N	Raised to generic level and combined with related functions
168	ACN-07.11.11	External User interfaces	1 Shall	Provide a list of roles assigned to NHIN system users.	Security-Authorization	Core	Infrastructure			Seems like a business process
169	ACN-07.11.2	External User interfaces	1 Shall	Assign all authorized NHIN users at least one NHIN-based user role, included but not limited to: Public Health Official, NHIN Administrator, ONC Super Administrator or NHIN Security Administrator.	Security-Authorization	Core	Infrastructure			Seems like a policy
170	ACN-07.11.3	External User interfaces	1 Shall	Allow NHIN-based users to access only data sets associated with their assigned roles.	Security-Authorization	Core	Infrastructure	NGIT-005 IBM-209-07 NGIT-151	E	Seems to be a consequence of N function. See also Data Access & Updating
171	ACN-07.11.4	External User interfaces	1 Shall	Associate a single role with any one user session.	Security-Authorization	Core	Infrastructure		N	
172	ACN-07.11.5	External User interfaces	1 Shall	Permit the Public Health Official role access to the reporting services.	Security-Authorization	Core	Infrastructure			Policy?
173	ACN-07.11.6	External User interfaces	1 Shall	Permit the NHIN Administrator role access to administration services relating to NHIN users.	Security-Authorization	Core	Infrastructure			Policy?
174	ACN-07.11.7	External User interfaces	1 Shall	Provide NHIN administration capabilities to be executed only by authorized NHIN users.	Security-Authorization	Core	Infrastructure	ACN-07.12.3 ACN-07.12.6	N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
175	ACN-07.11.8	External User interfaces	1 Shall	Permit the ONC Super Administrator role access to application, system and environment administrative resources.	Security-Authorization	Core	Infrastructure			Policy?
176	ACN-07.11.9	External User interfaces	1 Shall	Permit the NHIN Security Administrator role access to security-related data.	Security-Authorization	Core	Infrastructure			Policy?
179	ACN-07.12.2	External User interfaces	1 Shall	Assign all Edge Systems at least one NHIN-based system permissions.	Security-Authorization	Core	Infrastructure			Policy?
180	ACN-07.12.3	External User interfaces	1 Shall	Permit Edge Systems to access internal NHIN resources/services based on their system permission.	Security-Authorization	Core	Infrastructure	ACN-07.11.7 ACN-07.12.6	N	Combined
181	ACN-07.12.4	External User interfaces	1 Shall	Permit authorized Edge Systems to interface with other Edge Systems based on their system permission.	Security-Authorization	Core	Infrastructure			Seems to suggest an architecture
182	ACN-07.12.5	External User interfaces	1 Shall	Permit the NHIN Administrator role to manage RBAC authorizations between Edge Systems.	Security-Authorization	Core	Infrastructure			Seems to suggest an architecture
183	ACN-07.12.6	External User interfaces	1 Shall	Create new Edge System permissions where there is a business requirement for the new permissions	Security-Authorization	Core	Infrastructure	ACN-07.12.3 ACN-07.11.7	N	
184	ACN-07.12.7	External User interfaces	1 Shall	Provide a list of permissions assigned to any Edge System.	Security-Authorization	Core	Infrastructure	ACN-07.12.3 ACN-07.11.7 ACN-07.12.6	N	
156	ACN-07.1	NHIN Administration	1 Shall	Provide consent management.	Security-Authorization	Core	Infrastructure	ACN-07.1.1 ACN-07.1.2 ACN-07.1.3 ACN-07.1.4 IBM-302-03	N	
157	ACN-07.1.1	NHIN Administration-Consumer Authorization	1 Shall	Capture an individual's consent to sharing his/her data.	Security-Authorization	Core	Infrastructure	ACN-07.1 ACN-07.1.2 ACN-07.1.3 ACN-07.1.4 IBM-302-03	N	
158	ACN-07.1.2	NHIN Administration-Consumer Authorization	1 Shall	Capture any change in an individual's consent to sharing his/her data.	Security-Authorization	Core	Infrastructure	ACN-07.1.1 ACN-07.1 ACN-07.1.3 ACN-07.1.4 IBM-302-03	N	Raised to generic level and combined. See note at 200. In some cases "consent" and "permissions" seem to be used interchangeably.

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
159	ACN-07.1.3	NHIN Administration-Consumer Authorization	1 Shall	Allow only authorized access to an individual's data based on their consent status.	Security-Authorization	Core	Infrastructure	ACN-07.1.1 ACN-07.1.2 ACN-07.1 ACN-07.1.4 IBM-302-03	N	interchangeably. Need to define patient consent, patient permission, system permission. Is this function of N or each E?
160	ACN-07.1.4	NHIN Administration-Consumer Authorization	1 Shall	Provide consent status to authorized requesting systems.	Security-Authorization	Core	Infrastructure	ACN-07.1.1 ACN-07.1.2 ACN-07.1.3 ACN-07.1 IBM-302-03	N	
758	IBM-302-03	NHIN Administration-Consumer Authorization	1 Shall	Store patient permissions for accessing data	Security-Authorization	Core	EHR - Lab	ACN-07.1.1 ACN-07.1.2 ACN-07.1.3 ACN-07.1	N	
282	ACN-07.3.2	NHIN Administration-System Registration	1 Shall	Provide an appropriate Edge System registration capability before access to the NHIN is granted.	Security-Authorization	Core	Infrastructure	ACN-07.3 ACN-07.3.1 ACN-07.3.3	N	
283	ACN-07.3.3	NHIN Administration-System Registration	1 Shall	Provide an appropriate Edge System certification capability before access to the NHIN is granted.	Security-Authorization	Core	Infrastructure	ACN-07.3 ACN-07.3.1 ACN-07.3.2	N	Combined. What is difference between Edge System registration and certification?
167	ACN-07.11.10	NHIN Administration-User Registration	1 Shall	Create new NHIN user roles where there is a business requirement for the new role.	Security-Authorization	Core	Infrastructure	ACN-07.12.3 ACN-07.12.6	N	Combined
280	ACN-07.3	NHIN Administration-User Registration	1 Shall	Register NHIN users and Edge Systems that require access to the NHIN.	Security-Authorization	Core	Bio	ACN-07.3.1 ACN-07.3.2 ACN-07.3.3	N	Combined
281	ACN-07.3.1	NHIN Administration-User Registration	1 Shall	Provide an appropriate NHIN user registration capability before access to the NHIN is granted.	Security-Authorization	Core	Bio	ACN-07.3 ACN-07.3.2 ACN-07.3.3	N	Combined
165	ACN-07.11	NHIN Overarching (ACN)	1 Shall	Control NHIN user access through structured Role Based Access Control (RBAC).	Security-Authorization	Core	Infrastructure	ACN-07.12		Policy?
166	ACN-07.11.1	NHIN Overarching (ACN)	1 Shall	Implement a RBAC model which is scalable and flexible.	Security-Authorization	Core	Infrastructure	ACN-07.12.1		Policy?

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
835	IBM-307-15	RLS	1 Shall	Authorize release of laboratory test results locations based on regulations (federal, state, local), community policies, clinician status as ordering clinician, clinician status as provider of care for patient, patient consent restrictions and sensitivity restrictions	Security-Authorization	Core	EHR - Lab		X	
836	IBM-307-16	RLS	1 Shall	Confirm clinician status as ordering clinician for lab result	Security-Authorization	Core	EHR - Lab		X	
837	IBM-307-17	RLS	1 Shall	Confirm non-ordering clinician status as provider of care for patient	Security-Authorization	Core	EHR - Lab		X	
838	IBM-307-18	RLS	1 Shall	Confirm patient consent restrictions	Security-Authorization	Core	EHR - Lab		X	
839	IBM-307-19	RLS	1 Shall	Confirm non-ordering clinician credentials relative to sensitivity restrictions	Security-Authorization	Core	EHR - Lab			See Credentialing
840	IBM-307-20	RLS	1 Shall	Send error message if clinician not authorized to access data for identified patient	Security-Authorization	Core	EHR - Lab			See Data Quality/Integrity
668	IBM-209-03	Consumer System-Consumer NHIN Interface	May	Maintain a queryable marketplace-based registry to correlate to possible PHRs	Security-Authorization	Core	Infrastructure			Seems to suggest a specific architecture
357	CSC-ALL-890	All Edge Systems (CSC)	1 Shall	Send the identity and institution of the initiating user with each query message	Security-Authorization	Edge	Infrastructure			See Data Content
497	CSC-SEC-60	All Edge Systems (CSC)	1 Shall	Establish user authorizations to use specific functions of the system	Security-Authorization	Edge	Infrastructure	ACN-07.3.1	E	Equivalent of N
185	ACN-07.13	CDO	1 Shall	Control Edge System user access through structured Role Based Access Control (RBAC).	Security-Authorization	Edge	Infrastructure			Policy?
186	ACN-07.13.1	CDO	1 Shall	Implement a RBAC model which is scalable and flexible.	Security-Authorization	Edge	Infrastructure			Policy?
187	ACN-07.13.2	CDO	1 Shall	Strictly manage all internal user access requests through structured Role Based Access Control (RBAC).	Security-Authorization	Edge	Infrastructure			Policy?

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
190	ACN-07.13.5	CDO	1 Shall	Designate an administrator role covering administration of internal resources.	Security-Authorization	Edge	Infrastructure	ACN-07.11.7	E	Equivalent of N
191	ACN-07.13.6	CDO	1 Shall	Create new internal roles where there is a business requirement for the new role.	Security-Authorization	Edge	Infrastructure	ACN-07.11.10	E	Equivalent of N
192	ACN-07.14	CDO	1 Shall	Permit access to an individual's data to Edge System users where there is a legitimate need.	Security-Authorization	Edge	CE, EHR		X	
193	ACN-07.15	CDO	1 Shall	Permit override of access restrictions to an individual's data by Edge System users.	Security-Authorization	Edge	CE, EHR	CSC-SEC-140		See Data Access & Update
274	ACN-07.26	CDO	1 Shall	Ensure appropriate security controls exist to protect against unauthorized access to NHIN data or unauthorized access to systems with access to NHIN data.	Security-Authorization	Edge	Infrastructure			Broad technical control. See Authentication and Data Access & Update
1091	NGIT-109	CDO	1 Shall	Authorize request for data	Security-Authorization	Edge	CE - Consumer		X	
398	CSC-CE-510	Consumer System-PHR	1 Shall	Authenticate the identity of the person requesting access to personal health information	Security-Authorization	Edge	CE - Consumer	IBM-207-40 NGIT-083 CSC-CE-750	X	
399	CSC-CE-520	Consumer System-PHR	1 Shall	Enable creation and modification of an access list of persons and entities authorized by the consumer to access their PHR account.	Security-Authorization	Edge	CE - Consumer		X	
591	IBM-203-04	Consumer System-PHR	1 Shall	Maintain an authorized access list to the consumer's PHR	Security-Authorization	Edge	CE - Consumer	IBM-209-04 CSC-CE-530	X	
671	IBM-209-06	Consumer System-PHR	1 Shall	Authorize (or not) provider's request to access consumer's PHR	Security-Authorization	Edge	CE - Consumer	NGIT-095 CSC-CE-760	X	
1139	NGIT-164	Consumer System-PHR	1 Shall	Enable consumer to opt in or out of having data in PHR available to authorized entities	Security-Authorization	Edge	CE - Consumer		X	
582	IBM-201-02	Consumer System-PHR--PHR Registration info	1 Shall	Prompt consumer for uniquely identifying information to allow for first time access to PHR	Security-Authorization	Edge	CE - Consumer		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
543	IBM-104-01	Data Analysis and Secondary Use Systems-Public Health	1 Shall	Register CDO as authorized provider of biosurveillance data	Security-Authorization	Edge	Biosurveillance		N	This appears to be just another role
188	ACN-07.13.3	External User interfaces	1 Shall	Implement internal user roles with the least privilege required to perform their job function, included but not limited to: Clinician, Nurse, Administrator, Security Administrator, Technician, Secretary, Individual (Patient) and Proxy.	Security-Authorization	Edge	Infrastructure		X	
189	ACN-07.13.4	External User interfaces	1 Shall	Permit internal users to only request NHIN resources for which they are authorized to access.	Security-Authorization	Edge	Infrastructure		X	
284	ACN-07.30	External User interfaces	1 Shall	Ensure the data sharing agreement is signed before sharing data with the NHIN.	Security-Authorization	Edge	Infrastructure			Seems to be a business process Seems to be a business process and policy
756	IBM-302-01	External User interfaces	1 Shall	Provide capability for consumer or proxy to provide list of providers of care to serve as consumer's authorization for data access and to automatically send results and notifications	Security-Authorization	Edge	EHR - Lab			
757	IBM-302-02	External User interfaces	1 Shall	Provide capability for consumer or proxy to indicate that test results should not be made available to providers of care other than the ordering clinician	Security-Authorization	Edge	EHR - Lab		X	
164	ACN-07.10.3	NHIN Administration	1 Shall	Allow authorized users to override view restrictions to specific data associated with an individual's clinical treatment.	Security-Authorization	Edge	CE, EHR		X	Consistent with HIPAA §164.522(a)(1)(iii)
245	ACN-07.2	NHIN Administration	1 Shall	Provide consent management.	Security-Authorization	Edge	Infrastructure	ACN-07.1	E	Equivalent of N
249	ACN-07.2.4	NHIN Administration	1 Shall	Permit consent override by authorized users.	Security-Authorization	Edge	Infrastructure		X	
161	ACN-07.10	NHIN Administration-Consumer Authorization	1 Shall	Implement a data restriction service.	Security-Authorization	Edge	CE, EHR			Seems to suggest a specific architecture

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
162	ACN-07.10.1	NHIN Administration-Consumer Authorization	1 Shall	Allow users to restrict access to specific data associated with a clinical diagnosis and/or treatment.	Security-Authorization	Edge	CE, EHR		X	
163	ACN-07.10.2	NHIN Administration-Consumer Authorization	1 Shall	Indicate that certain data has been restricted from viewing.	Security-Authorization	Edge	CE, EHR		X	
194	ACN-07.15.1	NHIN Administration-Consumer Authorization	1 Shall	Permit individuals to select which users can view some or all of their data.	Security-Authorization	Edge	CE - Consumer	ACN-07.15.2	X	
196	ACN-07.15.3	NHIN Administration-Consumer Authorization	1 Shall	Permit view restriction override by authorized users.	Security-Authorization	Edge	CE - Consumer		X	
246	ACN-07.2.1	NHIN Administration-Consumer Authorization	1 Shall	Capture an individual's consent to sharing his/her data.	Security-Authorization	Edge	Infrastructure		X	
247	ACN-07.2.2	NHIN Administration-Consumer Authorization	1 Shall	Capture any change in an individual's consent to sharing his/her data.	Security-Authorization	Edge	Infrastructure		X	
248	ACN-07.2.3	NHIN Administration-Consumer Authorization	1 Shall	Allow only authorized access to an individual's data based on their consent status.	Security-Authorization	Edge	Infrastructure		X	
250	ACN-07.2.5	NHIN Administration-Consumer Authorization	1 Shall	Display the consent status.	Security-Authorization	Edge	Infrastructure		X	
513	IBM-102-01	NHIN Administration-Organization Registration	1 Shall	Register all public health agencies that are authorized to receive biosurveillance data from the CDOs	Security-Authorization	Edge	Biosurveillance	IBM-103-01	N	This appears to be just another role assigned to an Edge System

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
295	ACN-07.4	NHIN Administration-System Registration	1 Shall	Register all internal systems that require access to the NHIN.	Security-Authorization	Edge	Infrastructure		N	This appears to be just another role assigned to an Edge System
898	IBM-309-06	NHIN Administration-User Registration	1 Shall	Store non-ordering clinician credentials relative to sensitivity restrictions	Security-Authorization	Edge	EHR - Lab			Seems to mix patient restrictions and Credentialing
296	ACN-07.5	NHIN Overarching (ACN)	1 Shall	Certify that all internal systems meet NHIN security requirements for NHIN connectivity.	Security-Authorization	Edge	Infrastructure			Policy that appears more stringent than HIPAA risk management or evaluation requirements. See also Credentialing
338	CSC-ALL-610	Repositories	1 Shall	Determine their own access control policies, respecting privacy concerns, sensitivity designations, policy, and/or other attributes	Security-Authorization	Edge	Infrastructure		X	
896	IBM-309-04	Repositories	1 Shall	Authorize release of laboratory test results based on verification as ordering clinician	Security-Authorization	Edge	EHR - Lab		X	
897	IBM-309-05	Repositories	1 Shall	Authorize release of laboratory test results to non-ordering clinicians based on regulations (federal, state, local) regulatory agencies, entity policies, sensitivity restrictions and patient consent restrictions	Security-Authorization	Edge	EHR - Lab		X	
899	IBM-309-07	Repositories	1 Shall	Confirm non-ordering clinician credentials relative to sensitivity restrictions	Security-Authorization	Edge	EHR - Lab		X	
900	IBM-309-08	Repositories	1 Shall	Confirm non-ordering clinician status as provider of care for patient	Security-Authorization	Edge	EHR - Lab		X	
901	IBM-309-09	Repositories	1 Shall	Confirm patient consent restrictions	Security-Authorization	Edge	EHR - Lab		X	
1127	NGIT-152	CDO-EMR	May	Authorize query request for lab result data	Security-Authorization	Edge	EHR - Lab		X	

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
1128	NGIT-153	CDO-LIS	May	Authorize query request for lab result data	Security-Authorization	Edge	EHR - Lab		X	
1068	NGIT-084	Consumer System-PHR	May	Enable consumer to define who has access to data within PHR	Security-Authorization	Edge	CE - Consumer	NGIT-163	X	
1129	NGIT-154	Health Information Intermediaries	May	Authorize query request for lab result data	Security-Authorization	Edge	EHR - Lab		X	
343	CSC-ALL-690	Repositories	May	Authorize access based on querying institution, and/or other criteria based on local policies and regulations.	Security-Authorization	Edge	Infrastructure		X	
486	CSC-SEC-190	CDO-CDO NHIN Interface	1 Shall	Enforce NHIN security and privacy policies.	Security-Confidentiality	Core	Infrastructure	IBM-107-09 ACN-07.20 ACN-07.20.1 ACN-07.20.2 ACN-07.20.3	N	Combined
519	IBM-102-07	CDO-CDO NHIN Interface	1 Shall	Attach randomized linker before transmission of patient specific data that supports ability to re-identify data when required as part of an authorized public health investigation	Security-Confidentiality	Core	Bio	NGIT-066 NGIT-069 NGIT-116	N/E	Seems to suggest an architecture that may be at N or E.
534	IBM-103-07	CDO-CDO NHIN Interface	1 Shall	Attach randomized linker before transmission of patient specific data that supports ability to re-identify data when required as part of an authorized public health investigation	Security-Confidentiality	Core	Bio	IBM-102-07		Exact duplicate
1050	NGIT-066	CDO-CDO NHIN Interface	1 Shall	Anonymize data for transmission to public health agencies	Security-Confidentiality	Core	Bio	IBM-102-07 NGIT-069 NGIT-116	N/E	Seems to suggest an architecture that may be at N or E.
1053	NGIT-069	CDO-CDO NHIN Interface	1 Shall	Implement a randomized data linker (RDL) for biosurveillance data transmitted to public health agencies	Security-Confidentiality	Core	Bio	IBM-102-07 NGIT-066 NGIT-116	N/E	Seems to suggest an architecture that may be at N or E.
1095	NGIT-116	CDO-CDO NHIN Interface	1 Shall	Support re-linking identity information to anonymized data per RDL	Security-Confidentiality	Core	Bio	IBM-102-07 NGIT-066 NGIT-069	N/E	Seems to suggest an architecture that may be at N or E.
524	IBM-102-12	Message Handling	1 Shall	Transmit data to public health agencies in secure manner	Security-Confidentiality	Core	Biosurveillance			Vague technical security control
539	IBM-103-12	Message Handling	1 Shall	Transmit data to public health agencies in secure manner	Security-Confidentiality	Core	Biosurveillance	IBM-102-12		Exact duplicate

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
575	IBM-107-09	Message Handling	1 Shall	Transmit the biosurveillance event response "broadcast" messages conforming to approved privacy, security and messaging standards as provided by HITSP or as determined by the marketplace in the absence of approved standards	Security-Confidentiality	Core	Biosurveillance	CSC-SEC-190 ACN-07.20 ACN-07.20.1 ACN-07.20.2 ACN-07.20.3	N	
251	ACN-07.20	NHIN Overarching (ACN)	1 Shall	Comply with accepted security policy, privacy and management standards.	Security-Confidentiality	Core	Infrastructure	CSC-SEC-190 IBM-107-09 ACN-07.20.1 ACN-07.20.2 ACN-07.20.3	N	
252	ACN-07.20.1	NHIN Overarching (ACN)	1 Shall	Ensure that system complies with data privacy standards.	Security-Confidentiality	Core	Infrastructure	CSC-SEC-190 IBM-107-09 ACN-07.20 ACN-07.20.2 ACN-07.20.3	N	
253	ACN-07.20.2	NHIN Overarching (ACN)	1 Shall	Ensure that system complies with HIPAA legislation.	Security-Confidentiality	Core	Infrastructure	CSC-SEC-190 IBM-107-09 ACN-07.20 ACN-07.20.1 ACN-07.20.3	N	
254	ACN-07.20.3	NHIN Overarching (ACN)	1 Shall	Ensure that system complies with applicable federal, state and local legislation.	Security-Confidentiality	Core	Infrastructure	CSC-SEC-190 IBM-107-09 ACN-07.20 ACN-07.20.1 ACN-07.20.2	N	
477	CSC-SEC-10	All Edge Systems (CSC)	1 Shall	Protect confidentiality of data and services over the network using encryption.	Security-Confidentiality	Edge	Infrastructure	NGIT-006	N/E	Seems to apply to N and implies policy
484	CSC-SEC-170	All Edge Systems (CSC)	1 Shall	Establish, publish and implement security and privacy policies	Security-Confidentiality	Edge	Infrastructure		X	
488	CSC-SEC-210	All Edge Systems (CSC)	1 Shall	Provide patients with a method to chose to not participate in the NHIN.	Security-Confidentiality	Edge	Infrastructure		X	
489	CSC-SEC-212	All Edge Systems (CSC)	1 Shall	Provide patients with a method to keep specific data confidential.	Security-Confidentiality	Edge	Infrastructure		X	
490	CSC-SEC-220	All Edge Systems (CSC)	1 Shall	Upon request, provide patients with a list of institutions or providers requesting information about them.	Security-Confidentiality	Edge	Infrastructure		X	

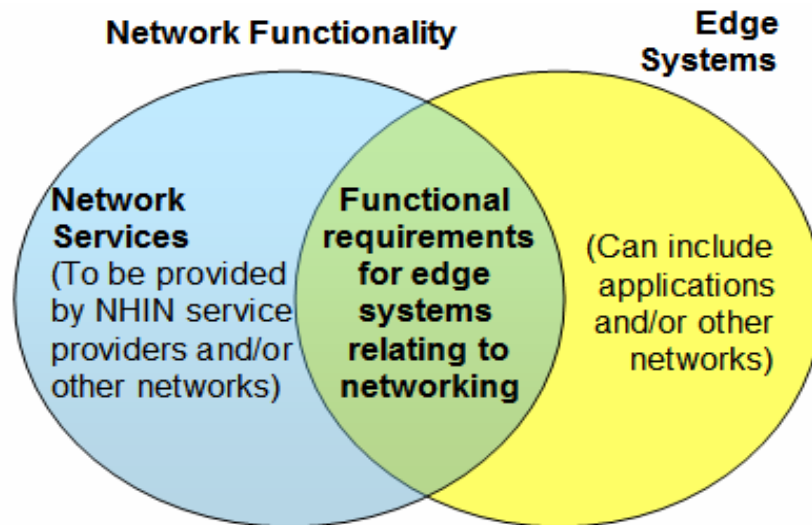
ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
268	ACN-07.23	CDO	1 Shall	Comply with accepted security policy, privacy and management standards.	Security-Confidentiality	Edge	Infrastructure		X	
271	ACN-07.23.3	CDO	1 Shall	Ensure that system complies with applicable federal, state and local legislation.	Security-Confidentiality	Edge	Infrastructure		X	
276	ACN-07.27.1	CDO	1 Shall	Ensure appropriate technical and procedural controls have been implemented to support the Information Security Policy.	Security-Confidentiality	Edge	Infrastructure		X	
277	ACN-07.27.2	CDO	1 Shall	Ensure that a robust monitoring capability exists to assure adherence and compliance to the Information Security Policy.	Security-Confidentiality	Edge	Infrastructure		X	
432	CSC-EHR-350	CDO	1 Shall	Provide patients with a method to indicate that a particular visit is confidential, and hence only the ordering clinician is to be notified.	Security-Confidentiality	Edge	EHR - Lab		X	
480	CSC-SEC-130	All Edge Systems (CSC)	2 Should	Detect network intrusions and log them.	Security-Confidentiality	Edge	Infrastructure		X	
487	CSC-SEC-200	All Edge Systems (CSC)	2 Should	Manage levels of patient consent, that are used to filter the release of health data from local data sources.	Security-Confidentiality	Edge	Infrastructure		X	
485	CSC-SEC-180	CDO	2 Should	Enforce CDO-to-CDO and CDO-to-NHIN security and privacy policies.	Security-Confidentiality	Edge	Infrastructure	CSC-SEC-190 IBM-107-09 ACN-07.20 ACN-07.20.1 ACN-07.20.2 ACN-07.20.3	N	
1044	NGIT-060	CDO	May	Anonymize data for transmission to public health agencies	Security-Confidentiality	Edge	Bio	IBM-102-06 IBM-103-06	N	
1054	NGIT-069a	CDO	May	Implement a randomized data linker (RDL) for biosurveillance data transmitted to public health agencies	Security-Confidentiality	Edge	Bio		N	
1032	NGIT-006	Message Handling	1 Shall	Support transport level security	Security-Confidentiality		Infrastructure	CSC-SEC-10	N	Combined
1096	NGIT-117	CDO	May	Support re-linking identity information to anonymized data per RDL	Security-Confidentiality		Bio	IBM-102-07 NGIT-066 NGIT-069 NGIT-116	N	Combined
492	CSC-SEC-240	CDO-CDO NHIN Interface	1 Shall	Establish pairwise trust relationships with the entities of the RHIO or SNO.	Security-Credentialing	Core	Infrastructure	ACN-04.3 ACN-04.6	N	Combined

ID-ONC	ID	Entities	Entity – Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Principal Context	Closely resembles... (Added by NCVHS)	N = Network Functionality E = Edge System Networking Fcns X = Fcns eXclusive to Edge System	NCVHS Review Comments
108	ACN-04.3	NHIN Administration-User Registration	1 Shall	Register public health users to participate in the NHIN.	Security-Credentialing	Core	Biosurveillance	CSC-SEC-240 ACN-04.6	N	
111	ACN-04.6	NHIN Administration-User Registration	1 Shall	Register system administrators to participate in the NHIN.	Security-Credentialing	Core	Infrastructure	CSC-SEC-240 ACN-04.3	N	
588	IBM-203-01	Consumer System-PHR	1 Shall	Prompt the consumer to select what third-parties will have access to their PHR	Security-Credentialing	Edge	CE - Consumer		X	
99	ACN-04.1	NHIN Administration-User Registration	1 Shall	Register patients to participate in the NHIN.	Security-Credentialing	Edge	Infrastructure	ACN-04.2 ACN-04.4 ACN-04.5	E	Equivalent of N
107	ACN-04.2	NHIN Administration-User Registration	1 Shall	Register providers to participate in the NHIN.	Security-Credentialing	Edge	CE, EHR	ACN-04.1 ACN-04.4 ACN-04.5	E	Equivalent of N
109	ACN-04.4	NHIN Administration-User Registration	1 Shall	Register public health users to participate in the NHIN.	Security-Credentialing	Edge	Biosurveillance	ACN-04.1 ACN-04.2 ACN-04.5	E	Equivalent of N
110	ACN-04.5	NHIN Administration-User Registration	1 Shall	Register system administrators to participate in the NHIN.	Security-Credentialing	Edge	Infrastructure	ACN-04.1 ACN-04.2 ACN-04.4	E	Equivalent of N
493	CSC-SEC-250	NHIN Administration-User Registration	1 Shall	Maintain the identities of its Users, according to a written and approved security policy.	Security-Credentialing	Edge	Infrastructure		E	
589	IBM-203-02	Consumer System-PHR	May	Provide look-up and reconciliation service for third parties	Security-Credentialing	Edge	CE - Consumer		E	
590	IBM-203-03	Consumer System-PHR	May	Query against a provider directory provided by the marketplace	Security-Credentialing	Edge	CE - Consumer		X	

Introduction to Analysis

The original 977 functional requirements were identified by the consortia contractors as those that may be performed by entities whose primary purpose was to provide networking services, identified initially by ONC as “core systems,” and those that may be performed by various other entities, identified initially by ONC as “edge systems.” Edge systems may be EHRs in care delivery organizations, terminology servers provided by vendor systems, etc. Some edge systems provide application support

Because the terms “core” and “edge” did not convey the notion that “core” was comprised of many entities and that “edge” systems could also provide networking functionality, these terms were first refined as illustrated in the Venn diagram below. Subsequently, the terms were discarded when the



Each of the 977 functional requirements was then labeled as pertaining to one of the three locations, **Network functionality (N)** may be provided by network service providers and/or other **Functional requirements for edge systems relating to networking (E)**. These functional requirements may at different times and different locations be performed by different types of entities.

Functions that apply eXclusively to an edge system (X) are those where an application at a specific location interacts with the information and applies it in a useful and appropriate manner. NCVHS has identified these within the analysis of the complete set of detailed functions as those that apply exclusively to edge functionality. NCVHS has not brought these “X” functions forward as part of

Functional Categories Defined by ONC

The following functional categories defined by ONC have been grouped by the six major categories identified by

SECURITY

Authentication – The ability to uniquely identify and validate (to a reasonable degree) the identity of an entity. These requirements are applicable to systems, services, and organizational actors.

Authorization – The ability to determine and grant access to systems, services and data based on prescribed parameters (instantiated authorization/access policies). For example, the process of granting authority or

Confidentiality – The ability to ensure that data are not disclosed (e.g., viewed, obtained or made known) to unauthorized individuals per organizational policies. Functionality to provide privacy, de-identification,

Credentialing – The process of validating or confirming the qualifications of licensed professionals, e.g., clinical provider. These functional requirements are distinct from authentication and authorization.

INFORMATION LOCATION

Identity/Information Correlation – The ability to map information or entities with other entities (e.g., individuals or organizations, or necessarily a named system or network user). For example, correlating clinical information to

Record Location – The ability to determine the location of data.

DATA TRANSACTION

Data Retrieval (Pull) – The functional requirements to support the request/retrieval of data.

Data Transmission (Push) – The functional requirements to support the unsolicited sending of data.

Audit and Logging - Functionality to support the recording of transactions and capability to review such recordings. For example, the functionality to support the identification and monitoring of activities within an

Data Access and Update –The ability to retrieve, view, and modify data, within prescribed policies.

Data Routing – The ability to identify a receiving system and ensure delivery of data.

Data Transaction Verification* - This category was added by contractors without further definition.

Configuration* - This category was added by contractors without further definition.

DATA TRANSFORMATION

Data Filtering – The functional requirements to support identifying and/or qualifying data that needs to be

Data Mapping/Translation – The functional requirements to support reformatting or expressing data in different terms. These requirements may relate to terminology and/or message structure.

Data Rendering – The ability to present data.

DATA CONTENT

Data Content - There may exist requirements on data that constrain the context and use of data exchanged within the NHIN. While many data requirements may be deferred to review of specifications or standards, there may be some high level data constraints that should be included within the Data Content functional category (e.g.,

Data Quality/Data Integrity – The functional requirements to ensure data is correct and complete, including the

Data Source – The functional requirements to support the identification of the data/information point of origin.

Data Usage – There may exist requirements on data that constrain the context and use of data exchanged within the Nationwide Health Information Network. While many data requirements may be deferred to review of specifications or standards, there may be some high level data constraints that should be included within the Data

DATA STORAGE

Persistent Data Storage – The ability of a system to function as a data repository.

Transient Data – The ability of a systems to function as a data repository for a given entity for a given period of

Non-Functional Categories

Below is a proposed list of categories that include system qualities or “non-functional” requirements. As noted above, the expectation is that categories of non-functional requirements will only be designated where the property has a substantial impact on the architecture and capabilities of the Nationwide Health Information

Accuracy – a measure of the application service quality - from the customer’s perspective, the precision with which responses are provided to customer inquiries.

Business Rules – Policy driven dynamic requirements that may change during the operation of the system, requiring that the system adapt to the change without major rework.

Performance – a measure of the degree to which an entity satisfies its intended purpose.

Robustness – a measure of the ability of system to adjust to unanticipated conditions (i.e., the ability of a system to adjust to unanticipated conditions without losing its endurance and level of quality).

Scalability – a measure of the ability of system to adjust or extend to changing demands (user load, data load).

Compressed Inventory of Functional Requirements

#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Closely resembles...	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.	
1	CSC-BIO-010	CDO	May	Share data with appropriate government authorities. CDOs may share directly or use a third-party intermediary.	Data Content-Data Usage	Edge		Bio	p2, 1.1.1.2, 1.2.1.2		IBM-102-11						Duplicate	1.1	3.1	4.2	
1	CSC-BIO-340	CDO	Should	Electronically collect, process, and transmit pertinent public health data in a secure fashion, using existing data exchange, ensure data is sent to appropriate PH agencies	Data Content-Data Usage	Edge	BIO-010, 400, 540	Bio	p09 s5, p10 s6, p11 s7		NGIT-054						Duplicate	1.1	3.1	4.2	
1	CSC-BIO-560	CDO	May	Send results (and requested meta data) to PH Agencies	Data Transaction-(Push)	Edge	BIO-580	Bio	1.1.5.1, 1.2.5.1, p07 s3, p10 s6		CSC-BIO-270 CSC-BIO-310 CSC-BIO-250 CSC-BIO-260						Duplicate	1.1	3.2	4.2	
1	NGIT-159	CDO	Shall	Transmit data to support public health biosurveillance	Data Transaction-(Push)	Edge		Bio		Data on patient-clinician encounters will be provided to a network communicating with public health agencies per agreement between entities. Agreements shall specify the role a CDO NHN interface performs regarding the filtering, aggregation, anonymizat	IBM-102-11						Duplicate	1.1	3.2	4.2	
1	CSC-BIO-500	CDO	Should	Filter collected data records to identify Biosurveillance data and mark relevant data whether directly or through an intermediary as required by PHA or local policy	Data Transformation-Data Filtering	Edge	CSC-SEC-200	Bio	1.1.1.1 1.2.1.1, p07 s3, p10 s6		NGIT-055						Duplicate	1.1	3.3	4.2	
1	CSC-BIO-510	CDO	May	Aggregate identified essential data	Data Transformation-Data Filtering	Edge		Bio	1.1.1.2 1.2.1.2		NGIT-054						Duplicate	1.1	3.3	4.2	
1	NGIT-056	CDO	May	Support filtering rules defined by public health agencies	Data Transformation-Data Filtering	Edge		Bio			NGIT-055						Duplicate	1.1	3.3	4.2	
1	IBM-209-38	CDO	May	Create an exception list of data that is not imported	Data Transformation-Data Mapping/Translation	Edge		CE - Consumer	2.3.2.3a	6.1 Provider access to PHR data	NGIT-113						Duplicate	1.1	3.3	4.3	
1	CSC-BIO-520	CDO	Should	Accept responsibility and exercise reasonable precautions to ensure identified data is anonymized	Information Location-Identity/Information Correlation	Edge		Bio	1.1.2.1 1.2.2.1								Policy	1.1	3.4	4.2	
1	CSC-BIO-110	CDO	Should	Ensure timely data delivery (within twenty-four hours of clinical event)	Non-Functional-Accuracy	Edge	BIO-030, 400	Bio	p2, p04 s2, p09 s5, p11 s7		IBM-102-11						Duplicate	1.1	3.5	4.2	
1	IBM-103-11	CDO	Shall	Send biosurveillance data within 24 hours of the event	Non-Functional-Performance			Bio	1.2.5.1X	3.4 Integrated CDOs - Route, Transmit, Audit Log Requested Data	IBM-102-11						Duplicate	1.1	3.5	4.2	
1	ACN-07.21.4	CDO	Shall	Enforce compliance with an established password policy.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	All user, system and application (service) accounts must require strong passwords, including but not limited to length, complexity, and lifecycle (history, age, change, expiration).	ACN-07.31						Policy	1.1	3.5	4.4	
1	ACN-07.21.9	CDO	Shall	Secure all hardware against damage and unauthorized modification.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Dedicated enclosures should be used to restrict access to hardware to authorized users. Data center facilities must offer protections, including but not limited to, UPS, humidity, temperature, flood, fire and natural disasters.							Policy	1.1	3.5	4.4	
1	ACN-07.22	CDO	Shall	Ensure that controls are applied to prevent unauthorized access to the network.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Only trusted components may obtain access to the network.							Policy	1.1	3.5	4.4	
1	ACN-07.22.1	CDO	Shall	Ensure that controls are applied to prevent unauthorized traffic from entering the network.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Devices, including but not limited to firewalls, routers, and switches, are installed on the network to allow only authorized traffic.							Policy	1.1	3.5	4.4	
1	ACN-07.31	CDO	Shall	Enforce compliance with an established password policy.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	All user, system and application (service) accounts must require strong passwords, including but not limited to length, complexity, and lifecycle (history, age, change, expiration).	ACN-07.21.4						Duplicate	1.1	3.5	4.4	
1	ACN-07.33	CDO	Shall	Ensure that controls are applied to prevent unauthorized access to the network.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Only trusted components may obtain access to the network.							Policy	1.1	3.5	4.4	
1	ACN-07.33.1	CDO	Shall	Ensure that controls are applied to prevent unauthorized traffic from entering the network.	Non-Functional-Robustness	Edge	N/A	Infrastructure	No Reference	Devices, including but not limited to firewalls, routers, and switches, are installed on the network to allow only authorized traffic.							Policy	1.1	3.5	4.4	
1	ACN-07.23.1	CDO	Shall	Ensure that system complies with data privacy standards.	Security-Confidentiality	Edge	N/A	Infrastructure	No Reference	N/A							Policy	1.1	3.6	4.4	
1	ACN-07.23.2	CDO	Shall	Ensure that system complies with HIPAA legislation.	Security-Confidentiality	Edge	N/A	Infrastructure	No Reference	Federal privacy and security requirements outlined in HIPAA should be implemented.							Policy	1.1	3.6	4.4	
1	ACN-07.27	CDO	Shall	Ensure that an up-to-date Information Security Policy exists, which is aligned to industry best practice.	Security-Confidentiality	Edge	N/A	Infrastructure	No Reference	There must be a Security Policy that defines security controls the Edge organization is committed to maintaining.							Policy	1.1	3.6	4.4	
1	ACN-07.28	CDO	Shall	Ensure an Acceptable Usage Policy exists that defines what is and is not acceptable usage of systems with access to NHIN data.	Security-Confidentiality	Edge	N/A	Infrastructure	No Reference	N/A							Policy	1.1	3.6	4.4	
1	ACN-07.35	CDO	Shall	Comply with accepted security best practices.	Security-Confidentiality	Edge	N/A	Infrastructure	No Reference	Security management standards and best practices issued by recognized security standards organizations should be implemented.							Policy	1.1	3.6	4.4	
1	ACN-07.36	CDO	Shall	Ensure that system complies with data privacy standards.	Security-Confidentiality	Edge	N/A	Infrastructure	No Reference	N/A							Policy	1.1	3.6	4.4	
1	ACN-07.37	CDO	Shall	Ensure that system complies with HIPAA legislation.	Security-Confidentiality	Edge	N/A	Infrastructure	No Reference	Federal privacy and security requirements outlined in HIPAA should be implemented.							Policy	1.1	3.6	4.4	
1	ACN-07.38	CDO	Shall	Ensure that system complies with state and local legislation.	Security-Confidentiality	Edge	N/A	Infrastructure	No Reference	State and local privacy, security and disclosure requirements outlined in applicable legislation must be implemented.							Policy	1.1	3.6	4.4	
1	ACN-07.29	CDO	Shall	Confirm via self-certification or 3rd party certification that all relevant information security controls have been implemented and are appropriate for the level of sensitivity of NHIN data.	Security-Credentialing	Edge	N/A	Infrastructure	No Reference	Before connection to the NHIN is authorized, each Edge organization must self-certify or obtain 3rd party certification that they have appropriate security controls in place to protect the confidentiality, integrity and availability of HHS data they will							Policy	1.1	3.6	4.4	
1	NGIT-072	CDO-CDO NHIN Interface	Shall	Transmit anonymized data as well formed messages to specific public health agencies	Data Transaction-(Push)	Core	NGIT-071	Bio	1.1.5.1, 1.2.5.1		IBM-102-08						Duplicate	2.5	3.2	4.2	
1	IBM-102-04	CDO-CDO NHIN Interface	Shall	Filter data source HL7 streams to identify biosurveillance data meeting all specified (trigger) conditions for requirements requested by authorized Public Health agencies	Data Transformation-Data Filtering	Core		Bio	1.1.1.1	2.3 Individual CDOs - Filter, Transform, Anonymize, Link Requested Data	NGIT-064						Duplicate	2.5	3.3	4.2	
1	IBM-103-04	CDO-CDO NHIN Interface	Shall	Filter data source HL7 streams to identify biosurveillance data meeting all specified (trigger) conditions for patient care and resource utilization requirements requested by authorized Public Health agencies	Data Transformation-Data Filtering	Core		Bio	1.2.1.1	3.3 Integrated CDOs - Filter, Transform, Anonymize, Link Requested Data For reference numbers 1.2.1 through 1.2.5, the recipients of requests for data from PH agencies are integrated health care data suppliers, organizations that span jurisdictional or fu	NGIT-064						Duplicate	2.5	3.3	4.2	
1	NGIT-061	CDO-CDO NHIN Interface	Shall	Support filtering rules defined by public health agencies (on a per entity basis)	Data Transformation-Data Filtering	Core		Bio			NGIT-064						Duplicate	2.5	3.3	4.2	
1	IBM-103-08	CDO-CDO NHIN Interface	Shall	Transform data using approved standards as provided by HITSP or as agreed upon with ONC for the Architecture Prototype	Data Transformation-Data Mapping/Translation	Core		Bio	1.2.3.1	3.3 Integrated CDOs - Filter, Transform, Anonymize, Link Requested Data	IBM-102-08						Duplicate	2.5	3.3	4.2	
1	NGIT-068	CDO-CDO NHIN Interface	Shall	Transform data into approved standards	Data Transformation-Data Mapping/Translation	Core		Bio	1.1.3.1, 1.2.3.1		IBM-102-08						Duplicate	2.5	3.3	4.2	
1	IBM-102-13	CDO-CDO NHIN Interface	Should	Minimize double counting. The system should be able to determine when multiple and or independently submitted data refer to the same case (patient) or event.	Information Location-Identity/Information Correlation	Core		Biosurveillance	1.1.5.1X	2.4 Individual CDOs - Route, Transmit, Audit Log Requested Data	IBM-103-13						Duplicate	2.5	3.4	4.2	
1	IBM-207-07	CDO-CDO NHIN Interface	Shall	Require that the requesting institution provide appropriate demographic information to query data in the NHIN. Data required is determined by the community.	Information Location-Record Location	Core		Infrastructure	2.1.5.2x	4.2 Updating a PHR	IBM-205-07							Duplicate	2.5	3.4	4.4
1	IBM-209-14	CDO-CDO NHIN Interface	Shall	Require that the requesting institution provide appropriate demographic information to query data in the NHIN. Data required is determined by the community.	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data	IBM-205-07							Duplicate	2.5	3.4	4.4
1	CSC-NFR-240	CDO-CDO NHIN Interface	Shall	Require minimal software and other IP licensing requirements	Non-Functional-Business Rules	Core		Infrastructure									Policy	2.5	3.5	4.4	
1	CSC-NFR-250	CDO-CDO NHIN Interface	Shall	Use only non-proprietary technologies and standards, that shall not require usage fees to holders of copyrights or patents	Non-Functional-Business Rules	Core		Infrastructure									Policy	2.5	3.5	4.4	
1	CSC-ALL-30	CDO-CDO NHIN Interface	Shall	Only trade messages with entities and SNOs that restrict queries to properly authenticated and authorized users.	Security-Confidentiality	Core		Infrastructure									Policy	2.5	3.6	4.4	
1	IBM-102-06	CDO-CDO NHIN Interface	Shall	Anonymize patient specific data before transmission to meet all applicable privacy and security considerations	Security-Confidentiality	Core		Bio	1.1.2.1	2.3 Individual CDOs - Filter, Transform, Anonymize, Link Requested Data	NGIT-060						Duplicate	2.5	3.6	4.2	
1	IBM-103-06	CDO-CDO NHIN Interface	Shall	Anonymize patient specific data before transmission to meet all applicable privacy and security considerations	Security-Confidentiality	Core		Bio	1.2.2.1	3.3 Integrated CDOs - Filter, Transform, Anonymize, Link Requested Data	NGIT-060						Duplicate	2.5	3.6	4.2	
1	CSC-SEC-230	CDO-CDO NHIN Interface	Shall	Establish pairwise trust relationships with the NHIN Interfaces of other RHOs and SNOs	Security-Credentialing	Core		Infrastructure									Policy	2.5	3.6	4.4	
1	IBM-311-07	CDO-EMR	Shall	Acknowledge successful receipt of lab results from repository or data stager	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.2.1.6	2.5 Clinician Receives Results into EHR	NGIT-123						Duplicate	1.1	3.1	4.1	
1	IBM-311-09	CDO-EMR	Shall	Produce exception list of errors	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.2.1.7a	2.5 Clinician Receives Results into EHR ONC Guidance: In general, the capabilities for updates and error corrections are important functions of a valid architecture and should be part of the prototype architecture. From the standpoint of the demonstration	NGIT-113						Duplicate	1.1	3.1	4.1	
1	NGIT-122	CDO-EMR	May	Verify integrity of unsolicited result transaction	Data Content-Data Quality/Data Integrity	Edge		EHR - Lab	3.2.1.2, 3.4.1.2	The system must validate the patient identifying information, integrity, authenticity, completeness and appropriateness of data received according to HITSP specified standards and implementation guidelines.	IBM-306-05						Duplicate	1.1	3.1	4.1	
1	IBM-307-01	CDO-EMR	Shall	Query locator system for laboratory (historical) test results location	Data Transaction-(Pull)	Edge	IBM-305-07	EHR - Lab	3.2.3.0	2.1 Clinician Requests Historical Results Location	NGIT-128						Duplicate	1.1	3.2	4.1	
1	IBM-306-01	CDO-EMR	Shall	Receive notification from locator service that new lab test results events are available	Data Transaction-(Push)	Edge	IBM-305-06; IBM-305-01	EHR - Lab	3.2.2.1	1.6 Clinician Notified of New Lab Results	NGIT-126						Duplicate	1.1	3.2	4.1	
1	IBM-307-34	CDO-EMR	Should	Provide clinician ability to query for lab results based on a specified date range for a specified patient	Data Transformation-Data Filtering	Edge		EHR - Lab	3.2.3.3ax2	2.1 Clinician Requests Historical Results Location	IBM-307-32						Duplicate	1.1	3.3	4.1	
1	IBM-307-36	CDO-EMR	Should	Provide clinician ability to query for lab results based on one or more types of lab data (chemistry, hematology, pathology, etc) for a specified patient	Data Transformation-Data Filtering	Edge		EHR - Lab	3.2.3.3ax3	2.1 Clinician Requests Historical Results Location	IBM-307-32						Duplicate	1.1	3.3	4.1	
1	IBM-307-38	CDO-EMR	May	Provide clinician ability to query for lab results based on one or more specified lab tests for a specified patient	Data Transformation-Data Filtering	Edge		EHR - Lab	3.2.3.3ax4	2.1 Clinician Requests Historical Results Location	IBM-307-32						Duplicate	1.1	3.3	4.1	
1	IBM-307-40	CDO-EMR	May	Provide clinician ability to query for lab results based on one, more or all local or remote marketplaces for a specified patient	Data Transformation-Data Filtering	Edge		EHR - Lab	3.2.3.3ax5	2.1 Clinician Requests Historical Results Location	IBM-307-32						Duplicate	1.1	3.3	4.1	
1	IBM-307-42	CDO-EMR	Shall	Provide clinician ability to request for specific lab test results based on order number or other unique test result identification	Data Transformation-Data Filtering	Edge		EHR - Lab	3.2.3.3	2.1 Clinician Requests Historical Results Location ONC Guidance: The unique identification number identified here would be obtained as part of some test ordering processes. The clinician would know this number if it was obtain in association with the orde	IBM-307-32						Duplicate	1.1	3.3	4.1	
1	IBM-101-03	CDO-EMR--Acute	Shall	Provide limited patient demographic data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Demographic data include: encounter date, patient information (date of birth, age, gender, resident zip code,	Data Content-Data Source	Edge		Bio	1.1.1.0X	1.1 Data Source - Ambulatory, Acute and ED EMRs	CSC-BIO-210 IBM-101-05						Duplicate	1.1	3.1	4.2	
1	IBM-101-04	CDO-EMR--Acute	Shall	Provide clinical data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Clinical data include: patient class (outpatient, inpatient, ER) diagnosis/injury code, diagnosis type, diagnosis date and time.	Data Content-Data Source	Edge		Bio	1.1.1.0X	1.1 Data Source - Ambulatory, Acute and ED EMRs	CSC-BIO-220						Duplicate	1.1	3.1	4.2	

#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Disables... Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.
1	IBM-101-01	CDO-EMR--Ambulatory	Shall	Provide limited patient demographic data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Demographic data include: encounter date, patient information (date of birth, age, gender, resident zip code, s	Data Content-Data Source	Edge		Bio	1.1.1.0X	1.1 Data Source - Ambulatory, Acute and ED EMRs Public health is eligible, under HIPAA, to receive data that even includes patient identifiers in appropriate situations. HIPAA "deidentification" criteria which seem to be alluded to here are relevant for p	CSC-BIO-210 IBM-101-03 IBM-101-05					Duplicate	1.1	3.1	4.2
1	IBM-101-02	CDO-EMR--Ambulatory	Shall	Provide clinical data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Clinical data include: patient class (outpatient, inpatient, ER) diagnosis/injury code, diagnosis type, diagnosis date and time.	Data Content-Data Source	Edge		Bio	1.1.1.0X	1.1 Data Source - Ambulatory, Acute and ED EMRs	CSC-BIO-220					Duplicate	1.1	3.1	4.2
1	IBM-101-05	CDO-EMR--ED	Shall	Provide limited patient demographic data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Demographic data include: encounter date, patient information (date of birth, age, gender, resident zip code, s	Data Content-Data Source	Edge		Bio	1.1.1.0X	1.1 Data Source - Ambulatory, Acute and ED EMRs	CSC-BIO-210 IBM-101-01 IBM-101-03					Duplicate	1.1	3.1	4.2
1	IBM-101-06	CDO-EMR--ED	Shall	Provide clinical data as specified in Biosurveillance use case in HL7 format for filtering by the CDO NHIN Interface System. Clinical data include: patient class (outpatient, inpatient, ER) diagnosis/injury code, diagnosis type, diagnosis date and time.	Data Content-Data Source	Edge		Bio	1.1.1.0X	1.1 Data Source - Ambulatory, Acute and ED EMRs	CSC-BIO-220					Duplicate	1.1	3.1	4.2
1	CSC-EHR-360	CDO-LIS	Should	Transmit preliminary, complete, final, and updated lab results to the ordering system or its designee.	Data Content	Edge	CSC-ALL-380	EHR - Lab	3.2.1.1, 3.3.1.0, 3.3.1.1		IBM-303-01					Duplicate	2.1	3.1	4.1
1	NGIT-119	CDO-LIS	Shall	Transmit well formed result messages according to a HITSP specified implementation instruction.	Data Transaction-(Push)	Edge		EHR - Lab	3.3.1.2	All parties must use common format and vocabulary for lab test result transmission	IBM-303-01					Duplicate	2.1	3.2	4.1
1	NGIT-141	CDO-LIS	May	Transmit well formed result messages according to HITSP specified standards and implementation instructions	Data Transaction-(Push)	Edge		EHR - Lab	3.4.1.5	Business rules may be implemented upon lab result repository data to route lab test results.	IBM-303-01					Duplicate	2.1	3.2	4.1
1	NGIT-098	Consumer System-PHR	Shall	Support termination of a consumers account	???-Unknown (NGIT)	Edge		CE - Consumer			CSC-CE-620					Duplicate	2.3		4.3
1	ACN-03.1	Consumer System-PHR	Shall	Enable people to access their Personal Health Record.	Data Content-Data Usage	Edge	N/A	CE - Consumer	2.1.4	Patients, who have consented, can access their Personal Health Record with their unique user id and password.	CSC-CE-510					Duplicate	2.3	3.1	4.3
1	IBM-207-27	Consumer System-PHR	Shall	Allow for annotations	Data Content-Data Usage	Edge	IBM-205-01	CE - Consumer	2.1.5.4a	4.2 Updating a PHR ONC Guidance: The Harmonized Consumer Empowerment Use Case expressed the option for consumers to request data changes within the source systems (see Event 2.1.5.0) and the network services should support this function. The adjudication	CSC-CE-580					Duplicate	2.3	3.1	4.3
1	CSC-CE-730	Consumer System-PHR	Shall	Receive data from another PHR or Repository in response to an authorized query	Data Transaction-(Pull)	Edge	CSC-ALL-710	CE - Consumer	2.2.2.4, 2.1.6.1a		NGIT-090 NGIT-089					Duplicate	2.3	3.2	4.3
1	CSC-CE-770	Consumer System-PHR	May	Transmit registration and/or medication data in response to a query	Data Transaction-(Pull)	Edge	CSC-ALL-660	CE - Consumer	2.2.3.3, 2.2.4.3a,		NGIT-097 NGIT-096					Duplicate	2.3	3.2	4.3
1	IBM-205-21	Consumer System-PHR	Shall	Receive registration/medication history into the PHR/database	Data Transaction-(Pull)	Edge		CE - Consumer	2.2.2.4	3.2 Pre-populating a PHR	NGIT-090 NGIT-089					Duplicate	2.3	3.2	4.3
1	IBM-207-04	Consumer System-PHR	Shall	Transmit request for registration/medication history data to data/network systems	Data Transaction-(Pull)	Edge	IBM-207-01	CE - Consumer	2.1.5.2x	4.2 Updating a PHR	NGIT-097 NGIT-096					Duplicate	2.3	3.2	4.3
1	IBM-207-21	Consumer System-PHR	Shall	Receive registration/medication history into the PHR/database	Data Transaction-(Pull)	Edge		CE - Consumer	2.1.5.3	4.2 Updating a PHR	NGIT-090 NGIT-089					Duplicate	2.3	3.2	4.3
1	NGIT-085	Consumer System-PHR	Shall	Support user request to collect registration data from external source	Data Transaction-(Pull)	Edge		CE - Consumer	2.1.5.2		IBM-205-04					Duplicate	2.3	3.2	4.3
1	NGIT-086	Consumer System-PHR	Shall	Support user request to collect medication history data from external source(s)	Data Transaction-(Pull)	Edge		CE - Consumer	2.1.5.2		IBM-205-04					Duplicate	2.3	3.2	4.3
1	NGIT-087	Consumer System-PHR	Shall	Transmit well formed query request for registration data	Data Transaction-(Pull)	Edge		CE - Consumer	2.1.5.2		IBM-205-04					Duplicate	2.3	3.2	4.3
1	NGIT-088	Consumer System-PHR	Shall	Transmit well formed query request for medication history data	Data Transaction-(Pull)	Edge		CE - Consumer	2.1.5.2		IBM-205-04					Duplicate	2.3	3.2	4.3
1	IBM-207-32	Consumer System-PHR	Shall	Transmit data according to web-based security standards (SSL, etc.)	Data Transaction-(Push)	Edge		CE - Consumer	2.1.5.5x	4.2 Updating a PHR	IBM-207-33					Duplicate	2.3	3.2	4.3
1	NGIT-099	Consumer System-PHR	Shall	Support transmission of registration and medication history data to a subsequent provider of PHR services	Data Transaction-(Push)	Edge		CE - Consumer	2.2.3.3		IBM-211-02					Duplicate	2.3	3.2	4.3
1	CSC-CE-570	Consumer System-PHR	Shall	Enable consumer to modify consumer-entered data	Data Transaction-Data Access and Update	Edge	CSC-ALL-710	CE - Consumer	CE-p.8.5.3, 2.1.5.4, 2.1.5.5, 2.1.5.5.a		IBM-207-26					Duplicate	2.3	3.2	4.3
1	IBM-205-23	Consumer System-PHR	Shall	Acknowledge receipt of registration/medication data	Data Transaction-Data Transaction Verification	Edge		CE - Consumer	2.2.2.5	3.2 Pre-populating a PHR	NGIT-091					Duplicate	2.3	3.2	4.3
1	IBM-207-23	Consumer System-PHR	Shall	Acknowledge receipt of registration/medication data	Data Transaction-Data Transaction Verification	Edge		CE - Consumer	2.2.2.5	4.2 Updating a PHR	NGIT-091					Duplicate	2.3	3.2	4.3
1	NGIT-101	Consumer System-PHR	May	Support direct access to registration and medication data for viewing by external user interfaces	Data Transformation-Data Rendering	Edge		CE - Consumer		PHR will authorize request for viewing of data	IBM-204-02 IBM-210-02 IBM-205-02					Duplicate	2.3	3.3	4.3
1	IBM-207-20	Consumer System-PHR	May	Publish the appropriate links back to the record locator	Information Location-Identity/Information Correlation	Edge		CE - Consumer	2.1.5.2x	4.2 Updating a PHR	IBM-205-02					Duplicate	2.3	3.4	4.3
1	IBM-207-02	Consumer System-PHR	May	Confirm with the consumer that the system will request information from data and network systems	Non-Functional-Accuracy	Edge		CE - Consumer	2.1.5.2x	4.2 Updating a PHR	IBM-205-02					Duplicate	2.3	3.5	4.3
1	IBM-207-03	Consumer System-PHR	May	Receive and validate the query request	Non-Functional-Accuracy	Edge		CE - Consumer	2.1.5.2x	4.2 Updating a PHR	IBM-205-03					Duplicate	2.3	3.5	4.3
1	IBM-207-35	Consumer System-PHR	May	Require the consumer to contact them directly for certain edits and annotations	Non-Functional-Accuracy	Edge		CE - Consumer	2.1.5.5a	4.2 Updating a PHR						Policy	2.3	3.5	4.3
1	CSC-CE-390	Consumer System-PHR	Shall	Be a full member of a SNO by meeting all SNO contractual, liability, security and other requirements.	Non-Functional-Business Rules	Edge	CSC-SEC-230	CE - Consumer		Because of the difficulties in authenticating consumers, it is unlikely that a PHR will be able to meet the requirements of SNO membership unless it is affiliated to a CDO.						Policy	2.3	3.5	4.3
1	IBM-211-01	Consumer System-PHR	Shall	Terminate PHR account	Non-Functional-Scalability	Edge		CE - Consumer	2.2.4.3	7.2 Closing a PHR ONC Guidance: The Harmonized Consumer Empowerment Use Case included the transmission of registration and medication data from one Provider of PHR Services to another. The portability of registration information and medication histories	CSC-CE-600					Duplicate	2.3	3.5	4.3
1	NGIT-083	Consumer System-PHR	Shall	Authenticate consumers before accessing their personal health record	Security-Authentication	Edge		CE - Consumer	2.1.2.1	Provider of PHR service shall establish the consumer's identity	CSC-CE-510					Duplicate	2.3	3.6	4.3
1	CSC-CE-530	Consumer System-PHR	Shall	Persist consumer's access list	Security-Authorization	Edge		CE - Consumer	2.1.2.2, 2.2.1.3		IBM-203-04					Duplicate	2.3	3.6	4.3
1	CSC-CE-630	Consumer System-PHR	Shall	Notify customer that PHR data is transmitted to another PHR	Security-Authorization	Edge		CE - Consumer	2.1.6.2a		IBM-211-08					Duplicate	2.3	3.6	4.3
1	CSC-CE-750	Consumer System-PHR	Shall	Accept queries for PHR data. The queries must contain authenticating and authorizing credentials provided by the consumer.	Security-Authorization	Edge	CSC-ALL-650	CE - Consumer	CE-p.9.s7.3, 2.2.3.1		CSC-CE-510					Duplicate	2.3	3.6	4.3
1	CSC-CE-760	Consumer System-PHR	Shall	Validate that data requestor is permitted by consumer access list	Security-Authorization	Edge	CSC-SEC-50, CSC-200, CSC-ALL-610	CE - Consumer	2.2.3.2, 2.2.4.2		IBM-209-06					Duplicate	2.3	3.6	4.3
1	IBM-209-04	Consumer System-PHR	Shall	Maintain a list of authorized users that can directly access the consumer's PHR	Security-Authorization	Edge	IBM-203-04	CE - Consumer	2.1.2.2x	6.1 Provider access to PHR data	IBM-203-04					Duplicate	2.3	3.6	4.3
1	NGIT-095	Consumer System-PHR	Shall	Authorize request for data	Security-Authorization	Edge		CE - Consumer		Authorize request for data per PHR parameters	IBM-209-06					Duplicate	2.3	3.6	4.3
1	NGIT-163	Consumer System-PHR	May	Enable consumer to mark only selected portions of the PHR as available to external authorized entities	Security-Authorization	Edge		CE - Consumer			NGIT-084					Duplicate	2.3	3.6	4.3
1	IBM-202-02	Consumer System-PHR--PHR Registration info	Shall	Establish consumer's identity and authorize based on information provided	Security-Authentication	Edge		CE - Consumer	2.1.2.1	2.1 Logging into a PHR	IBM-204-02					Duplicate	2.3	3.6	4.3
1	IBM-206-01	Consumer System-PHR--PHR Registration info	Shall	Prompt consumer for uniquely identifying information during log-in (not first time)	Security-Authentication	Edge	IBM-201-04	CE - Consumer	2.1.5.1	4.1 Logging into a PHR	IBM-204-01					Duplicate	2.3	3.6	4.3
1	IBM-206-02	Consumer System-PHR--PHR Registration info	Shall	Establish consumer's identity and authorize based on information provided	Security-Authentication	Edge		CE - Consumer	2.1.5.1	4.1 Logging into a PHR	IBM-204-02					Duplicate	2.3	3.6	4.3
1	IBM-207-40	Consumer System-PHR--PHR Registration info	Shall	Authenticate and verify the authorization of the requestor	Security-Authentication	Edge	IBM-202-01	CE - Consumer	2.2.4.2	4.2 Updating a PHR	CSC-CE-510					Duplicate	2.3	3.6	4.3
1	IBM-210-01	Consumer System-PHR--PHR Registration info	Shall	Prompt consumer for uniquely identifying information during log-in (not first time)	Security-Authentication	Edge	IBM-201-05	CE - Consumer	2.1.5.1	7.1 Logging into a PHR	IBM-204-01					Duplicate	2.3	3.6	4.3
1	IBM-210-02	Consumer System-PHR--PHR Registration info	Shall	Establish consumer's identity and authorize based on information provided	Security-Authentication	Edge		CE - Consumer	2.1.5.1	7.1 Logging into a PHR	IBM-204-02					Duplicate	2.3	3.6	4.3
1	IBM-104-05	Data Analysis and Secondary Use Systems-Public Health	Shall	Verify integrity of the transmission contents from the identified source including appropriate anonymized patient information per agreed to standards and policies	Data Content-Data Quality/Data Integrity	Edge		Biosurveillance	1.3.2.2	4.2 PH Agencies - Receive, Check, Store, Audit Log Requested Data	CSC-BIO-590 IBM-104-05 NGIT-078					Duplicate	2.4	3.1	4.2
1	NGIT-078	Data Analysis and Secondary Use Systems-Public Health	Shall	Verify integrity of transmission content	Data Content-Data Quality/Data Integrity	Edge		Bio	1.3.2.2	Integrity of transmission will measure the completeness and quality of the transmitted data.	CSC-BIO-590 IBM-104-05 NGIT-078					Duplicate	2.4	3.1	4.2
1	ACN-06.2.1	Data Analysis and Secondary Use Systems-Public Health	Shall	Allow federal public health users to access aggregated anonymized federal health data.	Data Content-Data Usage	Core	N/A	Bio	No Reference	N/A	ACN-06.2					Duplicate	2.4	3.1	4.2
1	ACN-06.2.2	Data Analysis and Secondary Use Systems-Public Health	Shall	Allow federal public health users to access aggregated anonymized state health data.	Data Content-Data Usage	Core	N/A	Bio	No Reference	N/A	ACN-06.2					Duplicate	2.4	3.1	4.2
1	ACN-06.2.3	Data Analysis and Secondary Use Systems-Public Health	Shall	Allow federal public health users to access aggregated anonymized local health data.	Data Content-Data Usage	Core	N/A	Bio	No Reference	N/A	ACN-06.2					Duplicate	2.4	3.1	4.2
1	ACN-06.2.4	Data Analysis and Secondary Use Systems-Public Health	Shall	Allow state public health users to access aggregated anonymized state health data.	Data Content-Data Usage	Core	N/A	Bio	No Reference	N/A	ACN-06.2					Duplicate	2.4	3.1	4.2
1	ACN-06.2.5	Data Analysis and Secondary Use Systems-Public Health	Shall	Allow state public health users to access aggregated anonymized local health data.	Data Content-Data Usage	Core	N/A	Bio	No Reference	N/A	ACN-06.2					Duplicate	2.4	3.1	4.2
1	ACN-06.2.6	Data Analysis and Secondary Use Systems-Public Health	Shall	Allow local public health users to access aggregated anonymized local health data.	Data Content-Data Usage	Edge	N/A	Bio	No Reference	N/A	ACN-06.2					Duplicate	2.4	3.1	4.2
1	CSC-BIO-580	Data Analysis and Secondary Use Systems-Public Health	Shall	Publish its data requirements and inform CDOs where to send data	Data Content-Data Usage	Edge	BIO-550	Bio	1.3.1.1, p11 s7		IBM-104-02 NGIT-076 CSC-BIO-550 IBM-106-01					Duplicate	2.4	3.1	4.2
1	IBM-104-03	Data Analysis and Secondary Use Systems-Public Health	Shall	Receive anonymized data with associated randomized data links from all authorized data sources	Data Transaction-(Pull)	Edge	IBM-102-12 and IBM-103-12	Biosurveillance	1.3.2.1	4.2 PH Agencies - Receive, Check, Store, Audit Log Requested Data ONC Guidance: Event 1.3.2.0 is included for completeness. The NHIN contractors must address network requirements necessary to allow the public health agency to accomplish this activity, but	NGIT-077 CSC-BIO-590					Duplicate	2.4	3.2	4.2
1	CSC-BIO-550	Data Analysis and Secondary Use Systems-Public Health	Shall	Provide information to CDOs on which PH Agencies require notification of specific data	Data Transaction-(Push)	Edge	BIO-580	Bio	1.1.4.1 1.2.4.1, p11 s7		IBM-104-02 NGIT-076 CSC-BIO-580 IBM-106-01					Duplicate	2.4	3.2	4.2
1	IBM-106-01	Data Analysis and Secondary Use Systems-Public Health	Shall	Send biosurveillance participating Care Delivery Organizations additional or updated specification of essential data that must be transmitted to PH Agencies to monitor a previously detected event	Data Transaction-(Push)	Edge		Biosurveillance	1.2.2.1	6.1 PH Community - Monitor Detected Event - Case Tracking Data	IBM-104-02 NGIT-076 CSC-BIO-580 CSC-BIO-550					Duplicate	2.4	3.2	4.2
1	NGIT-077	Data Analysis and Secondary Use Systems-Public Health	Shall	Receive unsolicited transmission of biosurveillance data	Data Transaction-(Push)	Edge		Bio	1.3.2.0		IBM-107-13					Duplicate	2.4	3.2	4.2

Compressed Inventory of Functional Requirements

#	ID	Entities	Entity - Property Relation	Property	Functional Categories	Entity Role (i.e., Core or Edge)	Link to other requirements	Principal Context	Context Reference	Comments / Rationale	Associated Reference 1	Associated Reference 2	Associated Reference 3	Associated Reference 4	Associated Reference 5	Initial Review Comments	Tentative Entity Breakout Session No.	Tentative Functional Category Breakout Session No.	Tentative Use Case Breakout Session No.
1	NGIT-079	Data Analysis and Secondary Use Systems-Public Health	Shall	Acknowledge receipt of data	Data Transaction-Audit & Logging	Edge		Bio	1.3.2.3	Acknowledgement will convey acceptance of received data.	IBM-104-06					Duplicate	2.4	3.2	4.2
1	NGIT-076	Data Analysis and Secondary Use Systems-Public Health	Shall	Publish listing of required biosurveillance data to support filter	Data Transformation-Data Filtering	Edge		Bio	1.3.1.0		IBM-104-02 CSC-BIO-580 CSC-BIO-550 IBM-106-01					Duplicate	2.4	3.3	4.2
1	IBM-306-02	External User interfaces	Shall	Receive notification from locator service that new lab test results events are available	Data Transaction-(Push)	Edge		EHR - Lab	3.2.2.1	1.6 Clinician Notified of New Lab Results	NGIT-127					Duplicate	1.3	3.2	4.1
1	IBM-312-05	External User interfaces	Shall	Display laboratory test results in web application	Data Transformation-Data Rendering	Edge		EHR - Lab	3.2.4.3	2.6 Clinician Receives Historical Results in Web Application	ACN-01.6					Duplicate	1.3	3.3	4.1
1	CSC-NFR-110	External User interfaces	Shall	Produce user friendly error messages, which provide specific instructions, in common language, that user could use to rectify the problem [Usability]	Non-Functional-Robustness	Edge		Infrastructure								Policy	1.3	3.5	4.4
1	CSC-NFR-120	External User interfaces	Should	Not require users to learn any new user interface technology besides what a standard HTML browser requires [Usability]	Non-Functional-Robustness	Edge		Infrastructure								Policy	1.3	3.5	4.4
1	CSC-NFR-130	External User interfaces	Should	Support "memorability" through simple interfaces and usage tooltips that remind users of common functions without recourse to separate user documentation	Non-Functional-Robustness	Edge		Infrastructure								Policy	1.3	3.5	4.4
1	IBM-307-12	MPI	Shall	Provide method for clinician and locator system to agree on patient identity through patient trait matching, shared MPI or patient identifier matching (as determined by the marketplace)	Information Location-Identity/Information Correlation	Core		EHR - Lab	3.5.2.2	2.1 Clinician Requests Historical Results Location	IBM-307-11					Duplicate	2.2	3.4	4.1
1	NGIT-134	MPI	Shall	Support unambiguous matching and subsequent correlation of patient identities for the purpose of locating records	Information Location-Identity/Information Correlation	Core		Infrastructure			NGIT-008					Duplicate	2.2	3.4	4.4
1	ACN-05.1.1	NHIN Administration	Shall	Abide by Service Level Agreements (SLA) for performance.	Non-Functional-Performance	Core	N/A	Infrastructure	No Reference	It is necessary for the NHIN and edge systems to have service level agreements for performance set up prior to data submission.	ACN-05.1					Duplicate	1.2	3.5	4.4
1	ACN-02.2.2	NHIN Administration-Audit Trail	Shall	Save copies of requests for patient data.	Data Transaction-Audit & Logging	Core	N/A	CE, EHR	3.2.3	All requests for patient data should be saved and include the requestor name and reason for request.	ACN-02.2.1					Duplicate	1.2	3.2	4.4
1	ACN-02.4.2	NHIN Administration-Audit Trail	Shall	Generate reports monitoring logging activity.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	The NHIN system should generate monitoring logging activity reports to detail who has accessed the system and when the access occurred.	ACN-02.4.1					Duplicate	1.2	3.2	4.4
1	ACN-03.4	NHIN Administration-Audit Trail	Shall	Allow patients to view who has accessed their data.	Data Transaction-Audit & Logging	Edge	N/A	CE, EHR	2.1.1, 2.1.2	Patients should be able to view who has accessed their personal information and when the record was accessed.						Policy for edge systems	1.2	3.2	4.4
1	ACN-07.16.13	NHIN Administration-Audit Trail	Shall	Analyze consolidated logs to detect unauthorized or suspicious activity.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	N/A						Policy	1.2	3.2	4.4
1	ACN-07.16.4	NHIN Administration-Audit Trail	Shall	Log all relevant infrastructure level access events.	Data Transaction-Audit & Logging	Core	N/A	Infrastructure	No Reference	User, administrator and system accessing infrastructure resources in the NHIN environment must be logged.	ACN-07.16.5					Duplicate	1.2	3.2	4.4
1	ACN-07.17.10	NHIN Administration-Audit Trail	Shall	Retain logs for a period of time as defined in the retention standard.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	All application, infrastructure and operating system logs will be retained to ensure there are audit trails for future use. Retention timeline would be driven by local retention standards.						Policy for edge systems	1.2	3.2	4.4
1	ACN-07.17.13	NHIN Administration-Audit Trail	Shall	Consolidate logs from internal Edge Systems in a central repository.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	All system, application and Infrastructure logs will be consolidated to a centralized log server for analysis, alerting and reporting.						Policy for edge systems	1.2	3.2	4.4
1	ACN-07.17.14	NHIN Administration-Audit Trail	Shall	Analyze consolidated logs to detect unauthorized activity.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	N/A						Policy for edge systems	1.2	3.2	4.4
1	ACN-07.17.15	NHIN Administration-Audit Trail	Shall	Allow thresholds to be set to determine activities requiring further investigation.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	Thresholds will determine activity outside of the baseline of normal system activity.						Policy for edge systems	1.2	3.2	4.4
1	ACN-07.17.16	NHIN Administration-Audit Trail	Shall	Generated notifications based on anomalous system activity.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	Reports and Alerts must be triggered when established thresholds are exceeded.						Policy for edge systems	1.2	3.2	4.4
1	ACN-07.17.17	NHIN Administration-Audit Trail	Shall	Generate evidence to support incident management and response processes.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	Incident Management process defines actions that need to be performed in case of an incident outbreak e.g. virus /worm attack, denial of service .etc						Policy for edge systems	1.2	3.2	4.4
1	ACN-07.17.4	NHIN Administration-Audit Trail	Shall	Log all relevant infrastructure level access events.	Data Transaction-Audit & Logging	Edge	N/A	Infrastructure	No Reference	User, administrator and system accessing infrastructure resources in the Edge System environment.	ACN-07.17.5					Duplicate	1.2	3.2	4.4
1	IBM-205-24	NHIN Administration-Audit Trail	Shall	Create an audit log for each entity that sends data to the PHR	Data Transaction-Audit & Logging	Core	IBM-205-21; IBM-207-21	Infrastructure	2.4.1.5	3.2 Pre-populating a PHR	IBM-211-09					Duplicate	1.2	3.2	4.4
1	IBM-207-24	NHIN Administration-Audit Trail	Shall	Create an audit log for each entity that sends data to the PHR	Data Transaction-Audit & Logging	Core	IBM-207-21; IBM-205-21	Infrastructure	2.4.1.5	4.2 Updating a PHR	IBM-211-09					Duplicate	1.2	3.2	4.4
1	IBM-209-41	NHIN Administration-Audit Trail	Shall	Create audit log	Data Transaction-Audit & Logging	Core		Infrastructure	2.3.2.6	6.1 Provider access to PHR data EXCEPTION: Given time constraints, the number of potential EHR vendors, and the lack of confirmed standards, it will be difficult to establish this functionality. Also, this functionality is problematic in so far as the a	IBM-211-09					Duplicate	1.2	3.2	4.4
1	CSC-CE-660	NHIN Administration-Consumer Authorization	Shall	Confirm consumer's identity before issuing credentials	Security-Authentication	Edge	CSC-SEC-50	CE - Consumer	2.2.1.1	This needs to be a vendor - consumer physical interaction for the foreseeable future, not an electronic system interaction						Policy	1.2	3.6	4.3
1	ACN-07.15.2	NHIN Administration-Consumer Authorization	Shall	Permit individuals to select which users are restricted from viewing some or all of their data.	Security-Authorization	Edge	N/A	CE - Consumer	2.1.2.0	Individuals must be able to restrict access to all or portions of their data to specific Edge System users.	ACN-07.15.1					Duplicate	1.2	3.6	4.3
1	IBM-103-01	NHIN Administration-Organization Registration	Shall	Register all public health agencies that are authorized to receive biosurveillance data from the CDOs	Security-Authorization	Edge	IBM-104-01	Biosurveillance	1.2.1.0	3.1 Integrated CDOs - Register Authorized PH Agencies	IBM-102-01					Duplicate	1.2	3.6	4.2
1	ACN-07.18.2	NHIN Overarching (ACN)	Shall	Ensure that only required components are enabled/activated for NHIN operating systems.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	Only required access control lists, accounts and services are enabled; all others are disabled or deactivated.	ACN-07.18.1 ACN-07.18.2 ACN-07.18.3 ACN-07.18.4					Duplicate		3.5	4.4
1	ACN-07.18.3	NHIN Overarching (ACN)	Shall	Ensure that only required components are enabled/activated for NHIN applications.	Non-Functional-Robustness	Core	N/A	Infrastructure	No Reference	Only required access control lists, accounts and services are enabled; all others are disabled or deactivated.	ACN-07.18.1 ACN-07.18.2 ACN-07.18.3					Duplicate		3.5	4.4
1	IBM-304-09	Repositories	Shall	Store lab test results in data repository and note restrictions for use (providers of care list, patient consent restrictions or sensitivity restrictions)	Data Storage-Persistent Data Storage	Edge	IBM-304-01; IBM-302-01	EHR - Lab	3.4.1.4	1.4 Data Repository Processes New Results	IBM-314-01					Duplicate	1.5	3.3	4.1
1	IBM-314-06	Repositories	Should	Provide ability to configure amount of time for data storage	Data Storage-Persistent Data Storage	Edge		EHR - Lab	3.4.y.6	3.2 Data Storage	IBM-314-07					Duplicate	1.5	3.3	4.1
1	IBM-205-16	Repositories	Shall	Transmit data according to web-based security standards (SSL, etc.)	Data Transaction-(Push)	Core	IBM-205-04	Infrastructure	2.2.2.4x	3.2 Pre-populating a PHR	IBM-209-36					Duplicate	1.5	3.2	4.4
1	IBM-207-16	Repositories	Shall	Transmit data according to web-based security standards (SSL, etc.)	Data Transaction-(Push)	Core	IBM-207-04	Infrastructure	2.1.5.2x	4.2 Updating a PHR	IBM-205-17					Duplicate	1.5	3.2	4.4
1	IBM-207-17	Repositories	Shall	Transmit data according to HITSP standards	Data Transaction-(Push)	Core		Infrastructure	2.1.5.2x	4.2 Updating a PHR	IBM-205-17					Duplicate	1.5	3.2	4.4
1	IBM-209-35	Repositories	Shall	Transmit data according to web-based security standards (SSL, etc.)	Data Transaction-(Push)	Edge		CE - Consumer	2.3.2.2x	6.1 Provider access to PHR data	IBM-209-36					Duplicate	1.5	3.2	4.3
1	IBM-304-21	Repositories	Shall	Automatically transmit lab test results to EHR of ordering provider (in local or remote marketplace)	Data Transaction-(Push)	Edge	IBM-311-01	EHR - Lab	3.4.1.5z	1.4 Data Repository Processes New Results This action depends on providers preferences and whether they want to receive or not receive results automatically or as specified in clinician's lab order message	IBM-304-18					Duplicate	1.5	3.2	4.1
1	IBM-304-22	Repositories	Shall	Automatically transmit lab test results to EHR of other providers of care who are not ordering clinician (local or remote marketplace) if appropriate based copy to directions in lab order and provider preferences to receive or not receive results automatically	Data Transaction-(Push)	Edge	IBM-311-01	EHR - Lab	3.4.1.5z	1.4 Data Repository Processes New Results	IBM-304-19					Duplicate	1.5	3.2	4.1
1	CSC-ALL-220	RLS	Shall	Resolve patient identity ambiguities, based on patient demographic attributes, and patient identity mapping algorithms.	Information Location-Identity/Information Correlation	Core		Infrastructure			NGIT-008					Duplicate	2.2	3.4	4.4
1	CSC-ALL-290	RLS	May	Allow identities to be determined from other identifiers associated with the patient.	Information Location-Identity/Information Correlation	Core		Infrastructure			CSC-ALL-300					Duplicate	2.2	3.4	4.4
1	CSC-ALL-310	RLS	May	Persist a list of other SNOs that have been queried in the past for information on a patient.	Information Location-Identity/Information Correlation	Core		Infrastructure			IBM-307-28					Duplicate	2.2	3.4	4.4
1	IBM-205-10	RLS	Should	Employ zero tolerance matches for consumer initiated queries through the NHIN	Information Location-Record Location	Core	IBM-205-06	Infrastructure	2.2.2.3x	3.2 Pre-populating a PHR In the context of consumer initiated queries from the NHIN, it is only appropriate to display fully validated results. Queries may be validated via questions regarding point of care, etc. To be determined by community.	IBM-207-10					Policy	2.2	3.4	4.4
1	IBM-207-08	RLS	Shall	Support HL7 R2.4 and 3.0 feeds as incoming queries	Information Location-Record Location	Core		Infrastructure	2.1.5.2x	4.2 Updating a PHR	IBM-205-08					Duplicate	2.2	3.4	4.4
1	IBM-207-09	RLS	Shall	Return one or more patients to the requesting consumer who meet the community defined minimum level of matching probability	Information Location-Record Location	Core	IBM-207-06	Infrastructure	2.2.2.3x	4.2 Updating a PHR The community minimum level of matching probability should minimize false positives. "Fuzzy" matches should not be allowed. Wild card searches should not be allowed. A national identification number should not be required. Local Identif	IBM-205-09					Duplicate	2.2	3.4	4.4
1	IBM-207-10	RLS	Should	Employ zero tolerance matches for consumer initiated queries through the NHIN	Information Location-Record Location	Core	IBM-207-06	Infrastructure	2.1.5.2x	4.2 Updating a PHR In the context of consumer initiated queries from the NHIN, it is only appropriate to display fully validated results. Queries may be validated via questions regarding point of care, etc.	IBM-205-10					Duplicate	2.2	3.4	4.4
1	IBM-207-11	RLS	Shall	Not return any clinical data; RLS shall only present links to appropriate data for NHIN queries	Information Location-Record Location	Core	IBM-207-06	Infrastructure	2.1.5.2x	4.2 Updating a PHR	IBM-207-11					Duplicate	2.2	3.4	4.4
1	IBM-209-16	RLS	Shall	Support HL7 R2.4 and 3.0 feeds as incoming queries	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data	IBM-205-08					Duplicate	2.2	3.4	4.4
1	IBM-209-18	RLS	Shall	Return one or more patients to the requesting clinician who meet the community defined minimum level of matching probability	Information Location-Record Location	Core	IBM-209-13; IBM-209-14	Infrastructure	2.3.1.2x	3.2 Pre-populating a PHR The community minimum level of matching probability should minimize false positives. "Fuzzy" matches should not be allowed. Wild card searches should not be allowed. A national identification number should not be required. Local I	IBM-205-09					Duplicate	2.2	3.4	4.4
1	IBM-209-20	RLS	Shall	Not return any clinical data; RLS shall only present links to appropriate data	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data	IBM-207-11					Duplicate	2.2	3.4	4.4
1	IBM-209-22	RLS	Shall	Present the retrieved records to allow for aggregation	Information Location-Record Location	Core		Infrastructure	2.3.1.2x	6.1 Provider access to PHR data	IBM-207-13					Duplicate	2.2	3.4	4.4

Appendix I
to Functional Requirements Needed for the
Initial Definition of a Nationwide Health Information Network
(NHIN)

Report Prepared by the
National Committee on Vital and Health Statistics (NCVHS)

NHIN Architecture Variations
Identified by the
Office of the National Coordinator

DRAFT 4.0

8/30/2006

Mappings and Translations

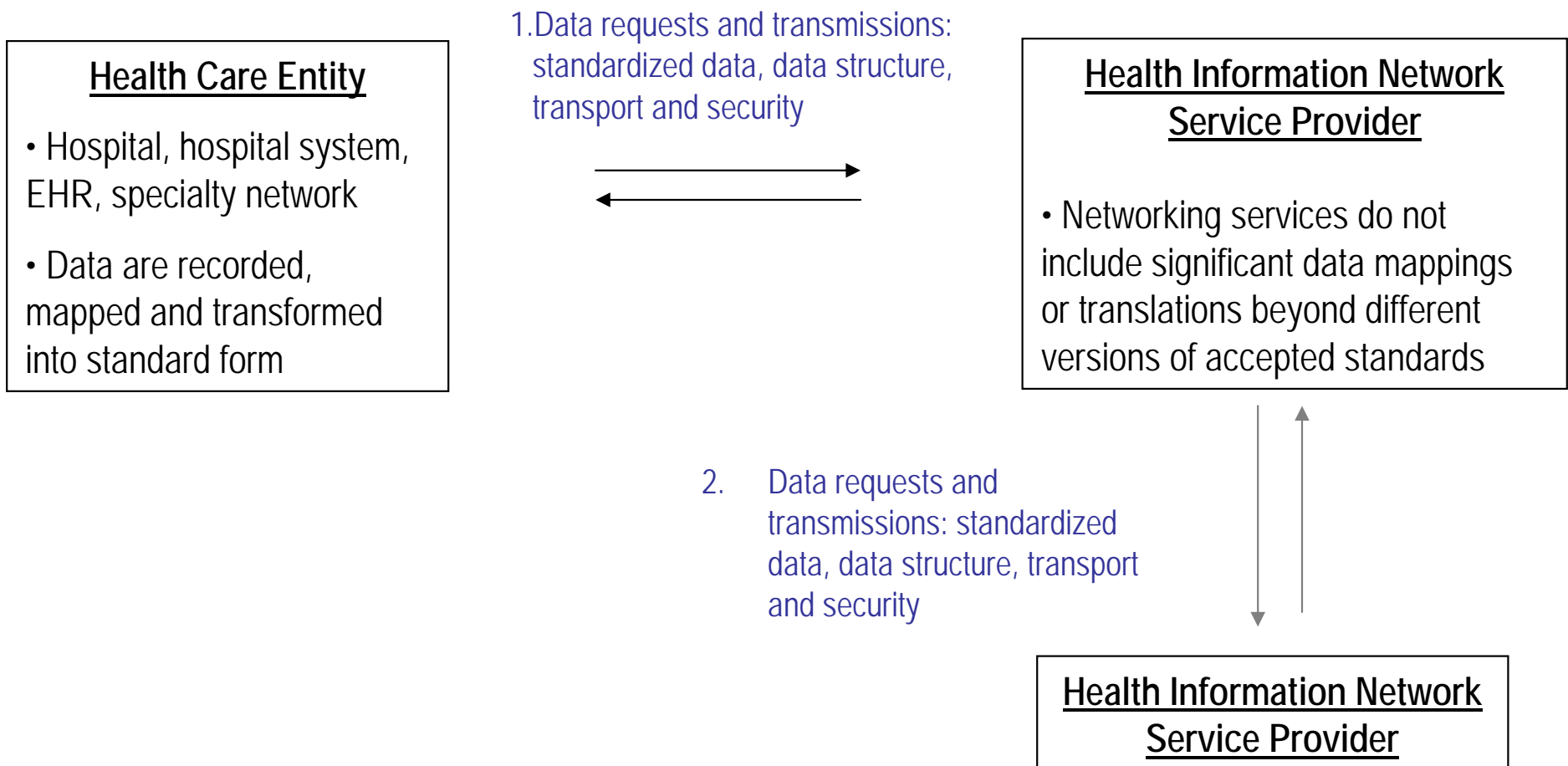
Architecture Variation 1

Health information network service provider:

- a) uses specified terminology, data structure, transport and security standards with all connected health care entities for all transactions
- b) does data mappings and translations to take variable content from health care entities and convert them into standard form for interaction with other health information network service providers
- c) includes as a part of its business model, varying costs of connection to different health care entities based on how well they adhere to specified terminology, data structure, transport and security standards

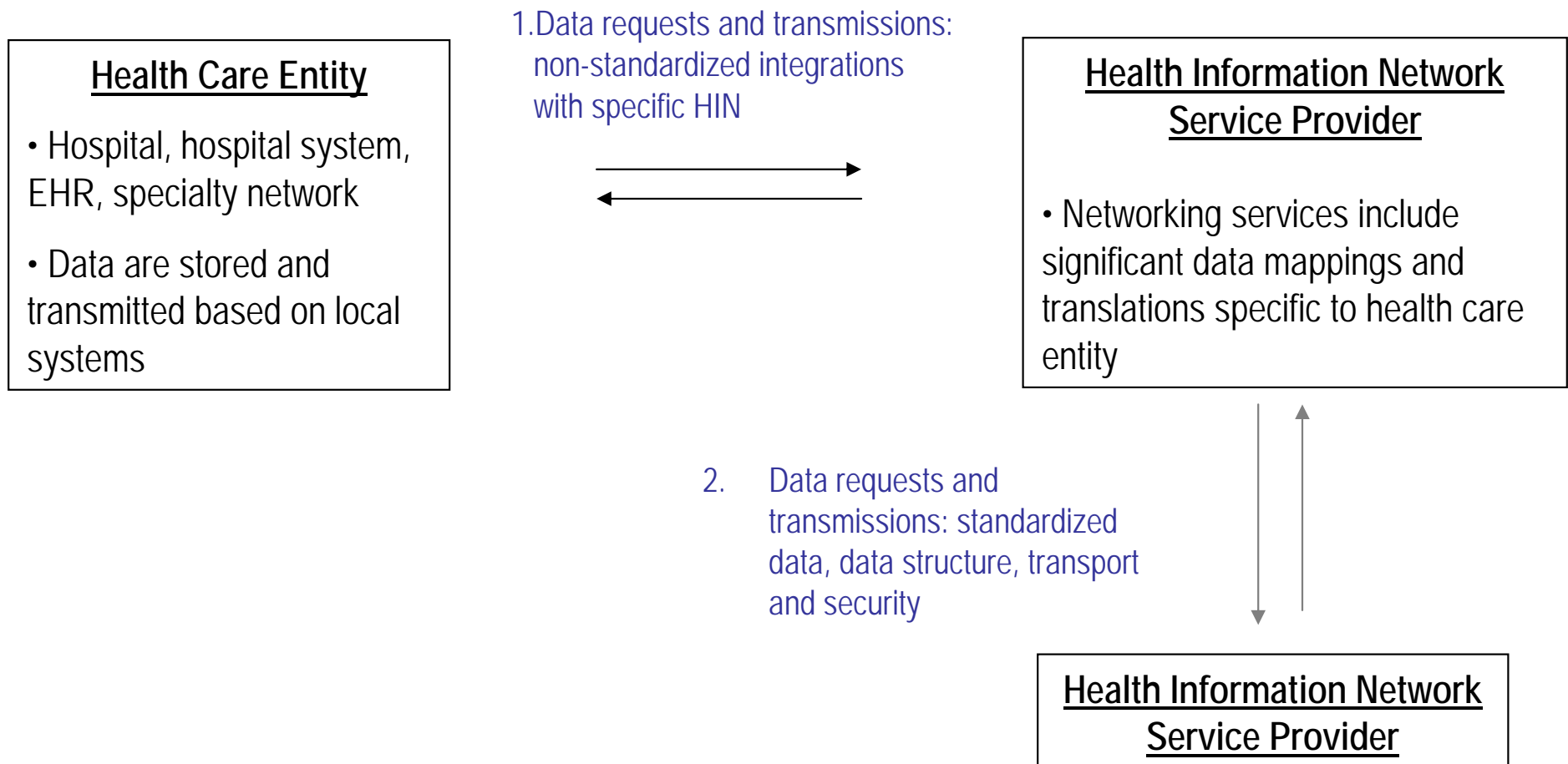
Mappings and Translations Architecture Variation 1-a

Health Information Service Provider uses specified terminology, data structure, transport and security standards with all connected health care entities for all transactions



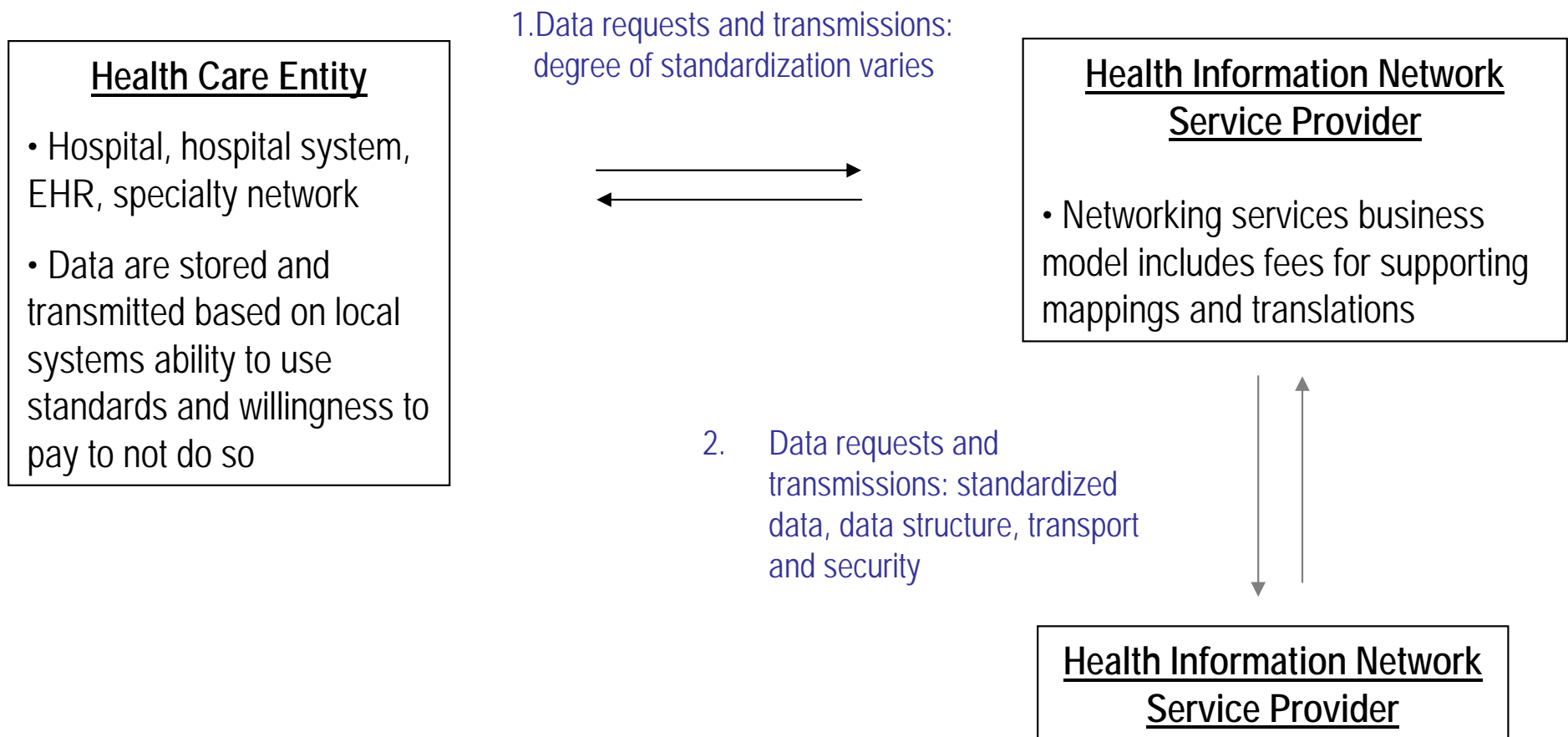
Mappings and Translations Architecture Variation 1-b

Health Information Service Provider does data mappings and translations to take variable content from health care entities and convert them into standard form for interaction with other health information network service providers



Mappings and Translations Architecture Variation 1-c

Health Information Service Provider includes, as a part of its business model, varying costs of connection to different health care entities based on how well they adhere to specified terminology, data structure, transport and security standards



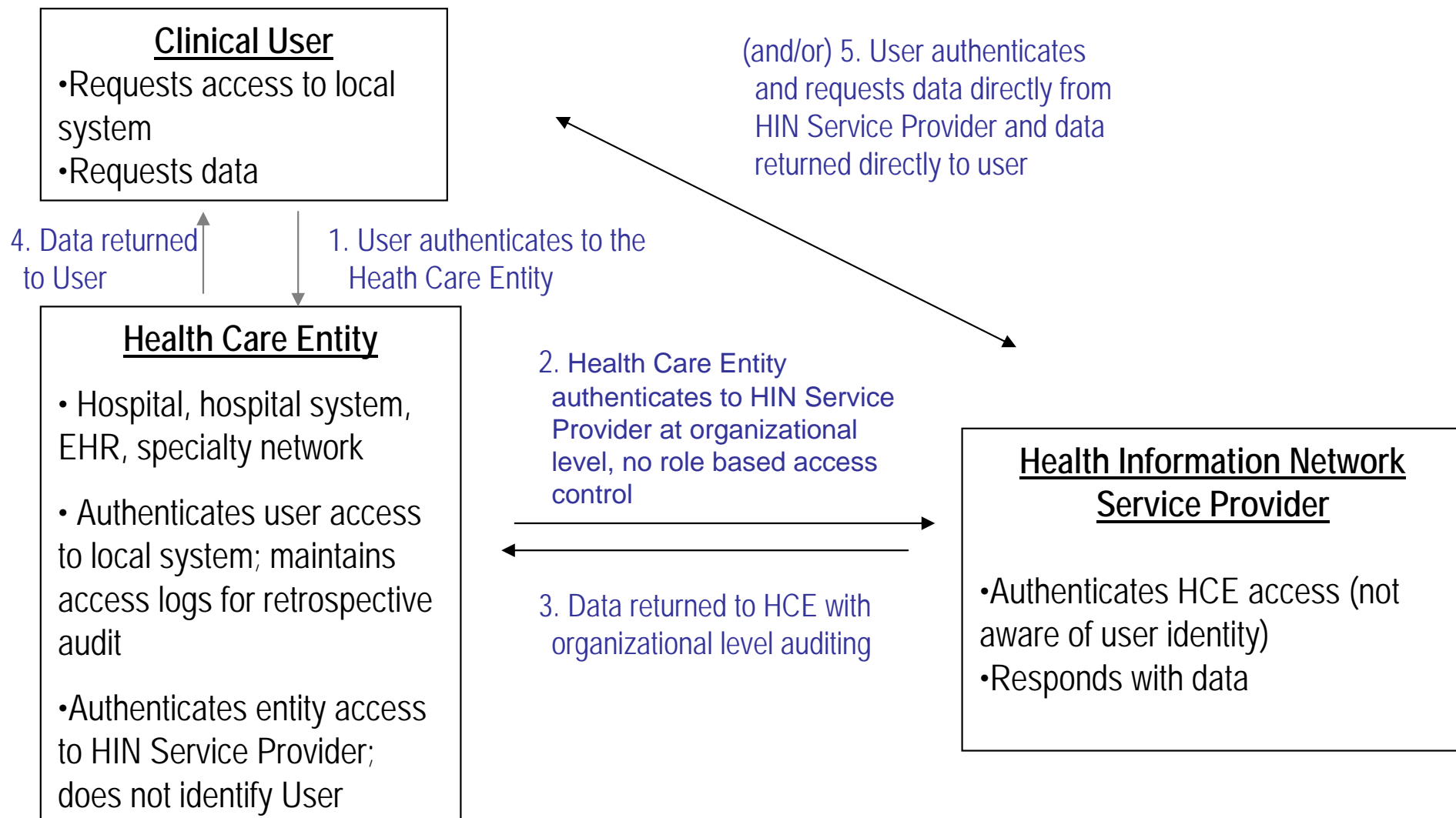
Audit and Access Control Architecture Variation 2

Health information network service provider supports:

- a) auditing of cross organization data access at the health care entity level so that inappropriate data retrieval can be retrospectively identified (the health care entity is responsible for auditing the specific provider of care requesting the retrieval)
- b) auditing of cross organizational data access at the provider of care level through metadata shared by the requesting organization
- c) Patient-to-provider registry and access control provided by HIN Service Provider – *not security by retrospective auditing*
- d) supports consumer controlled role based access to cross organizational data access

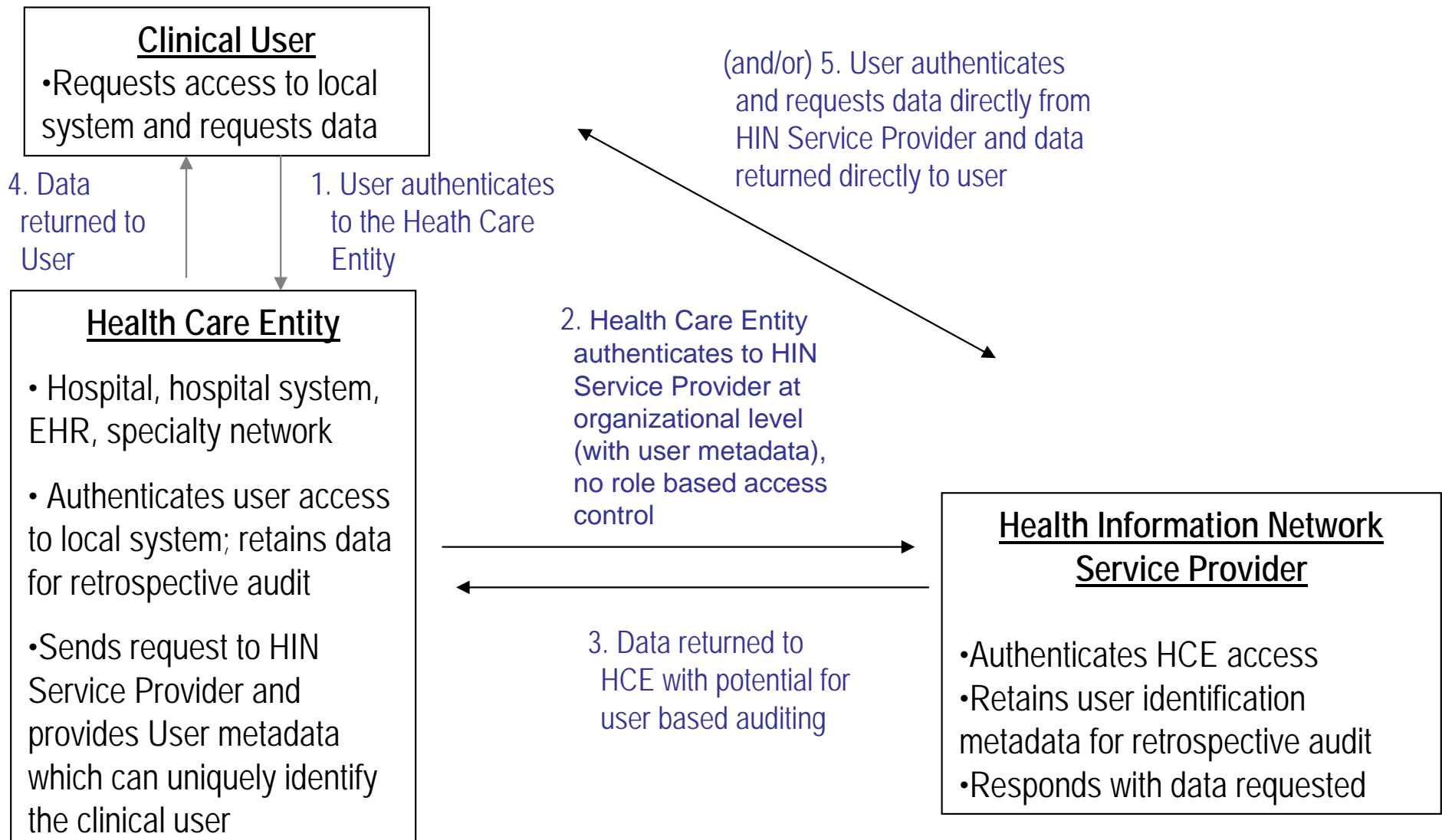
Audit and Access Control Architecture Variation 2-a

Health Information Service Provider supports auditing of cross organization data access at the health care entity level so that inappropriate data retrieval can be retrospectively identified (the health care entity is responsible for auditing the specific provider of care requesting the retrieval)



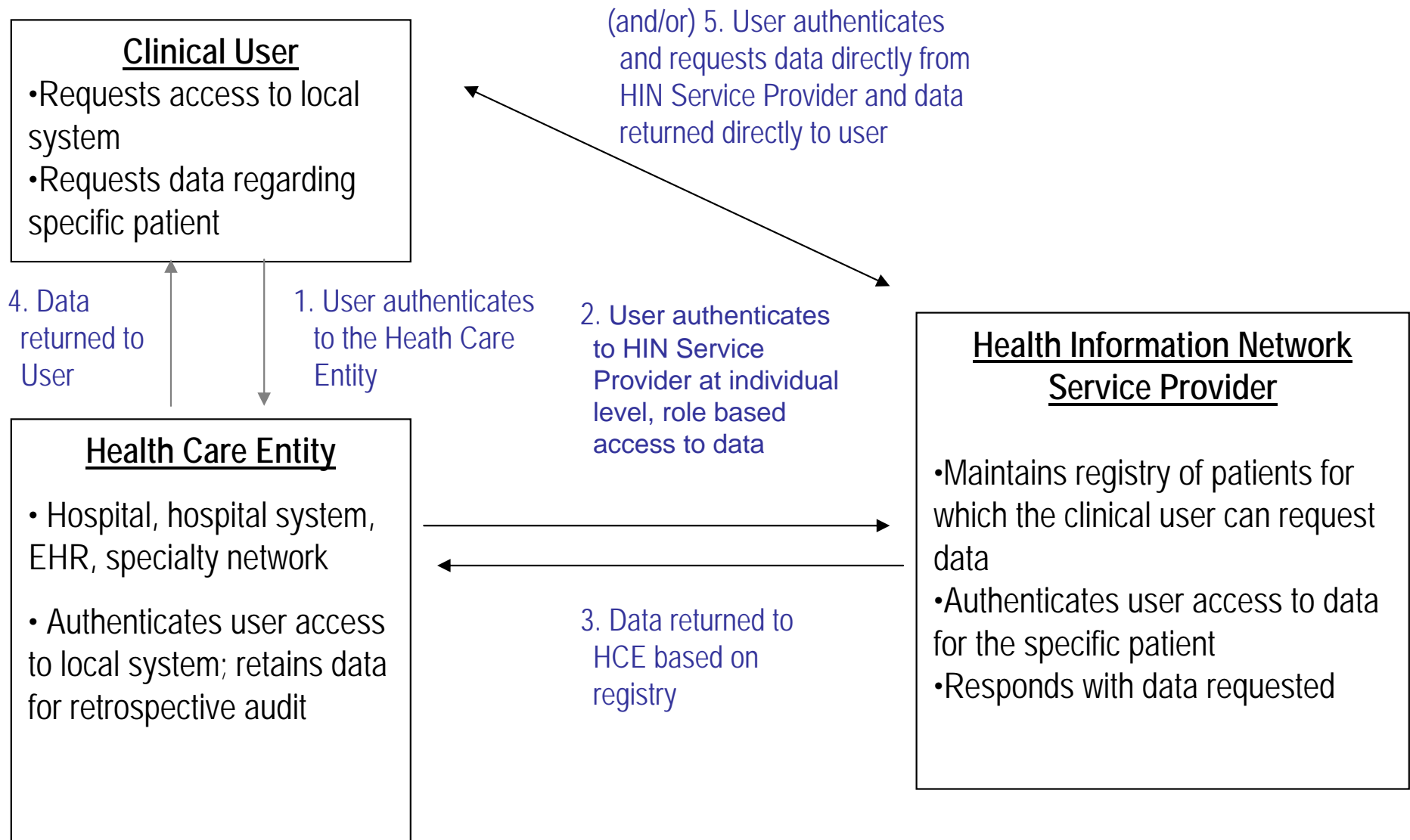
Audit and Access Control Architecture Variation 2-b

Health Information Service Provider supports auditing of cross organizational data access at the provider of care level through metadata shared by the requesting organization



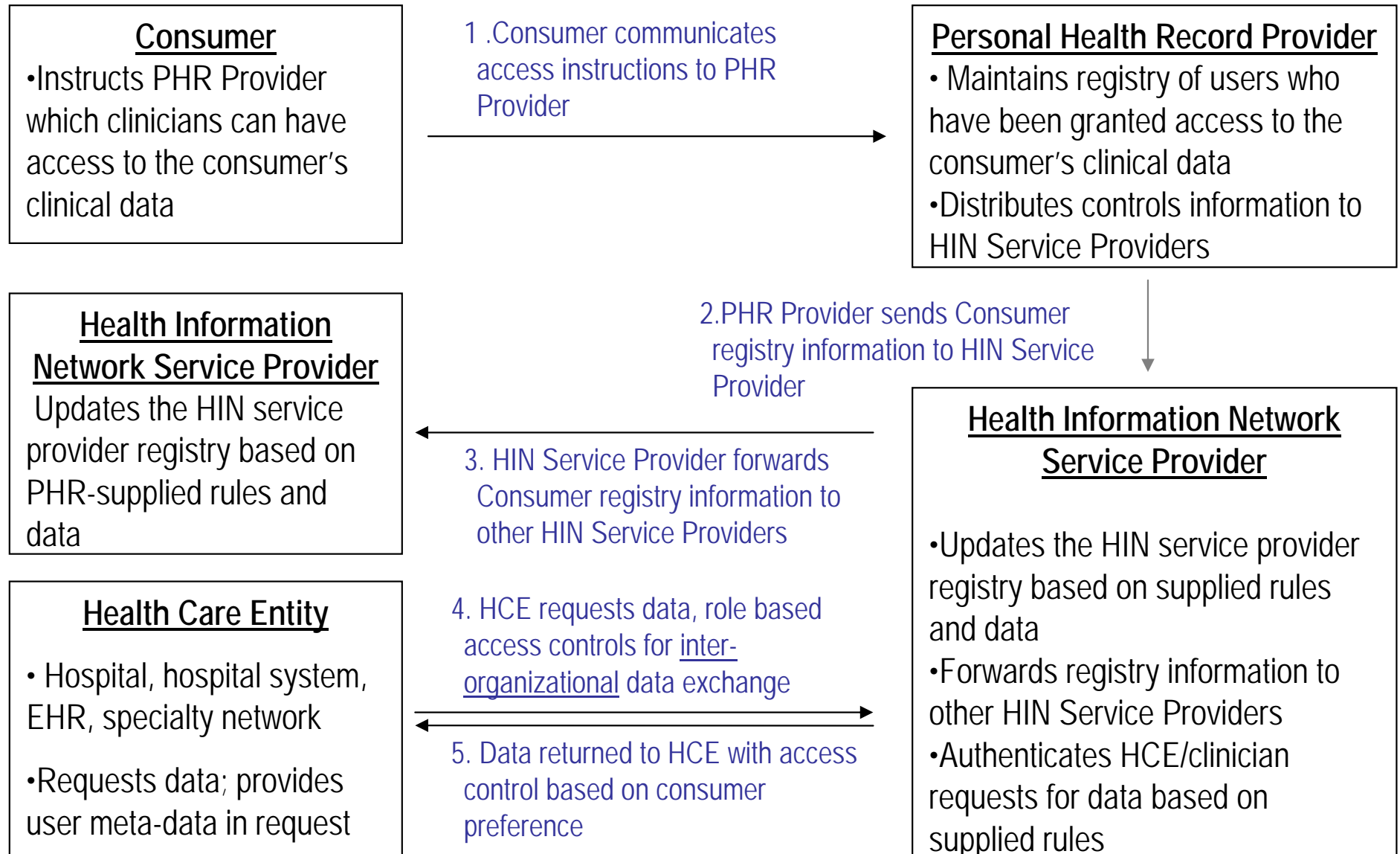
Audit and Access Control Architecture Variation 2-d

Health Information Network Service Providers support Patient-to-Provider registry and access control – not security by retrospective auditing



Audit and Access Control Architecture Variation 2-e

Health Information Service Provider supports consumer controlled role based access to cross organizational data access



Record Locator Services

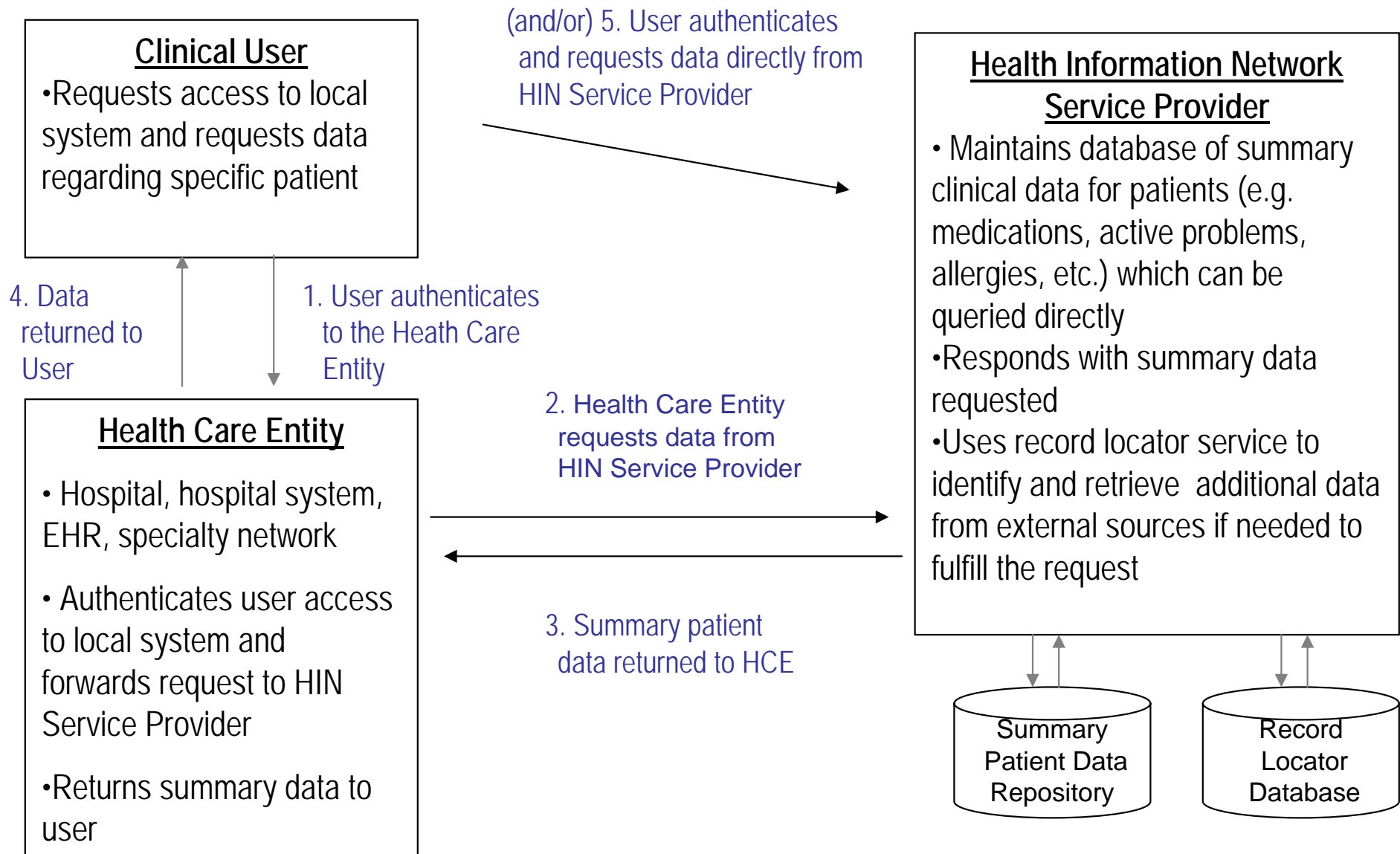
Architecture Variation 3

Health information network service provider supports retrieval of patient data:

- a) Via shared record locator service that also uses summary data in a regional repository
- b) Via shared record locator service that includes information on what kinds of data can be found at different organizations
- c) Via record locator service exclusively indicates that patient data exists at an organization, but with no indication of what those data are (data are returned through the network)
- d) Via shared record locator service that indicates where data exist and data are then retrieved directly from the relevant data source

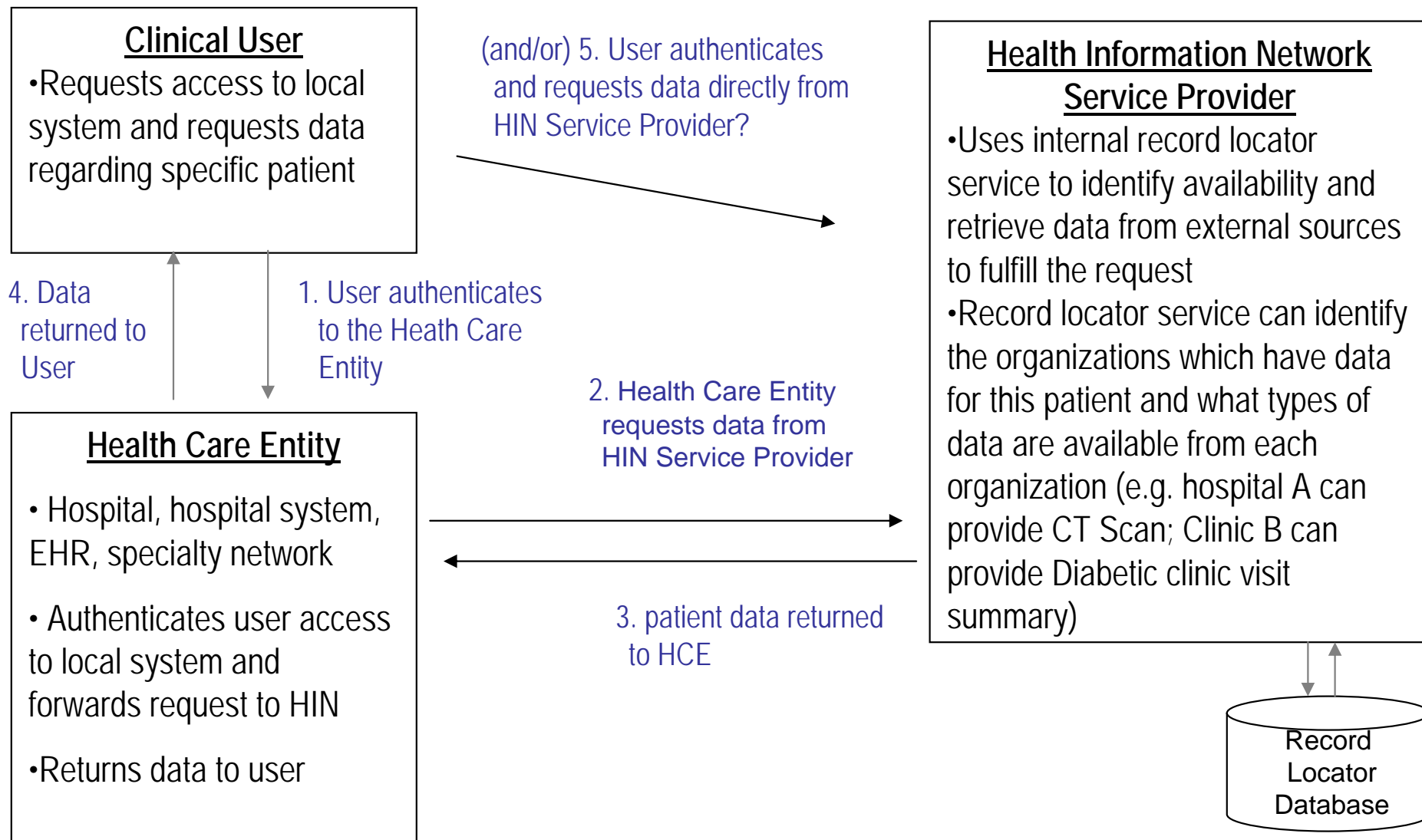
Record Locator Services Architecture Variation 3-a

Health Information Service Providers support retrieval of patient data via shared record locator service that also uses summary data in a regional repository



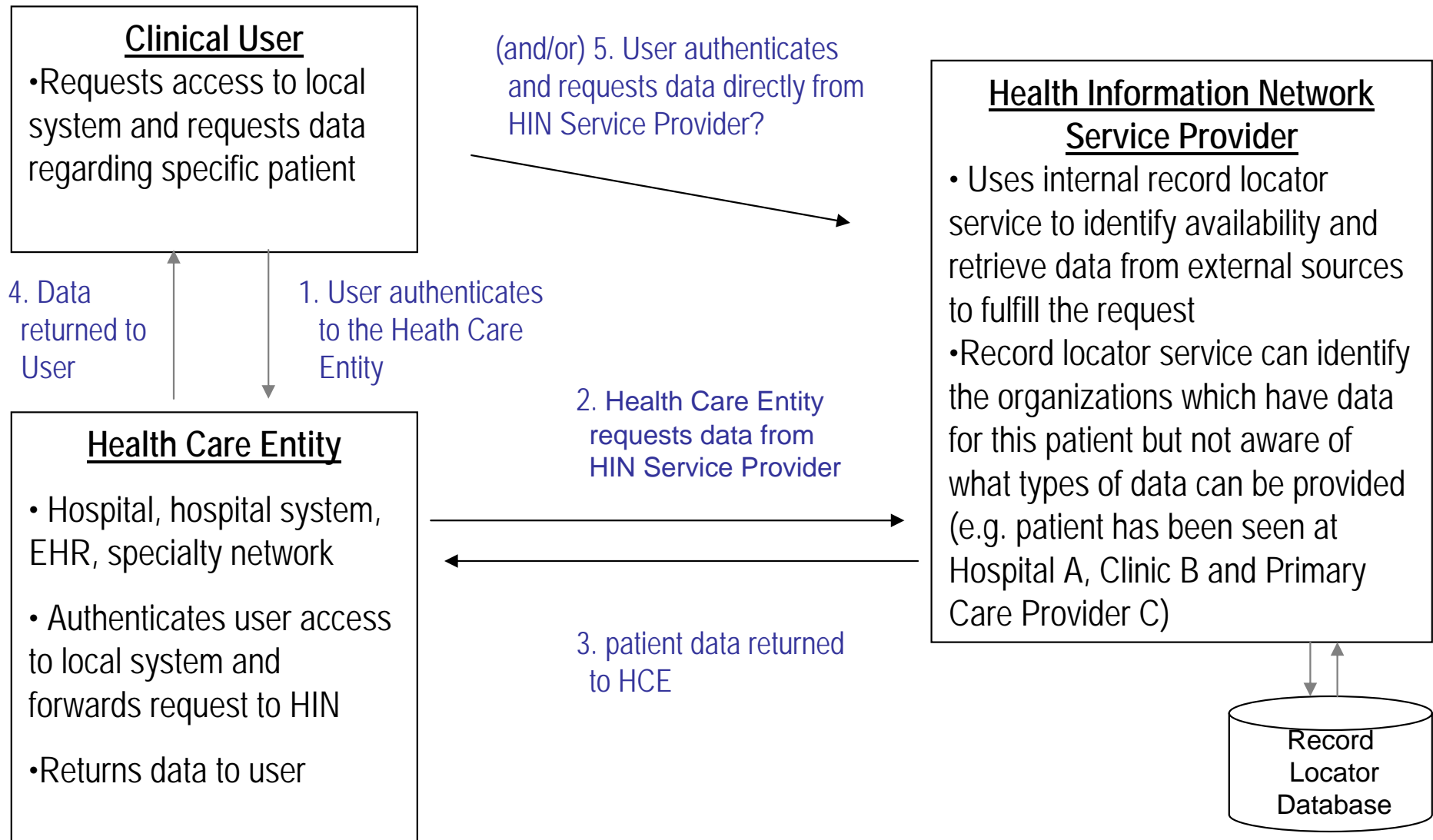
Record Locator Services Architecture Variation 3-b

Health Information Service Providers support retrieval of patient data via shared record locator service that includes information on what kinds of data can be found at different organizations



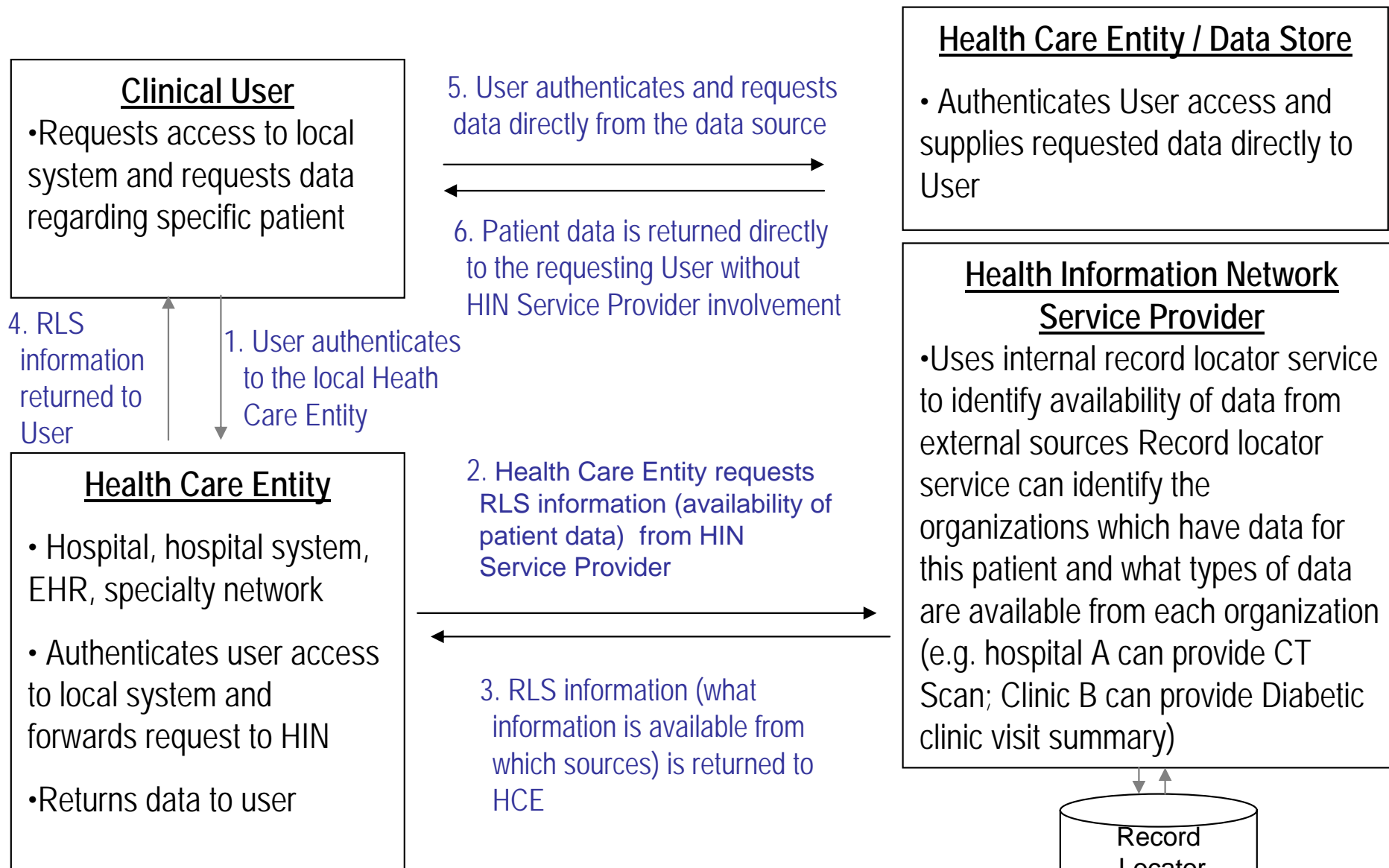
Record Locator Services Architecture Variation 3-c

Health Information Service Providers support retrieval of patient data via record locator service exclusively indicates that patient data exists at an organization, but with no indication of what those data are (data are returned through the network)



Record Locator Services Architecture Variation 3-d

Health Via shared record locator service that indicates where data exist and data are then retrieved directly from the relevant data source



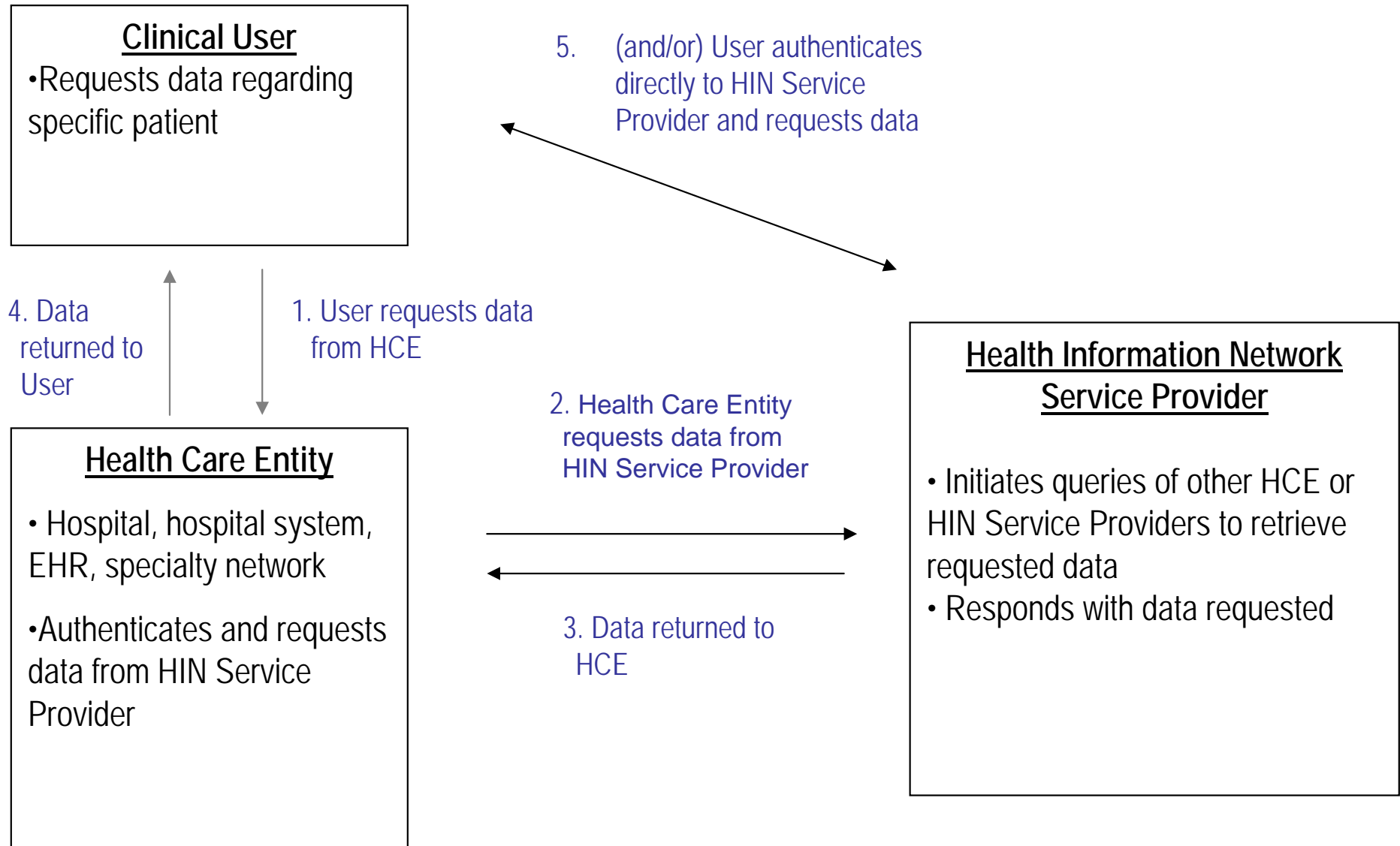
Pull vs Push Architecture Variation 4

Health information network service provider :

- a) Supports only the “pulling” of data on request
- b) Supports the routing of new data, data updates, referrals etc. to the provider of care

Pull vs Push Architecture Variation 4-a

Health Information Network Service Provider supports only the “pulling” of data on request



Pull vs Push Architecture Variation 4-c

Health Information Network Service Provider supports the routing of data to the provider of care via the local health care entity

