



March 25, 2011

RE: Response to RFC #201101-01
Anita Massey, NC HIE Project Manager

Dear Ms. Massey:

Verizon welcomes this opportunity to submit this response to RFC #201101-01 for providing a Health Information Exchange (HIE) solution to the North Carolina Health Information Exchange (NC HIE).

The Verizon Healthcare industry team focuses on using new technologies to assist healthcare workers in the improvement of patient care, information management and security.

In the past several years, there has been an increased public awareness of issues related to healthcare quality, costs, patient privacy, access and information. As a logical extension of our valued voice/data communication services and a commitment to providing a wide range of technology solutions and consulting services to the Healthcare and Health IT arenas, Verizon has partnered with industry leaders MEDfx and Oracle to develop an open, standards-based HIE solution as a service (HIEaaS). We selected our partners because of their strength, presence in the HIE marketplace and because of their leadership in National Health Information Network Activities (NHIN) by —

- Becoming the first to use the National Health Information Network (NHIN) to process SSA disability determination request.
- Co-authoring the Data Use and Reciprocal Support Agreement (DURSA).
- Being among the first to CMS via NHIN participating in the C-HIEP project to enhance the ability for communication and coordination of care across multiple settings.

The Verizon Health Information Exchange (Verizon HIE) is a highly secure and flexible cloud-based solution designed to provide unparalleled, collaborative health information exchange to connect Healthcare delivery organizations, their patients, doctors, labs and any other eligible providers/payers requiring access to information.

The Verizon Business Healthcare vertical team, along with senior management, is committed to establishing a solid relationship with the North Carolina HIE by identifying the important technical functions of Verizon's Health Information Exchange (VHIE).

Verizon Business' Solution provides a cost-effective way for providers to extend their services and market reach while managing operational costs.

In order to successfully implement a robust HIE, it is important to partner with a strong Healthcare Technology Solutions Provider who can provide a powerful secured network, thought leadership, integration excellence, a variety of skilled Healthcare resources and the long-term commitment of senior executives to be leaders in this space.

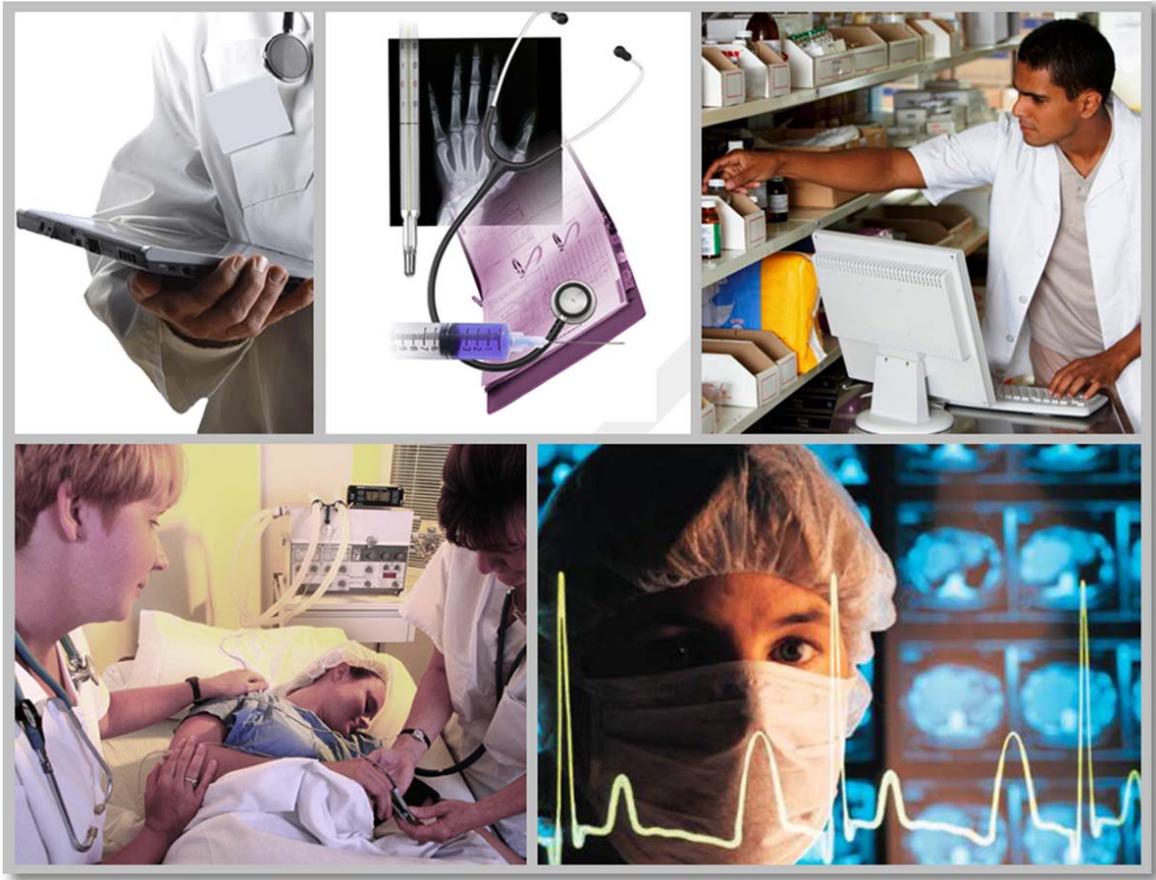
Verizon understands that healthcare in North Carolina is becoming increasingly sophisticated, with pressures to reduce cost, maintain the highest levels of patient privacy and improve operational complexities. Upon further discussion, Verizon Business and the NC HIE can work together to determine the true size and scope as well as implementation specifics concerning a Health Information Exchange deployment.

Thank you for your consideration of this response. Should you have any questions or if you would like additional information, feel free to contact me.

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Verizon Health Information Exchange



**A Response
to the
North Carolina Health Information Exchange (NC HIE)
Request for Comments (RFC) #201101-01**

March 25, 2011

Presented by:

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Respondent Information

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Verizon HIE Platform

HIE platform currently in use or development.

Designed by industry leaders with extensive expertise in the deployment and management of healthcare transactions, the Verizon HIE offers a complete Health Information Exchange service leveraging the Verizon Network.

The Verizon HIE is an internet-based health information exchange that complies with federal and state standards, laws, and policies and enables NC HIE health care providers to achieve meaningful use of health information technology.

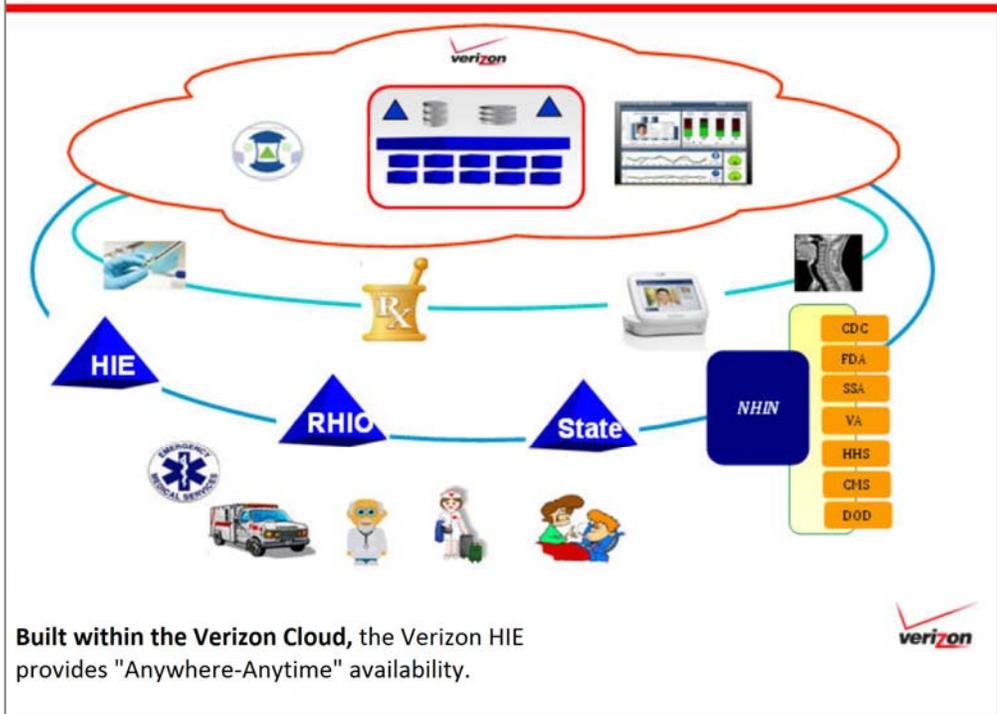
The Verizon HIE is comprised of components necessary to maintain the context and integrity of information being exchanged.

The Verizon Cloud

Verizon offers HIE as a service, meaning that North Carolina doesn't have to license any software from Verizon or buy any hardware to support the HIE infrastructure. Verizon built the HIE infrastructure on our network, following the open source and standards based protocols which provide us with the capability to simply enroll organizations in our HIE solution and rapidly deploy the solution.

The State is not bound to any solution or platform. Verizon provides HIE with the Service Level Agreements (SLAs) to meet HIE deliverables and requirements that North Carolina chooses. Since Verizon has already built the infrastructure, this allows us to implement the North Carolina HIE in a rapid deployment, accelerating the State's Return on Investment while lowering the Total Cost of Ownership.

Transforming the Healthcare Ecosystem

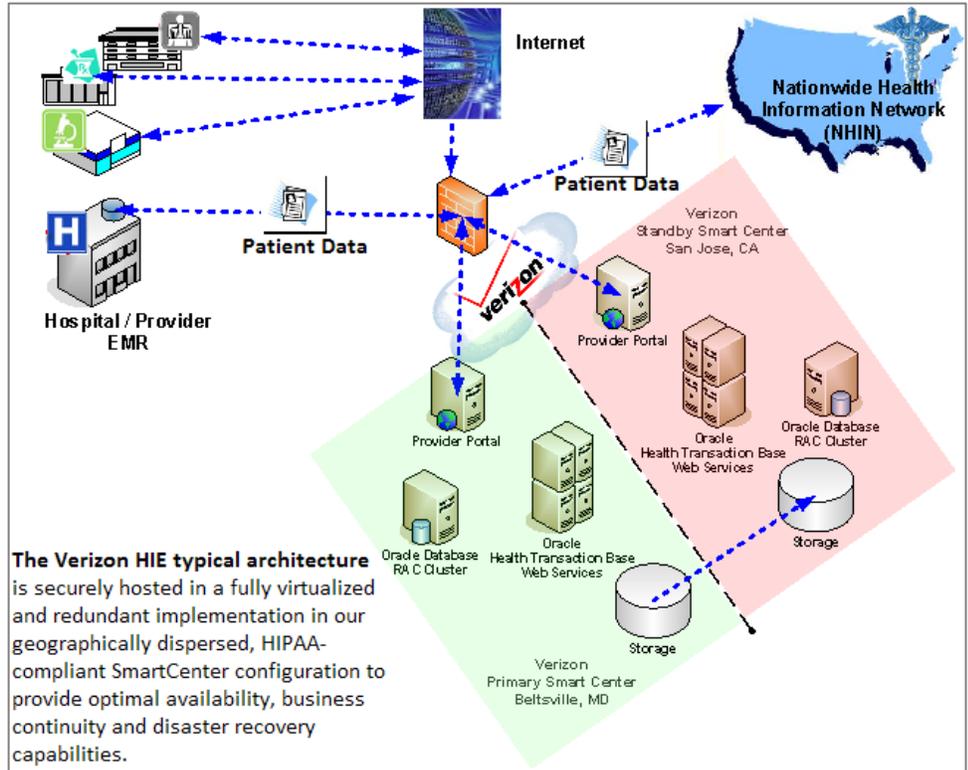


Solution Infrastructure

Verizon maintains state-of-the-art data centers, called SmartCenters, on both the East and West coasts of the United States, ensuring a fully virtualized and redundant solution.

SmartCenters are Verizon's highest security data centers where we deploy the most sensitive solutions that we deliver from the cloud. They implement the highest level security and access requirements, both for virtual access to the system information that resides within them, along with physical access to the facilities themselves.

The Verizon HIE Lifescape Clinical Portal Interface, powered by MEDfx Lifescape, facilitates authorized exchanges among health care professionals, integrates with Electronic Medical Record (EMR) platforms and conforms to data formats including HL7 (v2 and v3 releases), ANSI X12, XML standard as well as non-standard formats.



Security Architecture

The Verizon HIE solution is protected by the Cybertrust security platform which leverages NHIN specifications and agreements such as Data Use and Reciprocal Support Agreement (DURSA).

The Verizon security architecture has been built using a state-of-the-art proprietary correlation and classification technology called State and Event Analysis Machine (SEAM). Security devices generate threat information in the form of logs or alerts which can be used to detect potential security breaches. This threat information is collected using the Local Event Collector (LEC) or Connection Kit (CK) and sent to Verizon's SEAM engine. Verizon works with each Customer to design a detailed architecture to securely transfer logs via an SSL/VPN tunnel from a Local Event Collector (LEC) and/or Connection Kit (CK) installed on the customer's premises to the SMC.

SEAM is used to filter out millions of benign security events and escalate incidents that are more likely to pose a threat to the Customer.

User-Friendly, Intuitive Design

Many of the robust EMR solutions on the market today are thick clients, which means the applications must be installed and reside on a physical computer, which requires doctors to cart computers around on wheels from room to room or find a PC with the specific application installed on it and that is only to get access to the information that exists within that EMR application. The Verizon Lifescape Clinical Portal EMR solution has a zero footprint which allows healthcare providers to access information from any PC, laptop or even handheld device such as a smart phone, creating a truly mobile application which allows caregivers to access information any where at any time.

Our Clinical Portal interface has truly been designed for doctors by doctors. The interface has been in use for the past six years by healthcare providers in the field that use the interface on a day-to-day basis. Over that time, the healthcare providers have provided input into the design and function of the interface about what information should be displayed, how it should be displayed, and even where it should be displayed on the screen. All of which has been incorporated into our solution.

Data Exchange — Entities and Types

Types and number of entities with whom the respondent organization currently exchanges data

The Verizon HIE CONNECTfx and ESB are designed with a flexible, multi-layer architecture, designed for nationwide scalability, easily adapting to the changing demands of local, regional, statewide, or nationwide health information organizations. They utilize the open-source CONNECT framework to enable secure clinical data exchange leveraging the existing infrastructure of state and regional health information exchanges, integrated delivery systems, physician organizations, hospitals, private practices, community-based healthcare projects and the NHIN gateway.

They provide a secure clinical data exchange with SSA, VA, DOD, IHS, and CDC via the NHIN “dial tone” and meet multiple Stage 1 Meaningful Use criteria established by CMS.



Verizon is issuing HITECH compliant medical identity credentials to 2.3 million U.S. physicians and other healthcare professionals at no charge, allowing them to authenticate well

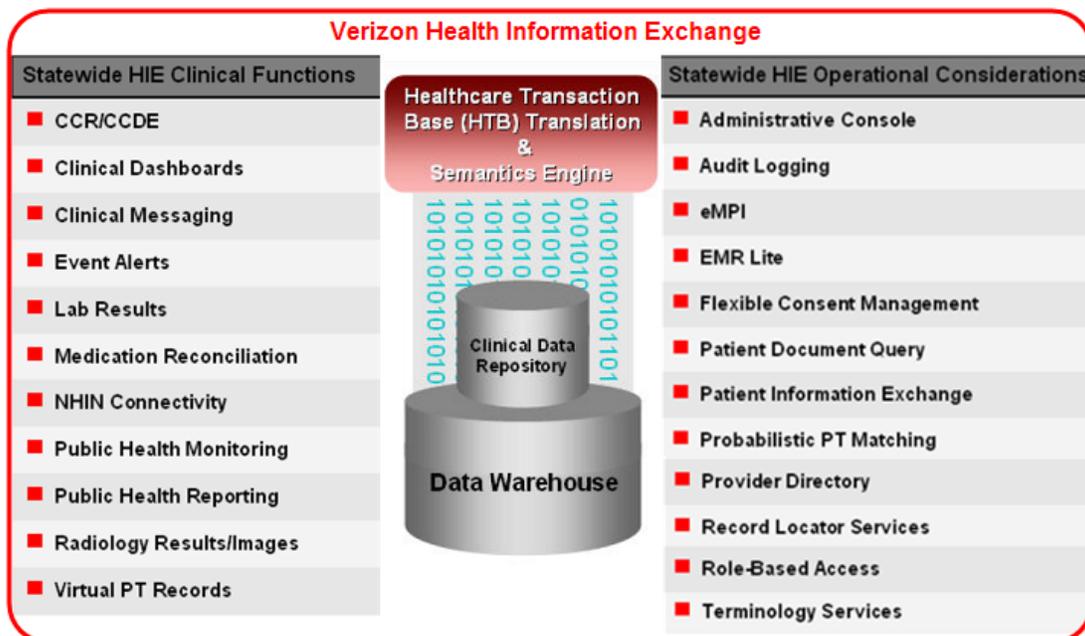
Data Types Currently Exchanged

Cardiology ♦ Claim Attachments ♦ Claim Status ♦ Clinical Patient Notes ♦ Consultations And Referrals
 Continuity Of Care Document (CCD) ♦ Continuity Of Care Record (CCR) ♦ Dental Claims ♦ Dictation Notes
 Digital Chart Information ♦ Discharge Summaries ♦ Disease Management Reporting/Exchange
 Eligibility Inquiry/Response ♦ E-Rx ♦ Home-Based Monitoring Integration ♦ Institutional Claims ♦ Lab
 Medication History ♦ Other Ancillary Results ♦ Other Population Health Reporting/Exchange
 Patient-Entered Care Data (e.g. New Allergy) ♦ Patient-Entered Data from PHR ♦ Patient-Entered Medication Data
 Patient-Entered Preventative Care (E.G. Documentation Of Home Blood Sugar Reading) ♦ Payment Advice
 PBM/Formulary Integration ♦ Professional Claims ♦ Provider Alerts to and from Public Health
 Quality Measure Reporting ♦ Radiology ♦ Referrals and Prior Authorization ♦ Reporting/Receiving Immunization Data

NC HIE Questions & Verizon Responses

NC HIE Question: What types of clinical functions would be helpful for the statewide HIE to support?

The following diagram lists clinical functions and operational considerations for the development and implementation of a successful statewide HIE:



NC HIE Question: What Core and Value-added HIE services are of the most value to your organization and why?

We believe that a statewide HIE should provide —

- Rapid deployment.
- Flexible configurations.
- A secure solution using two-factor authentication.
- Open and standards-based solution.
- A reliable, hosted service to reduce the need for large capital expenditure.

Verizon's HIE Core Solution includes:

- **Intuitive Clinical User Interface.** Access patient health information through an easy to use, powerful and intuitive user interface with high-speed data delivery, custom data views, and zero foot print application so you have access to it virtually anywhere, anytime.
- **Messaging Gateway.** Communicate between applications with different messaging systems in a secure, reliable manner and maintain confidentiality of patient information, authentication of access to information and the integrity of the data being exchanged.
- **Record Locator Service.** Locate patient records across disparate systems and verify the record matches the patient, using a criteria such as first name, last name, address and social security number. This service can also verify that the patient has given consent to make their medical records available, helping to address Health Insurance Portability and Accountability Act (HIPAA) requirements.
- **Enterprise Master Patient Index (EMPI).** Cross reference patient identifiers across multiple information systems to uniquely identify each patient, consolidate duplicate patient records, create complete views of patient information and share data across multiple facilities and information systems in real time.
- **Clinical Messaging Service.** Get patient health information, such as lab reports, radiology reports and transcribed documents, where and when it is needed for patient care.
- **Oracle Healthcare Transaction Base (HTB) Portal.** Manage, merge and display digital medical information made available by the data translation and semantics engine that powers the application.

Verizon HIE's Value Added Benefits/Services include:

- **Security — Sensitive Data Safeguarded.** Verizon's HIE is securely hosted in one of our Smart Centers for a fully virtualized and redundant solution. This not only provides high availability, business continuity benefits, and disaster recovery capabilities, but also includes multi-layered protections designed to safeguard the privacy and security of the sensitive data transported across the HIE, helping you address HIPAA requirements.
- **Patient Privacy — Health Information Fully Protected.** Patient right to privacy is paramount. Interaction with healthcare providers has the potential to create protected health information (PHI) and as such a patient has the right to accept or decline the opportunity to have his or her PHI made available. The identity of healthcare providers and associated vendors is authenticated and validated to confirm their identity and limit access to PHI to only legitimate HIE participants.
- **Integration — Existing Healthcare Information and IT.** Existing Healthcare information and existing IT infrastructure currently in use within an entity can be

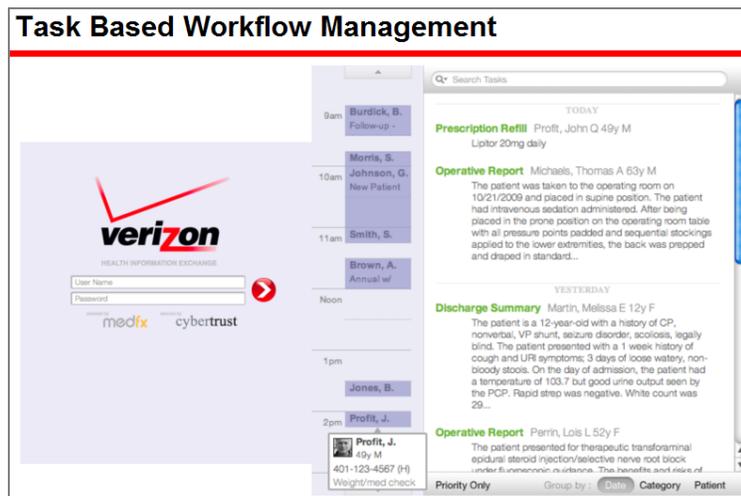
NC HIE Question: If you anticipate exchanging data with NC HIE's statewide services, how would you expect to request information? Additionally, how would you present information you received from statewide HIE services to your users?

HIE interchange functionality should enable Cross-Enterprise Document Sharing (XDS) transformation services that enables the exchange of standards-based documents, such as the HL7 Continuity of Care Document (CCD), using standards recognized by federal regulation.

The Verizon HIE Transformation Service creates Patient Summary Documents using the HL7 Continuity of Care Documents C32, C32+ (specific to Social Security Administration submissions) and C83 (CCD) that summarize a patient's medical status for the purpose of information exchange. The output document, XML formatted, may include administrative (e.g., registration, demographics, insurance) and clinical (problem list, medication list, allergies, test results) information.

Verizon's Clinical Portal interface has truly been designed for doctors by doctors. The interface has been in use for the past six years by healthcare providers in the field that use the interface on a day-to-day basis. Over that time, the healthcare providers have provided input into the design and function of the interface about what information should be displayed, how it should be displayed, and even where it should be displayed on the screen. Their top recommendations (which are included in our portal) have been:

- Ease of Use.
- Intuitive Browser.
- Speed of Data Delivery.
- Provide semantic interoperability to translate terminologies into a language that everyone using the system can understand.



NC HIE Question: Among the Statewide HIE requirements currently being considered by the NC HIE Clinical and Technical Operations Work Group, are there any modifications, additions you would suggest?

In addition to the Statewide HIE requirements currently being considered, Verizon would like to provide additional modifications for consideration.

These additional requirements may be found in Appendices 1-5, the completed NC Core HIE Requirements Matrix. The completed Excel Workbook is also attached to the submission email.

Appendix 1 — NC HIE Core Requirements Matrix - Solution Overview

Capability Area	Capability	Yes or No	Product That Provides This Capability	Comments
"Last Mile" Integration	Remote agent with small footprint with flexible deployment (ability to use current infrastructure or minimal invasion)	Yes	Verizon HIE Edge Server	
	Remote management and deploy/upgrade model	Yes	Verizon HIE Edge Server	
	Ability to push/pull data to/from remote sources (EMR, PMS, etc)	Yes	Verizon HIE Edge Server	
	Ability to initiate general actions at remote location (print, retrieve file, query db)	Yes	Verizon HIE Edge Server	
	Clinician Inbox capability	Yes	Verizon HIE Edge Server	
	Ability to route information via fax	Yes	Verizon HIE Edge Server	
	Ability to scan documents	Yes	Verizon HIE Edge Server	
	Ability to execute custom logic at remote node	Yes	Verizon HIE Edge Server	
	Is this capability delivered via a native product? If a third party solution, please provide the product name and version.	Yes	Verizon HIE Edge Server	
Clinician Portal	Clinician Home Page with customizable links to patient lists, patient search, patient summary and detailed lab and encounter data views	Yes	Verizon HIE	
	Integration with eMPI, Doc Repository and Registry	Yes	Verizon HIE	
	Development tools for customization/extension (and ease of extension/customization)	Yes	Verizon HIE	
	Ability to pull data from federated sources	Yes	Verizon HIE	
	Compliant with JSR 168 and WSRP standards	Yes	Verizon HIE	
	Pluggable Authentication Module support for SSO, support for LDAP, and fine grained role-based authorization	Yes	Verizon HIE	
	All data is viewed in a non-repudiatable fashion. Exactly what was seen by any provider or member at any time is precisely recorded and can be retrieved at will, irrespective to what has happened to the data at some later time.	Yes	Verizon HIE	
	Images residing on a PACS or other image server can be accessed/viewed in real-time	Yes		
	Clinician Messaging, Inbox, Alerts, and Referral capabilities	Yes	Verizon HIE	

Capability Area	Capability	Yes or No	Product That Provides This Capability	Comments
	Integration with NaviNet Portal	Yes	Verizon HIE	
Patient Health Record (PHR)	Integration with PHR vendors for prepopulation of profile (HealthVault, Google Health, and other proprietary PHR)	Yes	Verizon HIE	
	Bi-directional Integration with PHR solution	Yes	Verizon HIE	
	Patient Portal	Yes	Verizon HIE	
	Alerts and Reminders	Yes	Verizon HIE	
	Patient verification workflow prior to PHR pre-population	Yes	Verizon HIE	
	Ability for Patient to interact with provider via secure threaded messaging	Yes	Verizon HIE	
	Patient appointment scheduling and management between patient and provider	Yes	Verizon HIE	
	Ability for patients to submit requests and complete forms online	Yes	Verizon HIE	
eMPI and RLS	Probabilistic Matching Algorithms with ability to set multiple thresholds for each search	Yes	Verizon HIE	
	Deterministic Matching Algorithms	Yes	Verizon HIE	
	Ability to combine Probabilistic and Deterministic matching algorithms	Yes	Verizon HIE	
	Hierarchical MPI capabilities - allows for sub MPIs managed separately that roll up to overarching MPI	Yes	Verizon HIE	
	Master data management capabilities (e.g. auto-deduplication) and user screens to support this work	Yes	Verizon HIE	
	Installations at scale (>5M patients)	Yes	Verizon HIE	
	Remote synchronization capabilities	Yes	Verizon HIE	
	Supports PIX/PDQ and XCPD/XCA	Yes	Verizon HIE	
	Can generate summary care record from disparate patient data	Yes	Verizon HIE	
	Supports ability to make IHE compliant patient discovery calls to distributed sources, retrieve, and aggregate patient information as a result of a single patient discovery request	Yes	Verizon HIE	
	Support a Hybrid model for both EMPI and RLS	Yes	Verizon HIE	
	Out of box support for Provider Directory in addition to Master Patient Index	Yes	Verizon HIE	

Capability Area	Capability	Yes or No	Product That Provides This Capability	Comments
Document Repository	Ability to store original document, translated/transformed versions, and meta data info across all versions	Yes	Verizon HIE	
	Document meta data and version management UI	Yes	Verizon HIE	
	Federated storage model support (Distributed Document Repository components)	Yes	Verizon HIE	
	IHE compliance (XDS.b)	Yes	Verizon HIE	
	Out of box integration with Portal , eMPI, Registry	Yes	Verizon HIE	
	Installations at scale (>5M patients)	Yes	Verizon HIE	
Document Registry	Integration with eMPI and Document Repository	Yes	Verizon HIE	
	Turn key installation with basic configuration driven install	Yes	Verizon HIE	
	Auto registration and update capabilities as MPI and Document Repository are updated	Yes	Verizon HIE	
	IHE Standards compliance	Yes	Verizon HIE	
Integration Engine				
	Powerful and extensive out of box HL7 handling features	Yes	Verizon HIE	
	Rich development and transformation user UI and tools with prepackaged HL7 transformations	Yes	Verizon HIE	
	Integration Layer Management console	Yes	Verizon HIE	
	Service Mediation and Orchestration capabilities	Yes	Verizon HIE	
	Service creation (ability to expose components as services) and Service Registry	Yes	Verizon HIE	
	Encrypted messaging	Yes	Verizon HIE	
	IHE standards support (WS*, ATNA, XACML, XSPA, etc)	Yes	Verizon HIE	
	Full NHIN Gateway service support (NHIN Gateway emulation)	Yes	Verizon HIE	

Capability Area	Capability	Yes or No	Product That Provides This Capability	Comments
Terminology mapping (Nomenclature Normalization)	Ability to upload and store local to community terminology translation tables	Yes	Verizon HIE	
	Administration tools for managing translation tables	Yes	Verizon HIE	
	Ability to expire terminologies or terms	Yes	Verizon HIE	
	Ability to make external calls to external terminology service	Yes	Verizon HIE	
	Ability to apply terminology translations to in flight messages	Yes	Verizon HIE	
	Ability to apply terminology reconciliation and standardization prior to storage in central CDR	Yes	Verizon HIE	
	Ontological framework available for defining data and translation rules	Yes	Verizon HIE	
	Translation rules versioning and deployment tools	Yes	Verizon HIE	
Clinical Data Repository	Real-time normalized and consolidated data repository for unified view of patients	Yes	Verizon HIE	
	Turnkey Integration solutions and tools for importing data	Yes	Verizon HIE	
	Included Clinical Data types: clinical laboratory test results, patient demographics, pharmacy information, radiology reports and images, pathology reports, hospital admission/discharge/transfer dates, ICD-9 codes, discharge summaries, and progress notes	Yes	Verizon HIE	
	Included Financial Data types: claims, payments, pre-authorizations	Yes	Verizon HIE	
	Integrated flexible data access security model	Yes	Verizon HIE	
	Encrypted data storage	Yes	Verizon HIE	
	Ability to store clinical event data in a flexible fashion (no dependency on order)	Yes	Verizon HIE	
	Ability to store clinical data flexibly (able to define data field requirements as optional)	Yes	Verizon HIE	

Capability Area	Capability	Yes or No	Product That Provides This Capability	Comments
BI Capabilities	Quality Reporting and Analytics	Yes	Verizon HIE	Q3 2011
	Support for PQRI	Yes	Verizon HIE	Q3 2011
	Support for HEDIS	Yes	Verizon HIE	Q3 2011
	Public Health Reporting	Yes	Verizon HIE	Q3 2011
	Biosurveillance	Yes	Verizon HIE	Q3 2011
	Population Management Reporting	Yes	Verizon HIE	Q3 2011
	Gaps in Care	Yes	Verizon HIE	Q3 2011
	Patient Centered Medical Home (PCMH) Reporting	Yes	Verizon HIE	Q3 2011
	Accountable Care Organization (ACO) Reporting	Yes	Verizon HIE	Q3 2011
	Other Pay for Performance Model Reporting	Yes	Verizon HIE	Q3 2011
	Clinician Performance Management	Yes	Verizon HIE	Q3 2011
	High Risk Patient Identification	Yes	Verizon HIE	Q3 2011
	Meaningful Use Reporting	Yes	Verizon HIE	Q3 2011
	Provider Dashboards	Yes	Verizon HIE	Q3 2011
	Provider workbench to manipulate data to create new views and reports (adhoc queries)	Yes	Verizon HIE	Q3 2011
	Anonymization	Yes	Verizon HIE	Q3 2011
	Pseudo-anonymization/De-Identification and Re-Identification Capabilities	Yes	Verizon HIE	Q3 2011
	Security - Federated Security Capabilities	Integrated authc and authz solution across components	Yes	Verizon HIE
Extensible role-based authorization framework		Yes	Verizon HIE	
SAML, XSPA		Yes	Verizon HIE	
Security Provisioning & Identity Management	Powerful provision once console that maintains authc and authz stores	Yes	Verizon HIE	
	Flexible provisioning and workflow for approvals	Yes	Verizon HIE	
	Management and Auditing Reporting	Yes	Verizon HIE	
	Compliant with Audit Trail and Node Authentication (ATNA) profile from IHE	Yes	Verizon HIE	
	Flexible User Administration capabilities including Distributed Administration	Yes	Verizon HIE	

Capability Area	Capability	Yes or No	Product That Provides This Capability	Comments
Consent Management	Ability to store consent status	Yes	Verizon HIE	
	Ability to "break the glass"	Yes	Verizon HIE	
	Capability to store patient data and make it inaccessible based on Opt In or Opt Out flagging	Yes	Verizon HIE	
	Ability to do anonymous general reporting and analytics on patient data in Opt out status	Yes	Verizon HIE	
	Support for white lists and black lists	Yes	Verizon HIE	
Subscription Management	User Interface ease of use - to view/locate and manage subscriptions	Yes	Verizon HIE	
	Flexibility of Integration/delivery	Yes	Verizon HIE	
Logging and Audit	Comprehensive end to end ATNA compliant log storage and audit	Yes	Verizon HIE	
	Ability to tune logging and audit for performance purposes	Yes	Verizon HIE	
	Audit reporting management UI and Reporting	Yes	Verizon HIE	
	Audit alert notification capabilities	Yes	Verizon HIE	
HIE monitoring	End to end monitoring (core services through to "Last Mile")	Yes	Verizon HIE	
	Comprehensive reporting and dashboards to instrument "health" of solution	Yes	Verizon HIE	
	Flexible abilities to trigger notifications and execute corrective actions based on conditions/events	Yes	Verizon HIE	
IHE Conformance	Do you regularly participate in IHE Connectathons? If yes, please list years participated in comments field.	Yes		
	Do you publish and can you provide an IHE Integration Statement?	Yes		

Appendix 2 — NC HIE Core Requirements Matrix - Message Standards

Messaging Standard	Supported (Yes/No)	Please list versions that you support
HL7	Yes	2.X and 3.X
DICOM	Yes	DICOM 1x, 2x, and 3x
NCPDP	Yes	Formulary 1.x - 2.x, SCRIPT 5.x - 10.x, Telcom A-D
X12	Yes	HIPAA 4010 and 5010
ASTM CCR	Yes	All versions
HITSP C32	Yes	All versions
XML-CCR	Yes	All versions
Clinical Document Architecture (CDA)	Yes	R1x/R2x
Continuity of Care Document (CCD)	Yes	All versions
CMS Physician Quality Reporting Initiative (PQRI) 2009 Registry XML Specification	Yes	2009
NWHIN Specification	Yes	All versions
NWNIN Direct	Yes	1.1.2

Appendix 3 — NC HIE Core Requirements Matrix - Data Types

Data Exchanged	Yes/No	Formats Used	Comments
Continuity of Care Document (CCD)	Yes	XML	
Continuity of Care Record (CCR)	Yes	XML	
Discharge summaries	Yes	HL7, CCD/C32, CCR	
Clinical patient notes	Yes	HL7, CCD/C32, CCR	
Consultations and Referrals	Yes	HL7, CCD/C32, CCR, HIPAA 278	
Dictation Notes	Yes	HL7, CCD/C32, CCR	
Lab	Yes	HL7, CCD/C32, CCR	
Radiology	Yes	HL7, CCD/C32, CCR. DICOM	
Cardiology	Yes	HL7, CCD/C32, CCR. DICOM	
Other ancillary results	Yes	HL7, CCD/C32, CCR	
Digital chart information (type of digitized data)	Yes	HL7, CCD/C32, CCR	
e-Rx	Yes	HL7, NCPDP	
Medication history	Yes	HL7, CCD / C32, CCR, NCPDP	
PBM/formulary integration	Yes	NCPDP / HITSP	
Patient entered data from PHR	Yes	HL7, CCD/C32, CCR	
Home-based monitoring integration	Yes	HL7, CCD/C32, CCR	
Reporting/receiving immunization data	Yes	HL7, CCD/C32, CCR	
Provider alerts to and from public health	Yes	PHIN	
Other population health reporting/exchange	Yes	NNDSS, BIOSENSE	
Disease management reporting/exchange	Yes	HL7, CCD/C83, CCR	
Quality measure reporting	Yes	NQF, PQRI	
Eligibility inquiry/response	Yes	HIPAA 270 / 271	
Referrals and Prior Authorization	Yes	HIPAA 278	
Professional Claims	Yes	HIPAA 837P	
Institutional Claims	Yes	HIPAA 837I	
Dental Claims	Yes	HIPAA 837D	
Claim Attachments	Yes	HIPAA spec	
Claim Status	Yes	HIPAA 276 / 277	
Payment Advice	Yes	HIPAA 835	
Patient Entered Care Data (e.g. new allergy)	Yes	CCR, CCD / C32	
Patient Entered Medication Data (e.g. new OTC medication)	Yes	CCR, CCD / C32	
Patient Entered Preventative Care (e.g. documentation of home blood sugar reading)	Yes	HL7, CCR, CCD / C32	

Appendix 4 — NC HIE Core Requirements Matrix - EMR Integrations

EMR	IHE	HL7	Native/API	Database	Other (please explain)	Interface Type (e.g. ADT, results)
Allscripts	Yes	Yes	No	No	IHE supported if certified; HL7 if specs provided	CCD
Meditech	Yes	Yes	No	No	IHE supported if certified; HL7 if specs provided	CCD
McKesson	Yes	Yes	No	No	IHE supported if certified; HL7 if specs provided	CCD
Siemens	Yes	Yes	No	No	IHE supported if certified; HL7 if specs provided	CCD
Eclipsys	Yes	Yes	No	No	IHE supported if certified; HL7 if specs provided	CCD
eClinical Works	Yes	Yes	No	No	IHE supported if certified; HL7 if specs provided	CCD
Med3000	Yes	Yes	No	No	IHE supported if certified; HL7 if specs provided	CCD
Meditech Magic	Yes	Yes	No	No	IHE supported if certified; HL7 if specs provided	CCD
EPIC	Yes	Yes	No	No	IHE supported if certified; HL7 if specs provided	CCD

Appendix 5 — NC HIE Core Requirements Matrix - Vocabularies

Data Vocabulary	Out of Box Support (Yes/No)?	Comments
CPT-4	Yes	Localized/Customized
HCPCS	Yes	Localized/Customized
ICD-9	Yes	Localized/Customized
ICD-10	Yes	Localized/Customized
LOINC	Yes	Localized/Customized
Meaningful Use Quality Data Set (QDS)	Yes	Localized/Customized
NDC	Yes	Localized/Customized
Physician Quality R Initiative Measures Data Set	Yes	Localized/Customized
Office of Management and Budget Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity	Yes	Localized/Customized
RxNorm	Yes	Localized/Customized
SNOMED-CT	Yes	Localized/Customized
Other (please specify)		