



NORTHROP GRUMMAN

Linking Clinical Information to Public Health

The NHIN Architecture Prototype and the Biosurveillance Use Case

DEFINING THE FUTURE

This document discusses an NHIN Architecture Prototype project made possible by a contract from the Office of the National Coordinator for Health Information Technology (ONC), DHHS. The content is solely the responsibility of the authors and does not necessarily represent the official view of ONC.

HEALTH



Outline for this Talk

NHIN Architecture Prototype Program

Northrop Grumman Team

Biosurveillance Use Case



What Is an NHIN?

Part of Framework for Strategic Action

1. Inform Clinical Practice

- Incentivize EHR adoption
- Reduce risk of EHR investment
- Promote EHR diffusion in rural & underserved areas

2. Engage Clinicians

Integrate health information network
 Connect federal health information systems

3. Personalize Care

- Encourage use of PHRs
- Enhance informed consumer choice
- Promote use of telehealth systems

4. Improve Population Health

- Unify public health surveillance architectures
- Streamline quality and health status monitoring
- Accelerate research and dissemination of evidence

The Decade of Health Information Technology:
 Delivering Consumer-centric
 and Information-rich Health Care

Framework for Strategic Action

July 21, 2004

Tommy G. Thompson
 Secretary of Health and Human Services

David J. Brailer, MD, PhD
 National Coordinator for Health Information Technology



What Is an NHIN?

Part of advancing **Nationwide Interoperable Health Information Technology**. First three contracts established:

Health Information Standards Panel – developing processes

for developing health information standards

“...the American National Standards Institute (ANSI)... [will] convene the Health Information Technology Standards Panel (HITSP)... [to] bring together US Standards Development Organizations (SDOs) and other stakeholders... [to] develop, prototype, and evaluate a harmonization process for achieving a widely accepted and useful set of health IT standards that will support interoperability among health care software applications, particularly EHRs.”

Certification Commission for Health Information Technology – developing **criteria and evaluation health IT products**

“...the Certification Commission for Health Information Technology (CCHIT) [will] develop criteria and evaluation processes for certifying EHRs and the infrastructure or network components through which they interoperate. Criteria will include the capabilities of EHRs to protect health information, standards by which EHRs can share health information and clinical features that improve patient outcomes.”

Health Information Security and Privacy Collaboration – addressing

business policies & state laws that affect privacy and security

“The Health Information Security and Privacy Collaboration (HISPC), a new partnership consisting of a multi-disciplinary team of experts and the National Governor's Association (NGA)... will work with approximately 40 states or territorial governments... to address variations in organization-level business policies and state laws that affect privacy and security practices which may pose challenges to interoperable health information exchange. Overseeing the HISPC will be RTI International...”



What Is an NHIN?

A widely available, easy to use, and inexpensive service to securely exchange health information

- **Information exchange and interoperability necessary to realize the President's vision for health care IT**
- **Interconnect electronic health records**
- **Transport electronic medical information to form clinicians and follow the consumer**

Provides a platform for quality initiatives.

Monitoring with care.



NHIN Architecture Prototype Program

Contracts awarded to four “Consortia”: **Accenture, CSC, IBM, and Northrop Grumman.**

Phase 1 (Nov 2005 through Dec 2006)

Development of **Four Potential Architectures** for health information

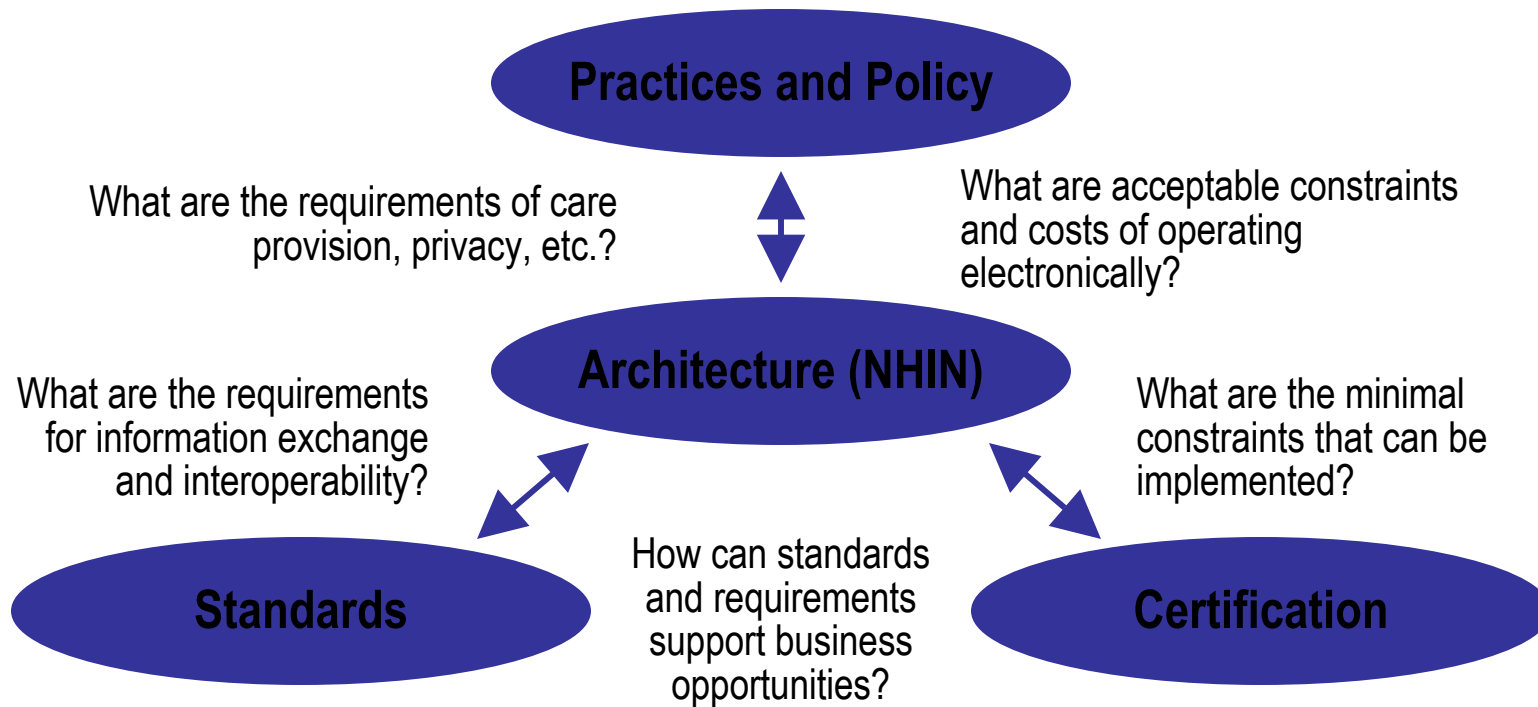
Development of **Business Models** for sustaining an NHIN.

Future

- Shared / harmonized architecture with best elements of those proposed.
- Operational implementations.
- Environment for sustainability.



Part of the Solution





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Our Team

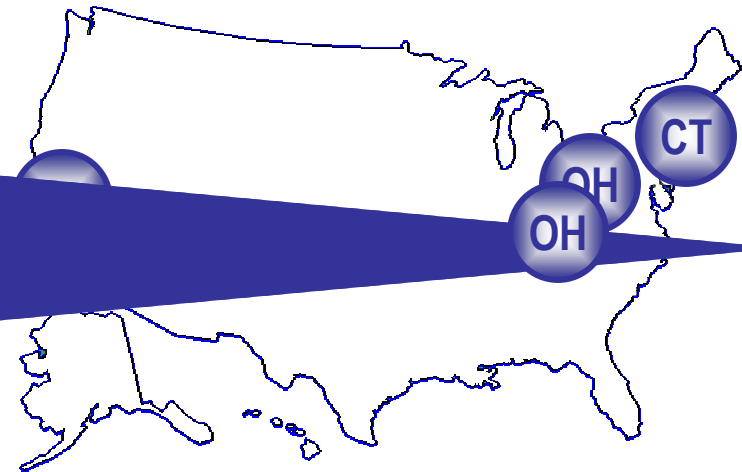
Our Company

- developer of an enterprise EHR with >7M beneficiaries and >7K physicians
- developer of a nationwide health information exchange for VHA systems
- developer of a nationwide health information exchange for surveillance and response solutions

Our Health Care Partners

Centers for Disease Control and Prevention (CDC)

Department of Health and Human Services (HHS) HealthBridge



Our Technology Team

First Consulting Group, Axolotl, Client/Server Software Solutions, SphereCom Enterprises, Emdeon, Oracle, and Sun/SeeBeyond Technologies



Our Approach

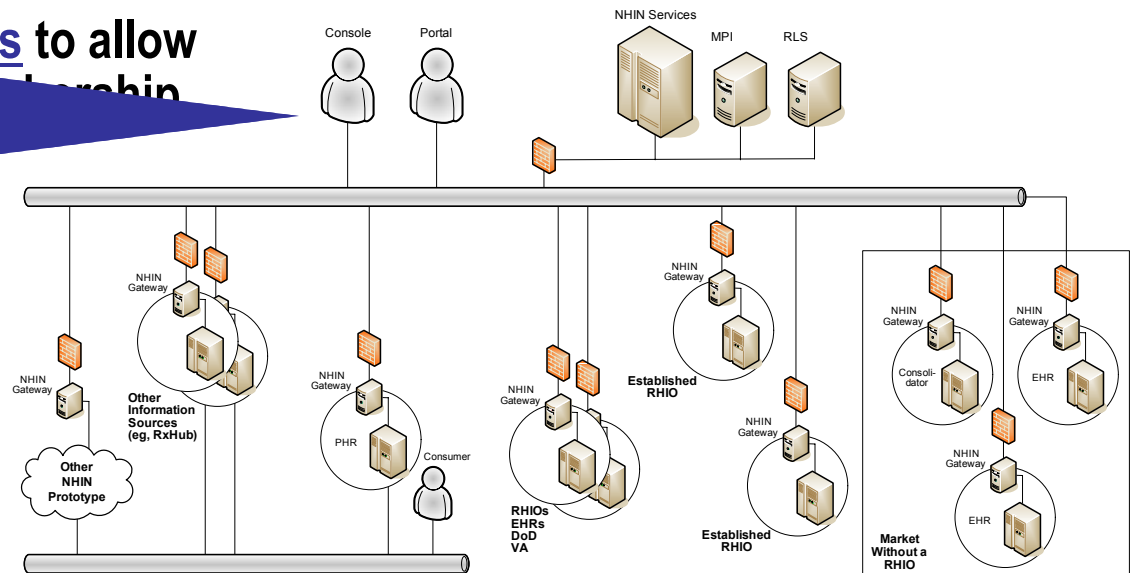
...but within source entities to preserve

- Using a federated approach with a mutually re-enforcing set of standards, policies, and agreements.
- No National Patient Identifier, but existing patient demographic attributes available from health care entities.

...existing capabilities to allow

...technologies, sources.

- Leveraging the Internet.
- Open, flexible SOA to accommodate components as they mature.





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Common Use Cases

...essential ambulatory care and emergency department health care... and anonymized format to public health agencies with less than one day lag time.”

Consumer Empowerment “Deploy to targeted populations a pre-populated, consumer-directed and secure electronic registration summary. Deploy a widely available pre-populated medication history linked to the registration summary.”

Electronic Health Record “Deploy standardized, widely available, secure solutions for accessing laboratory results and interpretations in a patient-centric manner for clinical care by authorized parties.”

Use cases provide a foundation for architectural elements and expectations for prototypes.



What Is Biosurveillance?

There is no generally accepted definition of biosurveillance.

Working definition of the use case and for today's discussion:

The implementation of real-time, nationwide public health event monitoring to support early detection, situational awareness, and rapid response management across public health and care delivery communities and other authorized Government agencies.



Charge to The Community

Broad Area

Implement (1) real-time (2) nationwide public health (3) event monitoring and (4) support rapid response management across (5) public health and (6) care delivery communities and other authorized government agencies.

Specific Use Case Area

...ential ambulatory care and emergency department (1) visit,
 ...lectronically enabled (4) health
 ...imized
 ...encies with (7) less than one day lag

*Use case describes the interaction to invoke **capture, discovery, anonymization, and transmission** of relevant data.*



Stakeholders

Patient: members of public who require and consume healthcare services.

Clinician: providers with direct patient interface in the delivery of care.

Healthcare Organizations: hospitals, physician practices, etc. which

Lab Organizations: medical laboratories, in hospital or ambulatory environments, which analyze specimens as ordered by physicians.

Public Health Agencies: state and federal government organizations to improve health of their populations.

Resource Suppliers: other public and private organizations with a stake in public health (e.g., USDA, ARC, DHS, pharmacies, etc).

Public: consumers of services and information in the overall healthcare system.

*Public Health Agencies are charged with **monitoring** the existence of emerging threats and **managing** them.*



Data to be Transferred

Data Used during Patient Care – monitor

Demographics – anonymized, but allows re-linking with discharge disposition

Test Results – e.g., collection info, specimen info, test results

Dynamic Resource Utilization Data – monitor & manage

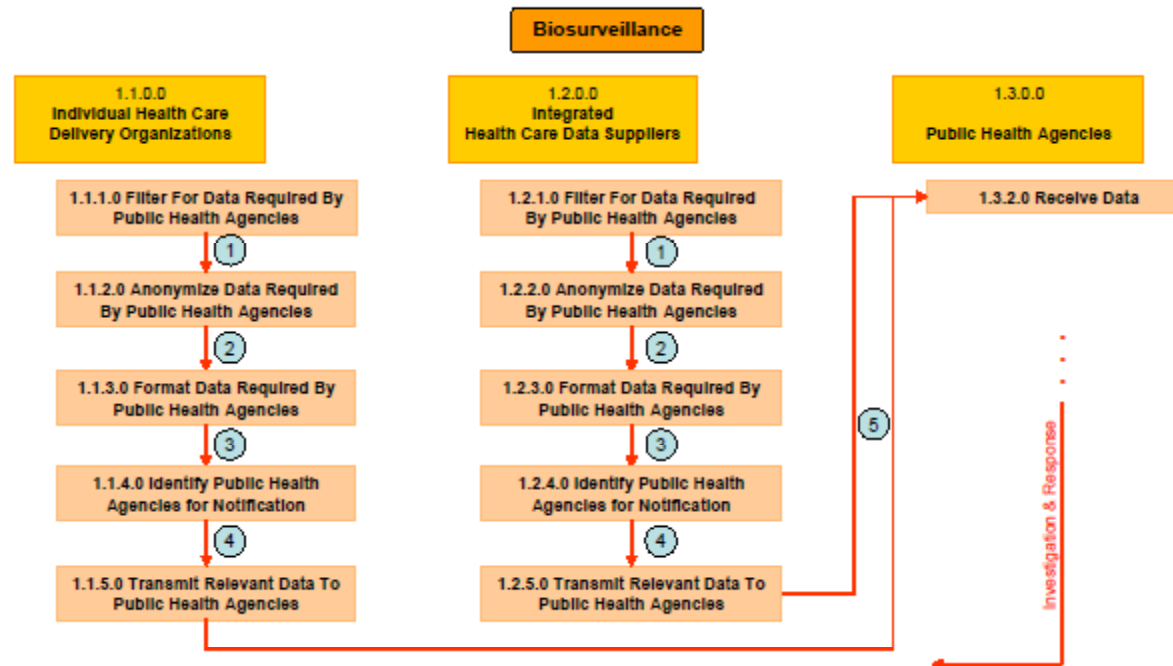
Capacity – e.g., patients/beds available, ED marginal capacity

7. Facility Utilization Data – e.g., admissions, discharges, deaths

The essential data required to monitor and respond.



Data Flows



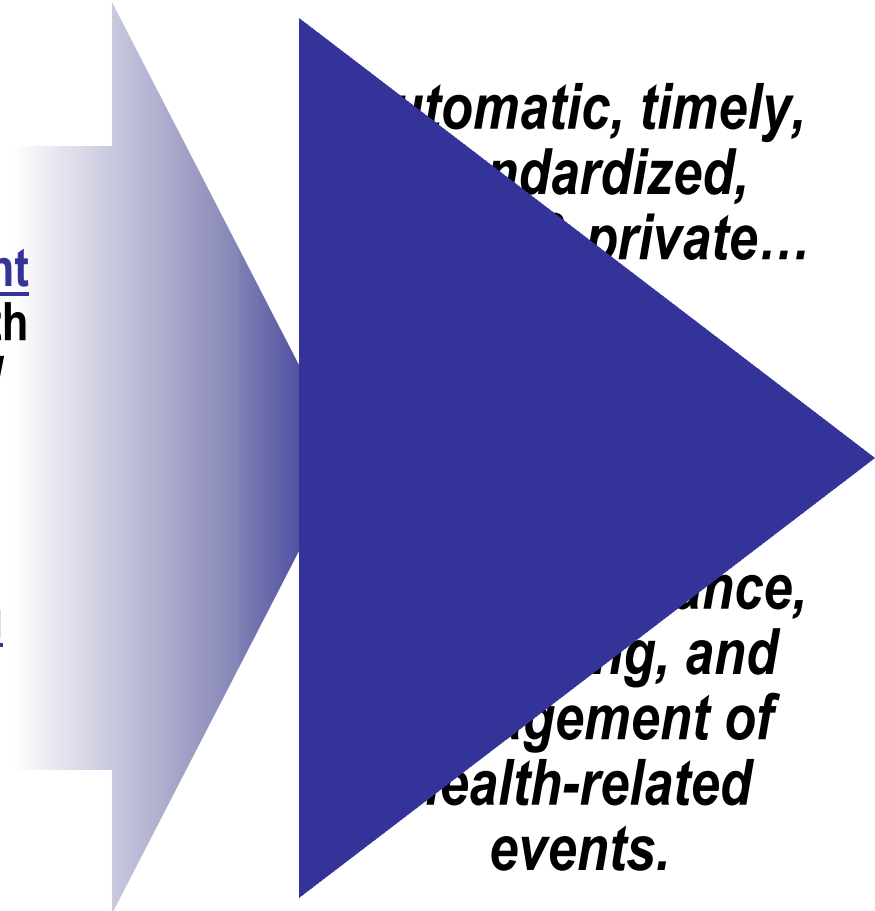
Scenario Flow 1: Transmission and Receipt of Relevant Biosurveillance Data

1. Data from patient-clinician encounters in individual facilities (ambulatory, ER, and local labs) and from integrated healthcare data suppliers are filtered to identify the data relevant to biosurveillance. Integrated Health Care Data Suppliers include organizations such as laboratories, payer systems, claims clearing houses, integrated healthcare delivery networks, health information exchanges, et al.
2. Data are anonymized to meet privacy requirements but retain the ability to be "re-linked" to support public health investigations.
3. Data are formatted for transmission using approved standards.
4. Public Health Agencies that require data are identified
5. Data are transmitted to authorized public health agencies.



Benefits of the Outcome

- Clinical patient event data relevant to biosurveillance automatically shared with public health stakeholders.
- Utilization data relevant to biosurveillance and event management automatically shared with public health stakeholders and resource providers / responders.
- Provides more timely transfer of information.
- Establishes a standardized formatting and structure for transmission of biosurveillance information.
- Appropriate controls are in place: privacy and security, receiving entity registration, auditing.





Issues and Obstacles to Success

Must be educated about value of information and concerns regarding privacy.

“Is my information really private?”

Must develop standards, business model to lower bar to develop capabilities.

Includes inability to standardize, normalize, anonymize data.

Includes limited availability of utilization data in electronic form.

Includes limited connectivity of some providers.

Health facilities may be unwilling to participate. Must understand the value of participation. Participation must be simple.

Public health agencies perceive regulatory conflicts. Must address varying policies regarding transfer of public health information in this new environment.

Must be prepared to receive the data. Must update the infrastructure to keep pace with availability of data.

Includes inability to receive electronic data.

Includes limited ability to analyze the wealth of data now available.



Related Initiatives

Public Health Information Network (PHIN) – national initiative to implement a multi-organizational business and technical architecture for public health information systems.

<http://www.cdc.gov/phin/overview.html>

BioSense – a component of the PHIN architecture that advances the nation's capabilities for real-time biosurveillance and situational awareness and coordinating biosurveillance systems at the local, state, and national levels.

<http://www.cdc.gov/phin/component-initiatives/biosense/index.html>



Summary

Outlined the NHIN and **NHIN Architecture Prototype** program in the context of some other ONC-sponsored activities.

Introduced the **Northrop Grumman Team** and approach.

Reviewed the **Common Biosurveillance Use Case** that will drive other aspects of the NHIN program.

Discussed the **Benefits and Issues** associated with linking healthcare information with public health practice.



Questions?



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