



Preparing for Public Health Emergencies Following a Natural Disaster: Is the PHIN Ready?

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What This Presentation Covers

This presentation on preparing for natural disasters looks at the technical opportunities and leadership required to ensure electronic access to medical records for public and private health professionals at the point of care following a natural disaster. It covers:

- The development of technical infrastructures for health information exchange that provide access to medical records following a disaster.
- Secure Messaging using the PHIN Messaging System to deliver lab results at the point of care.
- Issues of governance and leadership – what leadership should the PHIN and its public health agencies take?

The Challenge at the Point of Care

After a natural disaster, people flee their homes. Their medical problems remain but their medical records don't.



Katrina evacuees in the Houston Astrodome, Texas

The After Effects of Natural Disasters

When natural disasters strike, vital medical services and infrastructure can be disrupted and crippled.



St. John's Mercy Hospital in Joplin, Missouri

HIE for Patient Care

The ability to access medical records using a Health Information Exchange can be lost after a natural disaster.

HIE before a disaster

Emergency Department physicians need to obtain accurate, timely information on a patient to make an accurate diagnosis and to deliver the most appropriate care and treatment.



Current medical problem
Current medications
Treatment from other physicians
Other disease states
Life style issues

Patient presents with past medical history that may not be available to the treating physician

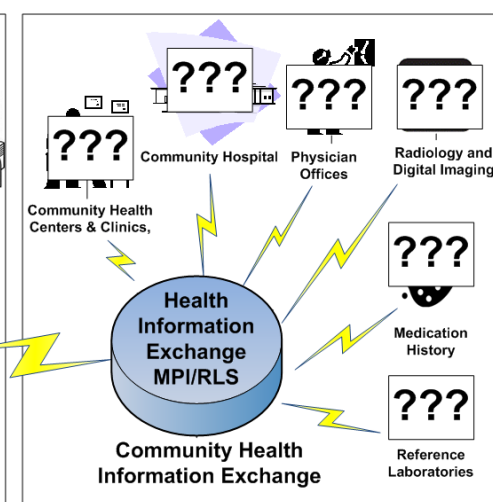
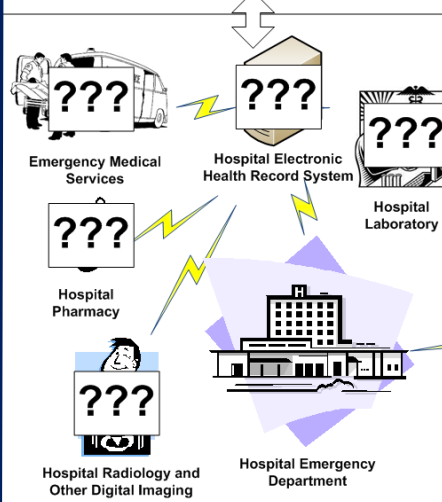
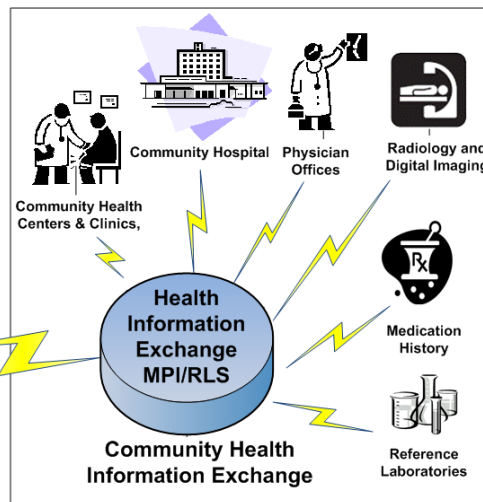
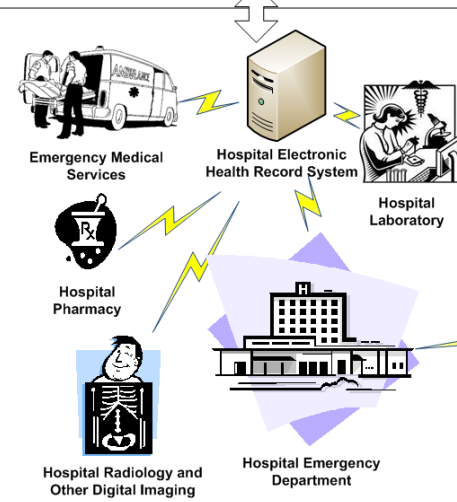
HIE after a disaster

Physicians treating patients in emergency settings following a natural disaster need accurate medical information to deliver the most appropriate care and treatment.



Current medical trauma
Unknown medications
Unknown medical history
Chronic disease(s)
Comorbid conditions

Patient presents with trauma or with chronic medical condition not available to the treating physician



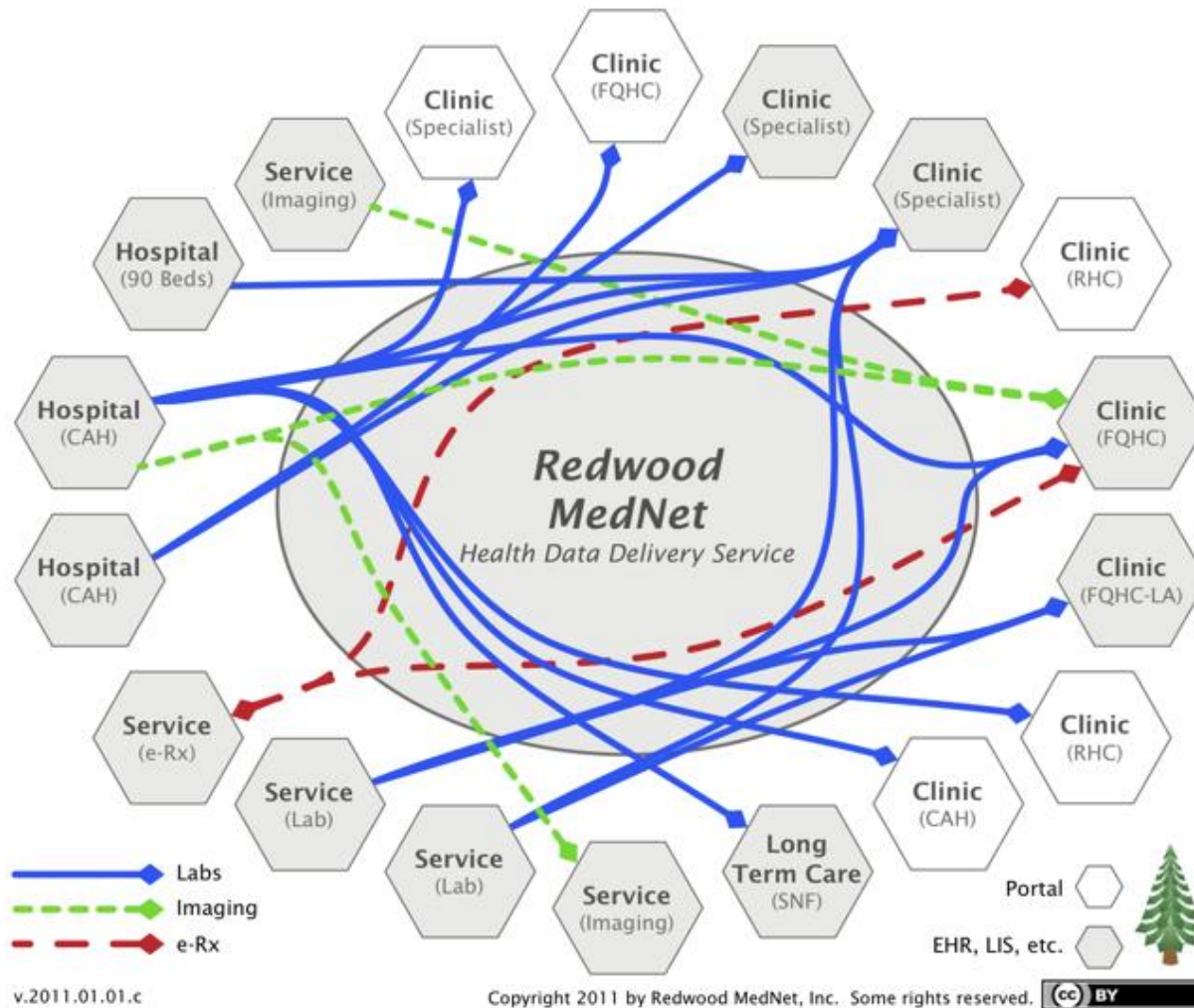
What is Health Information Exchange (HIE)?

HIE is a telecommunication solution that enables medical record sharing among physicians, hospitals, clinics and other provider organizations.

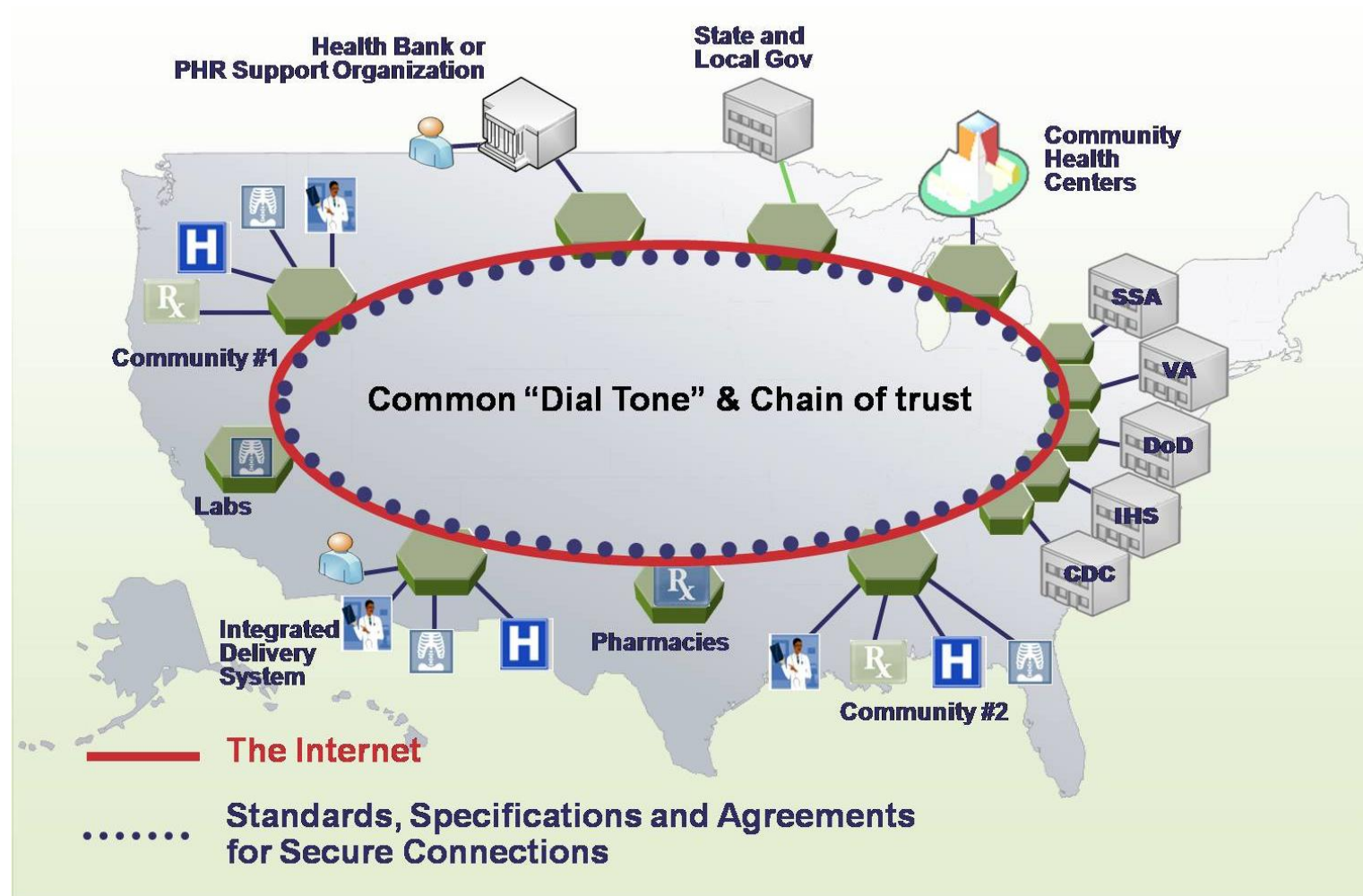
- HIE refers to the movement of health information electronically across multiple health care organizations and to the organizations that facilitate the exchange.
- One value of HIE lies in the coordination of patient care among providers through a query and “patient lookup” approach to ensure that health care providers have access to the most up-to-date information on patients.
- Access to HIE could be critical following a disaster.



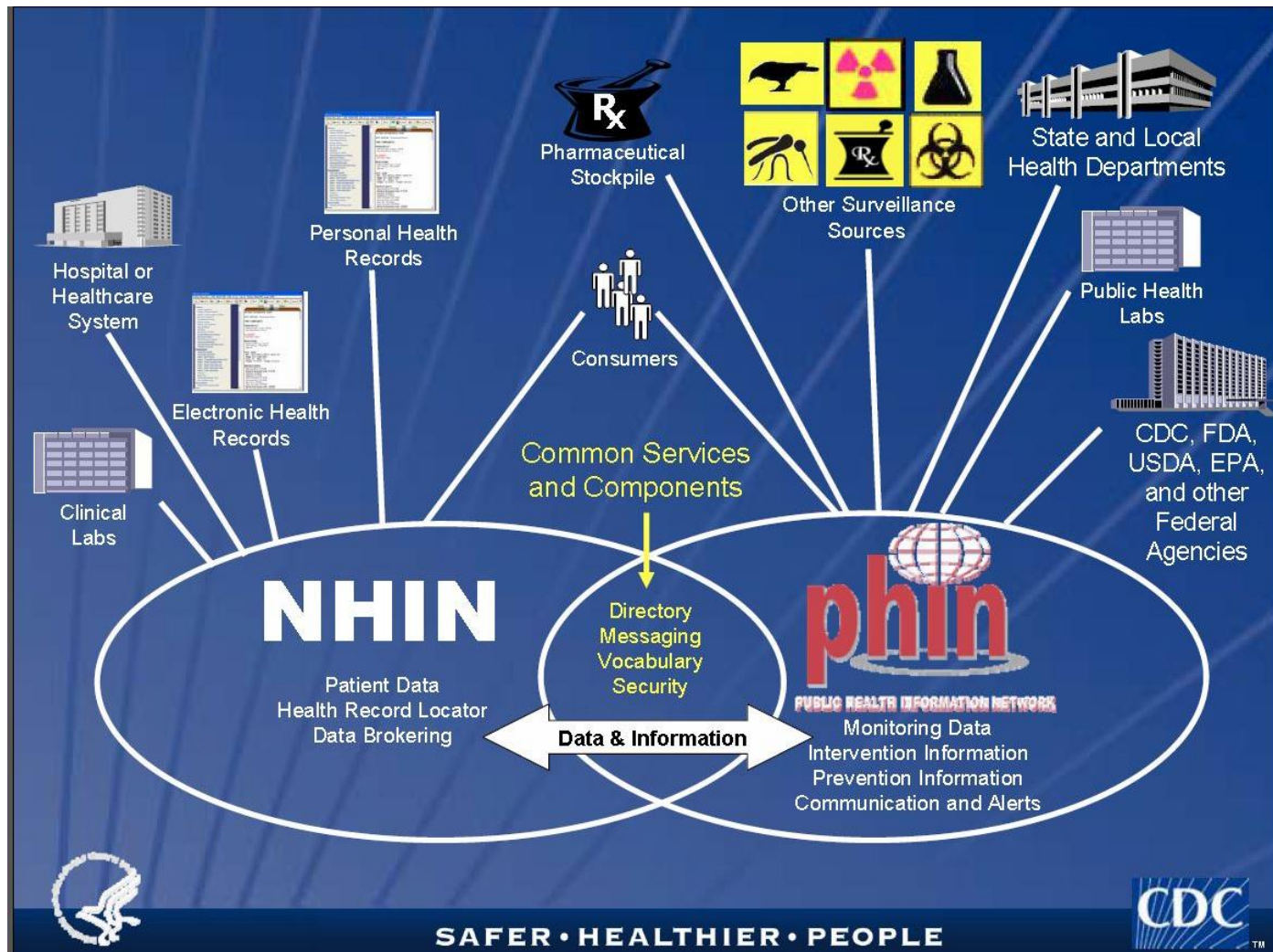
Example of an HIE – Redwood MedNet in California



The Nationwide Health Information Network



NwHIHN and the PHIN



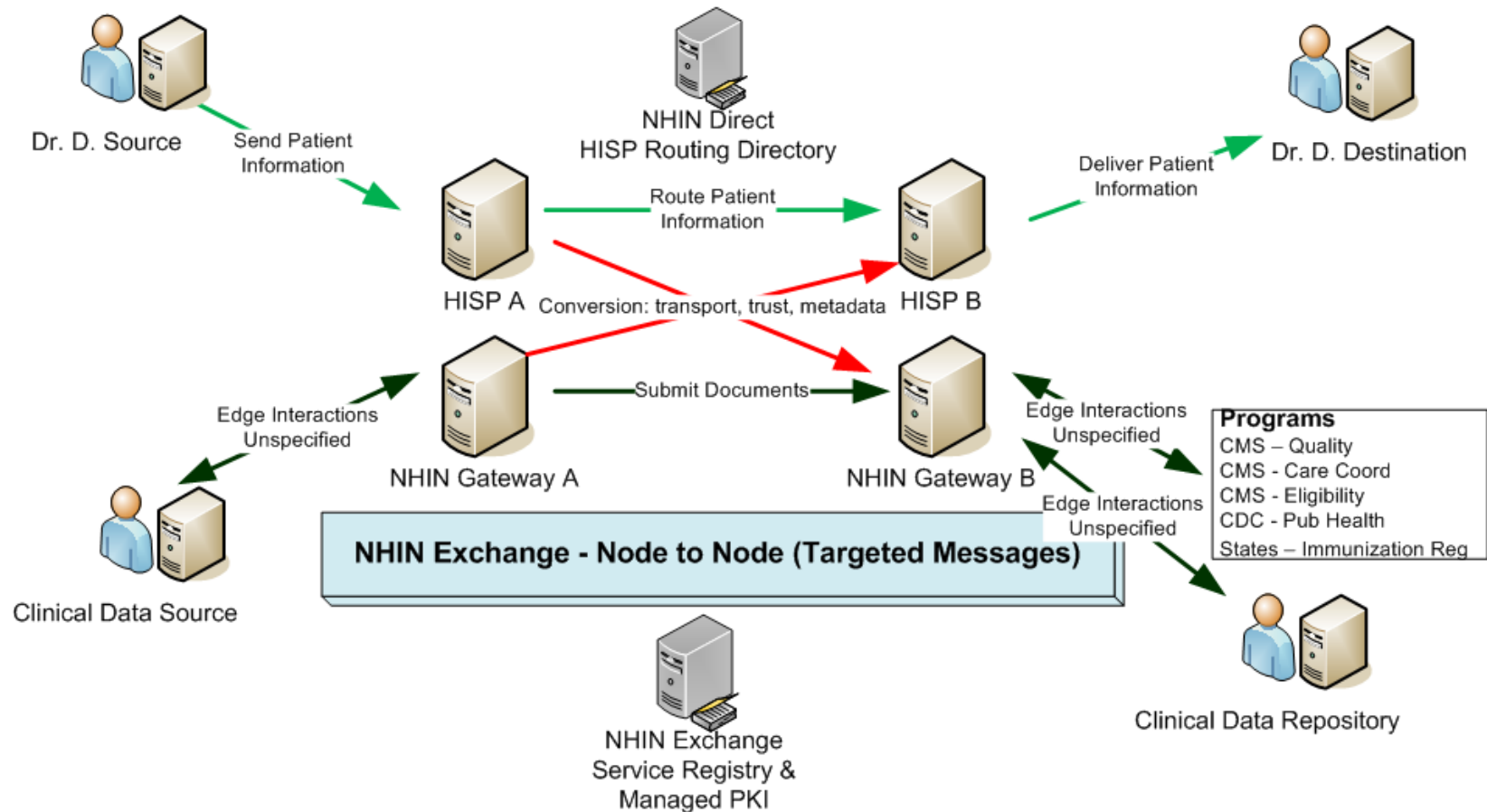
Secure Messaging for Exchanging Records

Secure messaging allows the direct exchange of records between providers while maintaining HIPAA compliance.

- The Office of the National Coordinator for Health IT (ONC) developed the Direct Secure Messaging platform as a secure e-mail solution for sending clinical records between providers, which EHR vendors must now use.
 - Many electronic health record (EHR) systems offer secure messaging, but until forced to do by 2014 EHR Certification, could not communicate with other EHRs.
- Direct Secure Messaging (DSM) lets providers send medical records directly to a treating physician at the point of care following a disaster – if both sides have DSM accounts.

Example of Direct Secure Messaging Platform

NHIN Direct – Endpoint to Endpoint (Routed Messages)



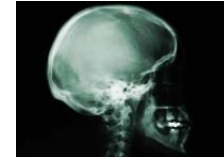
Power of DSM in a Disaster - Flexibility

Communication Pathways



Communication Content

I've attached the study of Mr. Author. Thanks for seeing him.



Readable by People

```
EVN|A28|20060501140008|||000338475^Author^Arthur^~^~^~^
^Regional
MPI&2.16.840.1.113883.19.201&ISO^L|20060501140008<cr>
PID|||000197245^^NationalIPN&2.16.840.1.113883.19.3&ISO^PN
~4532^
```

Readable by Machines

I've attached an x-ray and electronic record for Mr. Author



```
EVN|A28|20060501140008|||00
0338475^Author^Arthur^~^~^~^
^RegionalMPI&2.16.840.1.1138
83.19.201&ISO^L|2006050114
0008<cr>
```

Readable by People and/or Machines

Role of the Public Health Information Network

The Public Health Information Network (PHIN) is the CDC initiative to increase the capacity of public health agencies to electronically exchange data across organizations and jurisdictions.



- The PHIN's mission is to establish and support shared:
 - Policies, standards, practices, and services
- That facilitate efficient public health information:
 - Access, **exchange**, use, and collaboration
- Among public health agencies and their clinical partners.

PHIN Strategic Plan for Engaging with HIEs

PHIN Goal 1: Provide leadership in the selection and implementation of shared policies, standards, practices, and services for nationwide public HIE.

Strategy 1.1.2: Define and maintain an architectural framework for public health information exchange.

- PHIN architecture must to support public health business and technical needs to match evolving HIEs.

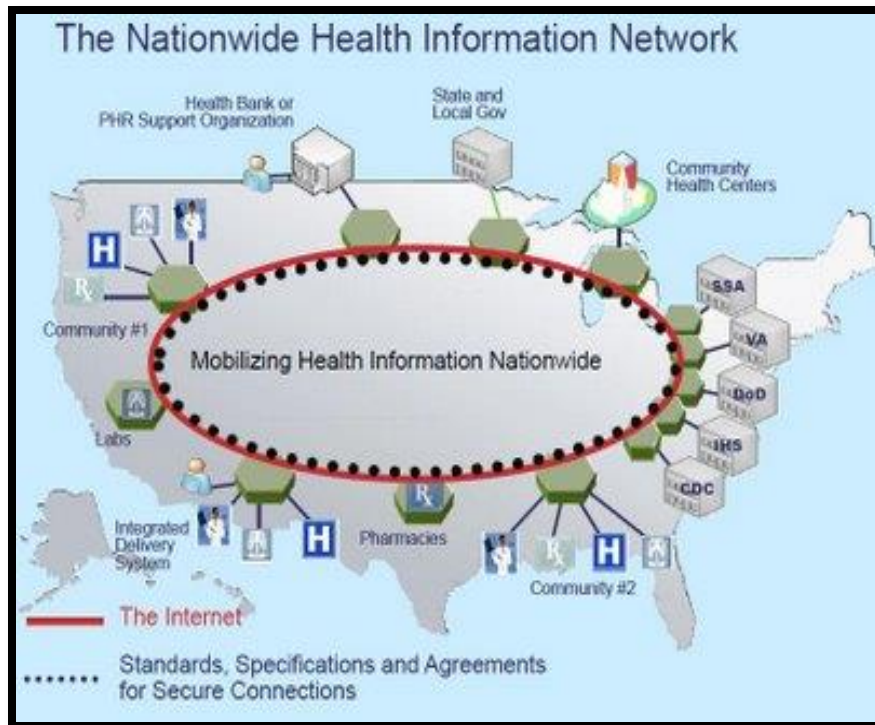
Strategy 1.2.1: Harmonize PHIN as a population and public health component of the NwHIN.

- The PHIN must adapt to the information technology and health information standards for information exchange to support its role in public health clinical care



PHIN and the NwHIN

PHIN will align with the Nationwide Health Information Network to create easy-to-find “on- and off-ramps” that will enable public health information systems to use the NwHIN.

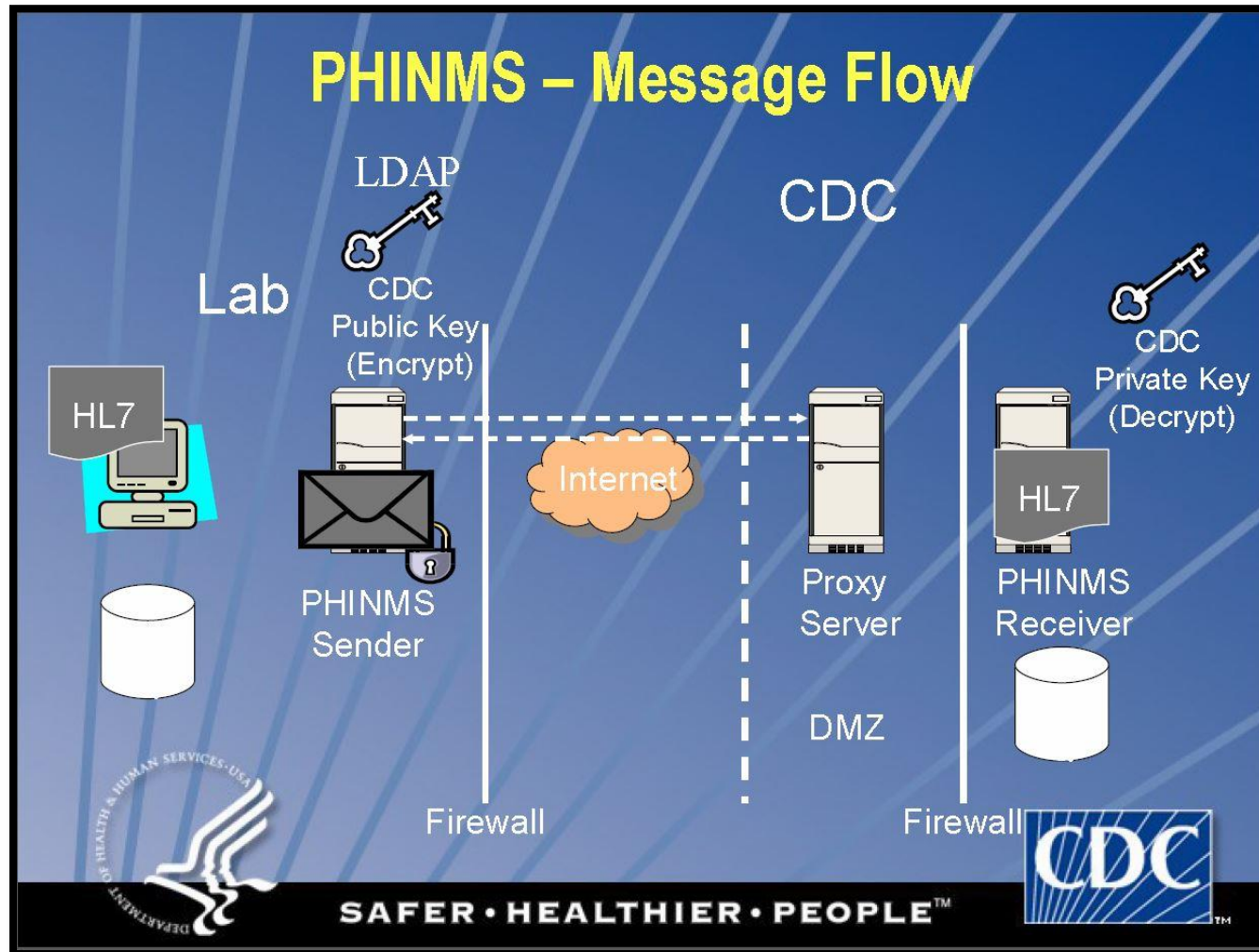


PHIN Secure Messaging

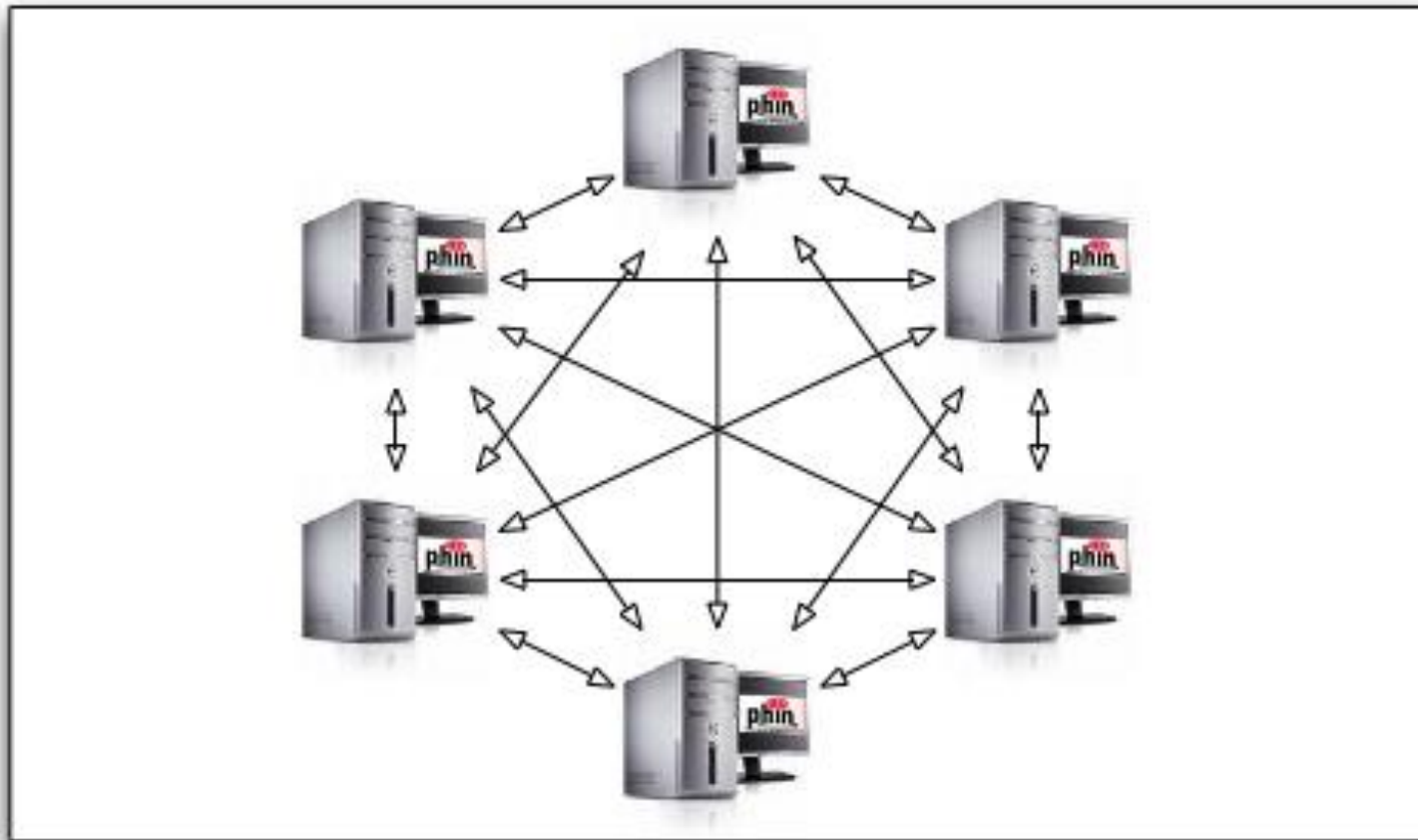
Strategy 3.1.1: Support reusable and extensible vocabulary, **data messaging** and brokering and directory technologies to streamline application development and public health information exchange:

- The need to send and receive electronic messages, securely and reliably is shared in common among public health programs and information exchanges.
- PHIN will provide public health partners with tools, utilities, and services to streamline implementation of common public health information exchange operations.
 - PHIN Messaging System (PHINMS)
 - PHIN Public Health Directory (PHINDir)

PHIN Messaging System (PHINMS)



Direct Send Model



Multiple Senders to Multiple Receivers = exponential growth of connections and maintenance

APHL Informatics Messaging Services (AIMS)

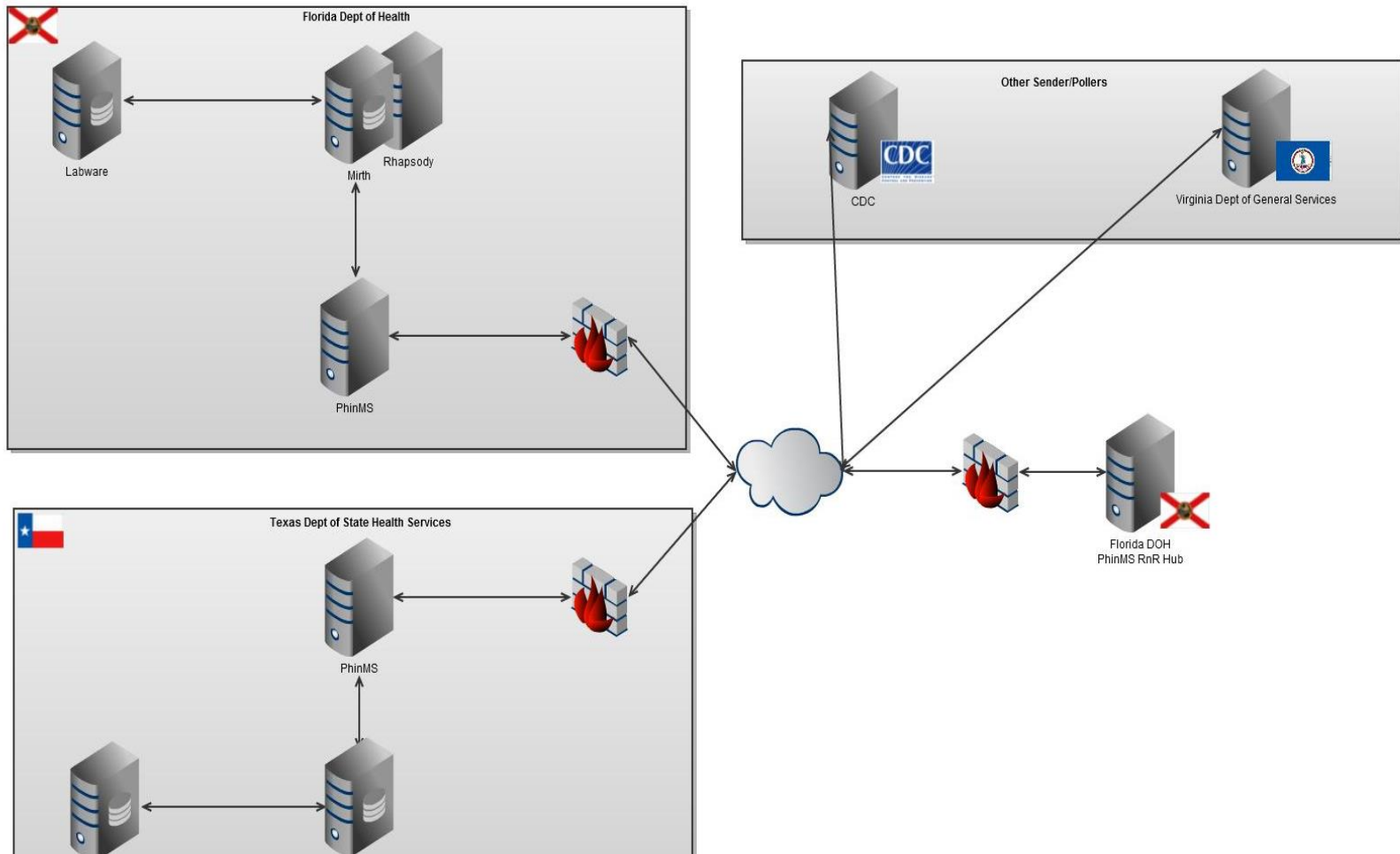
A secure, cloud based environment that accelerates the implementation of public health messaging solution by providing shared services to aid in the transport, validation, translation and routing of electronic data.



APHL Informatics Messaging Services (AIMS)

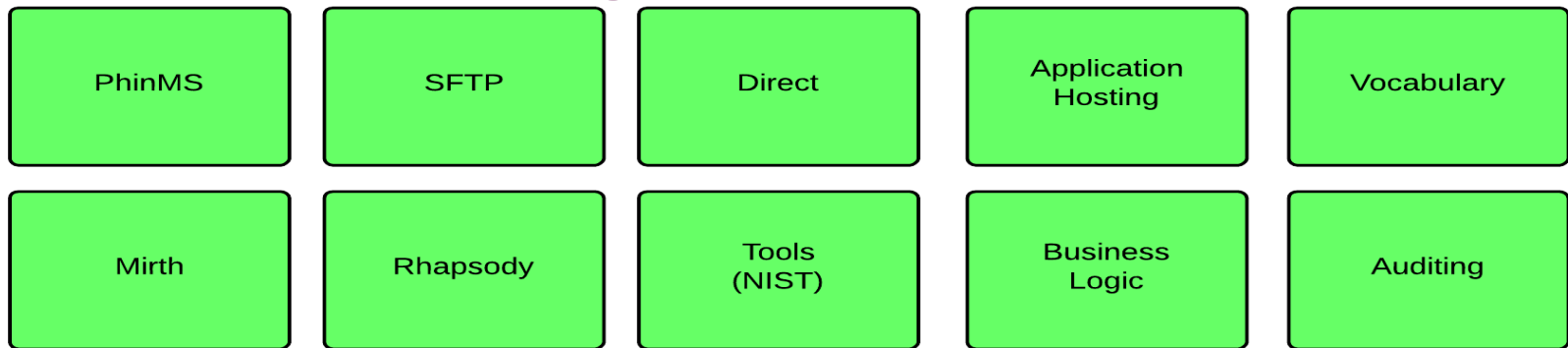
- PHLIP
- Electronic Surveillance Message (ELSM) – influenza
- Pandemic Influenza between Texas, Florida, Virginia, CDC
- ETOR Salmonella
- LIMSi / LRN
- ELR – LTIAPH, ELRTA, LIC



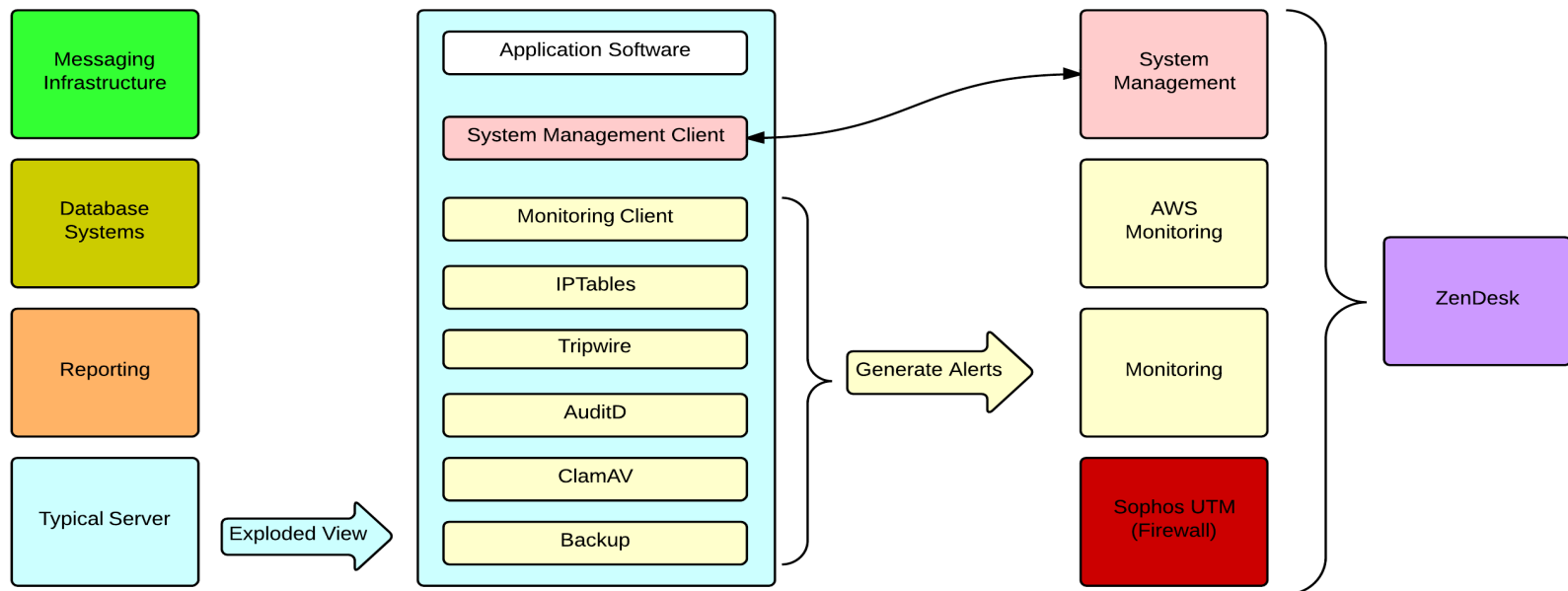


APHL Informatics Messaging Services Hub

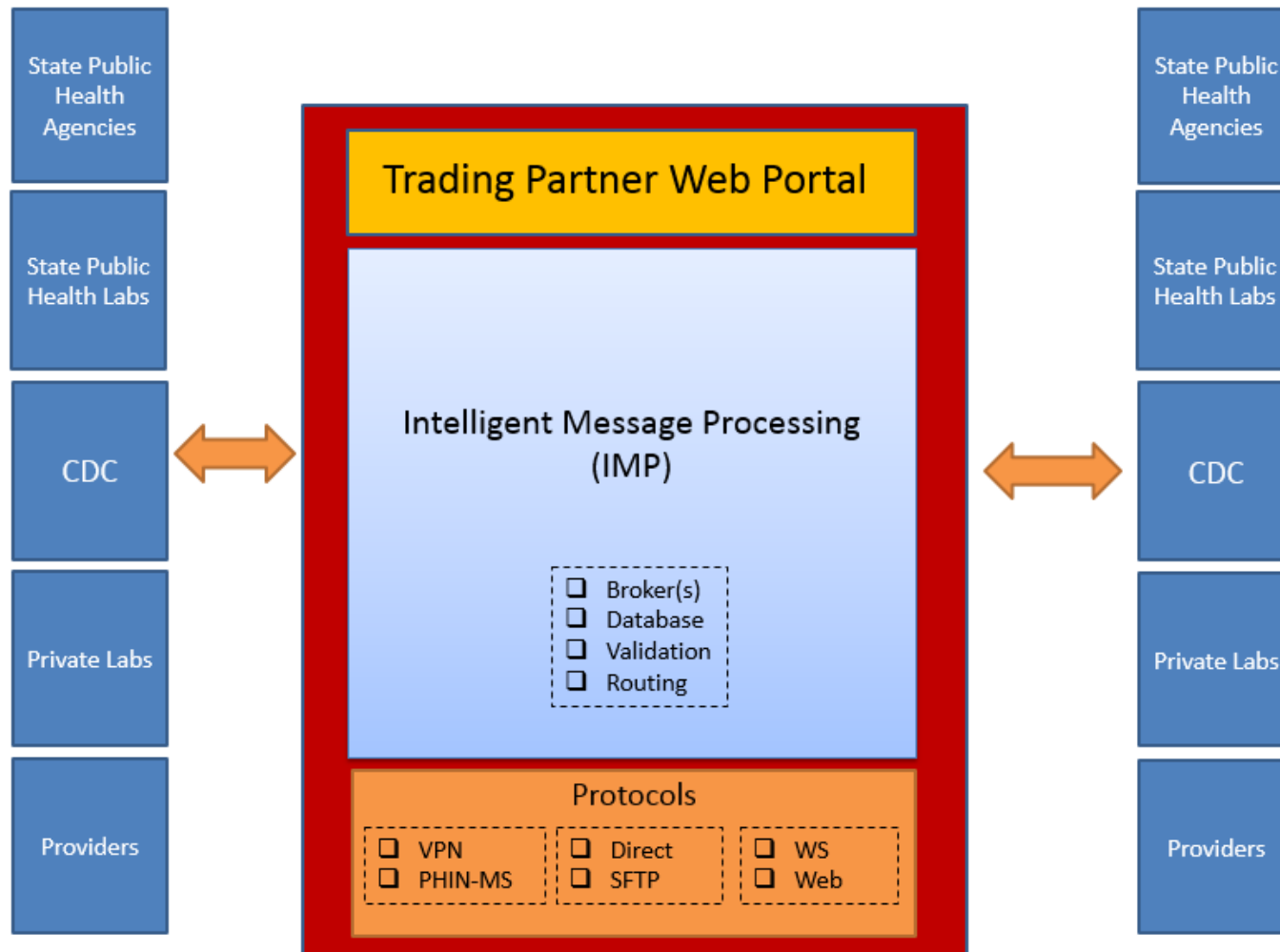
Message Infrastructure



System Infrastructure



APHL Informatics Messaging Services Hub



Security and Compliance

- System Security Plan (SSP) in place.
- Security Assessment (ST&E) and Audit conducted in 2013 by RTI International.
- FISMA Compliance granted in 2013.
- Migration to FEDRAMP certified environment in 2014.
- SSP is being upgraded to show security enhancements gained by moving to AWS.



Amazon Web Services



- Migrated technology stack to AWS on March 1, 2014.
- AIMS Hub is located in the AWS East Region.
- Planning is underway to enhance Continuity of Operations with Multi-Availability Zones.

The AWS cloud infrastructure has been designed and is managed in alignment with regulations, standards, and best-practices including:

- | | |
|---|---|
| <ul style="list-style-type: none">• HIPAA• SOC 1/SSAE 16/ISAE 3402 (SAS70)• SOC 2• SOC 3• PCI DSS Level 1• ISO 27001 | <ul style="list-style-type: none">• FedRAMP(SM)• DIACAP and FISMA• ITAR• FIPS 140-2• CSA• MPAA |
|---|---|



APHL AIMS Architecture Coverage

State Public Health Laboratories include:

- ✦ Alabama
- ✦ Alaska
- ✦ Arizona
- ✦ Arkansas
- ✦ Connecticut
- ✦ Florida
- ✦ Georgia
- ✦ Hawaii
- ✦ Houston
- ✦ Illinois
- ✦ Indiana
- ✦ Kansas
- ✦ Kentucky
- ✦ Louisiana
- ✦ Maine
- ✦ Maryland
- ✦ Mississippi
- ✦ Missouri
- ✦ Montana
- ✦ Nebraska
- ✦ Nevada
- ✦ New Hampshire
- ✦ New Mexico
- ✦ New York City
- ✦ North Carolina
- ✦ Ohio
- ✦ Oregon
- ✦ Rhode Island
- ✦ South Carolina
- ✦ South Dakota

Other Trading Partners

- ✦ Tennessee
- ✦ Texas
- ✦ Utah
- ✦ Vermont
- ✦ Virginia
- ✦ West Virginia
- ✦ Wisconsin
- ✦ Wyoming

Other Trading Partners

- ✦ Centers for Disease Prevention and Control (CDC)
- ✦ Cerner
- ✦ Quest Diagnostics
- ✦ Lab Interoperability Collaborative (LIC)
- ✦ Mayo

AIMS Advantages

- Common architecture and services
- Open source architecture that can be shared (where possible)
- Centralized processing and message routing
- Monitoring and auditing
- Sharable systems
- Reduced message transport complexity
- Reduced data translation and transformation complexity
- Reduced development and support costs
- FISMA Moderate compliant applications
- FedRAMP compliant environment

AIMS Lessons Learned

- Agreements – MOU? VPN? Data Sharing?
- Collaboration
- Priorities
- Other initiatives

Strategic Planning for PHIN Engagement in HIE

Strategic disaster planning for the PHIN entails it taking on responsibilities as governance body in each state.



Strategic Planning for Disaster Planning

What is required to ensure access to medical records after a natural disaster strikes?

- Strategic planning must occur **before** the disaster:
 - Build relationships among stakeholders.
 - Create partnerships with health care data sources.
 - Coordinate action steps among partners.
 - Establish procedures to locate and access patient records.



Role of Governance for HIE Planning

Governance for disaster planning is best conducted by a neutral convening body with the authority to convene diverse stakeholders and coordinate consensus-based efforts to develop plans to make medical records available after a disaster.

- Implement a road map for interoperability and data exchange among private and public health care stakeholders.
- Represent the interests of both private enterprise and state government agencies



PHIN Strategic Plan for Governance?

Strategy 1.4.2: Align CDC program guidance and funding language with PHIN specifications:

- To help ensure consistent information exchanges based on nationwide standards and enable “unlocking” data within each program silo,
 - CDC PHITPO will create reusable policies, cooperative agreement guidance, and contract language
 - For public health partners to identify and develop best practices to electronically exchange health information
 - Among organizations with varying privacy policies.
- Recipients of CDC funds will be encouraged to incorporate data exchange into their plans.

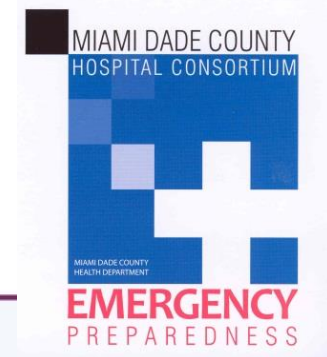
PHIN Partners in Disaster Planning

Which organization should partner with the PHIN public health agencies for disaster planning for HIE?

- The State-Designated Entities for HIE are tasked with convening health care stakeholders for data-sharing.



- The Health and Medical Services ESF8 - Responsible for health care disaster planning and response.
- Local groups that partner with the ESF 8 responsible for disaster planning with health care stakeholders.



The PHIN Can Lead in Disaster Planning

Health care planning for natural disasters is critical.

The PHIN health IT infrastructure is capable of delivering medical records to the point of care after a disaster.

- The PHIN agencies should work with:
 - State-Designated Entities for HIE.
 - ESF-8 agencies for emergency management.
 - Local and regional groups to engage health care stakeholders in HIE disaster planning.
- The goal of governance is to integrate public and private health data sources through data-sharing agreements to ensure that technical solutions work.

Questions?

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