

# Public Health Information Network

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# Some Public Health IT Initiatives

Specific initiatives have shown the potential of public health information technology:

- Health Alert Network (HAN) – Internet connectivity, alerting and distance learning
- National Electronic Disease Surveillance System (NEDSS) – disease surveillance, electronic laboratory reporting
- Laboratory Response Network (LRN) – diagnostic capacity and information delivery
- Epidemiology Information Exchange (EPI-X) – Secure, interactive communications
- CDC and other web sites – Public information access
- National Health Care Safety Network (NHSN) – Patient safety data

Now that public health is being tested by new needs for preparedness and response, it is time to advance a public health information network that brings together the functions and organizations that are public health.



# Public Health – Problem Statement

- Public health and terrorism preparedness involve many organizations working together and exchanging information
- The fragmented and heterogeneous technologies in the U.S. healthcare system do not readily share consistent data with public health
- The current public health information cycle (clinical event to response) is too long and frequently involves the manual exchange of information
- The new realities of terrorism and disease trends require a new level of operation



# Public Health Information Network – Vision

To transform public health by coordinating its functions and organizations to enable:

- real-time data flow
- computer assisted analysis
- decision support
- professional collaboration
- rapid dissemination of information to public health, the clinical care community and the public



# Public Health Information Network – Functions

- **Detection and monitoring** – support of disease and threat surveillance, national health status indicators
- **Analysis** – facilitating real-time evaluation of live data feeds, turning data into information for people at all levels of public health
- **Information resources and knowledge management** – reference information, distance learning, decision support
- **Alerting and communications** – transmission of emergency alerts, routine professional discussions, collaborative activities
- **Response** – management support of recommendations, prophylaxis, vaccination, etc.

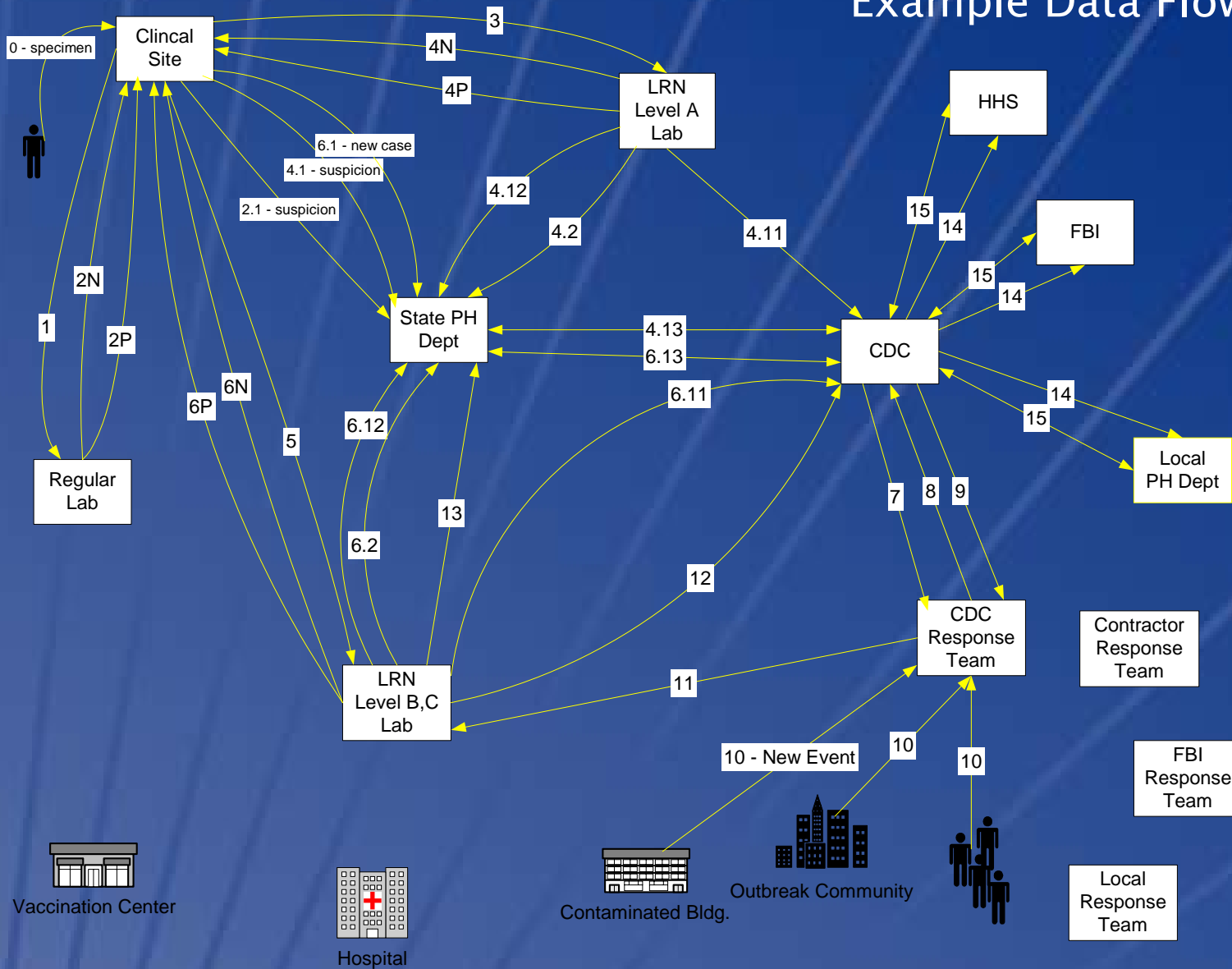


# Public Health Information Network – Characteristics

- **An interoperable network** – A common framework to integrate public health systems and functions while using industry standards to work with other networks / systems
- **Dual use** – Directly enhance homeland security and transform routine public health practice
- **Reduce Reporting Burden** – use existing electronic clinical data
- **Live data** – continuous monitoring of nations health, continuous detection and evaluation of threats
- **Support users** – provides information and decision support to the public and public health professionals at all levels



# Example Data Flow



# Public Health Information Network – Process

1. Identify relevant **industry standards** –technical and data (e.g. HL7)
2. Develop **specifications** based on standards that are concrete enough to do work (e.g. implementation guide for lab result)
3. **Fund** through the specifications (e.g. IT functions and specifications for > 1 billion in 2002)
4. Develop “**transitional software**” that implements the standards now (e.g. the messaging system)
5. Encourage **partners and private sector** to implement the specifications (e.g. NEDSS compatible state systems)
6. Support **conformance testing**





# Public Health Information Network – Needs

1. Standard identification and specification development for all PHIN functional areas
2. Development of PHIN foundational elements at public health partners and CDC that support integrated, interoperable systems
  - a. Shared directories
  - b. Shared data brokering and exchange capabilities
  - c. Standardized data stores
  - d. Shared analysis and reporting (including GIS)
  - e. Shared knowledge management and collaboration systems
  - f. Integrated response systems
3. “Transitional software components” that implement the standards now
4. Conformance testing and integration assurance



# Public Health Information Network Interoperability Strategies

- Systems architecture
- Live network for the exchange of specific data
- Shared data model and vocabularies

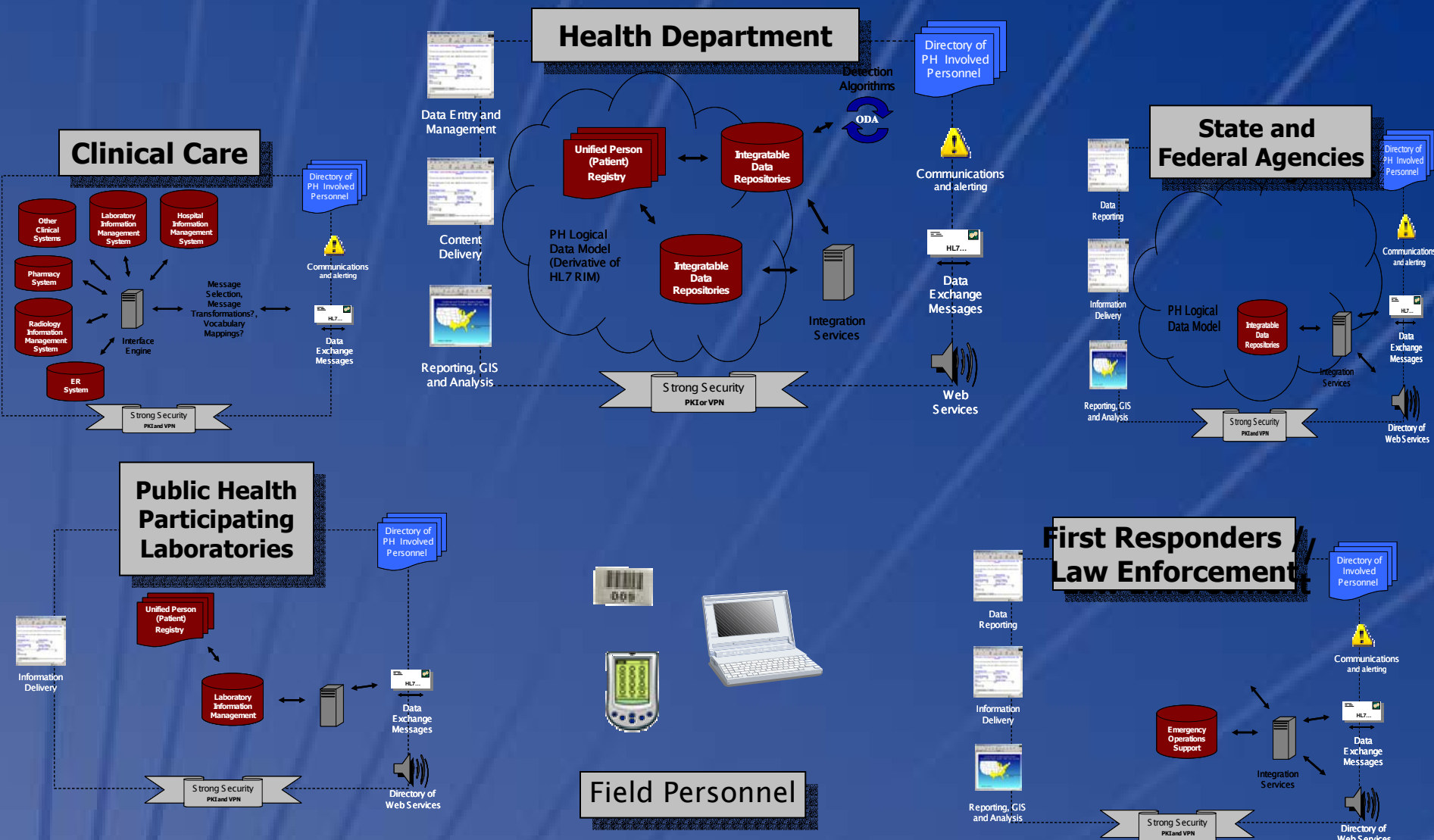


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# Public Health Information Network – Systems Architecture



# Health Department

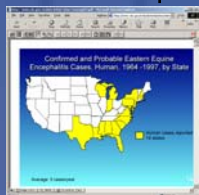
Directory of PH Involved Personnel



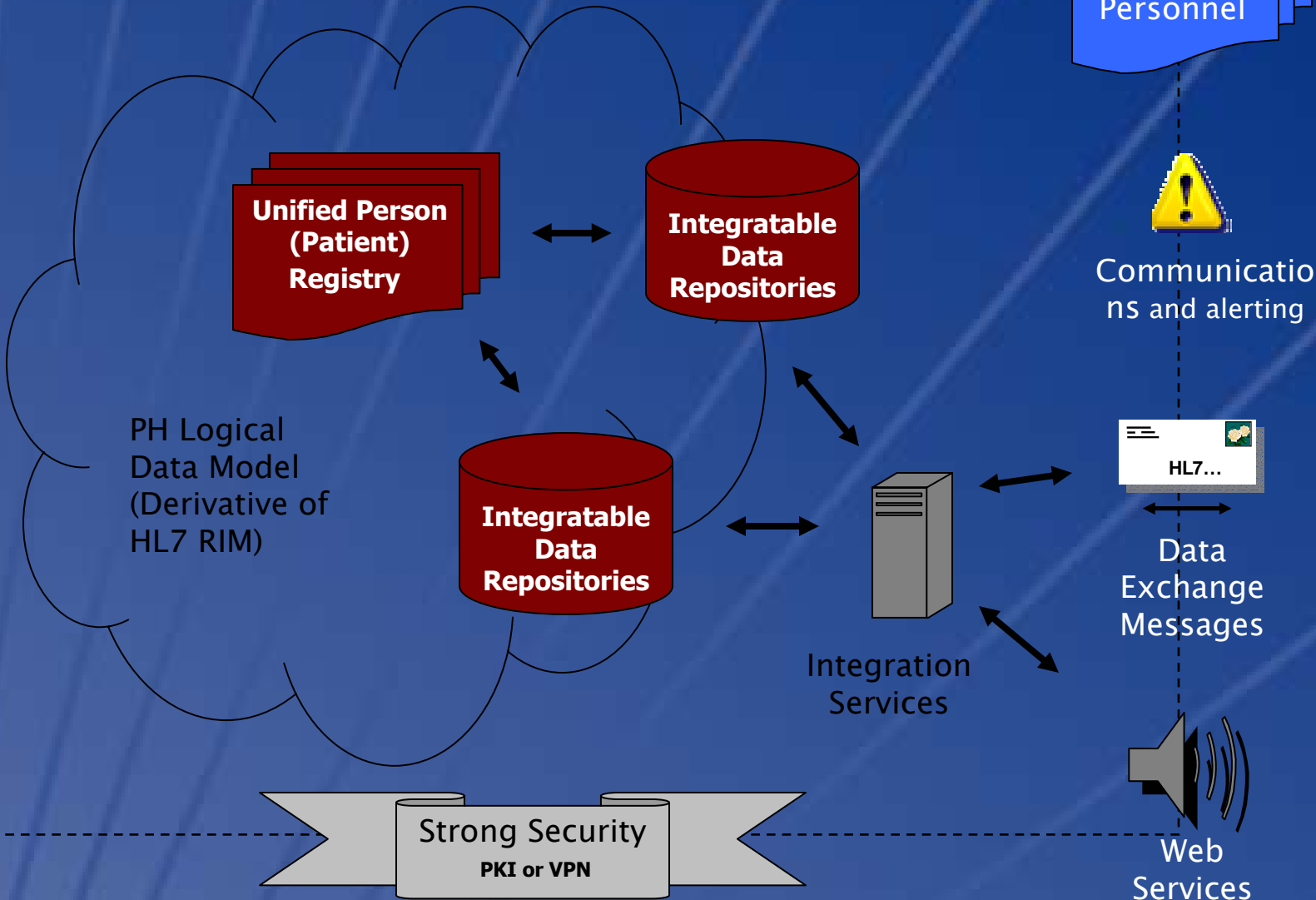
Data Reporting



Content Delivery



Reporting, GIS and Analysis



# Public Health Information Network Interoperability Strategies

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# Public Health Information Network – “Live Network”

“Live” Exchange of and Access to Specific Data  
for Interoperable Systems – Messages and Storage

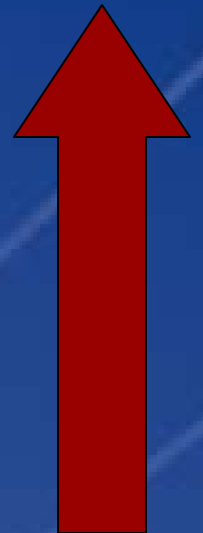
Specific Data Content – Vocabulary and Implementation  
Guides (LOINC, SNOMED, etc.)

Data Structure – Data Models (PHLDM, HL7 etc.)

Transport / “Handshake Between Information Systems” –  
ebXML

Encryption / Security – HTTPS, PKI

Connectivity – Continuous Internet Connectivity



# Public Health Information Network Common Data Language

For public health participants:

- Require the use of industry standard data model, vocabularies and messages
- Use technology standards to ensure that software can be used in many settings

For clinical data coming to public health:

- Public Health Information Network standards conform with federal e-Gov directions and related standards:
  - National Committee on Vital and Health Statistics (NCVHS)
  - Consolidated Health Informatics (CHI)





# Public Health Information Network Messages

## Routine Public Health and Investigation of BT Detection Messages

### Clinical

- Microbiology results
- Orders
- Chief complaints
- Lab results
- Discharge diagnosis

### Public Health

- Nationally Notifiable Diseases
- Hepatitis
- Meningitis
- Electronic Lab Reporting

## Response Messages

- Lab test request
- Lab result
- Case report
- Test result available notification
- Specimen container shipment
- Specimen context
- Intervention request
- Intervention result report
- Contact list report
- LDIF directory exchange
- Alerts and public health information dissemination



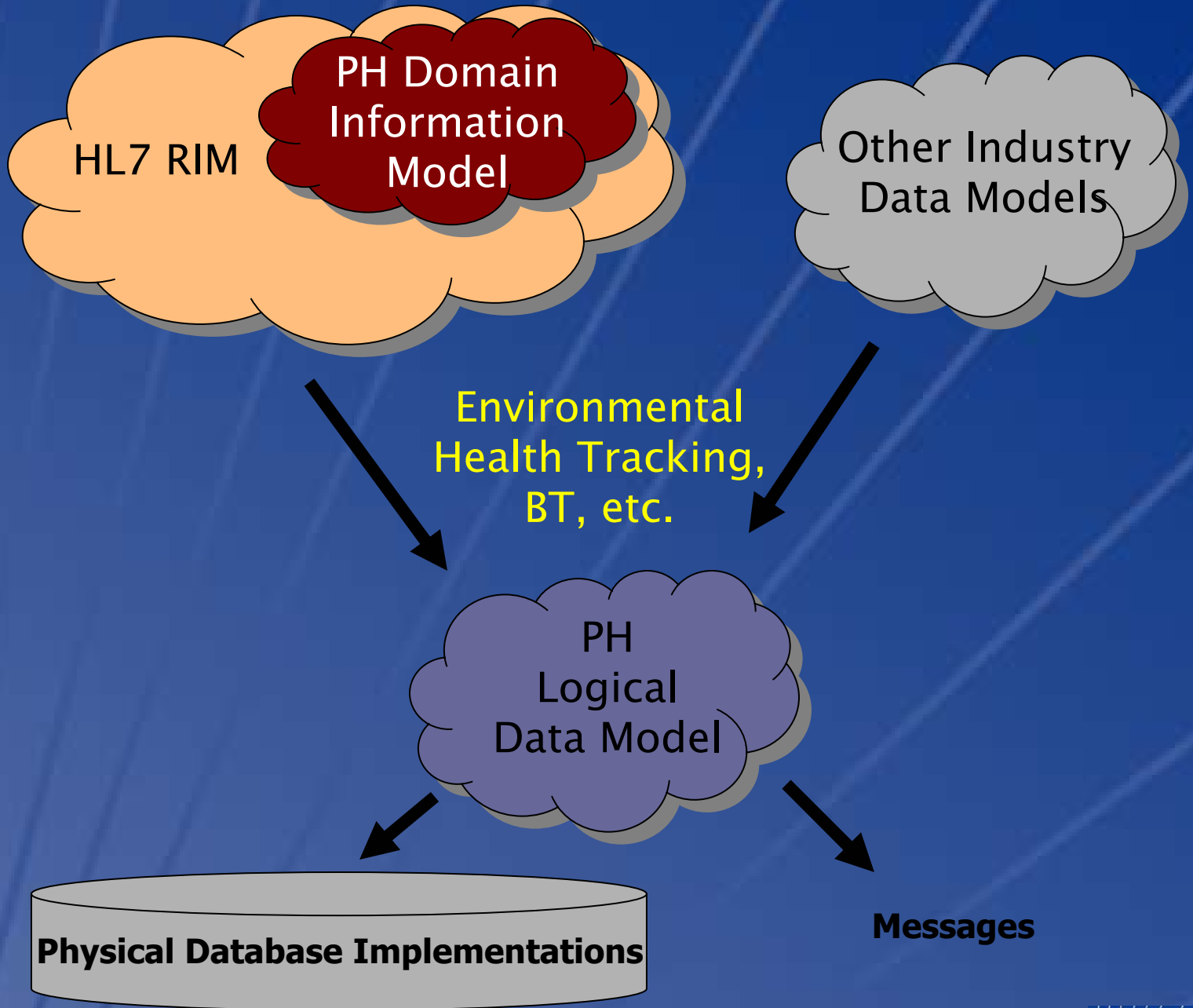
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Data

Specificity



# Public Health Information Network – Status

## Public Health and Social Services Emergency Fund

- \$1 billion for state and local public health capacity (estimate that 30% of funding is going to IT)
- CDC and HRSA stipulate use of standards for IT investments

CDC information council (CDC, ASTHO and NACCHO) approved naming of IT Functions and Specifications as version 1 of the Public Health Information Network Standards

Build on and coordinate ongoing activities of HAN, NEDSS and others

Conformance testing initiated around the Smallpox vaccination process





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