



PHIN VS Software Services: Vocabulary Provisioning and Management Tools for Public Health Information Systems

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PHIN VS



- Purpose and scope
- Functionality
- Technical aspects
- Current status and future directions

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Vocabulary Services: An Integral Component of PHIN

- PHIN, through defined data and technical standards and strong collaborative relationships, enables consistent data exchanges within public health and between public health and its partners
- PHIN data standards, including standard vocabulary and other specifications for electronic messages, are a foundation for interoperability
- PHIN Vocabulary Services (PHIN VS) will provide a coordinated, multi-organizational system for distributing standard PHIN vocabulary

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PHIN VS: Examples of Utility



- *State epidemiologist* – Searches for a disease condition to see whether it is notifiable
- *Electronic laboratory reporting (ELR) project manager* – Browses LOINC laboratory test names to evaluate content of incoming laboratory messages
- *Information system developer* – Updates microorganism list in state or local application from SNOMED terms and codes



PHIN VS: Objectives



- Challenge
 - ◆ Projects tend to reinvent the wheel
 - ◆ Vocabulary efforts often incompatible
 - ◆ Vocabulary is an extra chore for most projects
 - ◆ Implementations may be incomplete or inflexible
- Solution – PHIN Vocabulary Services
 - ◆ *People, Processes, and Tools* to support the authoring, editing, management, and distribution of standard vocabularies
 - ◆ People will provide expertise and oversight
 - ◆ Processes will help supplement and enforce standards
 - ◆ Tools will enable extensibility of applications and distribution of PHIN data

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Standard Vocabulary: Terminology and Codes



- Standard vocabulary refers to agreed-upon terminology and codes used to represent concepts, such as terms and codes for laboratory tests and microorganisms
- Code systems, e.g., LOINC, SNOMED, are important sources of the standard vocabulary needed for consistent, readily-comprehensible data exchanges between information systems
- A value set is a subset of terms and codes drawn from a code system and designed to meet a specified data requirement

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PHIN VS: A Source of Standard Vocabulary for Public Health



- Standard Reference Tables (SRTs) for the National Electronic Disease Surveillance System (NEDSS) and other PHIN systems
- Coded concepts for Locally Defined Fields (LDFs) and Collaboratively Defined Fields (CDFs)
- Controlled Health Terminology (CHT) under development for CDC Web site redesign

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Standard References Tables: Examples of Collaboratively Identified Content



- PHIN Notifiable Condition Mapping Tables
 - Notifiable conditions list provided by CSTE & CDC
 - LOINC-to-condition mapping
 - SNOMED-to-condition mapping
- Value sets developed for NEDSS
- Value sets developed for NHSN



PHIN VS: A Coordinated System for Providing Standard Vocabulary

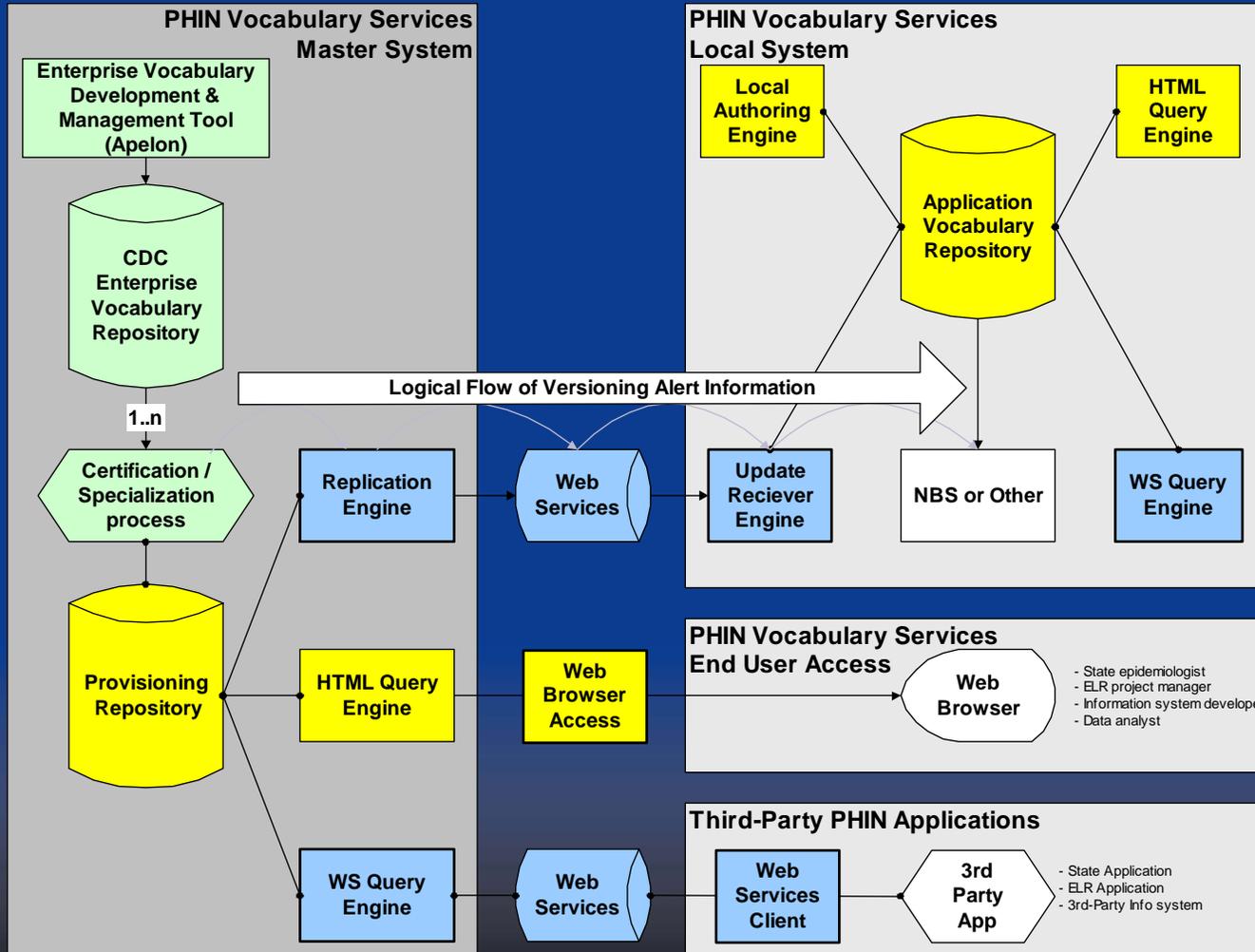


- Enterprise vocabulary authoring/editing tool and editorial services at CDC
- Provisioning data store at CDC
- User access (CDC, state, local, and other users) through Web Browser and Web Services
- Local authoring capability for extensions and other customizations consistent with standard vocabulary

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PHIN VS Architecture





Vocabulary Provisioning: Functional Features



- Vocabulary data store at CDC is designed for distribution of the entire store or portions of it to multiple organizations
- Version support allows users to selectively update components of the data store in their systems
- Distribution tree accommodates arbitrary number of servers
- User interface enables searches by code system, value set, code name, code description, or some other code property (e.g., screen display name)

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PHIN VS: Using the Web Browser



- *State epidemiologist* – Notifiable conditions
- *Electronic laboratory reporting (ELR) project manager* – Laboratory test names
- *Information system developer* – Microorganism list
- *Data analyst* – Synonyms for a key word



PHIN VS: Version Support



- An efficient versioning schema is required because:
 - ◆ Vocabularies change over time
 - ◆ Regulations prevent modifications to stored data
 - ◆ Updates should must be as small as practical
 - ◆ Local customizations must be preserved for data integrity
 - ◆ Some operations require specialized vocabulary management

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PHIN VS: Web Services

- Purpose of PHIN VS Web Services
 - ◆ Server-to-Server Use Case:
Provision Vocabulary to PHIN VS Systems
 - ◆ Server-to-Client Use Case:
Provide Vocabulary to 3rd-Party Applications

- PHIN VS Web Services Architecture:
 - ◆ Industry-standard SOAP web services protocol
 - ◆ Java Façade API for read-only vocabulary access
 - ◆ Automatically generated WSDL web service definition
 - ◆ Automatically generated modules for app server
 - ◆ Sample APIs, clients provided to end users

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PHIN VS: State and Local Requirements for Provisioning Tools



- Standard Web browser (system has been certified on Internet Explorer)
- Local application vocabulary repository may be necessary to meet State or local requirements
- Database administrator or system administrator for system setup

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PHIN VS: PHIN Developer Module

- Services
 - Manages vocabulary storage and caching
 - Provides authoring, access, searching, mapping, and filtering
 - Controls versions and updates to vocabulary server
 - Fully documented Java libraries available
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PHIN VS: Current Status

- PHIN VS Release 1.0
- PHIN notifiable condition mapping tables, NEDSS SRT's, additional PHIN vocabulary tables – developed and distribution-ready
- Web-browser access to vocabulary store ; XML download
- Provisioning: Web services interface with vocabulary store
- Version Support



PHIN VS: Priorities and Ongoing Projects

- Updating and adding value sets to provide new vocabulary content coverage
- Further development of enterprise vocabulary services at CDC and CDC's CHT
- Supporting implementations of the PHIN VS provisioning & developer tools
- Distribution of user's guide and other documentation for PHIN VS
- User participation and feedback

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PHIN VS Future: Local Authoring Wizard



- Purpose – PHIN development sites may need access to authoring/editing tools to maintain local vocabulary customizations
- Browser-based
- Planned features
 - Vocabulary modification
 - Vocabulary manipulation
 - System-wide version updates and roll backs

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PHIN VS: Web Browser URL

<http://phinvs.cdc.gov>

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PHIN VS: Using the Web Browser



- *State epidemiologist* – Notifiable conditions
- *Electronic laboratory reporting (ELR) project manager* – Laboratory test names
- *Information system developer* – Microorganism list and mappings



Use Case: State Epidemiologist



- Goal
 - ◆ Examine Notifiable conditions
- *Use Case*
 - ◆ Web
 - ★ Use PHIN VS Browser to look at Notifiable conditions
 - ◆ Machine
 - ★ State Web App uses Web Services to display notifiable conditions.



Use Case: ELR Project Manager



- Goal
 - ◆ Evaluate Coded Content of laboratory messages using LOINC
- *Use Case*
 - ◆ Web
 - ★ Use PHIN VS Browser to find the LOINC codes that are associated with **Streptococcus pneumoniae**
 - ★ Use PHIN VS Browser to find out what LOINC code “10676-5” corresponds to.
 - ◆ XML
 - ★ Download relevant LOINC codes.

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Use Case: Information System Developer



- Goal
 - ◆ Use PHIN VS to control public health vocabulary
- *Use Case*
 - ◆ Web
 - ★ Browse concepts currently in the local repository
 - ★ Find new codes to add to repository.
 - ◆ Machine
 - ★ Enterprise Application uses local PHIN VS repository to store all health vocabulary



PHIN VS: Summary

- Personnel, processes, and technical infrastructure for developing, distributing, and updating standard vocabulary
- Designed to meet cross-cutting needs as well as specific programmatic requirements at local, state, and federal levels
- Enables semantic interoperability in data exchanges within public health and between public health and its partners

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PHIN VS: Contact Information



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