Plan of Interoperable EHR in Korea

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Outline

- Common Scenario
- Purpose and Method
- Interoperable EHR Architecture
- Future Plan

Purpose of Common Scenarios

Explain the relationship between the typical healthcare scenarios supported with EHR system and the deliverables of research projects carried out by CiEHR

Projects of Headquarter

- NH-ICT Plan
- EHR Architecture
- Integrated Terminology Model
- CDSS

Projects of Sub Teams

- EHR Functionality
- Data Dictionary and Document Form
- Standard Harmonization for Interoperability
- Terminology Service
- Private & Security Guidelines

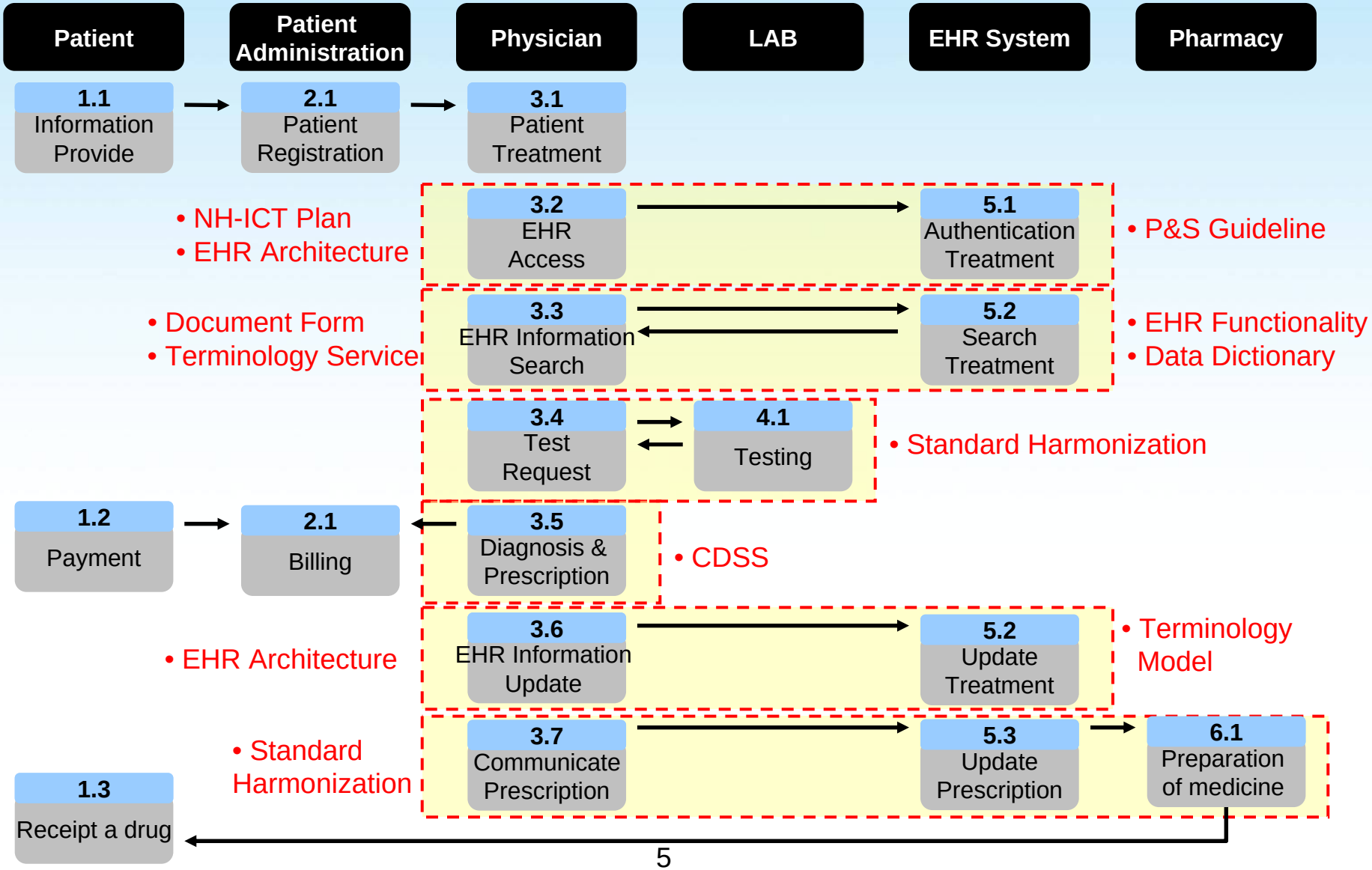
Common Scenario A

Interoperability of Medical Record & Outpatient Clinic

1. Patient Mr. Kim visits Internal Medicine Department of HanGook Hospital.
2. Mr. Kim sees Dr. Lee after registering at the Patient Administration Department.
3. After receiving authentication for accessing EHR system, Dr. Lee accesses Mr. Kim's medical record in the hospital to review his past medical history.
4. Dr. Lee reviews recent information related to examination and test results of Internal Medicine Department.
5. Upon reviewing the EHR, Dr. Lee notes that Mr. Kim has been diagnosed for gastritis previously from another hospital and is allergic to 'A' medication.
6. Dr. Lee recommends and orders a gastroscopy to Mr. Kim for more detailed examination.
7. After completing the test, Dr. Lee makes the diagnosis, recurrent gastritis, to Mr. Kim.
8. Dr. Lee prescribes medication for the recurrent gastritis.
9. Mr. Kim pays the medical fee at the patient administration department of HanGook Hospital. He designates a pharmacy nearby his home to collect his medicine.
10. Mr. Kim collects his medicine prepared and ready for him at the designated pharmacy and returns home after paying for the medicine.

Common Scenario A – Workflow

Interoperability of Medical Record & Outpatient Clinic



Approach for Interoperable EHR

Business Architecture	**Framing Interoperability Business Scenario**	▪ General interoperable EHR scenario ▪ Emergency interoperable EHR scenario ▪ Bio-Surveillance scenario
	Definition of Interoperability Use-case	▪ Document EHR workflow about scenario ▪ Definition of EHR event and action
Purpose: Complement to EHR architecture using EHR use-case based on interoperability scenario		
Application Architecture	**Mapping of EHR Function and Application**	▪ Definition of EHR function using EHR event ▪ EHR application mapping based on the EHR function
	Major Decision Subject of EHR Architecture	▪ Patient Identifier ▪ Data Storage Format ▪ Adaptor System
	Definition of EHR Deployment Model	▪ Deployment of EHR service ▪ Deployment of EHR repository ▪ Definition of EHR deployment model
Purpose: Derive EHR function that support EHR business architecture. Definition of EHR deployment model based on analysis of considerable matters on EHR architecture.		

Framing Interoperability Business Scenario

Interoperable Business Scenario

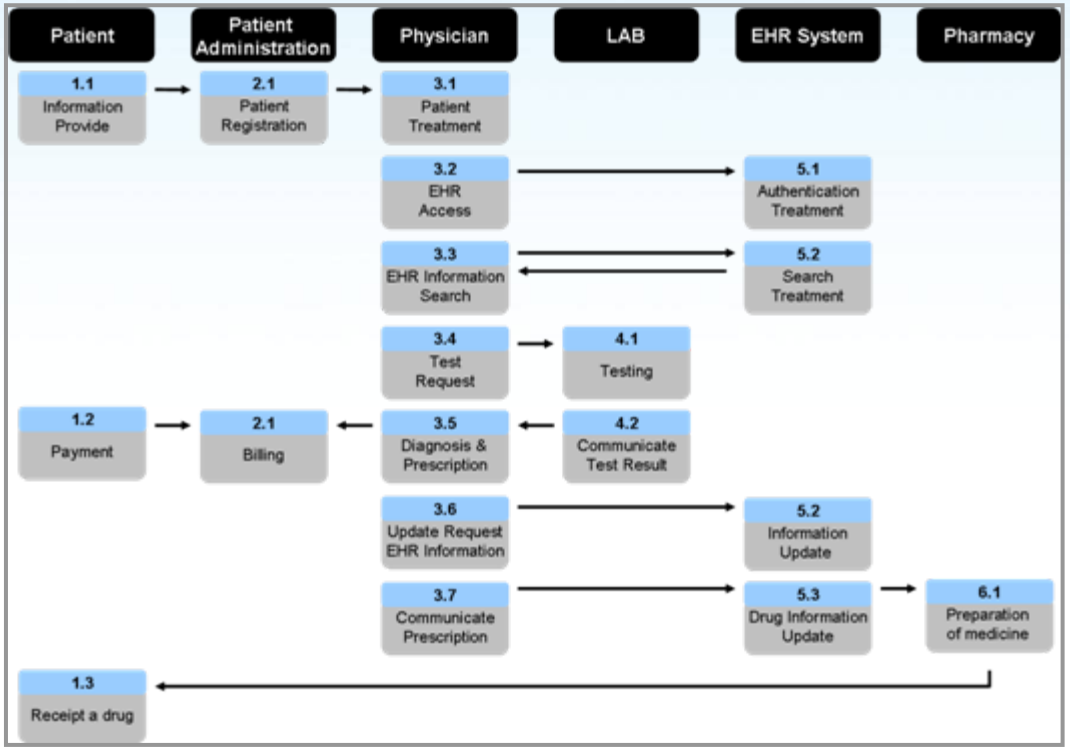
- A definition of scenarios in 3 main areas (the general interoperable EHR, emergency and Bio-Surveillance)
- 5 detail scenarios regarding general interoperable EHR.

EHR System Workflow

- A definition of a workflow between EHR system and major actors based on the scenarios.
- Description of how the EHR system works in order to realize each scenario.

Scenario of outpatient interoperability

Patient Mr. Kim visits Internal Medicine Department of HanGook Hospital. …



Events and Actions of EHR System

Derive event and action of EHR system: Bio-surveillance

- Definition of EHR events between actors and actions of the events
- Events and actions are connected with requirements of EHR function on EHR service

1.1 Surveillance Agency

- 1.1.1.0 Surveillance Policy Making
  - 1.1.1.1 Surveillance Target Selection
  - 1.1.1.2 Surveillance Policy Publication
- 1.1.2.0 Surveillance Policy Complete
  - 1.1.2.1 Policy Canceling Information Transmit
- 1.1.3.0 Surveillance Information Access
  - 1.1.3.1 EHR Service Registration
  - 1.1.3.2 EHR Service Access
  - 1.1.3.3 Surveillance Information Search
  - 1.1.3.4 Surveillance Information Download

1.2. IT Administrator

- 1.2.1.0 HIS Function Setting for Policy
  - 1.2.1.1 Event Registration / Cancellation
  - 1.2.1.2 Data Type Registration Process

1.4 EHR Service

- 1.4.1.0 User Management
  - 1.4.1.1 Grant EHR User ID
  - 1.4.1.2 Grant EHR Service Access Authority
- 1.4.2.0 Bio-Surveillance Access Control
  - 1.4.2.1 User Access Permission
  - 1.4.2.2 Reply Search Request
  - 1.4.2.3 Access Log Management
- 1.4.3.0 Report Management
  - 1.4.3.1 Terminology Mapping
  - 1.4.3.2 Form Creation
  - 1.4.3.3 Report Form Management
  - 1.4.3.4 Surveillance Information Transmit
  - 1.4.3.5 Transmit Log Management
  - 1.4.3.6 System Linking
- 1.4.4.0 Bio-Surveillance Information Mgt
  - 1.4.4.1 HIS Save Request Process
  - 1.4.4.2 Save Request Error Management

EHR Functions and Services

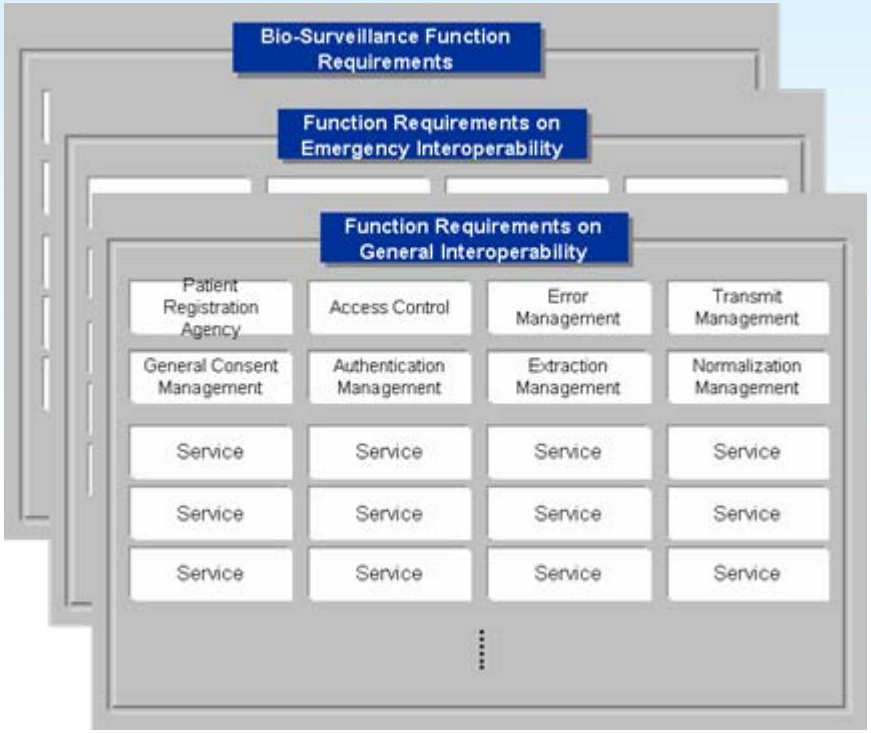
EHR Functional Requirements

- Derive EHR functional requirements from EHR actions of scenarios
- Definition of EHR service from EHR function Requirements.

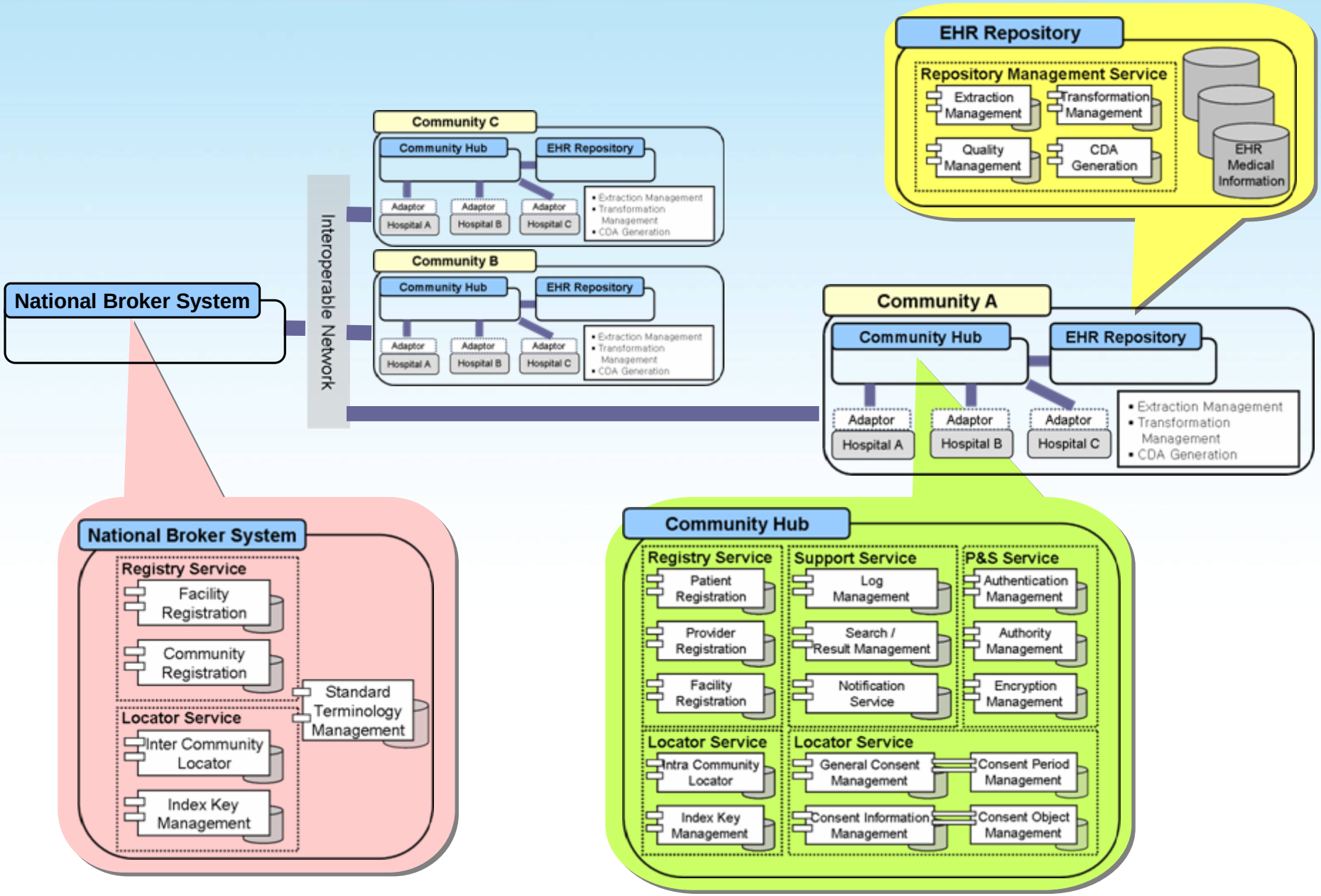
Event	Action	Functional Requirements	Functions
Request for search of patient record	Verification Query	EHR system requires error verification function of query to search EHR information.	Error Management
		EHR system requires correct result transmit function of search query.	Search and Provide Result
	Authentication and Verification of Provider	EHR system must involve function providers authentication .	Authentication Management
	Permission of Medical Record Transmit	EHR system must verify authenticated user and patient consent and permit transmit information.	Authority Management
	Transmit Patient Medical Information to Provider	EHR system must have extraction function from EHR repository.	Extraction

Definition of EHR Service

- Definition EHR services on each scenarios



EHR Deployment Model



Overall Plan of EHR Architecture

Conceptual and Logical Architecture of Interoperable EHR for Safe Management of Life-time Healthcare Information

EHR Architecture Framework	Interoperable EHR Architecture	EHR Architecture Guideline
Architecture Models	Business Architecture	Public Health Information Service
Architectural Deliverables	Data Architecture	Connection to Interoperable EHR
	Application Architecture	

2006	2007	2008	2009	2010
Public Health Center	Public Medical Institutions	PHR	Lifetime Health Record	Data Warehouse Bio-surveillance

References, Acknowledgments

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