



**RCKMS: Developing quality decision support in
the data supply chain for public health
surveillance**

~ Understanding RCKMS as an eCR Tool ~

Maiko Minami

Sr. Project Manager, HLN Consulting

Topics

- **Overview of RCKMS Technical Components**
 - eCR Workflow
 - Architecture: AIMS Platform, Centralized Approach
 - RCKMS Authoring Interface
 - Decision Support Service
- **Enhancements**
- **Future Considerations**

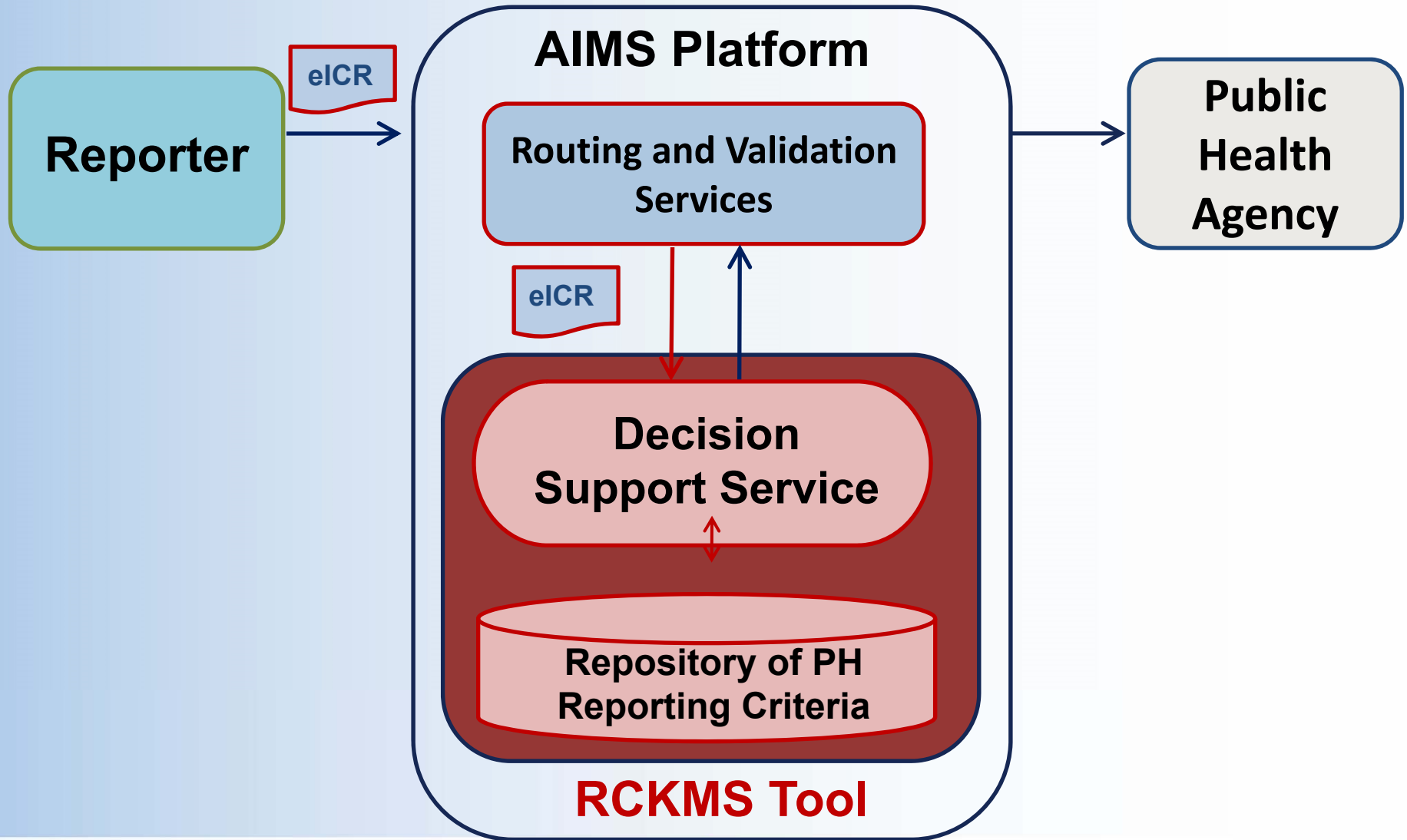
Purpose of RCKMS Tool

Reportable Conditions Knowledge Management System

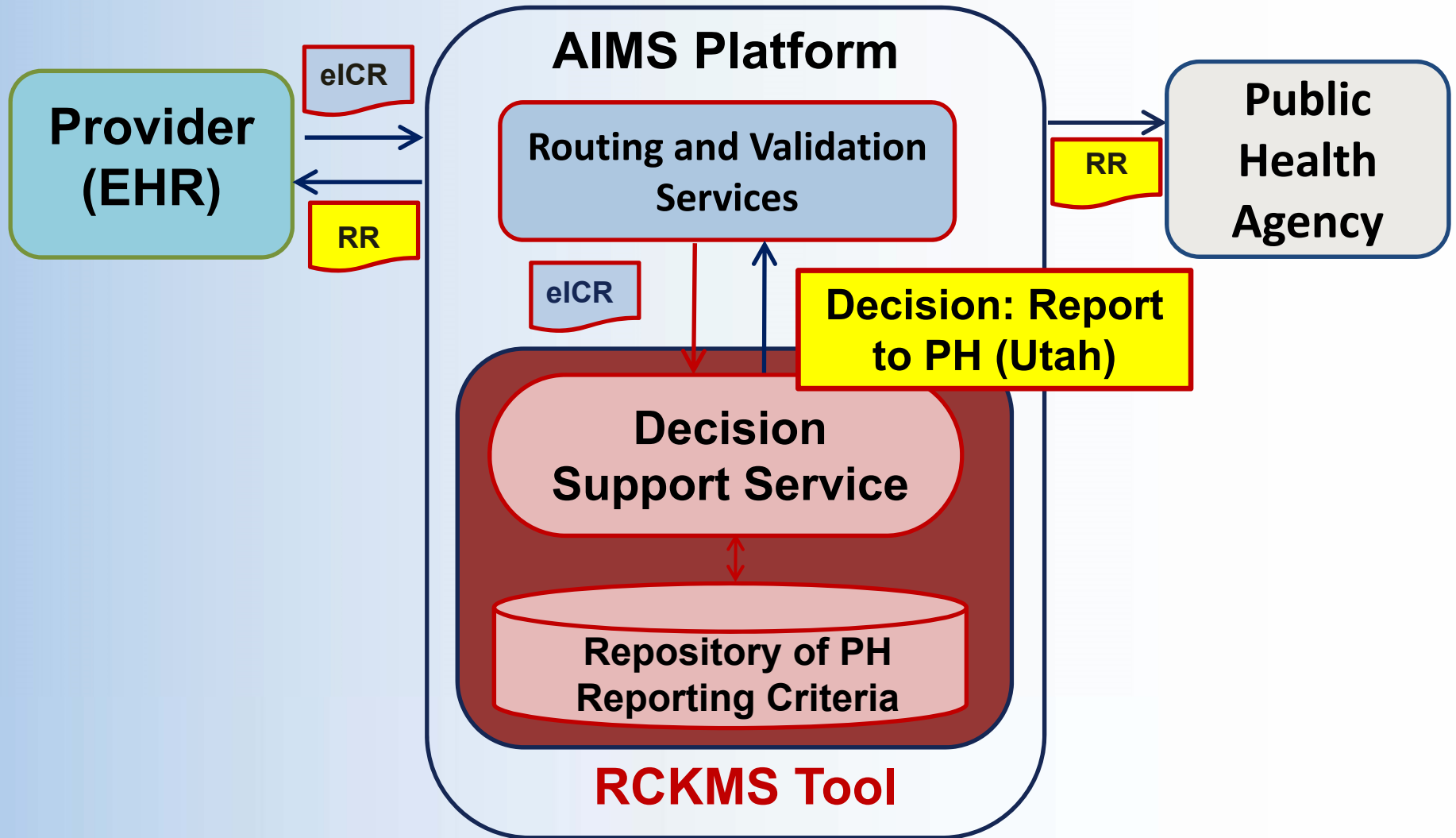
Two Main Purposes:

- 1) **Knowledge Management**: Allows Public Health Agencies (PHAs) to author their reporting specifications and rules logic; and
- 2) **Decision Support**: Allows Reporters to run records against those rules to determine reportability

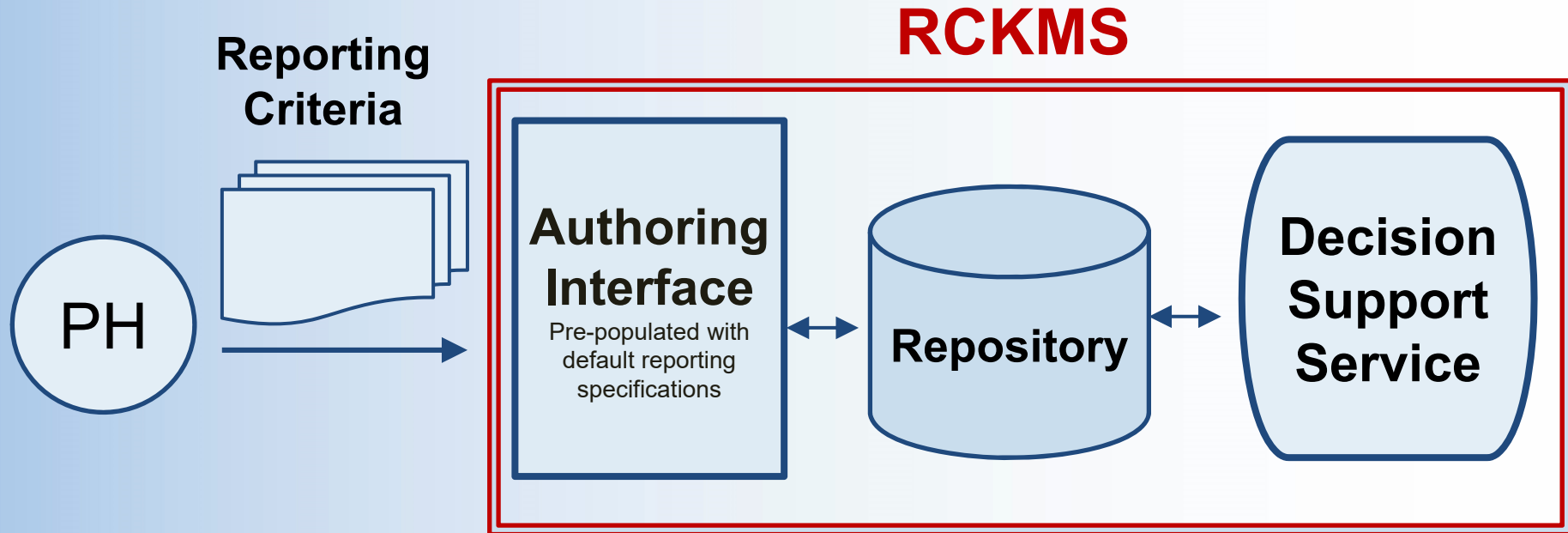
eCR Workflow



eCR Workflow



RCKMS Components



1. **Authoring Interface**: PHAs enters Reporting Specifications into Tool

RCKMS tool comes pre-populated with *default Reporting Specifications* that PHAs can choose to use as is, or customize to meet their needs

2. **Repository**: Reporting Specifications and Criteria stored in a Repository

3. **Decision Support Service (DSS)**: Reporting Specifications deployed to DSS (Rules Engine)

Authoring Interface

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WELCOME TO RCKMS



The Reportable Conditions Knowledge Management System (RCKMS) is a real-time portal to enhance disease surveillance by providing comprehensive information on public health reporting criteria.



Reporting Specifications

This module allows jurisdictions to author their reporting specifications for reportable conditions.

[Read More →](#)



Test Cases

After authoring the reporting specifications, jurisdictions can create and run test cases against those rules to validate that the expected results are being returned.

[Read More →](#)













Reports

Reports allow users to see a summary and detailed output of the reporting specifications, value sets and criteria for each condition.

[Read More →](#)

Reporting Specification

Show entries

Specification Added? 	Nationally Notifiable? 	Specification Name 	Category 	Status 
	Y	Chlamydia	Sexually Transmitted Infections	Published to Production
	Y	Gonorrhea	Sexually Transmitted Infections	Published to Production
	Y	Pertussis	Vaccine Preventable Conditions	Published to Production
	Y	Salmonellosis	Enteric Diseases	Published to Production
	Y	Zika	Zoonotic and Vectorborne Diseases	Published to Test

Reporting Specification

Edit Reporting Specification

[Details](#)
[Criteria / Logic Sets](#)
[Specifications](#)
[Internal References](#)
[External References](#)

Reporting Specifications

	Lab Reporting (Lab2)	Provider/Facility Reporting (CLIN+EPI)	Provider/Facility Reporting (DX)	Provider/Facility Reporting (Lab)
Reporting Timeframe	1 day(s) ▼	1 day(s) ▼	1 day(s) ▼	1 day(s) ▼
Clinical		Necessary ▼		
Diarrhea				
Salmonellosis (Diagnosis or active problem)			Sufficient ▼	
Laboratory	Sufficient ▼			Sufficient ▼
Detection of Salmonella (except <i>S. typhi</i> and <i>S. paratyphi</i>) nucleic acid by any method in a clinical specimen				
Identification of Salmonella (except <i>S. typhi</i> and <i>S. paratyphi</i>) by culture method in a clinical specimen, including identification tests performed on an isolate	Sufficient ▼			Sufficient ▼
Epidemiologic		Optional ▼		
Contact of a person with Salmonellosis (Not Yet Implemented)				

Reporting Specifications

		Provider/Facility Reporting (DX)	
Reporting Timeframe	▼	1	day(s) ▼
Clinical	▼		▼
Diarrhea			
Salmonellosis (Diagnosis or active problem)	▼	Sufficient	▼

Edit Criteria

To setup the criteria for the condition, select a criteria template from the list then assign inputs in the box below.

ID ff1b0328e29ab652262a765ddb672615

Criteria Template

[Condition] (Diagnosis or active problem) ****THE BA MUST UPDATE TEXT****

Inactivate

Criteria Label

Salmonellosis (Diagnosis or active problem)

Criteria Input

- Patient has a diagnosis of == Salmonellosis (Disorders) (SAL003)
OR
- **Group 1**
 - Patient has a problem of == Salmonellosis (Disorders) (SAL003)
AND
 - Problem has status of == Active (active)

Salmonellosis (Diagnosis or active problem)

Criteria Input

- Patient has a diagnosis of == Salmonellosis (Disorders) (SAL003)

OR

- **Group 1**

- Patient has a problem of == Salmonellosis (Disorders) (SAL003)

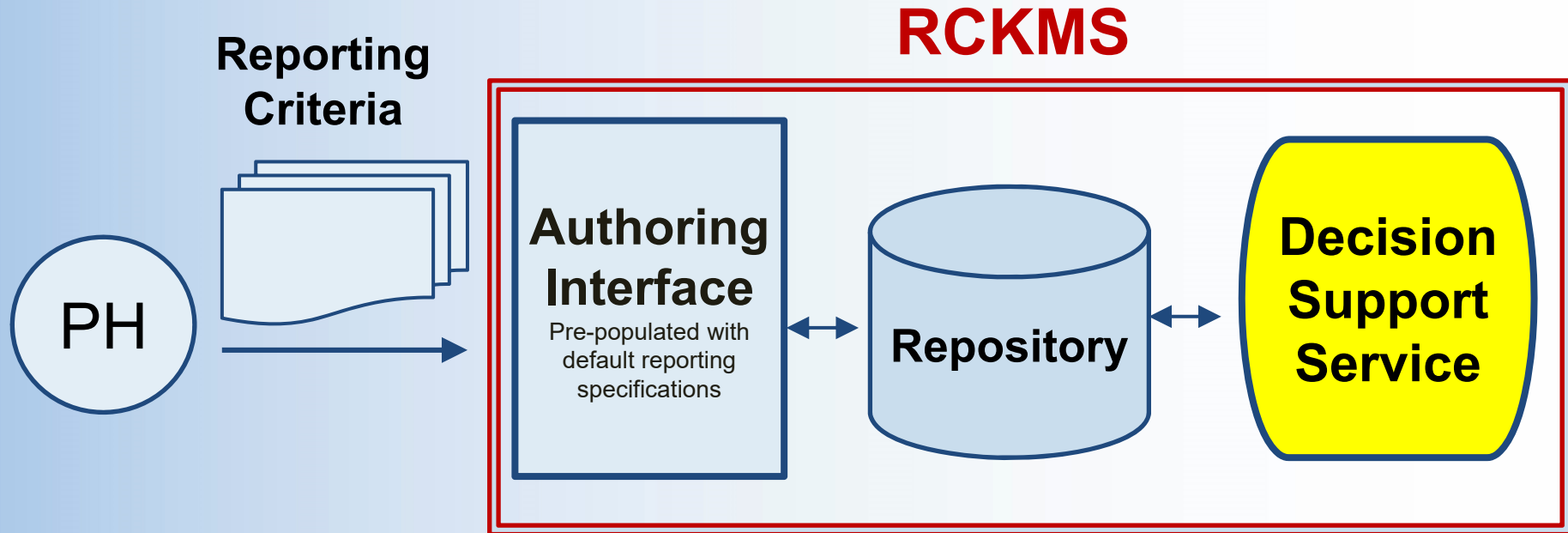
AND

- Problem has status of == Active (active)

Decision Support Service

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Decision Support Service

- RCKMS **Decision Support Service (DSS)** uses [OpenCDS](#) as the Rules Engine
 - Open Source, freely available Clinical Decision Support (CDS) software: “multi-institutional, collaborative effort to develop scalable, CDS tools and resources”
- **Standards-based DSS infrastructure and tooling**
 - [HL7 Decision Support Service Standard](#) for standard functionality and interfaces
 - [HL7 Virtual Medical Record \(vMR\)](#) for consistent modeling of the rules
 - [Drools](#) as executable representation of rules
 - Evolving to support new models and payloads (e.g. FHIR)

Enhancements

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Enhancements

- **Communication**
 - Notifications
 - PHA List of Conditions
 - **Enhance Authoring**
 - Versioning
 - Cloning
 - **Testing Capability**
 - Decision Support Service Test Tool
- **Larger eCR Workflow:
Handling of Logic and Output**
 - Support for Reportability Response
 - Insufficient Information for Definitive Determination

Notifications

- **Notifications** allows RCKMS Administrators to send messages to PHAs using:
 - Dashboard
 - Message Inbox
- **Messages** may be used to communicate (examples):
 - New release of the RCKMS Tool
 - New condition or versions of reporting specifications
 - Updated versions of value sets that will supported

PHA List of Conditions

- **PHA List of Conditions** allows PHAs to manage the conditions that are of interest to them
- Communicates to RCKMS which conditions are of interest for reporting specifications

PHA List of Conditions

Future Use

- When a default reporting specification becomes available for importing, PHAs will receive notification that the reporting specification is available
- Allows a PHA to select “proxy rules” that they designate to be run in place of a PHA’s own rules

Versioning

Versioning refers to the ability for RCKMS to efficiently support multiple versions of reporting specifications, value sets, etc.

- Implemented this year:
 - Ability to support multiple versions of reporting specifications and value sets for the same condition
 - Ability for users to test a newer version of reporting specifications without disrupting rules in production

Cloning

Cloning makes authoring more efficient by allowing users to clone their existing reporting specifications so that they don't have to be created from scratch

- Current implementation allows cloning of **reporting specifications**
- Future implementations will allow cloning of:
 - **Logic Sets**
 - **Test Cases**

Support for Reportability Response

Data Elements were added to support HL7 Reportability Response document that will be sent to PHAs and Reporters:

- Routing Agency
- Responsible Agency
- SNOMED Codes for Conditions
- Links and References: Priority, Category

Insufficient Information for Definitive Determination

- There are scenarios where there is insufficient information from eICR to make a definitive determination:
 - Determination returns a “May be reportable”
 - Reason is (for example): “Reportability could not be determined due to missing information needed for the following criteria: Patient Age < 1 year”

Insufficient Information for Definitive Determination

RCKMS has implemented one scenario where this applies:

- If a reporting specification contains criteria where age is a part of the logic set, and:
 - Age is missing from the eICR

AND

 - All other criteria in the logic set are met

THEN
- Determination = May be reportable

Insufficient Information for Definitive Determination

For example -- for Chlamydia, if the rule states:

If patient record contains evidence of:

Chlamydial conjunctivitis (as a diagnosis or active problem)

AND

Patient Age < 1 year

Then Report

If the eICR contains an active problem of Chlamydial conjunctivitis but patient DOB is missing, then determination = “May be reportable”.

Enhanced Testing Capability

- Previously, Test Manager allowed PHAs to test their own rules
- **Decision Support Service Test Tool** allows users to simulate the actual eCR workflow to test multiple jurisdictions, multiple conditions.

Future Considerations

- FHIR
- Alternative Deployments
- CQL
- Improved Tooling

Contact Information

Maiko Minami

Sr. Project Manager

HLN Consulting, LLC

maiko@hln.com

For more information on RCKMS:

www.cste.org/rckms

Email: rckms@cste.org