

RCKMS

Tools That Shine Through Implementation of Automated Rules for Electronic Case Reporting

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

RCKMS Technical Components



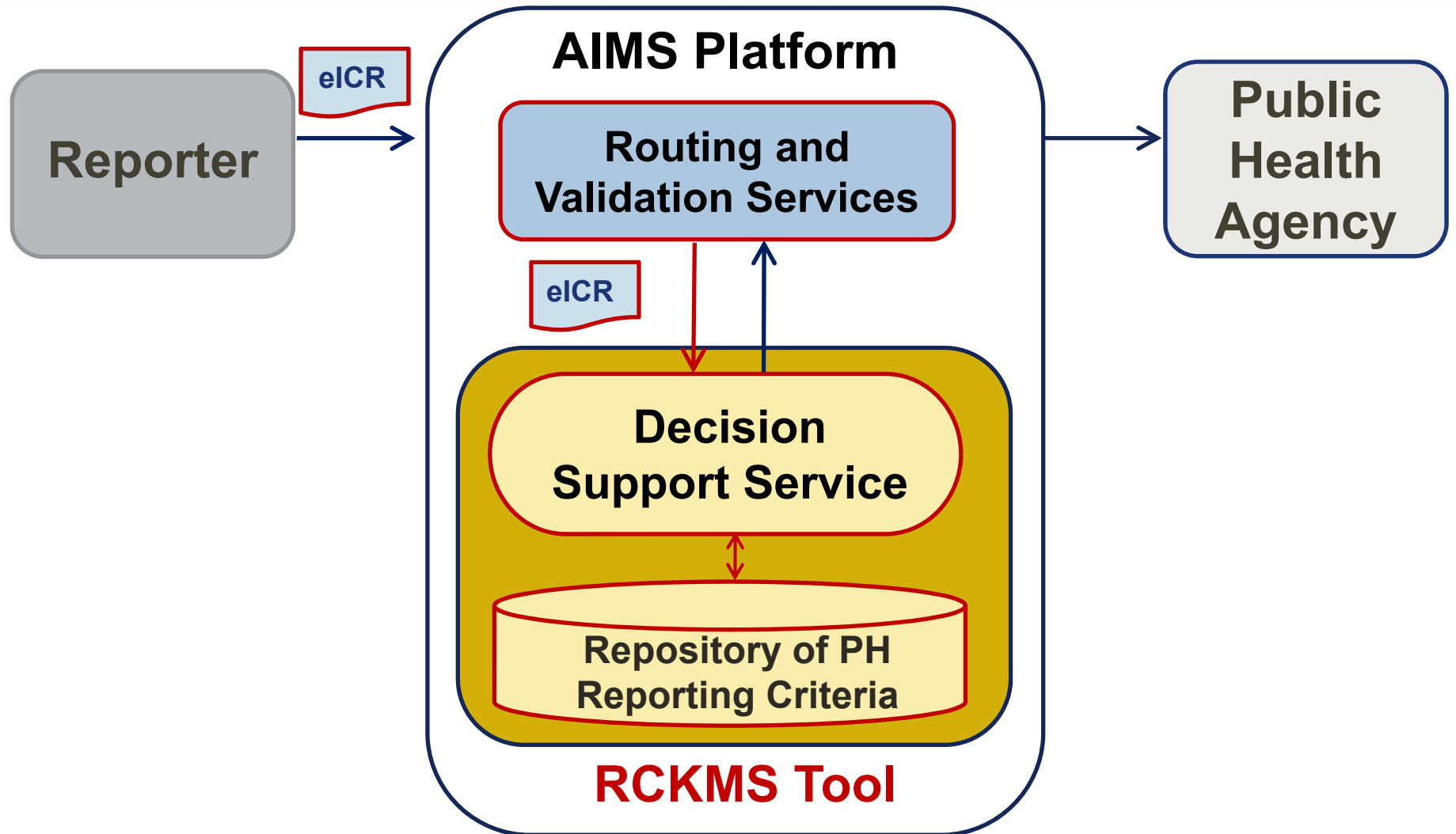
Purpose of RCKMS Tool CSTE

Reportable **C**onditions **K**nowledge **M**anagement **S**ystem

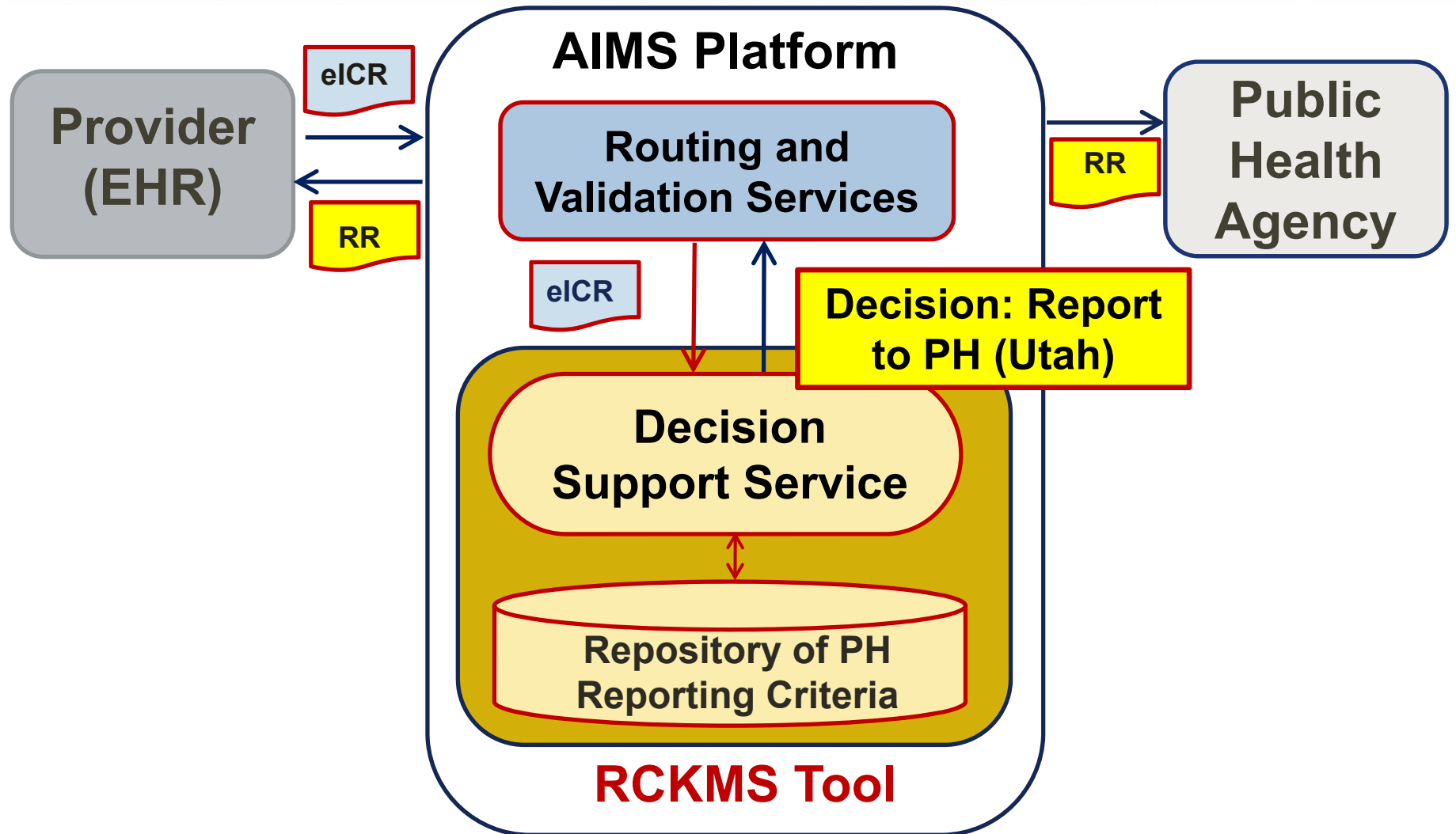
Two Main Purposes:

- 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

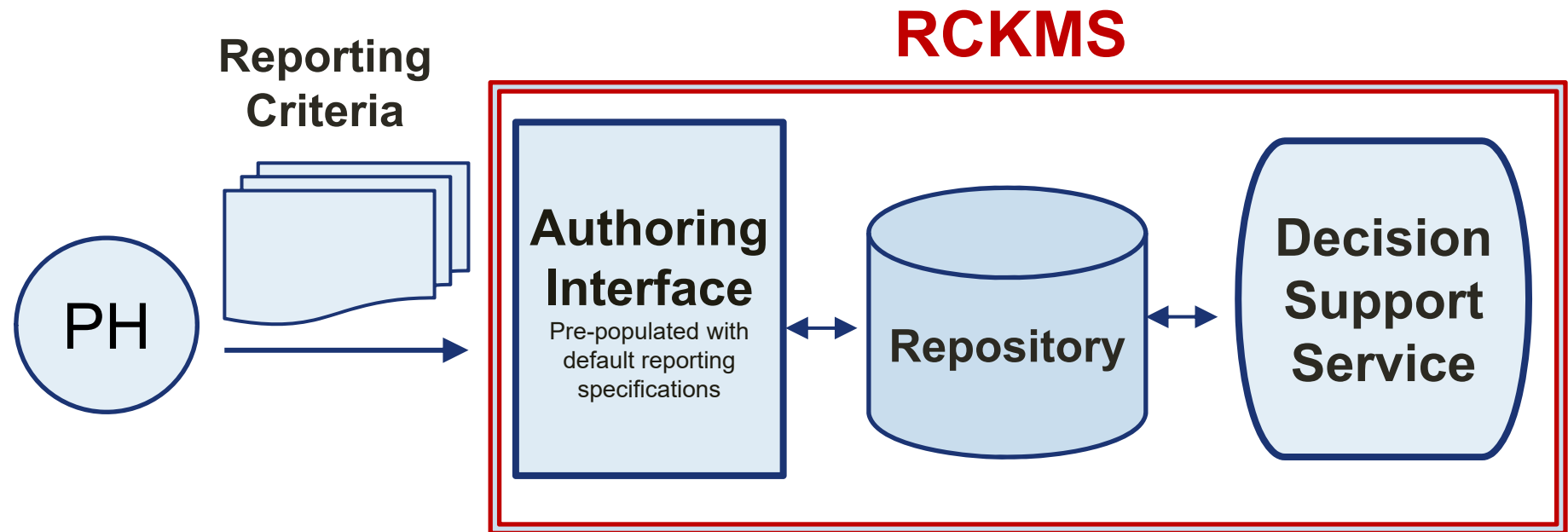
eCR Workflow



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



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)

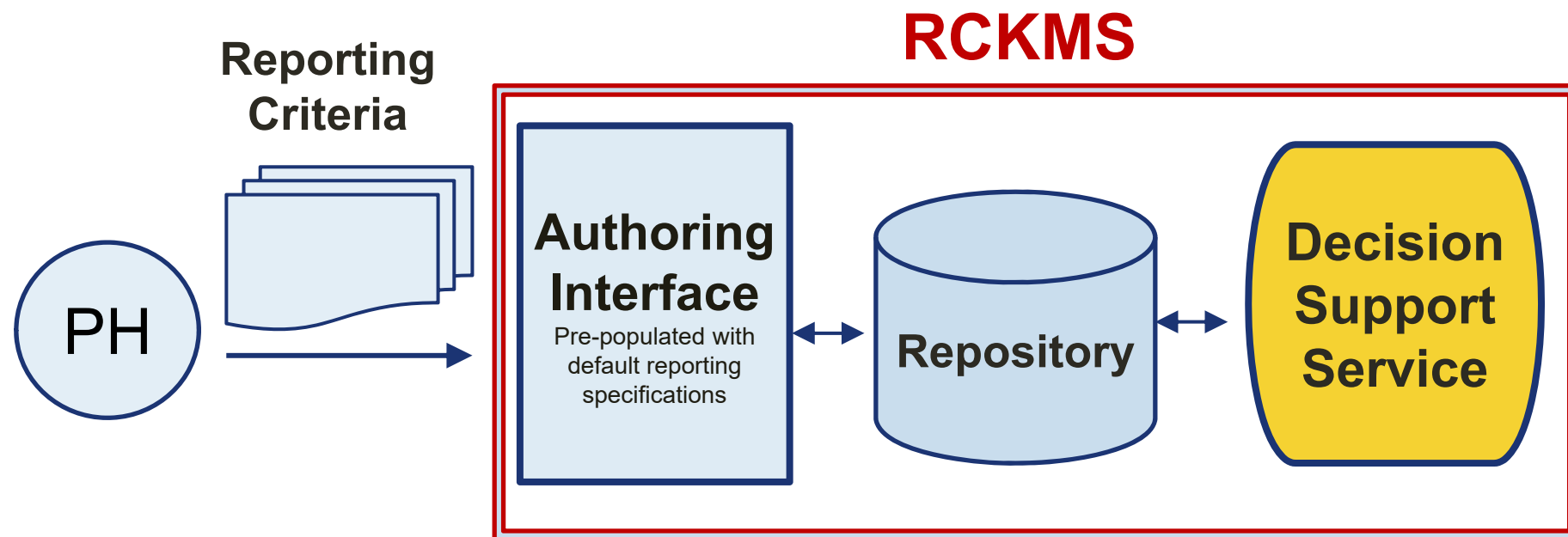
AND

- Problem has status of == Active (active)

Decision Support Service



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)

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



As a PHA, what new features are available to me?

- **Communication**
 - PHA List of Conditions
 - Notifications
- **Enhance Authoring**
 - Versioning
 - Cloning

- **Larger eCR Workflow: Handling of Logic and Output**
 - Support for Reportability Response
 - Insufficient Information for Definitive Determination

- **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

Reporting Specification

Show entries

Specification Added? 	Nationally Notifiable? 	Specification Name 	Category 	Status 
	Y	Salmonellosis	Enteric Diseases	Published to Test
	Y	Zika	Zoonotic and Vectorborne Diseases	In Progress
	Y	Pertussis	Vaccine Preventable Conditions	In Progress
	Y	Chlamydia	Sexually Transmitted Infections	In Progress
	N	Listeriosis		Condition Details Only
	N	Cryptosporidiosis		Condition Details Only
	N	Typhoid Fever		Condition Details Only

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

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 will allow cloning of **reporting specifications** (*in progress*)
 - 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 apart 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”.

Contact Information



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