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AMERICAN IMMUNIZATION  
REGISTRY ASSOCIATION

# Functional Guide Volume 1: Query and Response

AIRA Discovery Session  
February 26<sup>th</sup>, 2018  
4pm Eastern



# Overview

- Presentation
  - Functional Guide: Volume 1
  - Query and response in the wild
  - Functional Guide: Volume 2 – what's ahead?
- Questions, Comments and Discussion





# Today's Speakers:

- Eric Larson, AIRA Senior Technical Project Manager
- Kevin Snow, Envision Technology Partners, Technical Developer





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# Functional Guide Introduction

# Agenda

- Background
- Development Process
- Query and Response Volume
- Implementer Perspective
- Volume 2 Update



# Functional Guide Purpose

- A functional guide focuses on the capabilities and requirements a system will need in order to enable business functions needed by their end users.
- Functional guides do not dictate that a system must provide certain capability, but rather, it defines the requirements if a system chooses to supply certain capability.
- Drive forward the information found in the foundational, visionary, and best practice documents to ensure consistent implementation

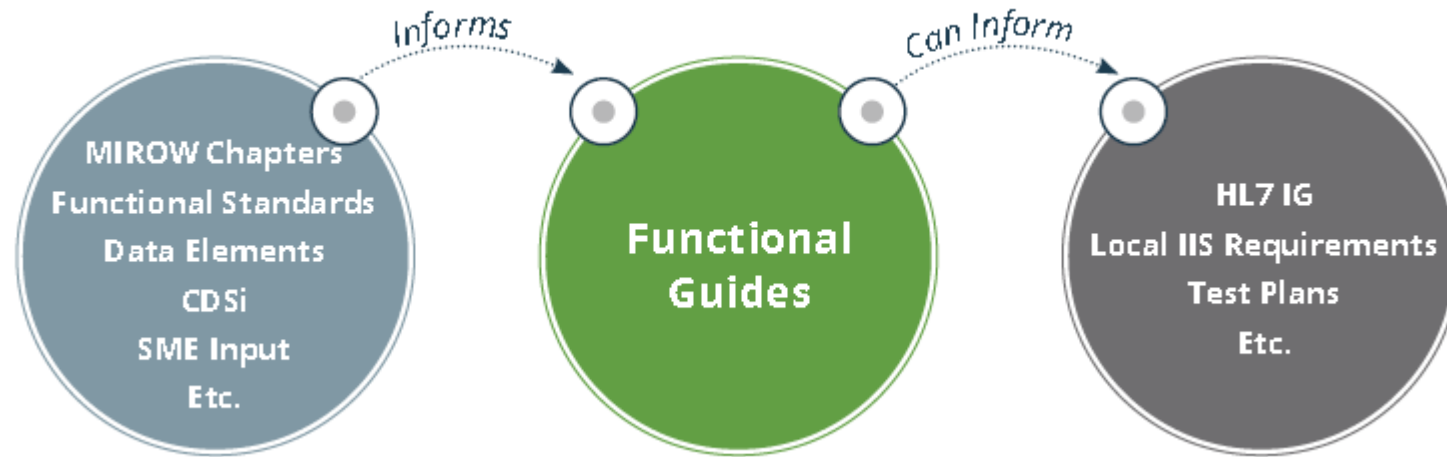


# Example Community Resources

Resource	Purpose	Limitation
HL7 Implementation Guide	Technical Specification to guide “payload” transmission of data.	Technical focused and true business needs/requirements are gleaned/implied from usage, cardinality, and conformance statements.
AIRA MIROW Chapters	Best Practice Documents	Further refinement is needed to drive them to consistent implementation. These can be used as input to a Functional Guide.
Functional Standards	Intended to lay a framework for the develop of IIS through 2022	Further refinement is needed to drive them to consistent implementation. These can be used as input to a Functional Guide.
IIS Strategic Plan	Serves as a guide for future investment decisions	Can be used to ensure Functional Guide is topically accurate and scoped appropriately.

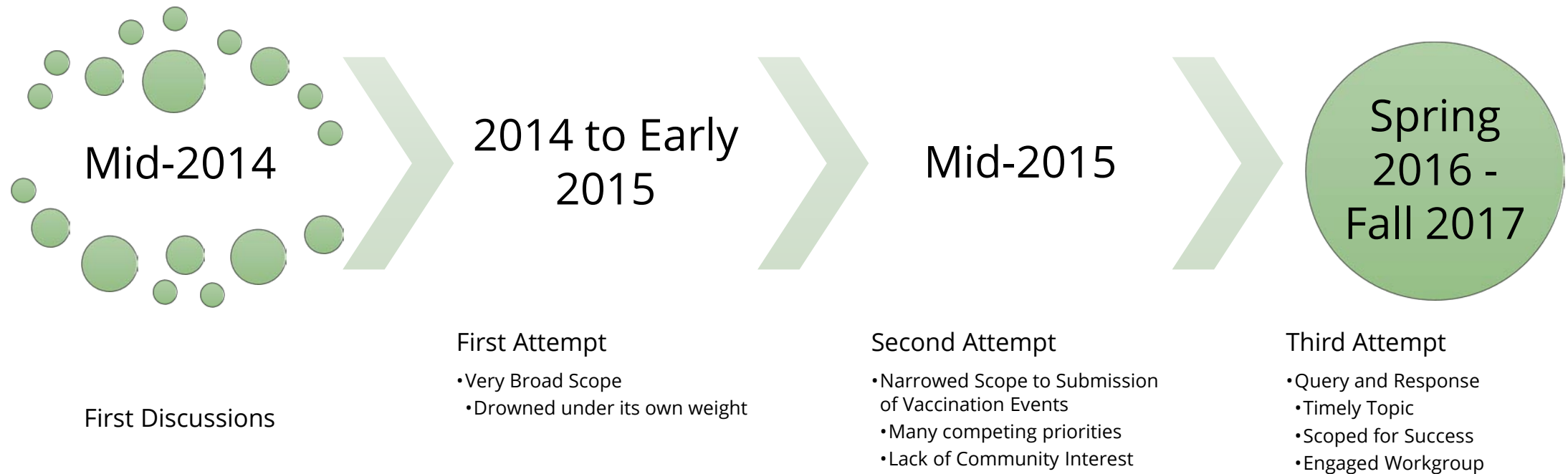


# Functional Guide “Fit”

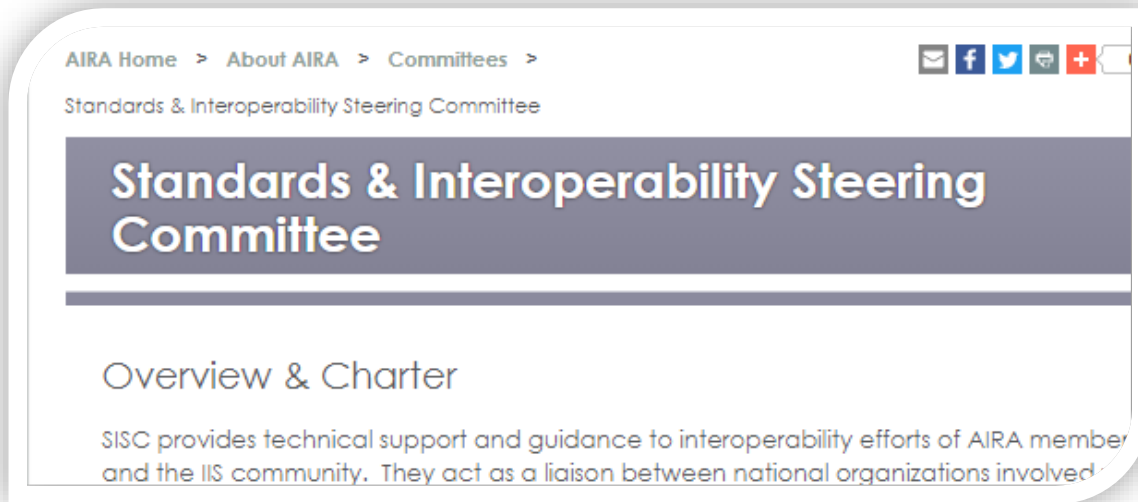




# Timeline



# Development Process



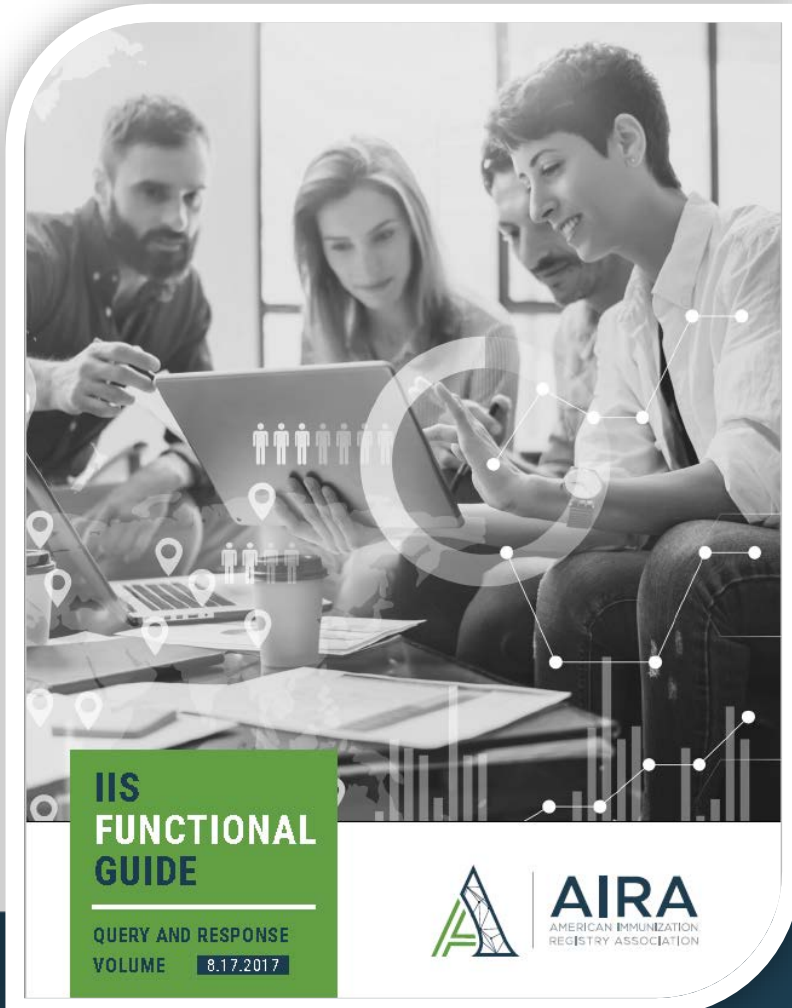
- Consensus-based process
  - Monthly calls with 12 Subject Matter Experts
  - Draft and review cycles
  - SISC Review
  - Public Review



# Query and Response Volume

## *Background Material*

- Functional Standards
- MIROW
- HL7 IG
- CDC CDSi Resources
- NIST Certification Tooling
- HIMSS Immunization Integration Program
- PHII Functional Requirements for IIS
- AIRA Measurement and Improvement Results

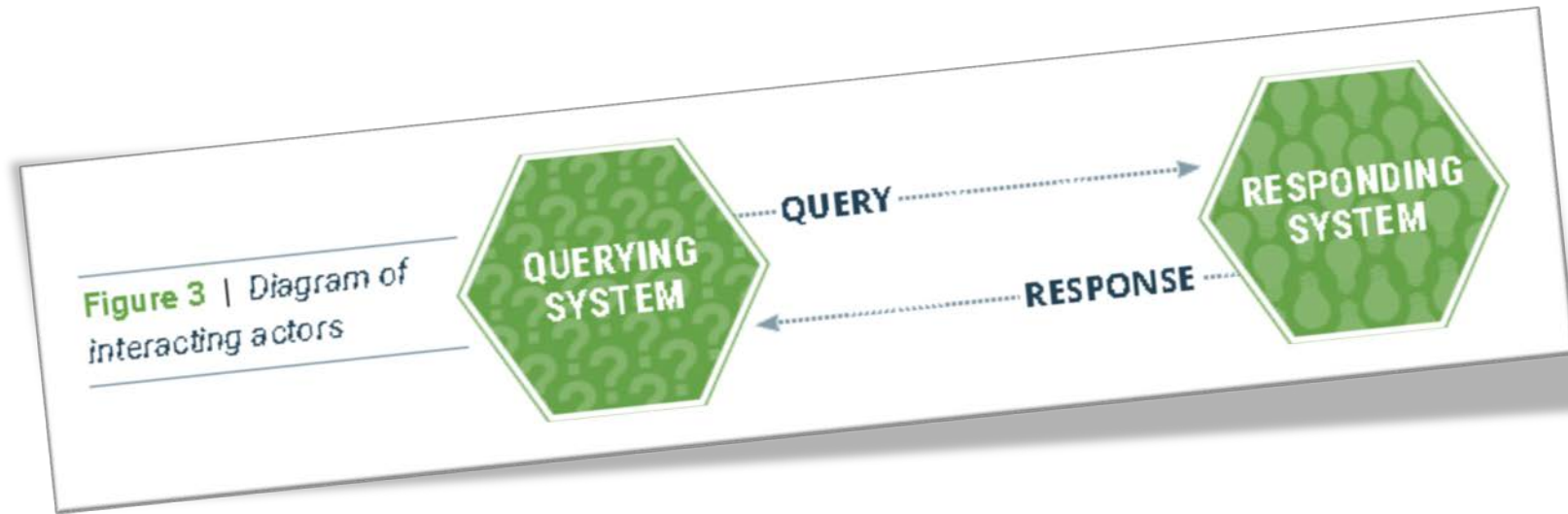


# Who Participated

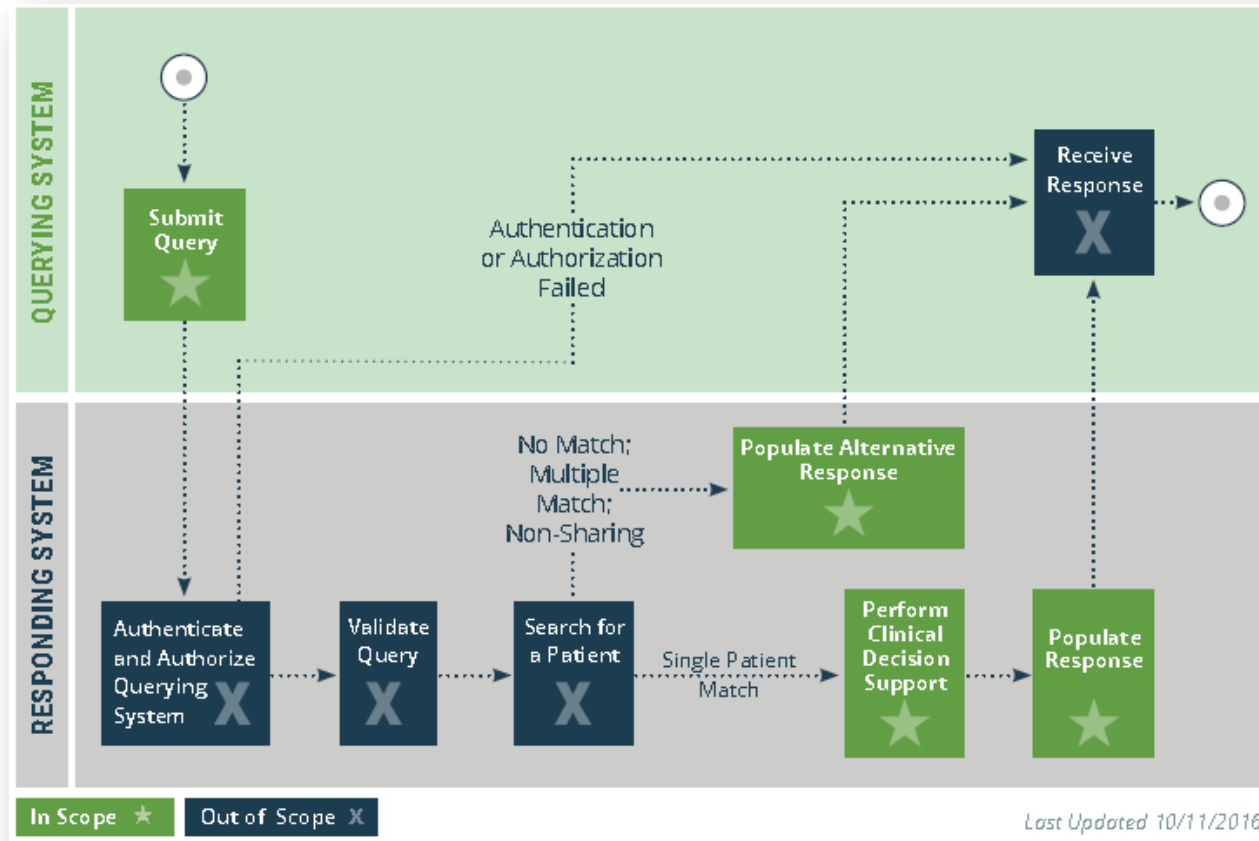
- Alice Stecko, *MIIS Rollout Manager*, Strategic Solutions Group
- Angel Aponte, *Computer Software Specialist*, New York City Department of Health and Mental Hygiene
- Avinash Martis, *Senior Systems Analyst*, Strategic Solutions Group
- Bianca Perry, *Interoperability Unit Chief*, New York City Department of Health and Mental Hygiene
- Craig Newman, *Health Research Analyst*, Northrup Grumman
- Greg Faber, *Integration Engineer*, EPIC
- Kevin Snow, *Senior Developer and HL7 Architect*, Envision Technology Partners, Inc.
- Kim Salisbury-Keith, *Development Manager*, Rhode Island Department of Health
- Megan Meldrum, *Research Scientist*, New York State Immunization Information System
- Michael Flynn, *NYSIIS Technical Manager*, New York State Immunization Information System
- Nell Lapres, *Integration Engineer*, EPIC
- Rob Snelick, *Computer Scientist*, National Institute of Standards and Technology



# The Actors



# Scoping the Actors



# Use Cases

## Querying System

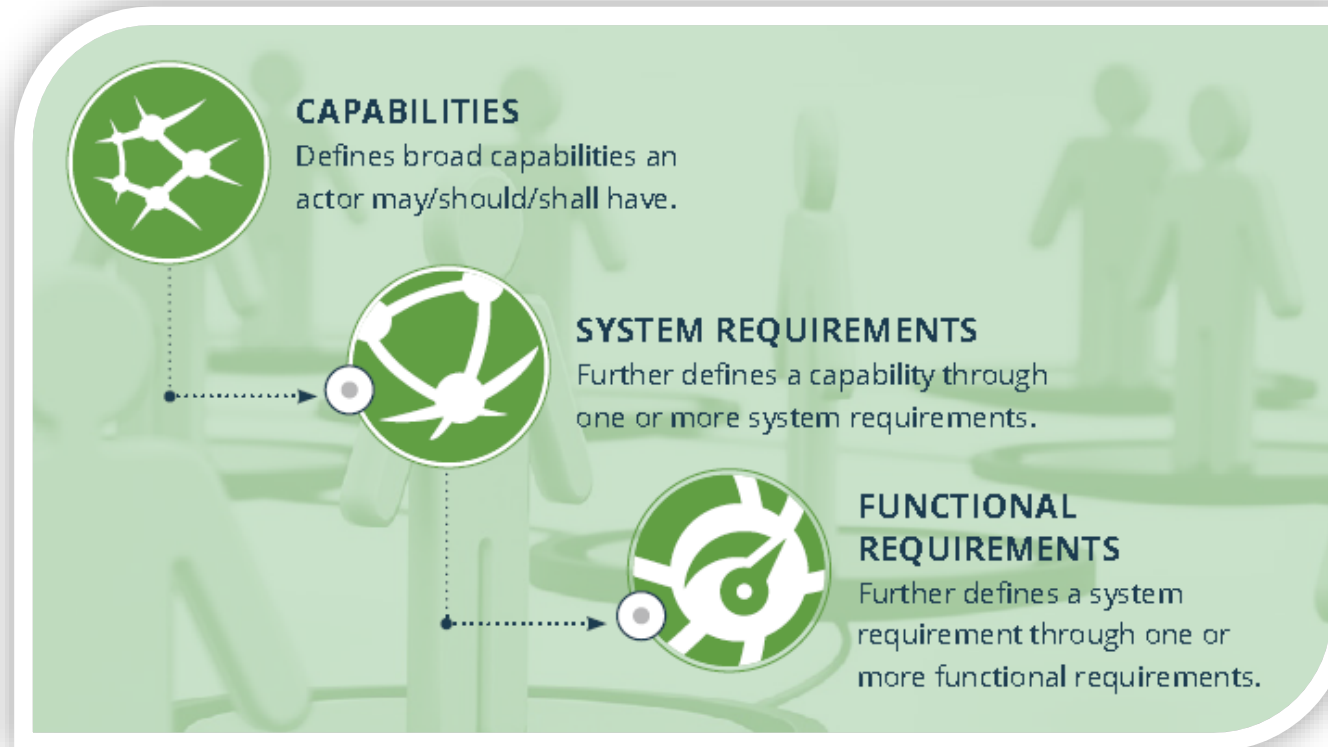
- Submit a Query
- Submit a Secondary Query

## Responding System

- Single Patient Found
- No Patient Found
- List of Possible Patients Found
- Too Many Patients Found
- Patient Found, but Doesn't Consent to Share



# Shaping the Actors





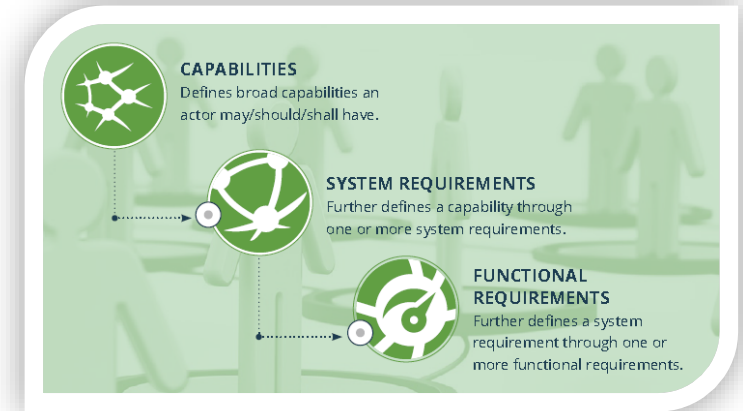
# Pulling it all together

## 6.1.1 CAPABILITIES

The following capabilities from Figure 5 are in scope and further defined in the remainder of this document.

### 1. Submit a Query:

- The Querying System **SHALL HAVE THE ABILITY TO** submit a query.
  - **Note:** This excludes the receipt (e.g., consumption, reconciliation, display, etc.) of the response to the submitted query.



SYSTEM REQUIREMENTS	FUNCTIONAL REQUIREMENTS
General Requirements	
1.1 The Querying System SHALL HAVE THE ABILITY TO query for a patient.	The Querying System SHALL construct an appropriately formatted and populated query with information from the Querying System.
	The Querying System SHALL include the maximum number of patients it is willing to accept in response.
	The Querying System SHALL include all known data from the Querying System at the time of the query.



# Informative Discussions

- Appendix A contains “Informative Discussions” which were critical to decision points on various requirements throughout the Functional Guide.
- Example
  - HL7 IG has two query and response profiles
    - Discussions from the business side couldn’t articulate when one profile would be used over an alternative profile.
    - Recommendation was to revisit this in future HL7 IGs
    - Update: This has been addressed by SISC in the current draft IG (Version 2.8.2)



# Informative Discussions (Cont'd)

- What is the best pattern for Forecasting when a dose is needed?
  - Immediate Dose
  - Immediate Dose + 1
  - Full Remaining Schedule
- For example:
  - A patient has a 2-month Polio on file
  - What should the IIS return?
    - A 4 month forecast only
    - The 4 month forecast + the 6 month dose
    - The remaining doses (4 month, 6 month, and 4 years)



# Using the Functional Guide

An implementer's perspective on using the Functional Guide

Kevin Snow

Envision Technology Partners, Inc.





# The functional guide falls in the list of tools used to both implement and test a HL7 immunization interface

- Local Testing
  - Unit Tests
  - Integration Tests
  - Load Tests
  - Etc.
- Guides
  - HL7.Org 2.5.1 guide
  - 2.5.1 Implementation Guide for Immunization Messaging v1.5
  - Addendum
  - Guidance for HL7 Ack Messages
  - Standardized Error Codes
  - **Functional Guide**
- Online Testing
  - AART
  - NIST Immunization Test Suite





# High level overview of how we use the functional guide

1. Used as a functionality checklist
  - Ensure that all the “SHALL” and “SHOULD” statements were implemented
  - Ensure as many as possible “MAY” statements were implemented
2. Used to provide a list for new tests to be written for any gaps in functionality



# Functionality checklist

Patient Identifying Information	
2.4 The Responding System SHALL have the ability to respond with patient identifying information.	<p>The Responding System SHALL have the ability to exchange the following Patient Identifying data elements from the Responding System:</p> <ul style="list-style-type: none"><li>• Patient Name</li><li>• Patient Date of Birth</li><li>• Patient Gender</li><li>• Responding System Patient ID</li><li>• Patient Address</li><li>• Patient Phone Number</li><li>• Patient Email Address</li><li>• Querying System Patient ID</li><li>• Mother's Maiden Name</li><li>• Patient Death Indicator</li><li>• Patient Death Date</li><li>• Reminder/Recall Preference</li><li>• Reminder/Recall Preference Effective Date</li><li>• Protection Indicator</li><li>• Protection Indicator Effective Date</li><li>• IIS Status</li><li>• IIS Status Effective Date</li><li>• Multiple Birth Indicator</li><li>• Multiple Birth Order</li></ul>
	<p>The Responding System MAY have the ability to exchange:</p> <ul style="list-style-type: none"><li>• Patient Race</li><li>• Patient Ethnic Group</li><li>• Patient Primary Language</li><li>• Patient Alias</li><li>• Other identifiers per jurisdictional policy (e.g., SSN, Medicaid ID, etc.)</li></ul>
<pre>1 MSH ^~\&amp; WebIZ.18.1.20180223 KS0000^2.16.840.1.113.83.0.0.0.0^ISO TestApplication KS9999 20180222115057-0007  RSP^K11^RSP_K11 KS000020180222505725 D  2 MSA AA KS9999388540000000232 3 QAK querytag OK Z34^Request Immunization History^CDCPHINVS 4 QPD Z34^Request Immunization History^CDCPHINVS querytag  SIMPSON^BART^^^^L  1990101 5 PID 1  498167^^^KS0000^SR~0000000002^^^KS9999^MR  SIMPSON^BARTHOLOMEW^JOJO^^^^L~SIMPSON^BART^^^^A JACQUELINE^^^^M 19990101 M  2106-3^White^CDCREC 1 6 PD1       A 20161014 7 NK1 1 SIMPSON^MARGE^^^^L MTH^MOTHER^HL70063</pre>	

- Ensure that all the “SHALL” and “SHOULD” statements were implemented
- Ensure as many as possible “MAY” statements were implemented



# Most changes we needed to make related to evaluation and forecasting...

Standardization of “locally defined”  
Series Status value set to be more inline  
with CDSi

Explicitly stating when a dose is not  
recommended to be given

Forecast when a dose is recommended to be given	
2.10 The Responding System SHALL have the ability to respond with a forecast when a dose is recommended to be given.	The Responding System SHALL have the ability to exchange the following Forecast data elements when a dose is recommended to be given: <ul style="list-style-type: none"><li>• Vaccine Type</li><li>• Series Status</li><li>• Earliest Date</li><li>• Recommended Date</li></ul>
	The Responding System MAY have the ability to exchange: <ul style="list-style-type: none"><li>• Past Due Date</li><li>• Latest Date</li><li>• Forecast Reason</li><li>• Immunization Schedule Used</li><li>• Forecast Dose Number</li></ul>
	The Responding System SHALL include a forecast for each vaccine preventable disease within the scope of the Responding System when a dose is recommended to be given based on currently available information. <ul style="list-style-type: none"><li>• See <a href="#">Appendix A.3</a> for more information</li></ul>
Forecast when a dose is not recommended to be given	
2.11 The Responding System SHALL have the ability to respond with a forecast when a dose is not recommended to be given.	The Responding System SHALL have the ability to exchange the following Forecast data elements when a dose is not recommended to be given: <ul style="list-style-type: none"><li>• Vaccine Type</li><li>• Series Status</li><li>• Forecast Reason</li></ul>
	The Responding System MAY have the ability to exchange: <ul style="list-style-type: none"><li>• Immunization Schedule Used</li></ul>
	The Responding System SHALL include a forecast for each vaccine preventable disease within the scope of the Responding System when a dose is not recommended to be given based on currently available information. <ul style="list-style-type: none"><li>• See <a href="#">Appendix A.4</a> for more information</li></ul>





# Volume 2: Data Element Definition

Further definition of the newly release CDC-Endorsed Data Elements



# A Non-Immunization Example



- What if “Bolt” was a data element?
  - Would it be consistently implemented by all?
  - Is there a way to further reduce ambiguity?



# 2018 - 2022 Data Elements

## *Definitions have been added*

### Definition of BOLT

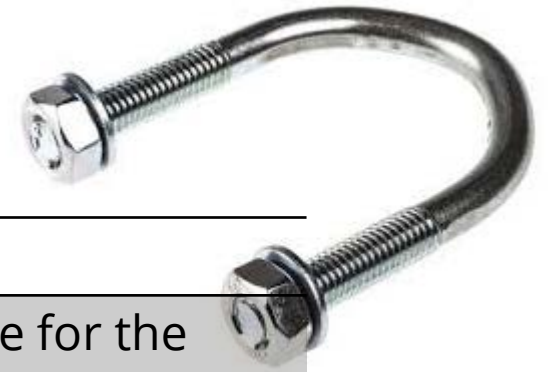
- 1    a : a shaft or missile designed to be shot from a crossbow or catapult; *especially* : a short stout usually blunt-headed arrow  
     b : a lightning stroke; *also* : THUNDERBOLT
- 2    a : a wood or metal bar or rod used to fasten a door  
     b : the part of a lock that is shot or withdrawn by the key
- 3    : a roll of cloth or wallpaper of specified length
- 4    : a metal rod or pin for fastening objects together that usually has a head at one end and a screw thread at the other and is secured by a nut
- 5    a : a block of timber to be sawed or cut  
     b : a short round section of a log
- 6    : a metal cylinder that drives the cartridge into the chamber of a firearm, locks the breech, and usually contains the firing pin and extractor



# But that's probably not enough



# Responsible Person Example



2018 CDC-Endorsed Data Element	Definition
Responsible Person: First	The first name of the person responsible for the patient
Responsible Person: Middle	The middle name of the person responsible for the patient
Responsible Person: Last	The last name of the person responsible for the patient
Responsible Person Relationship to Patient	The actual personal relationship that the person has to the patient



What constitutes a “Responsible” person in the eyes of the IIS?

- The person “responsible” for paying the bill?
- The person “responsible” for making clinical decisions?
- The person “responsible” if nobody else is available (e.g. emergency contact)?



# Other Considerations

- Clear definition on which data elements
  - Could have more than one (e.g., patients with more than one address)
  - Could/should have a change log over time (e.g., vaccination event changes over time)
  - Are just for certain situations (e.g., patient age, provider type)
- Develop a Functional Standards and Data Element Map



# Next Steps

- Survey coming
  - Tuesday due the 16<sup>th</sup>
  - Going to everyone on members list
  - 5-7 Minutes
- Interested in being a SME?
  - Fill out the Survey!
- Timeline
  - Kickoff in end of March
  - Finish in January
  - Virtual Participation
  - Meet 1 – 2 times per month



# Questions





# Functional Guide Team Contacts

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- Kristi Siahaya – [ksiahaya@immregistries.org](mailto:ksiahaya@immregistries.org)
- Eric Larson – [elarson@immregistries.org](mailto:elarson@immregistries.org)

