Leveraging Modern APIs to Solve National Needs:
The Immunization Experience

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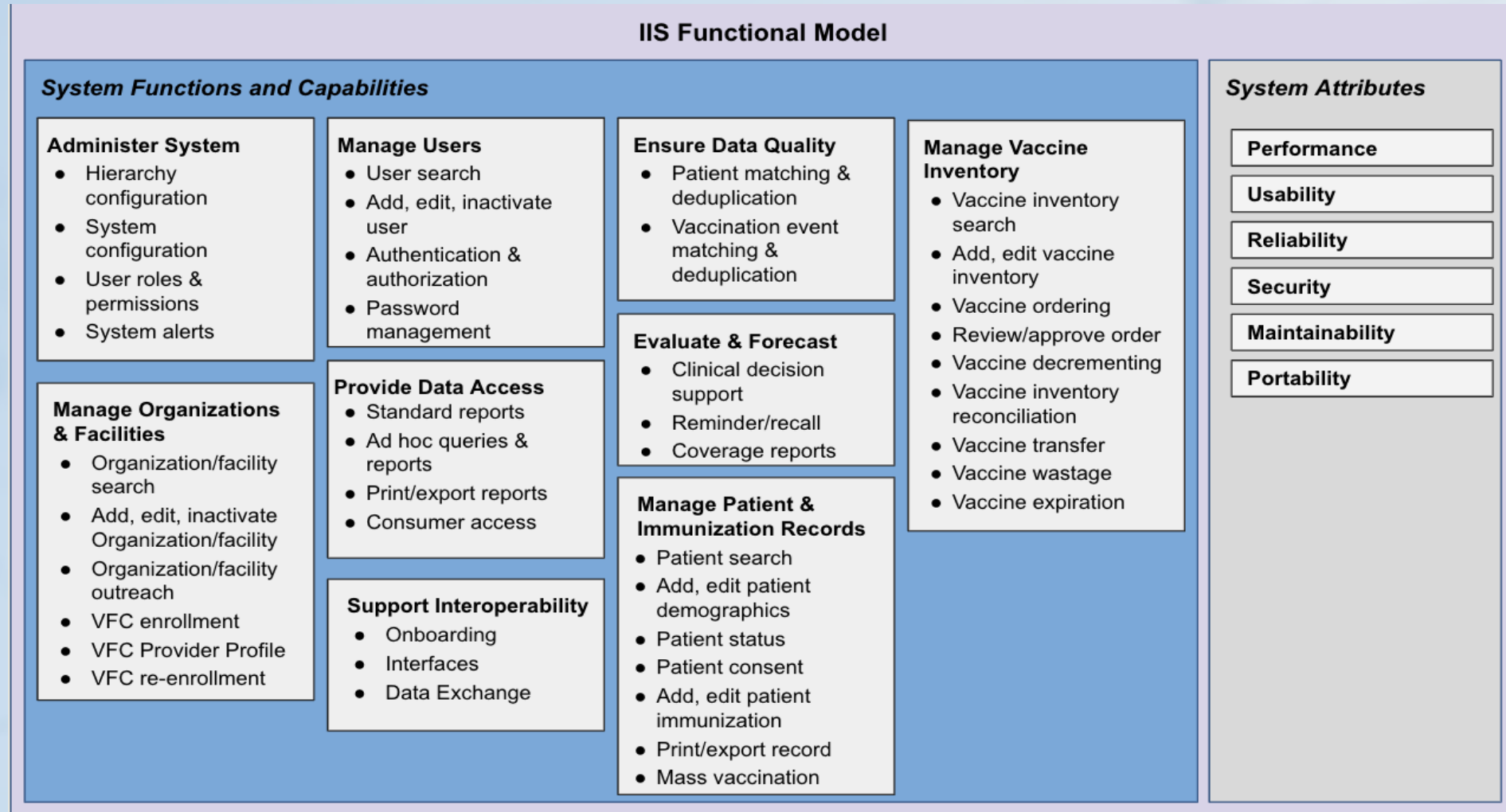ONC 2021 Tech Forum
September 10, 2021

IIS Overview

Immunization Information System

Immunization information systems (IIS) are confidential, population-based, computerized databases that record all immunization doses administered by participating providers to persons residing within a given geopolitical area.

- o At the *point of clinical care*, an IIS can provide consolidated immunization histories for use by a vaccination provider in determining appropriate client vaccinations.

- o At the *population level*, an IIS provides aggregate data on vaccinations for use in surveillance and program operations, and in guiding public health action with the goals of improving vaccination rates and reducing vaccine-preventable disease.
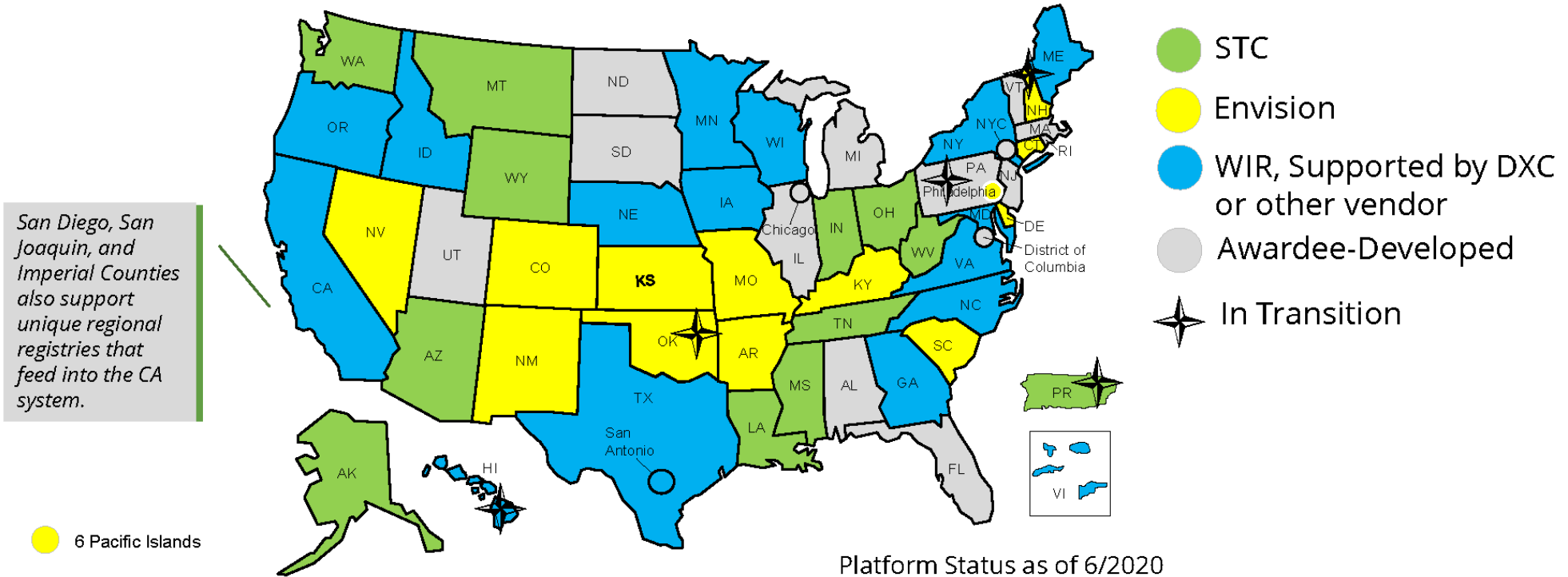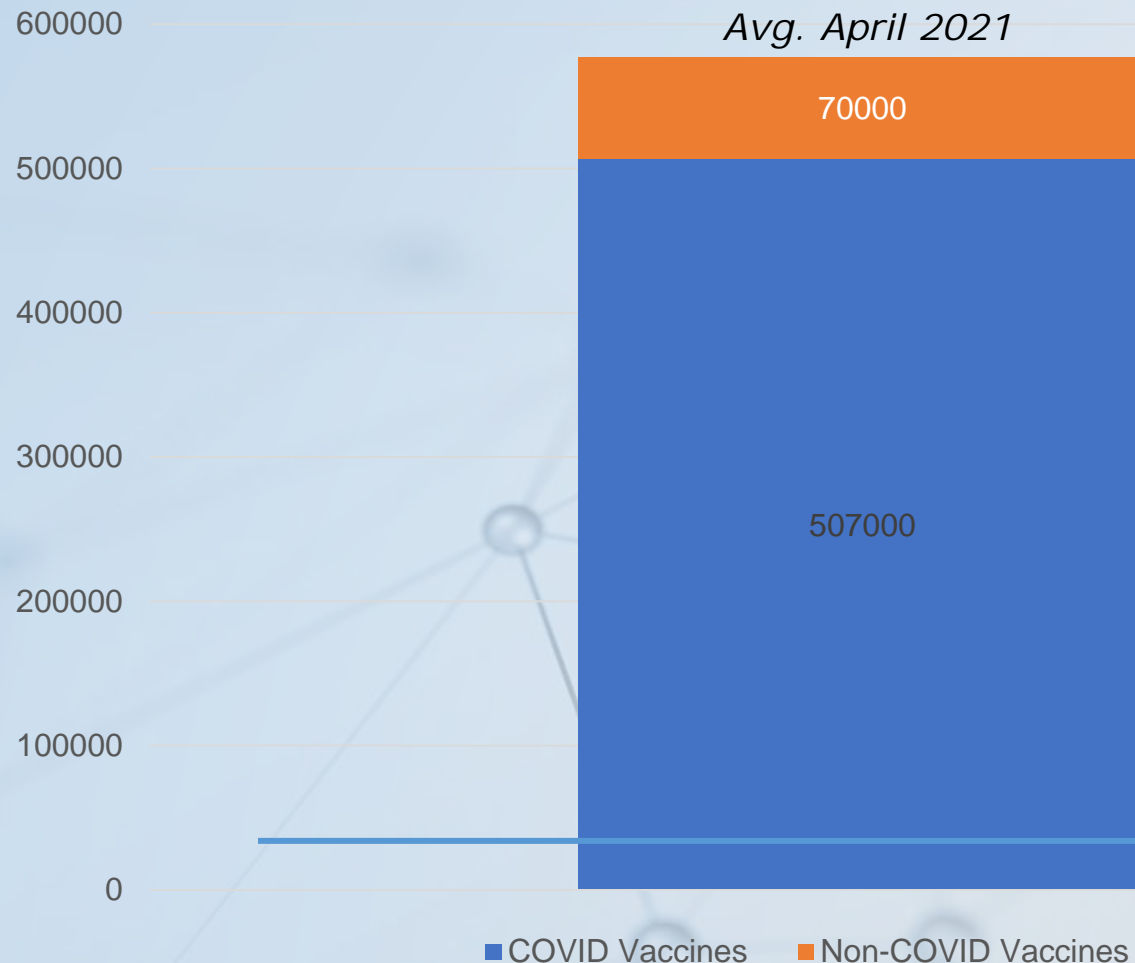
https://www.cdc.gov/vaccines/programs/iis/about.html

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IIS Functional Model (Draft)

IIS Functional Model

System Functions and Capabilities

Administer System
- Hierarchy configuration
- System configuration
- User roles & permissions
- System alerts

Manage Users
- User search
- Add, edit, inactivate user
- Authentication & authorization
- Password management

Ensure Data Quality
- Patient matching & deduplication
- Vaccination event matching & deduplication

Manage Vaccine Inventory
- Vaccine inventory search
- Add, edit vaccine inventory
- Vaccine ordering
- Review/approve order
- Vaccine decrementing
- Vaccine inventory reconciliation
- Vaccine transfer
- Vaccine wastage
- Vaccine expiration

Manage Organizations & Facilities
- Organization/facility search
- Add, edit, inactivate Organization/facility
- Organization/facility outreach
- VFC enrollment
- VFC Provider Profile
- VFC re-enrollment

Provide Data Access
- Standard reports
- Ad hoc queries & reports
- Print/export reports
- Consumer access

Evaluate & Forecast
- Clinical decision support
- Reminder/recall
- Coverage reports

Manage Patient & Immunization Records
- Patient search
- Add, edit patient demographics
- Patient status
- Patient consent
- Add, edit patient immunization
- Print/export record
- Mass vaccination

Support Interoperability
- Onboarding
- Interfaces
- Data Exchange

System Attributes
- Performance
- Usability
- Reliability
- Security
- Maintainability
- Portability

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IIS Product/Vendor Landscape

San Diego, San Joaquin, and Imperial Counties also support unique regional registries that feed into the CA system.

STC

Envision

WIR, Supported by DXC or other vendor

Awardee-Developed

In Transition

6 Pacific Islands

Platform Status as of 6/2020

Operationalizing Immunization Interoperability

Snapshot of Growth in Volume of Daily Submissions

Avg. April 2021

In 2019, there were **117,000** data exchange connections

Data based on AIRA Survey March 2020; AIRA member conversations, April 2021

Average pre-COVID daily submissions = **17,000**

Chart values:
- 600000
- 500000
- 400000
- 300000
- 200000
- 100000
- 0

70000 (Non-COVID Vaccines, orange)

507000 (COVID Vaccines, blue)

Legend: ■ COVID Vaccines ■ Non-COVID Vaccines

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Clinical-IIS Interoperability
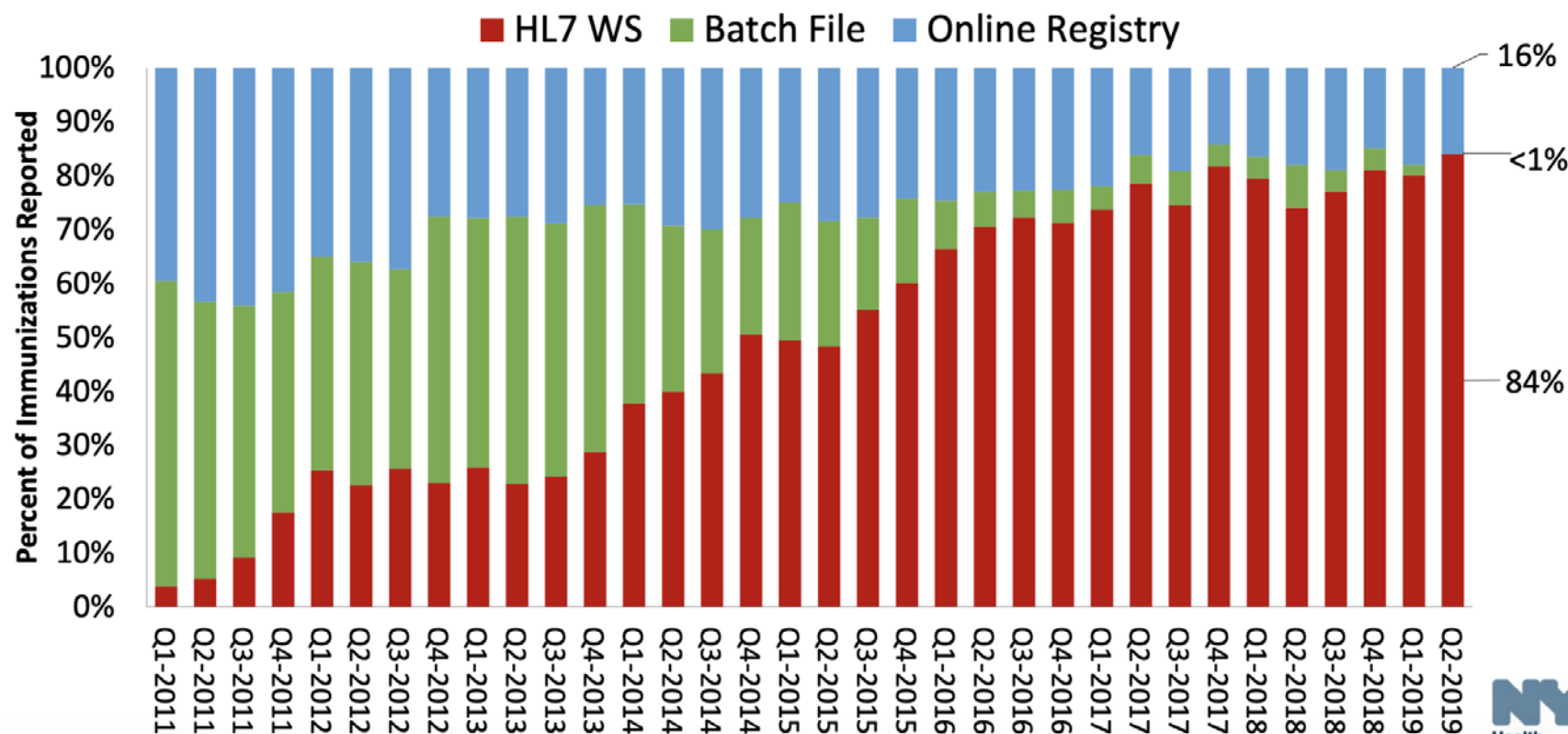
Basic Workflow: Vaccine Submission
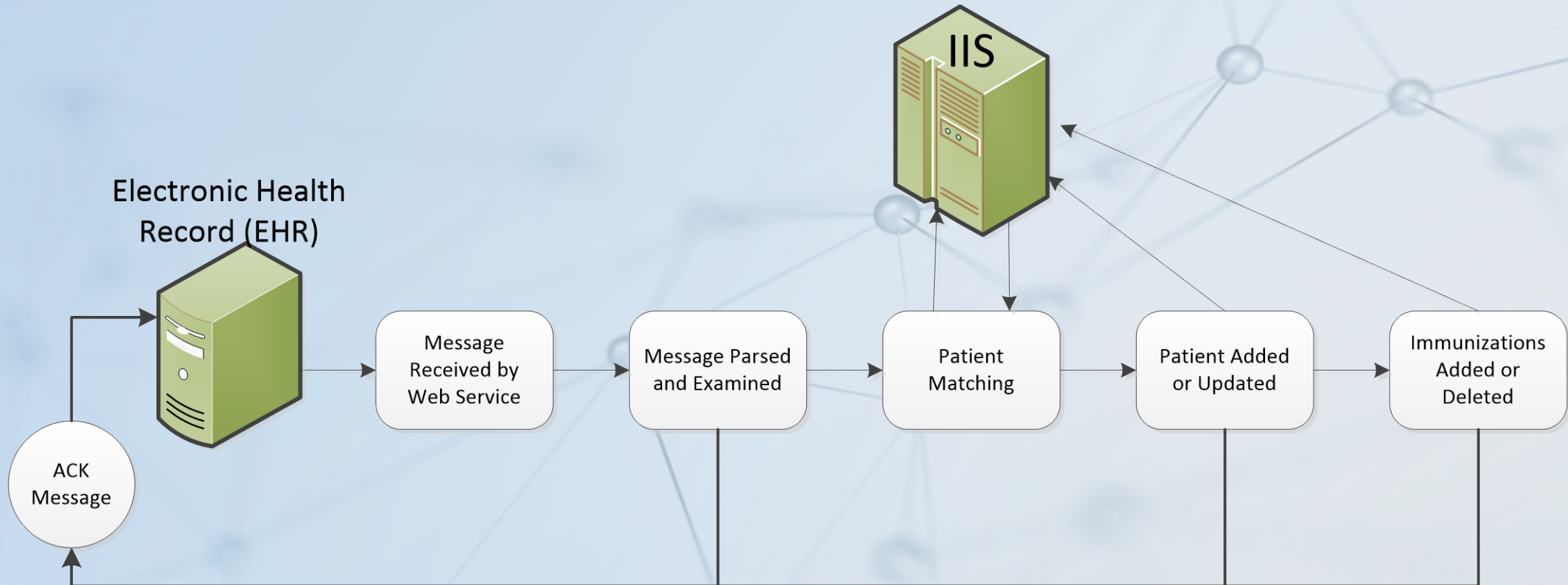
Basic Workflow: Query/Response
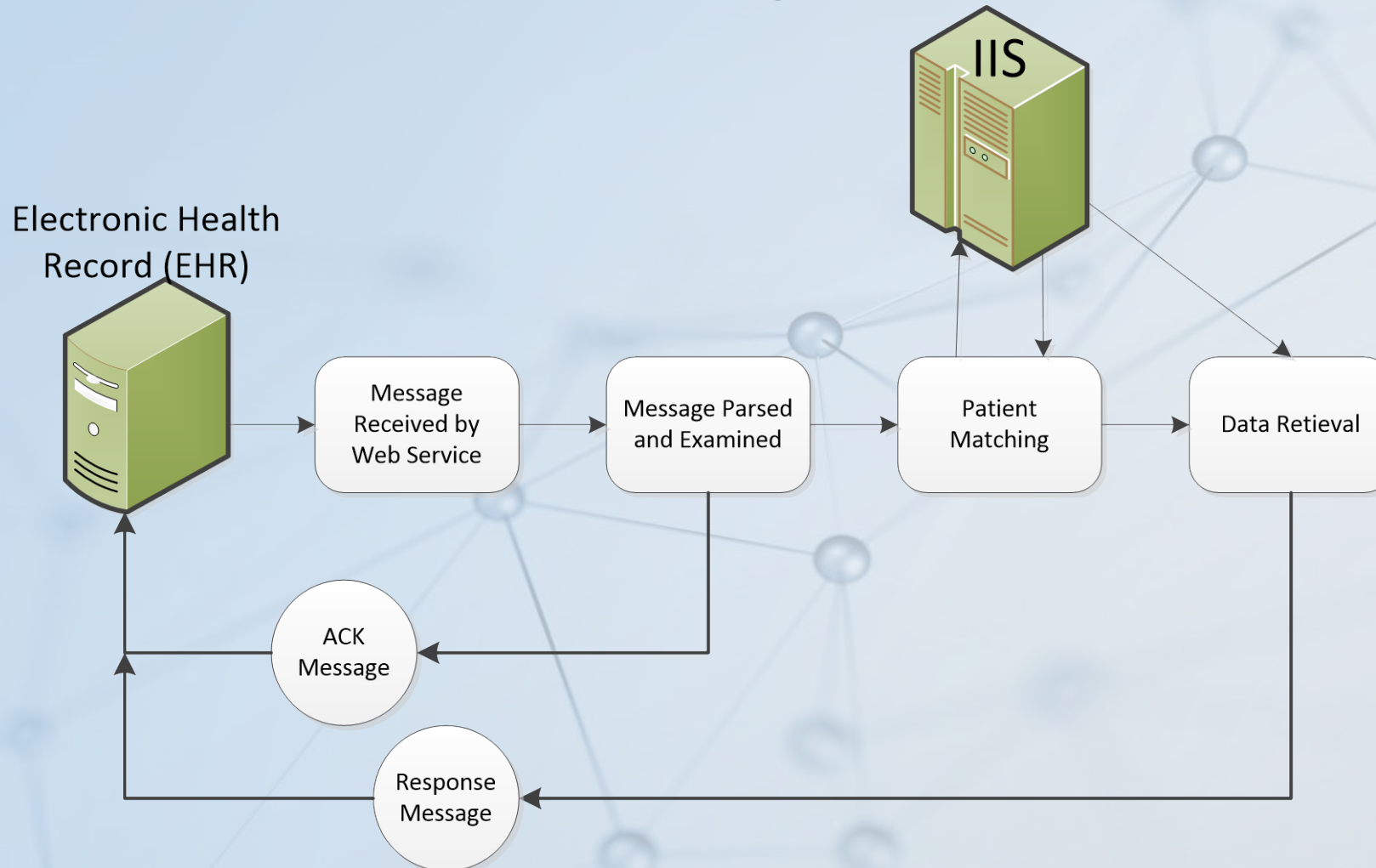
IIS Interoperability: Three Streams

❑ Policy Stream
- o Jurisdictional data use agreement
- o HIE data use agreement if necessary
- o Business Associate Agreement (BAA) if necessary

❑ Connectivity Stream
- o Implement required transport, typically Web Services
- o Implement required digital certificates to support transport

❑ Data Quality Stream
- o Elaborate on-boarding process(es) with IIS, HIE
- o Testing of message format for compliance
- o Usually rigorous for submission (VXU), very mild for query (QBP)
- o *Ongoing* data quality assurance expected when in production

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CDC IIS Data Quality Blueprint
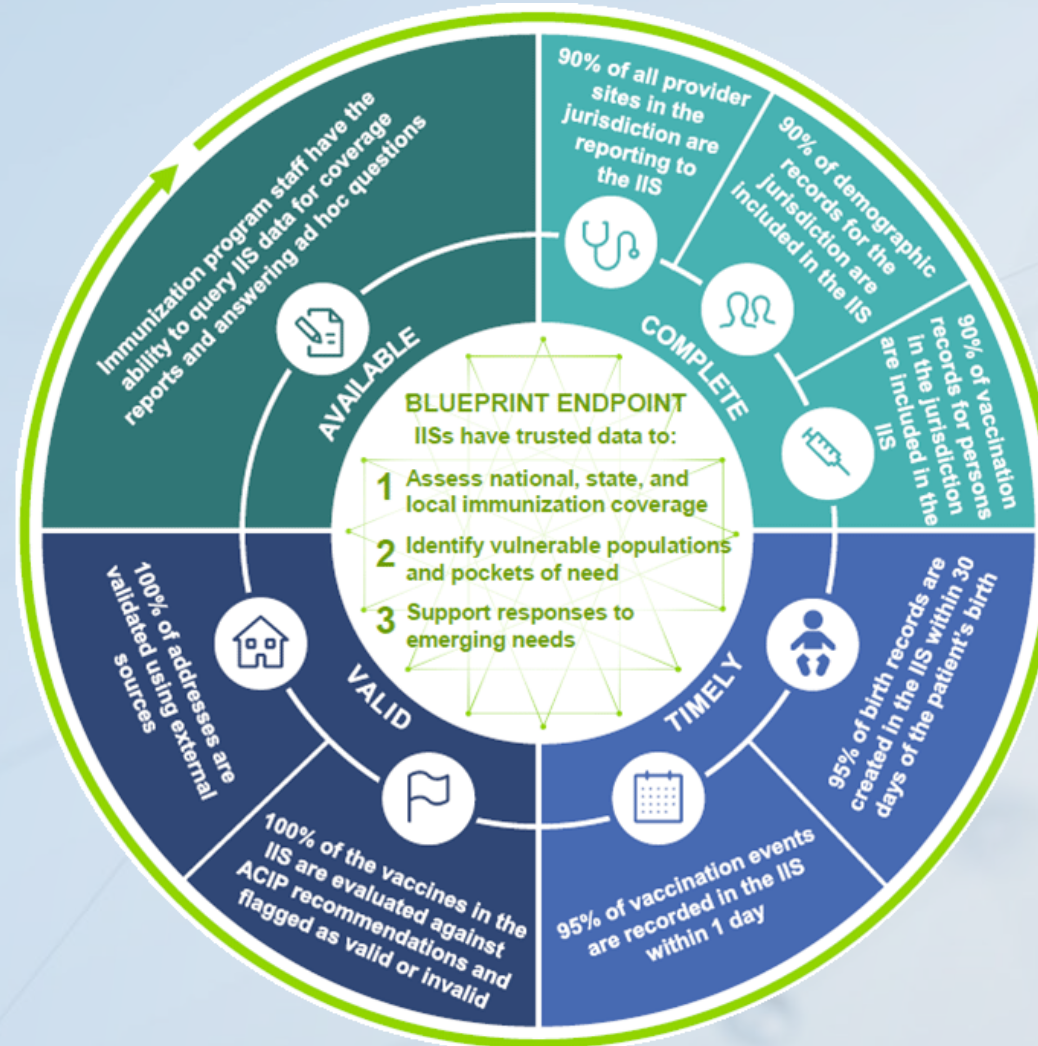
Transition to FHIR?

Fast Healthcare Interoperability Resources (FHIR) — Just for Reference…

❑ Key concepts

- Data "bundled" into resources

- Resources can be assembled either into "message-like" or "document-like" packages

- Uses REST for transport

- Relies on a set of "services" to pass FHIR resources from one system to another

❑ Data encoded in XML or JSON formats

❑ Human readable visualization

❑ 80/20 rule in terms of base data, but extensible

❑ The focus nationally is on query/response, but FHIR *can* also be used for "push" and publish/subscribe transactions

Implications for Immunization Interoperability

❑ HL7 v2 well entrenched, re-enforced by CMS Promoting Interoperability Program

❑ IIS working hard to reduce variability in interfaces

❑ As EHRs move to FHIR, IIS community *could* use this new standard either natively or via interface engine

❑ Clinical Decision Support for Immunizations using FHIR already balloted in HL7 but paused until Fall 2021 due to pandemic

❑ COVID-inspired "bulk query" and "bulk update" may be the first use cases

❑ Vaccine credentials use FHIR-based SMART Health Cards

❑ IIS query *from* clinical systems FHIR server may be interesting

Thank you!

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