

December 16, 2021

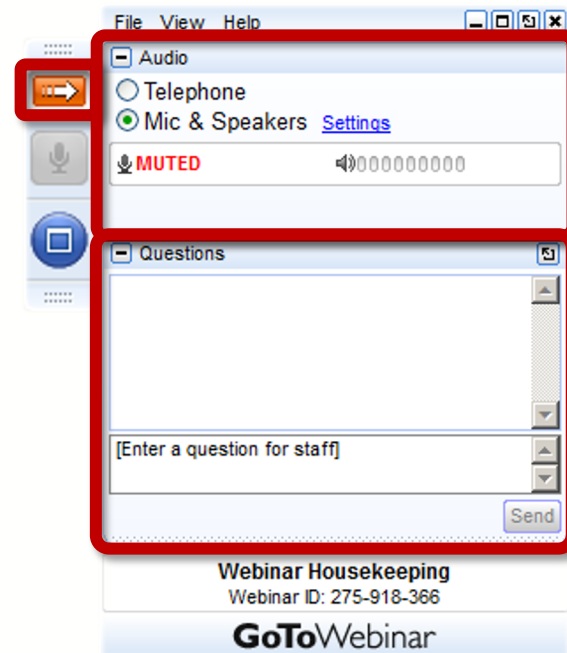
eHealth ExchangeTM

Please e-mail questions or concerns to
administrator@ehealthexchange.org

Annual Meeting

Virtual due to COVID-19

How Do I Participate?



Your Participation

Open and close your control panel

Join audio:

- Choose "Mic & Speakers" to use VoIP
- Choose "Telephone" and dial using the information provided

Submit questions and comments via the Questions panel

Note: Today's presentation is being recorded and will be provided within 48 hrs

Problems or Questions? Contact Hera Ashraf
(Marketing@ehealthexchange.org or 317-529-5862)

Meeting Survey & Recording

Interactive Survey

Please Engage:

When prompted, please respond to the 5 survey questions as they are presented in the “chat” function:

1. Value from eHealth Exchange
2. Priority of new data types to exchange
3. Value of new participant types
4. Value of possible new eHealth Exchange services
5. Value of Record Locator Service (RLS)

Survey Results:

- Your responses are anonymous
- Time-permitting we'll review survey results end of today's meeting or at <https://ehealthexchange.org/communications>.

Recording

- Today's meeting is being recorded for those unable to attend.
- The recording and slides we be published at <https://ehealthexchange.org/communications> tomorrow.


The background of the slide features a blue-tinted image of a doctor's hands. One hand is holding a stethoscope, and the other is resting on a laptop keyboard. The image is overlaid with a pattern of overlapping circles and a grid of small circles.

Meet the Team

Coordinating Committee & Key eHealth Exchange Staff

eHealth Exchange[™]

The Coordinating Committee

		Organization	Representing			Organization	Representing
Matt Eisenberg, MD		Stanford Health Care	Health Systems	Cindy Pan		Veterans Health Administration	Federal Agencies
Jarrod Pearson		DaVita	"Other" Category (e.g. ambulatory, pediatric, dialysis, intermediaries, vendors, payers)	Col Jeffrey A. Ford (USAF)		Defense Health Agency	Federal Agencies
Pam Matthews, RN		East Tennessee Health Information Network	Health Information Organizations	Mitch Thornbrugh		Indian Health Service	Federal Agencies
Mike Dittmore, RN		Lewis & Clark Information Exchange (LACIE)	Health Information Organizations	Jude Soundararajan		Social Security Agency	Federal Agencies
John Kansky		Indiana Health Information Network	Health Information Organizations	Ryan Stewart		CommonSpirit	Health Systems
Patti Cuartas, PA		Mount Sinai Health System	Health Systems	Dede Ainbinder		Health Gorilla	"Other" Category (e.g. ambulatory, pediatric, dialysis, intermediaries, vendors, payers)
Paul Matthews		OCHIN	"Other" Category (e.g. ambulatory, pediatric, dialysis, intermediaries, vendors, payers)	Pat Russell, RN (non-voting)		eHealth Exchange	eHealth Exchange staff

Additional Participants Speaking Today



Steve Anderson, PhD, MPP
FDA Center for Biologics
Evaluation & Research
(CBER)



Hussein Ezzeldin, PhD
FDA Center for Biologics
Evaluation & Research
(CBER)



Kate Jackson
Audacious Inquiry
(PULSE Disaster Response)

eHealth Exchange Staff Speaking Today

Role			Role		
	Jay Nakashima	Network Direction & Oversight		Mike Yackanich	Technology Leadership
	Pat Russell, RN	Policy & Governance		Matt Blackmon	Validation Engineering
	Mark Rogers	Program Management		Didi Davis	Informatics, Conformance & Interoperability
	Jay Johnstone	Interoperability Operations		Hera Ashraf	Communications
	Mike McCune	Solution Engineering			



Today's Topics

Today's Topics

Planned topics not covered today will be addressed at the 1/20/2021 1pm ET all-participant monthly meeting

1. Introductions & Opening Remarks	Matt Eisenberg, MD (Stanford Health Care & Coordinating Committee Chairperson)	10:00 – 10:10 PST
2. Topics Review	Matt Eisenberg, MD (Stanford Health Care & Coordinating Committee Chairperson)	10:10 – 10:15 PST
3. Who we are & why we do it	Jay Nakashima	10:15 – 10:20 PST
4. Network Size and Breadth, Promoting Interoperability MIPS Points	Matt Eisenberg, MD (Stanford Health Care & Coordinating Committee Chairperson)	10:20 – 10:25 PST
5. Coordinating Committee Hot Topics	Matt Eisenberg, MD (Stanford Health Care & Coordinating Committee Chairperson)	10:25 – 10:30 PST
6. Use Cases Supported	Jay Nakashima	10:30 – 10:50 PST
• Care Coordination	Jay Nakashima	10:30 – 10:50 PST
• Disability Determinations	Jude Soundararajan (Social Security Administration)	10:30 – 10:50 PST
• Electronic Case Reporting (eCr)	Matt Eisenberg, MD (Stanford Health Care) & Jay Johnstone	10:30 – 10:50 PST
• Encounter Notifications	Mark Rogers	10:30 – 10:50 PST
• Disaster Response (PULSE system)	Kate Jackson, Audacious Inquiry (Ai)	10:30 – 10:50 PST
7. Hub Dashboard Analytics	Matt Eisenberg, MD (Stanford Health) & Mike Yackanich	10:50 – 11:00 PST
8. 2021 Accomplishments	Jay Nakashima	11:00 – 11:05 PST
9. Roadmap		
- Highlights	Jay Nakashima	11:05 – 11:10 PST
- TECCA/QHIN	Jay Nakashima	11:05 – 11:10 PST
- Adverse Event Exchange with FDA via FHIR (with Q&A)	Steve Anderson, PhD, MPP & Hussein Ezzeldin, PhD	11:10 – 11:40 PST
- Related FHIR Capabilities	Mike Yackanich	11:40 – 11:50 PST
- Directory Upgrade to FHIR R4 (time-permitting)	Mike McCune	time-permitting
- Testing Capabilities (time-permitting)	Didi Davis	time-permitting
10. Survey Results (time-permitting)	Bill Howard	11:50 – 11:55 PST
11. Engage With Us! (time-permitting)	Pat Russell	time-permitting
12. Q&A	Coordinating Committee & eHealth Exchange staff	11:55 – noon PST

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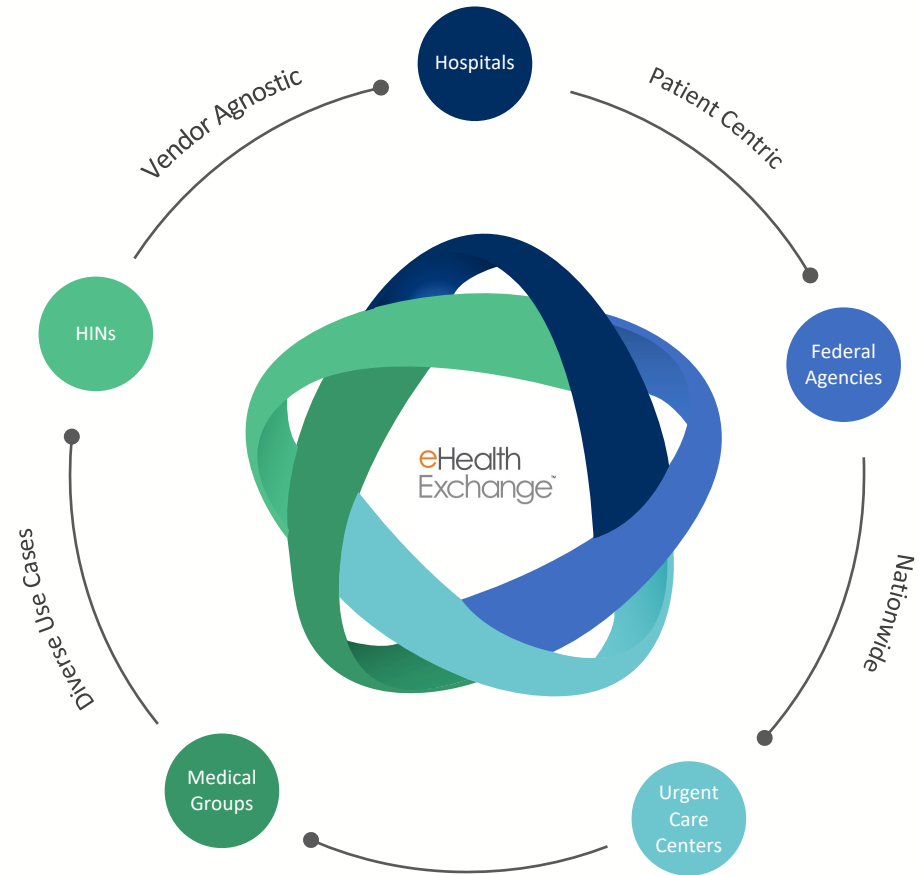
eHealth Exchange Highlights

Who we are, what we do, & why

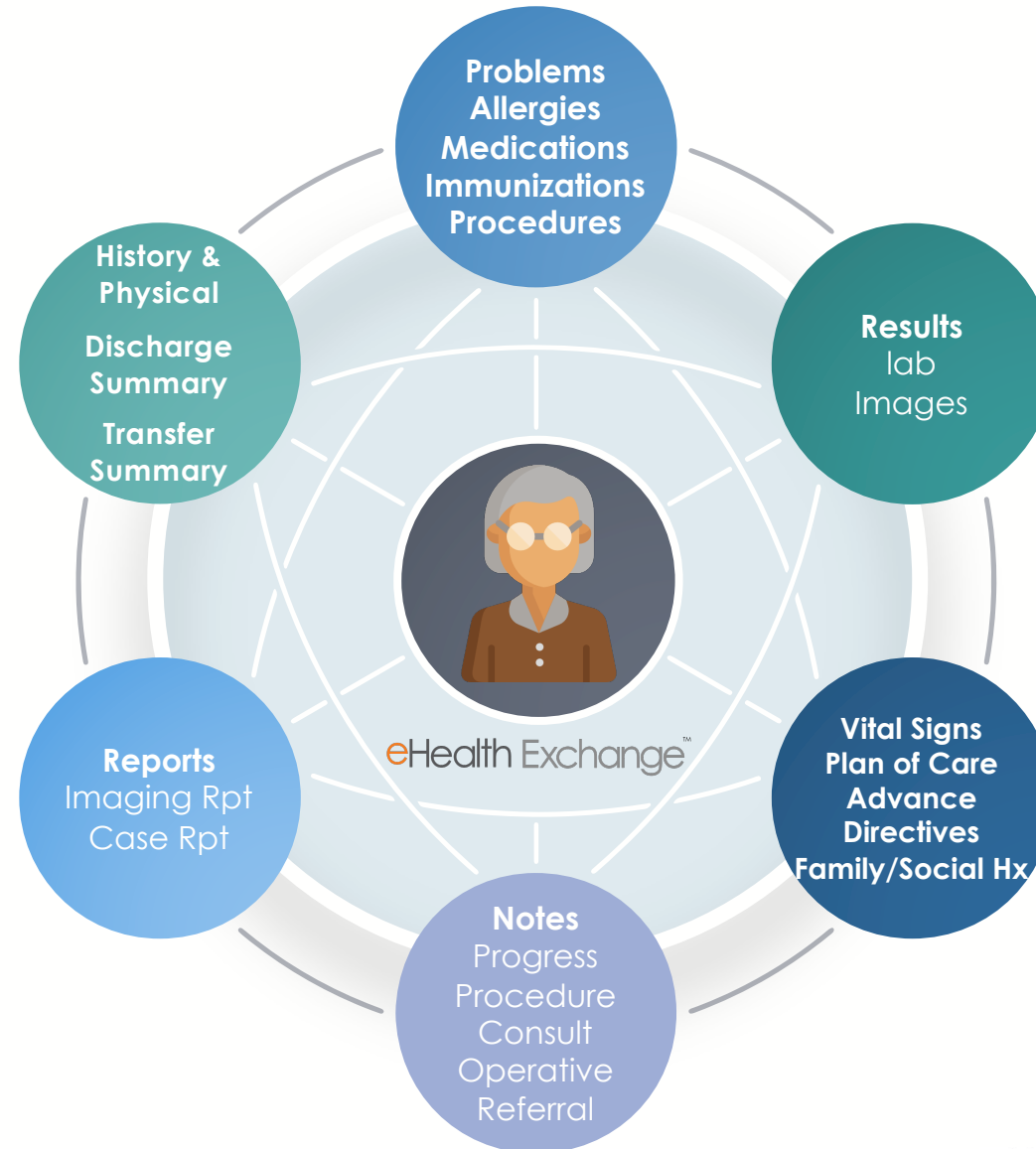
What is eHealth Exchange?

A health data-sharing network providing a single connection to the country!

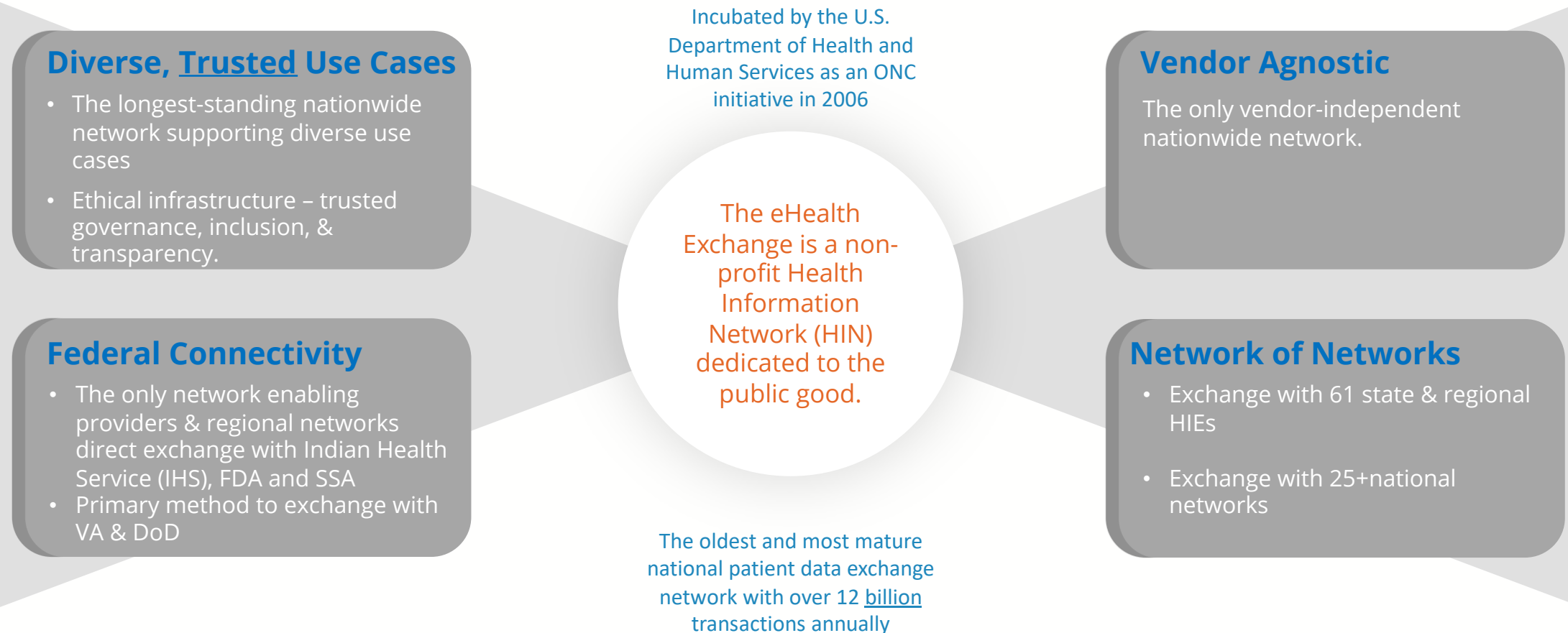
- Facilitates electronic exchange of patients' medical information
- Improves the speed, quality, safety, and cost of patient care
- Informs clinical decisions **when seconds and minutes matter**



What data is exchanged?



How is eHealth Exchange different?





eHealth Exchange Size & Breadth

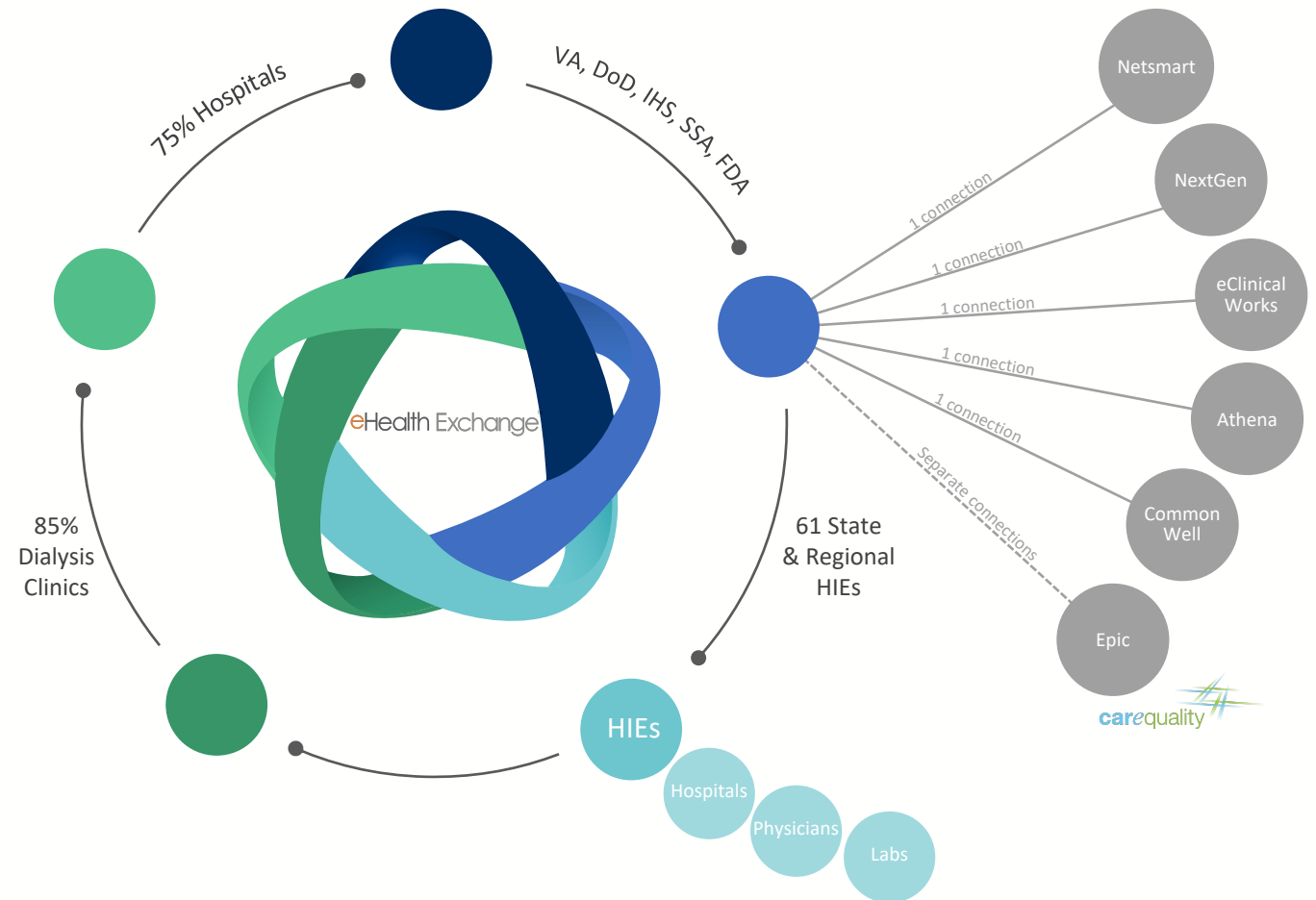
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eHealth ExchangeTM

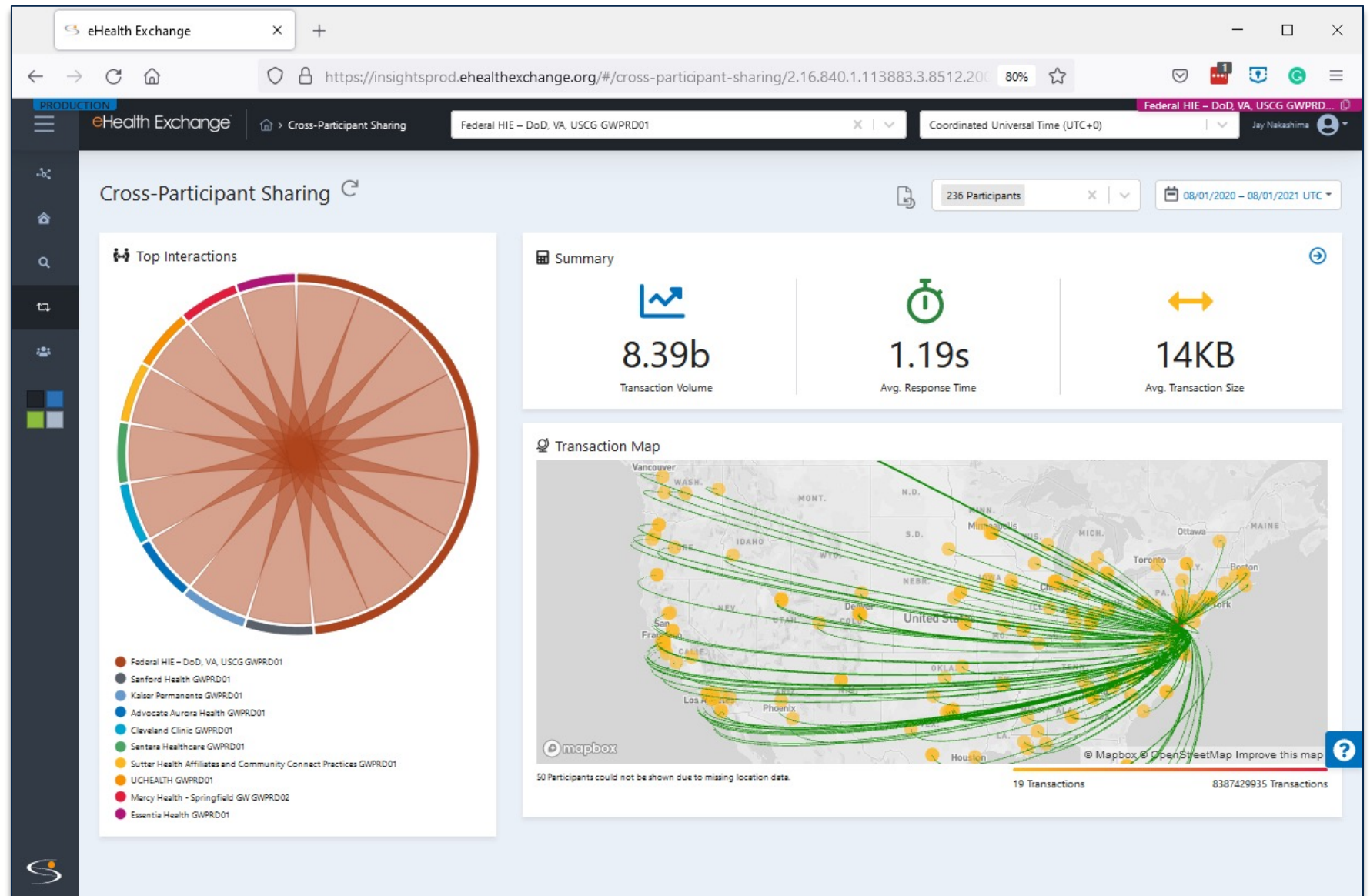
Connecting Federal Agencies & The Private Sector in All 50 States

Supporting 250 Million Patients in All 50 States

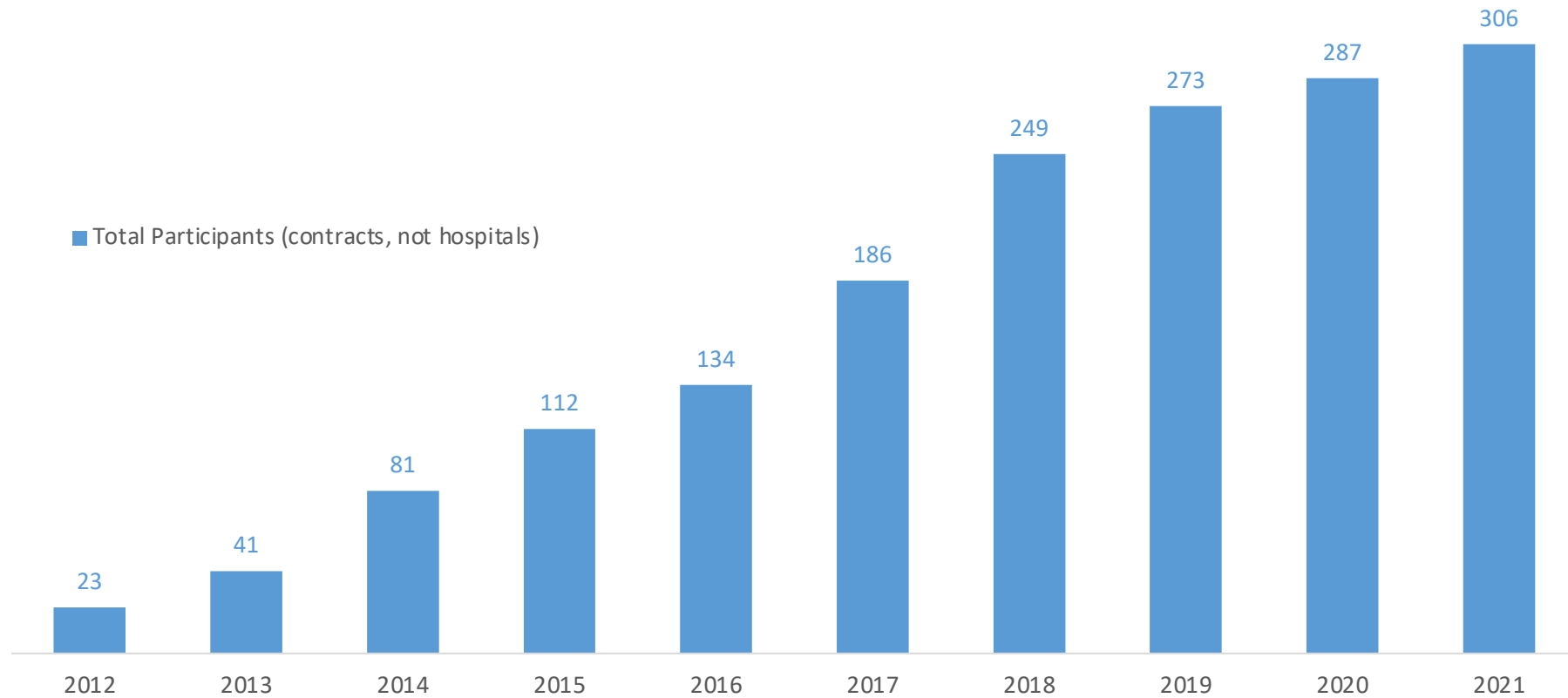
- 5 Federal Agencies
(VA, DoD, Indian Health Service, SSA, FDA)
- Over 3,900 Short-term Acute Care Hospitals
- 5,800 Dialysis Centers
- Network of Networks for 61 State & Regional HIEs
- Connectivity with 25+ Carequality-Enabled Networks such as CommonWell
- 12 Billion Transactions Annually



Your Reach is Expanding



We're Growing!



19 New Participants Added in 2021!

1. Baylor College of Medicine (TX, Epic)
2. Boston Medical Center (MA, Epic)
3. El Rio Santa Cruz Neighborhood Health (AZ, Epic)
4. Self Regional Healthcare (SC, Epic)
5. Health Gorilla (Nationwide, Patient 360)
6. HealtheLink (NY, NextGen/Mirth)
7. Indian Health Service (36 states, InterSystems)
8. Lexington Medical Center (KY, Epic)
9. University of Kentucky Healthcare (KY, Epic)
10. Prime Health Care Services (14 states, Epic)
11. University of Louisville Physicians (KY, Epic)
12. RWJBarnabas Health (NJ, Epic)
13. Southeast Coalition on Health (GA & TN, Lightbeam)
14. Wellspan Health (PA & MD, Epic)
15. New York City Health & Hospital (NY, Epic)
16. Novo Health (WI, Epic)
17. Cambridge Health Alliance (MA, Epic)
18. Boulder Community (CO, Epic)
19. El Rio Santa Cruz Neighborhood Health (AZ, Epic)

Committed to Improving Patient Care via Data Exchange

Poll

Please select the link provided in “chat” to anonymously respond to question 1 of 5

Question #1: Current Value

Question #1:
Today, what aspect of eHealth Exchange provides you the most value?

- A. SSA (for automating benefits determination and being compensated for quality data)
 - B. VA/DoD (to exchange data for veterans who may visit VA and non-VA facilities)
 - C. HIE data (to query to get access to a HIE data for a longitudinal patient summary)
 - D. Public Health (most recently, to fulfill eCase Reporting requirements)
 - E. Local Providers (who are otherwise not part of my HIE or exchange network)
 - F. National or Out-of-State Providers (who are not otherwise part of my HIE or exchange network)
 - G. Regulatory/Policy (this is part my framework to fulfill MU/PI, MIPS or other regulations)
- ... if other, please add details in the comments below.



<https://forms.office.com/r/3eRtsk0Ytw>

1. RESPONSES: *

	Must Have	Nice to Have	Don't Use
A. SSA	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The background of the slide features a blue-tinted image of a doctor's hands. One hand is holding a stethoscope, and the other is resting on a laptop keyboard. The image is overlaid with a pattern of overlapping circles and squares. A large orange rectangle is positioned in the center-right of the slide, containing the title text.

Coordinating Committee Hot Topics

2021 Coordinating Committee Hot Topics

- Duty to Respond
- TEFCA Leadership
- Content Validation Conclusion
- Information Blocking
- MIPS Incentives
- Digital Certificate Transition & Process Improvement
- FHIR R4 Technical Specifications
- Controlled Unclassified Information (CUI)

2021 Promoting Interoperability Objectives

Appendix

Promoting Interoperability Objectives and Measures

The table below outlines the 2021 objectives, measures, and available exclusions. Complete measure specifications are available [here](#). The **MIPS Data Validation Criteria**, available later in the performance period on the [Quality Payment Program Resource Library](#), will include the Promoting Interoperability documentation requirements for reporting measures and claiming exclusions.

Objective	Measures	Measure Exclusions (If you meet the criteria below, you can claim an exclusion instead of reporting the measure)	Available Points (based on performance)
e-Prescribing	e-Prescribing	Any MIPS eligible clinician who writes fewer than 100 permissible prescriptions during the performance period.	1 – 10 points
	Bonus: Query of Prescription Drug Monitoring Program (PDMP)	Optional measure (no exclusion available)	10 points
Health Information Exchange	Option 1	Support Electronic Referral Loops by Sending Health Information	1 – 20 points
		Support Electronic Referral Loops by Receiving and Reconciling Health Information	1 – 20 points
	Option 2	HIE Bi-Directional Exchange	1 – 40 points
Provider to Patient Exchange	Provide Patients Electronic Access to Their Health Information	No exclusion available	1 – 40 points
Public Health and Clinical Data Exchange	Report to 2 different public health agencies or clinical data registries for any of the following: <ol style="list-style-type: none">1. Immunization Registry Reporting2. Electronic Case Reporting3. Public Health Registry Reporting4. Clinical Data Registry Reporting5. Syndromic Surveillance Reporting	Each of the 5 measures has their own exclusions; please refer to the Measure Specifications for the exact exclusion criteria for each measure. Generally speaking, the exclusions are based on the following criteria: <ul style="list-style-type: none">• Does not diagnose or directly treat any disease or condition associated with an agency/registry in their jurisdiction during the performance period.• Operates in a jurisdiction for which no agency/registry is capable of accepting electronic registry transactions in the specific standards required to meet the CEHRT definition at the start of the performance period.• Operates in a jurisdiction where no agency/registry for which the MIPS eligible clinician is eligible has declared readiness to receive electronic registry transactions as of 6 months prior to the start of the performance period.	10 points for the objective



New HIE Bi-directional Exchange Optional Measure Details

This measure is worth 40 points for your providers and is a **yes/no attestation to the following 3 statements:**

- I participate in an HIE in order to enable secure, bi-directional exchange to occur for every patient encounter, transition or referral, and record stored or maintained in the EHR during the performance period in accordance with applicable law and policy.
- ***The HIE that I participate in is capable of exchanging information across a broad network of unaffiliated exchange partners including those using disparate EHR's and does not engage in exclusionary behavior when determining exchange partners.***
- I use the functions of CEHRT to support bi-directional exchange with an HIE:
 - 45 CFR 170.315(b)(1), (b)(2), (g)(8), or (g)(10)

Statement 2 – The eHealth Exchange fits the bill!

- The eHealth Exchange is the only national exchange that supports exchange to Federal Partners and includes more than 60 HIEs/HIOs
- They exchange across a “broad network of unaffiliated exchange partners including those using disparate EHRs”
- If your providers will use this measure for their MIPS submission, the eHealth Exchange can provide a letter upon request for the 2nd statement above.
- The eHealth Exchange cannot provide data for the 1st and 3rd statements.
- If you would like this letter for your providers and records, please contact prussell@ehealthexchange.org or administrator@ehealthexchange.org for this request.

eHealth Exchange™
8300 Boone Blvd., Suite 500, Vienna, Virginia, 22182

Date: 03/8/2021

RE: HIE Bi-directional Exchange PI measure

To Whom It May Concern:

Please accept this letter related to the Merit-based Incentive Payment System (MIPS) PI performance objective for HIE bi-directional Exchange.

Stanford Health Care in Stanford, CA is an active Participant within the eHealth Exchange, both initiating queries and responding to queries (bi-directional) from other Participants within our exchange.

All Participants of the eHealth Exchange voluntarily sign and agree to the Data Use and Reciprocal Support Agreement (DURSA). The DURSA is a legal, multi-party agreement that reflects consensus among the state-level, federal and private entities and provides for a framework for broad-based information exchange among a set of trusted entities.

eHealth Exchange is the only national exchange that provides access to four (4) Federal Agencies.

The eHealth Exchange is capable of exchanging information across a broad network of unaffiliated exchange partners including those using disparate EHRs, and does not engage in exclusionary behavior when determining exchange partners.

The eHealth Exchange and Stanford Health Care have had an active agreement since 07/18/2014 that has continued without a break in service and thus verifies their participation.

Sincerely

Jay Nakashima

Jay Nakashima
eHealth Exchange Executive Director
303-949-2498
jnakashima@ehealthexchange.org



Use Cases Already Supported

Please let us know how eHealth Exchange staff can help you adopt these workflows

Which Use Cases Does the eHealth Exchange Support?



Treatment / Care Coordination

Enables access to critical information to support improved care coordination for patients by their providers during transitions of care



Social Security Disability Benefits Determination

Automates the request and retrieval of records to support applicants' claims for disability benefits, accelerating determination process



Clinical Notifications

Enables the push of immunization data for treatment purposes (*not related to immunization registries*)



Electronic Case Reporting

Enables providers' EHRs to automatically notify public health agencies with rich clinical details, even when state and local reporting requirements vary



Life Insurance Applications

Automates the request and retrieval of clinical records for life insurance applications



Encounter Alerts

Enables event notification of clinical encounters (with robust clinical details) to state & regional HIEs to populate longitudinal patient records



Prescription Drug Monitoring Program (PDMP) Pilot

Enables exchange of PDMP data via FHIR



Syndromic Surveillance Reporting

Enables providers to push discrete disease notifications (not full case reports) to public health agencies



Consumer Access to Health Information

Enables clinical exchange between patient and provider, often via a Personal Health Record (PHR)



Image Share

Enables organizations to share images

Approved but
not yet
implemented by
Participants

Use Case #1: Care Coordination

1



Meet Dorothy

- Has End-Stage Renal Disease & Diabetes Type 2
- Takes 22 pills via 14 prescriptions each day
- Must visit dialysis clinic 3x each week **to live**
- Limited to 32 oz fluids daily
- Specialized diet
- Sees Nephrologist & Vascular Surgeon for kidneys
- Visits PCP and Endocrinologist for diabetes
- Hospitalized frequently

2




Dorothy is experiencing symptoms of co-occurring conditions

- Dorothy struggles to maintain her diabetes and kidney disease well
- Now she is experiencing heart disease and retinal disease symptoms
- She has a visit with a cardiologist and ophthalmologist in the next week
- Care is complicated and Care Coordinator to be assigned

3



Dorothy Visits Her Specialists

- She doesn't know which 14 medications she takes 
- She doesn't know her allergies or what her current medications may interact with
- She doesn't know her dialysis "prescription" (ideal weight after fluid removed, dialysate flow rate, blood flow rate, dialyzer model, anticoagulant substance/method, calcium level, potassium level, sodium level, bicarbonate level, etc)

4

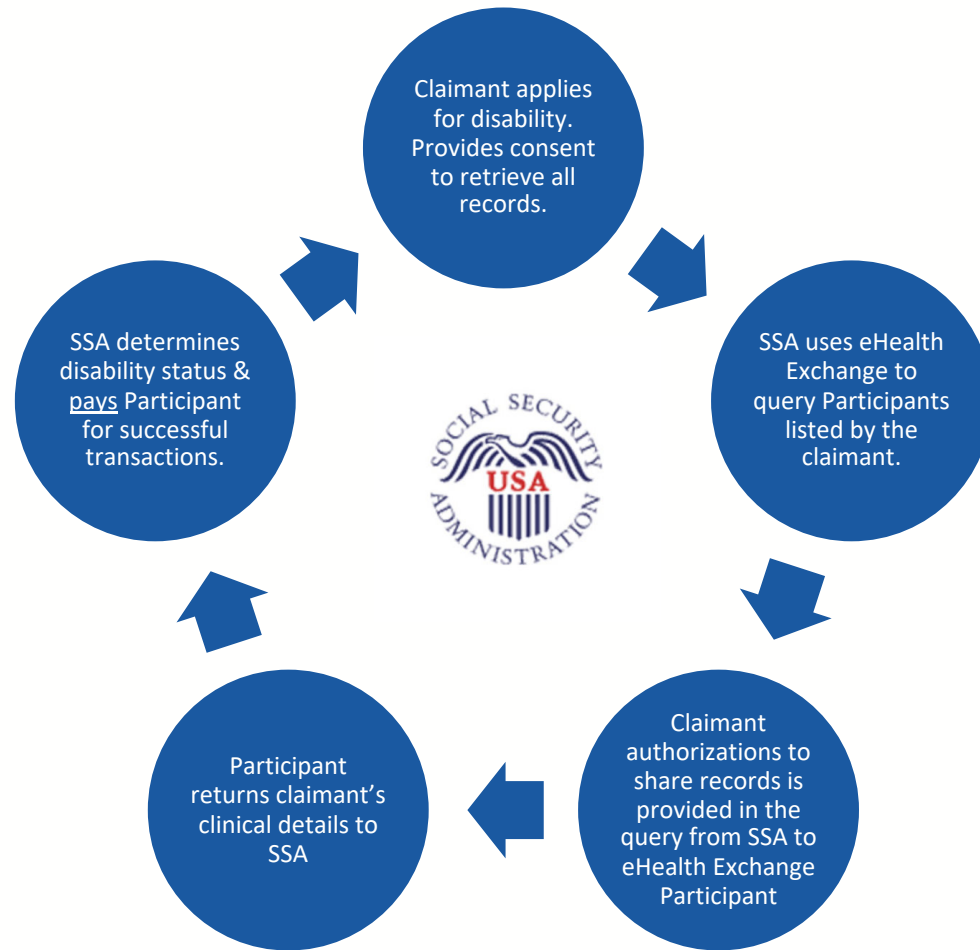


Meet Care Coordinator, Mary Smith, RN

- To assist Dorothy with the management of her care, Mary, RN retrieves Dorothy's detailed medical histories from hospitals, physician practices, dialysis clinics, and surgery centers.
- Mary, RN retrieves Dorothy's medication list, allergies, dialysis prescription, etc
- With Dorothy's medical data, Mary can work closely with Dorothy to help her manage her care, maintain her conditions to avoid readmissions and thus have improved outcomes.



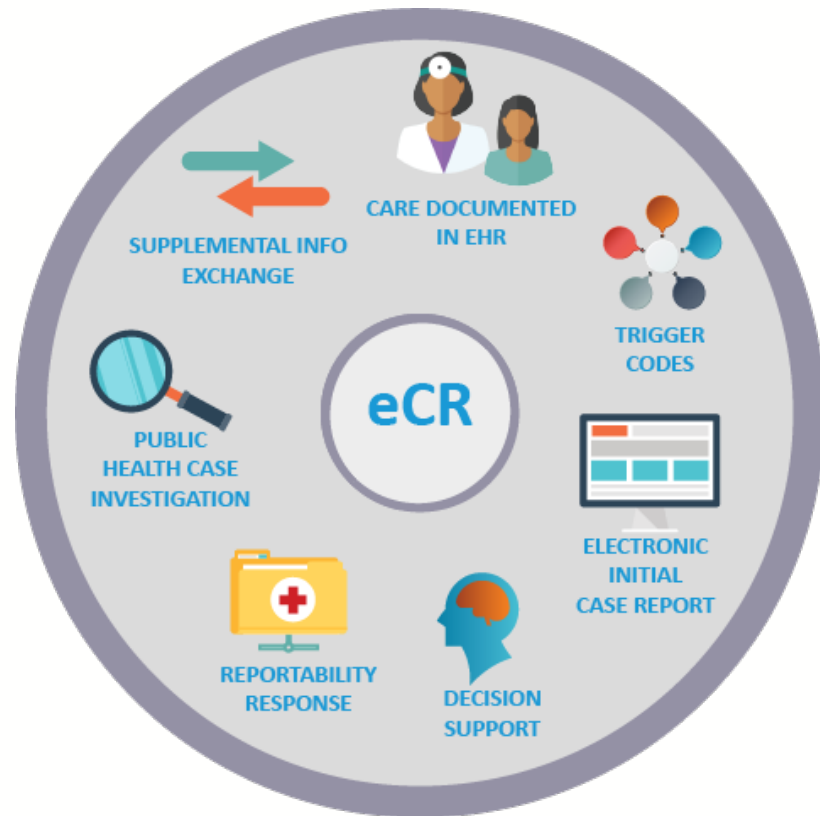
Use Case #2: SSA Disability Determinations



- SSA Disability Determination is made possible by the Access Consent Policy (ACP) Use Case.
- A patient applies for disability services, providing consent to retrieve records from their physicians to the SSA.
- The SSA then uses the eHealth Exchange to query for patient's records, providing consent with each query message.
- SSA provides payment to Participant for each successful transaction.
- The SSA Disability Use Case has significantly decreased the time it takes for SSA to make an eligibility determination, speeding up the process for those claimants in need.

Use Case #4: Electronic Case Reporting (eCr)

What is Electronic Case Reporting (eCR)?



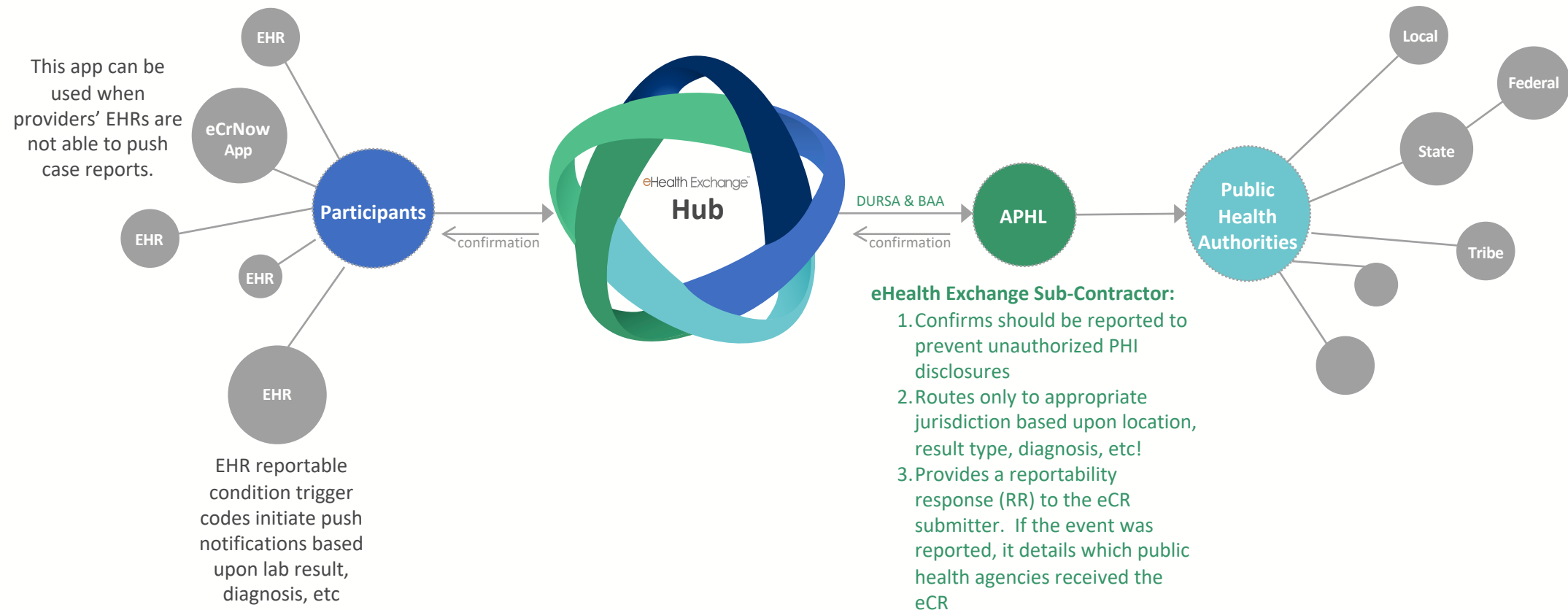
Electronic Case Reporting (eCr) refers to automated generation and transmission of case reports from EHRs to public health agencies for review and action.

Case reporting is used for:

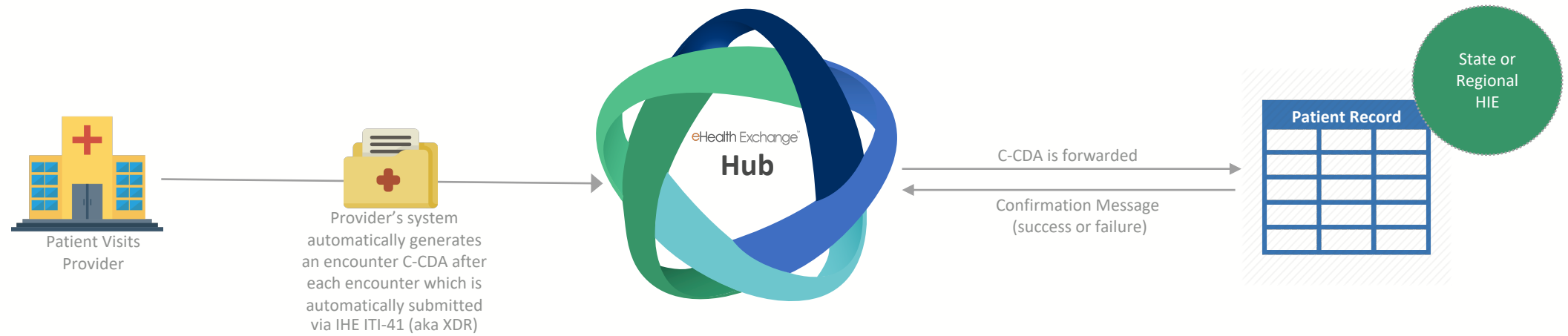
- Real-time monitoring of infectious disease outbreaks at the local, state and national levels
- Outbreak response including investigating possible cases, to help track exposures, origin of outbreak and controlling response activities
- Closed loop communication for the submission of and action needed by

Use Case #4: Electronic Case Reporting (eCr)

Pushing Electronic Case Reports (eCr)



Use Case #5: Providers Push Encounter Details to Local HIEs to Populate Longitudinal Patient Records



Instead of providers & HIEs maintaining multiple point-to-point connections to populate HIEs' longitudinal patient records, providers can push encounter data to state & regional HIEs using the Hub as an intermediary.

PULSE for Disaster Response

The Patient Unified Lookup System for Emergencies platform helps provide safe and informed care during and following major disasters.

- Individuals and providers are often **displaced** from their **homes**, from their offices, from medications, and from medical records.
- Patients are often **treated at field locations** such as tents, churches, and school gymnasiums, often in a **different city**.
- First responders and **volunteer providers** at field locations often work **with incomplete medical information**.
- And **provisioning access to medical histories to only credentialed volunteer** clinicians is difficult.



Case Study: Redding, CA Wildfires

- In response to the **September 2018 wildfires in the city of Redding**, the California Emergency Management Services Authority activated PULSE.
- PULSE provided **physicians, RNs, LPNs, physician assistants, pharmacists, EMTs, and paramedics in disaster shelters** with access to patients' histories, allergies, and prescriptions.
- During the wildfires, **one man with diabetes was running out of insulin and unable to get a refill after being displaced**, because the filling pharmacy could not find his records and patient office was closed.
- At the shelter to which the individual was evacuated, emergency responders were able to pull up his records using PULSE and connect him with one of the emergency clinicians on site to assess him and **prescribe his medications**.
- This allowed the patient to be stabilized and **prevented an unnecessary hospitalization**.





PULSE Deployments in 2021

eHealth ExchangeTM

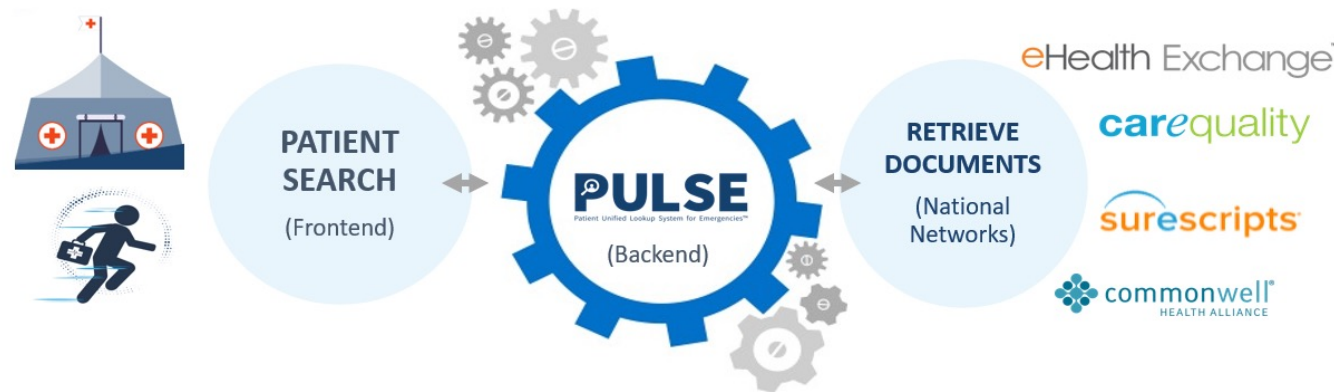
Why PULSE?

Access to health records and medication history supports coordinated care during disasters

- Displaced patients may end up several hundred miles away from their routine care providers
- Patients deserve informed care no matter where or when they need to access services

PULSE uses national advancements in connectivity (eHealth Exchange!) to enable better clinical decision making in field-based emergency settings

- Alternate care facilities often lack the infrastructure of routine health settings (e.g., EHR & local health IT networks)
- Volunteer clinicians can search across national networks to return all available clinical history



What is PULSE?

State & Territory Partners

- California
- Florida
- Texas
- U.S. Virgin Islands

PULSE
Patient Unified Lookup System for Emergencies

Description	System	Code	Code Description	Severity	Susceptibility	Date and Time	Status
Allergy to Eggs	UNII	291P45F896	Eggs	Mild to moderate	Susceptible	04-01-2009 10:00:00	Active
	ICD-9-CM	V15.03	Allergy to eggs				
Bakers Yeast	RxNorm	892677	Baker's yeast allergenic extract 100 MG/ML Injectable Solution	Mild	Very susceptible	04-01-2009 10:00:00	Active
Codeine	NDF-RT	N0000006691	Codeine	Mild	Very susceptible	04-01-2009 10:00:00	Active

Encounters

Group Description	Code System	Code	Code Description	Date and Time	Status
Encounter Office Visit	CPT	99212	Office/outpatient visit, est	04-01-2009 10:00:00	Performed
Encounter Office Visit	CPT	99212	Office/outpatient visit, est	04-01-2010 10:00:00	Performed
Encounter Outpatient	CPT	99213	Office/outpatient visit, est	07-07-2010 10:00:00	Performed
	ICD-9-CM	V70.0	Routine general medical examination at a health care facility		
Encounter Outpatient	CPT	99213	Office/outpatient visit, est	08-05-2010 10:00:00	Performed

Technology & Funding Partners

Data Sources

- **eHealthExchange** (and Carequality, Commonwell), including dedicated use case
- Surescripts Medication History service

Strategy

- The Sequoia Project partnered on early strategy

Funding

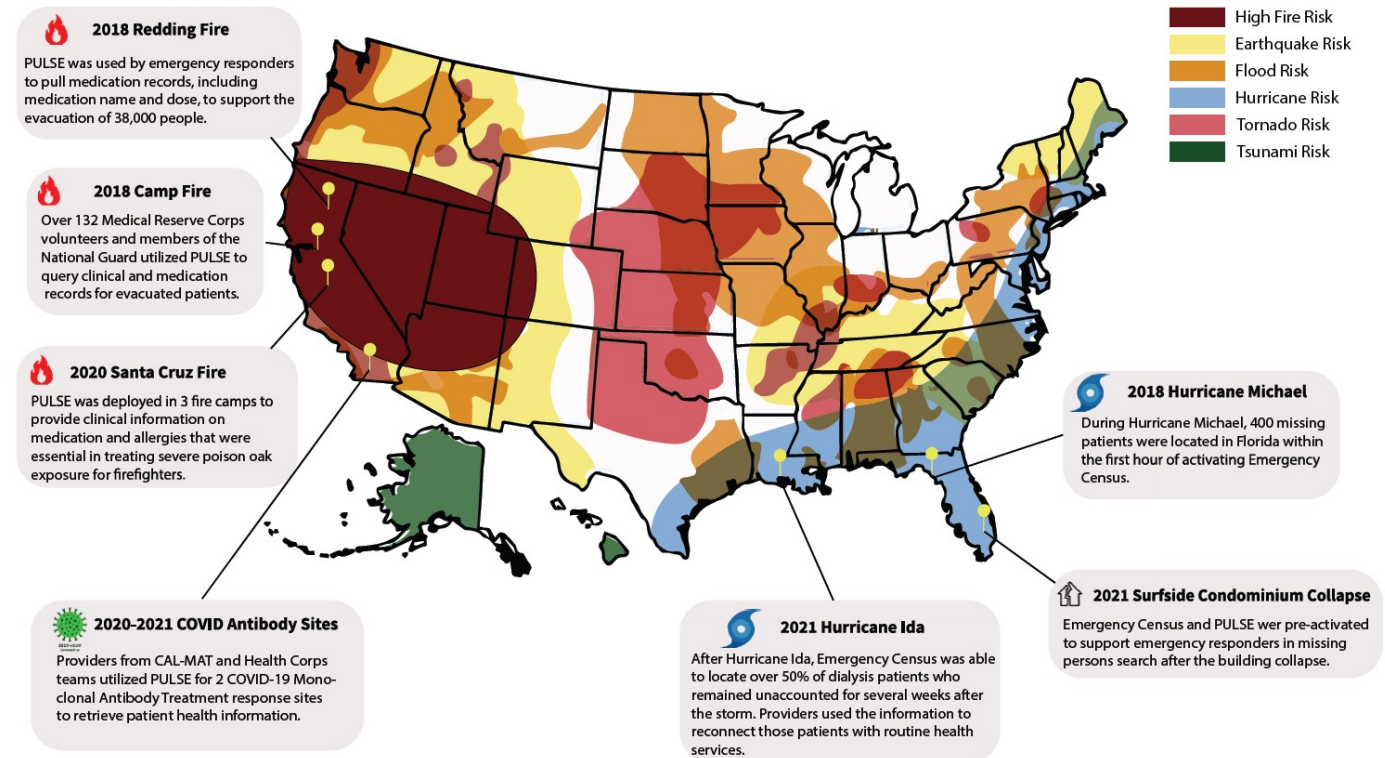
- HHS ONC / ASPR funded the initial and open-source versions
- Audacious Inquiry supports the Enterprise version now used by all state/territory partners
- State/territory partners use CMS funding to offset the cost of the service

Near Deployments

- **Miami Surfside Condo Collapse:** Missing Persons
- **Hurricane Elsa:** PULSE Patient Search and Missing Persons

Live System Use

- **Hurricane Ida:** PULSE Patient Search and Missing Persons
- **COVID Antibody Infusion Sites:** PULSE Patient Search



Improve Patient Matching Results



Rationale

- PULSE queries a wide range of sources because patients are displaced from their regular care sites

Challenges

- PULSE must work with all sources across the networks to optimize patient matching results
- Patient demographic information is often incomplete (e.g., missing address information, partial names, etc.)

Opportunities to Partner

- How do we optimize patient matching results across sources while each source has their own MPI? Is there a standard list of required fields for optimal matching?
- Can we improve patient matching results for queries with less-than-ideal patient demographics? (e.g., allowing an ambiguous patient matching algorithm)
- How do we narrow down the list of sources to query for each patient? For example, based on where the emergency takes place or patient address information?
- How do we help our users understand the use of different MPIs across many sources on the national networks (and even between networks like eHealth Exchange and Surescripts)?

Ensure Connectivity with All Sources

Rationale

- PULSE is only used during declared disasters. There is no routine data exchange.
- PULSE must maintain connectivity with all sources across the networks because emergencies can occur anytime and anywhere in the country

Challenges

- Ensuring PULSE can reliably retrieve documents from any source on the network without live data monitoring
- Engaging and working with source organizations to troubleshoot issues in a timely manner

Opportunities to Partner

- How do we better monitor our production level connectivity to other endpoints?
- Are there best practices to enable our technology to complete PD/QD/RD against all sources on the networks while there are different interpretations of the technical specifications?
- How can we improve our ability to test the journey of a query through PD/QD/RD when test patients are not consistent across endpoints?
- How can we obtain and maintain information about test patients that have documents available in source production environments?



Deliver Enhanced Clinical Value in the Disaster Setting

Rationale

- Actionable clinical data must be delivered for rapid decision-making during patient triage and stabilization

Challenges

- Ability to target specific sources that may be most relevant to a specific patient
- Ability to target the most relevant document types or clinical data elements

Opportunities to Partner

- Is there a more efficient way to choose which sources to query based on context clues from the emergency event, including the use of geofencing?
- How do we get better at understanding if our query missed available documents vs. the patient truly had no records available across the national networks?
- Can we learn which sources best deliver the high quality, high value clinical information important for care during disasters? Should we implement FHIR-based APIs?



Poll

Please select the link provided in “chat” to anonymously respond to question 2 of 5

Question #2: New Types of Data

Thinking about exchanging new Types of Data, which are the highest priority?

- A. Social Determinants of Health (SDoH) (for accessing or exchanging needs assessments).
 - B. Claims Data (for determining gaps-in-care or population health analytics (such as risk scoring)).
 - C. Public Health Registry Data (for accessing Prescription Drug Monitoring or Immunization data, as 2 examples).
 - D. Lab Data (for accessing historical lab results).
 - E. Imaging Data (for accessing or exchanging high-fidelity DICOM images and image reports).
 - F. Patient Generated Data (such as weight or activity from a home device or personal health record).
 - G. Genetic Data (patient or provider ordered, to support a precision medicine referral, for example).
- ... if other, please add details in the comments below.



<https://forms.office.com/r/jezkgg1MgV>

1. RESPONSES: *

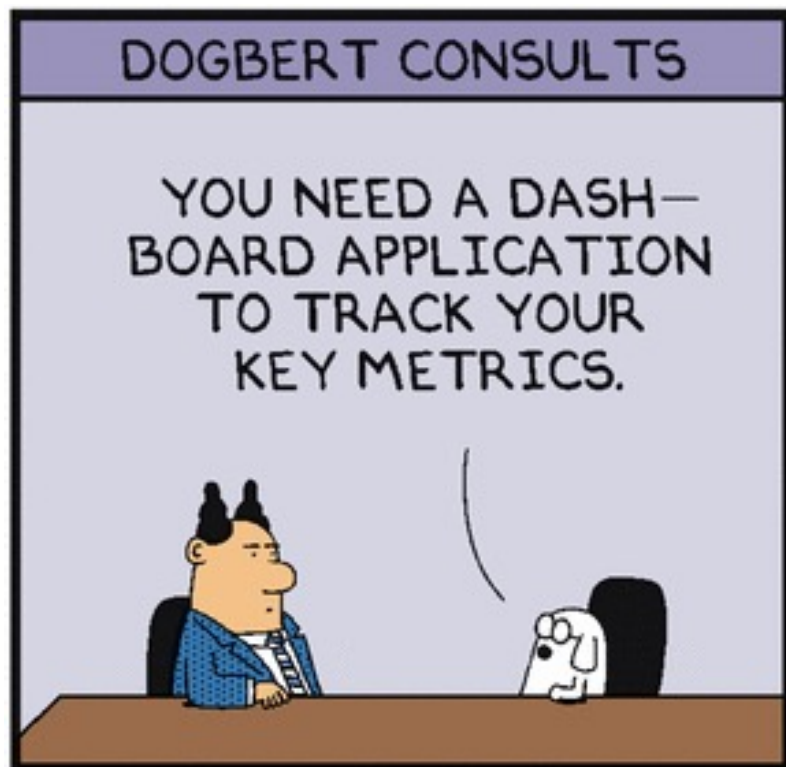
	URGENT NEED (that is not currently fulfilled)	NOT URGENT (or alternatives exist)	OPPOSED (or I think this is a bad idea)
A. SDoH Assessments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The background of the slide features a blue-tinted image of a doctor's hands. One hand is holding a stethoscope, and the other is resting on a laptop keyboard. The image is overlaid with a pattern of overlapping circles and a grid of small circles.

Dashboard Insights

Insight into your organization's data exchange

eHealth Exchange[™]



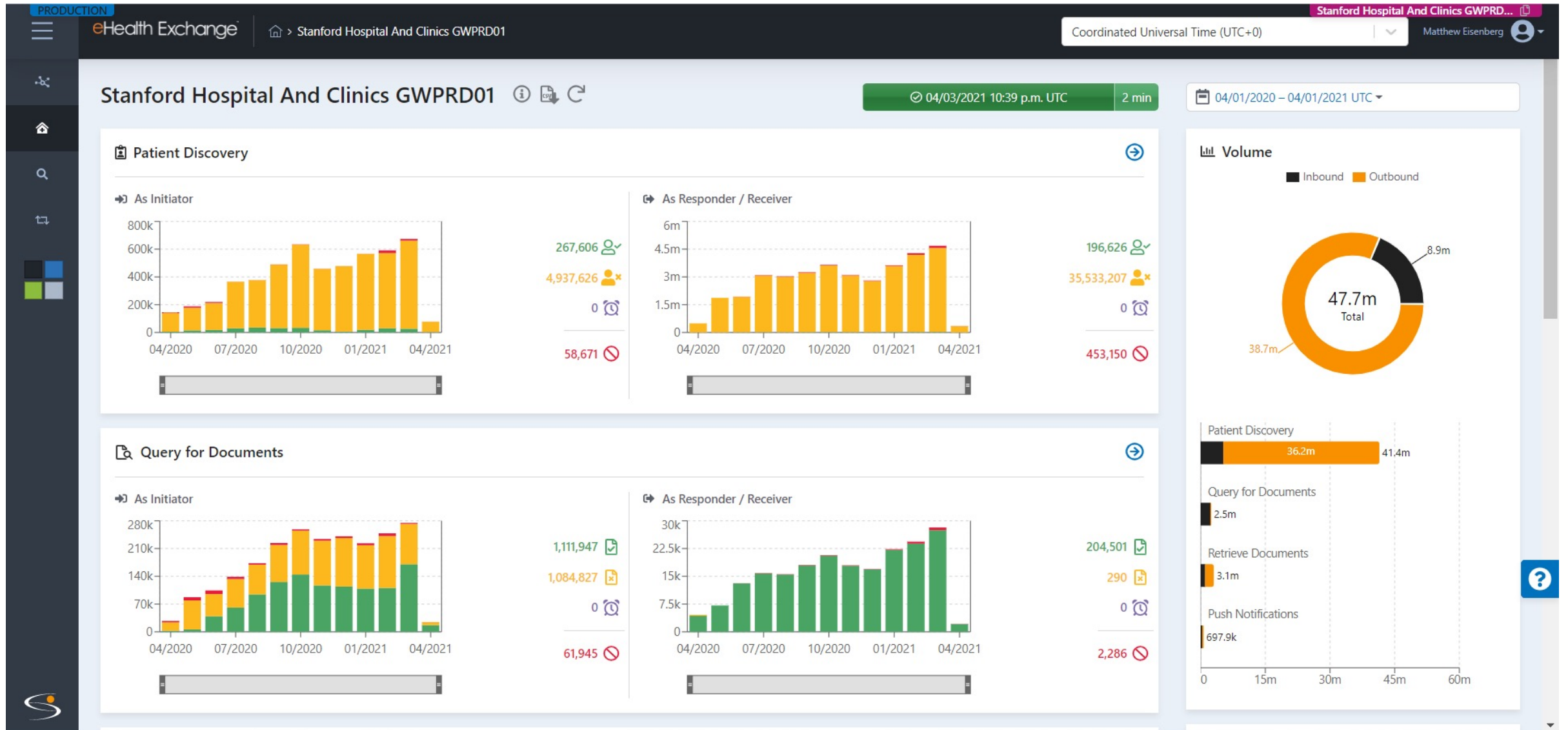
www.dilbert.com scottadams@aol.com

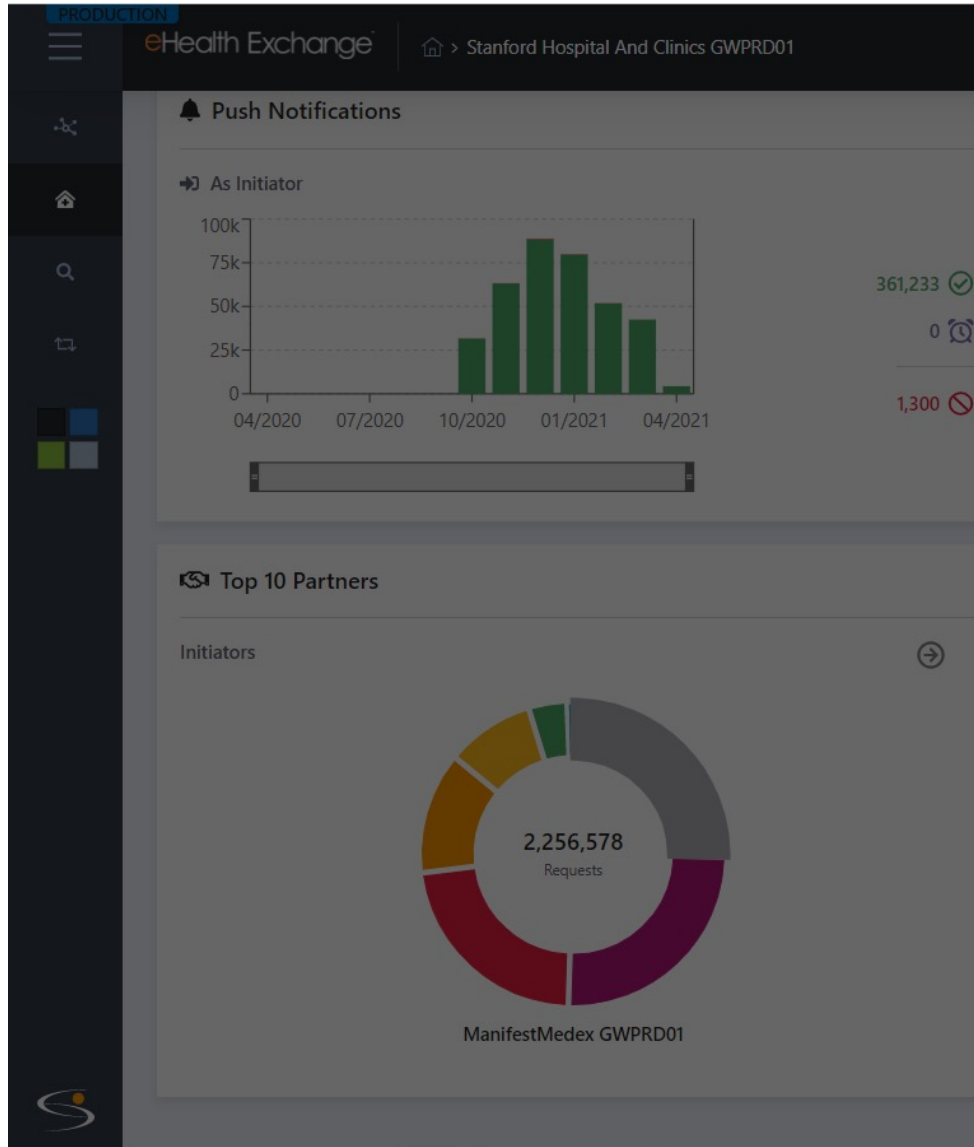


5-16-07 ©2007 Scott Adams, Inc./Dist. by UFS, Inc.



HUB Dashboard – A great compliment to your internal HIE dashboards!

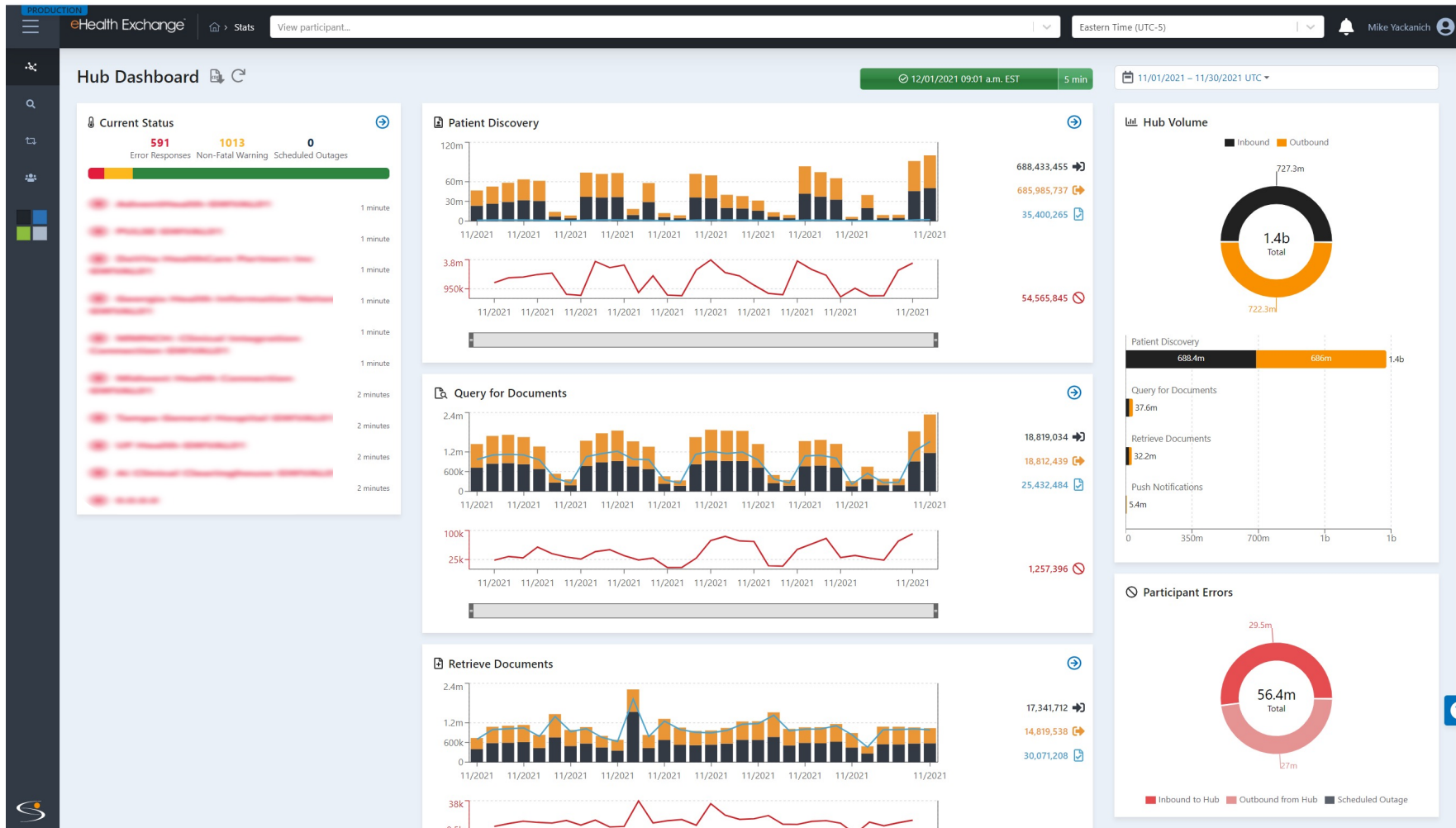




Initiating Partners

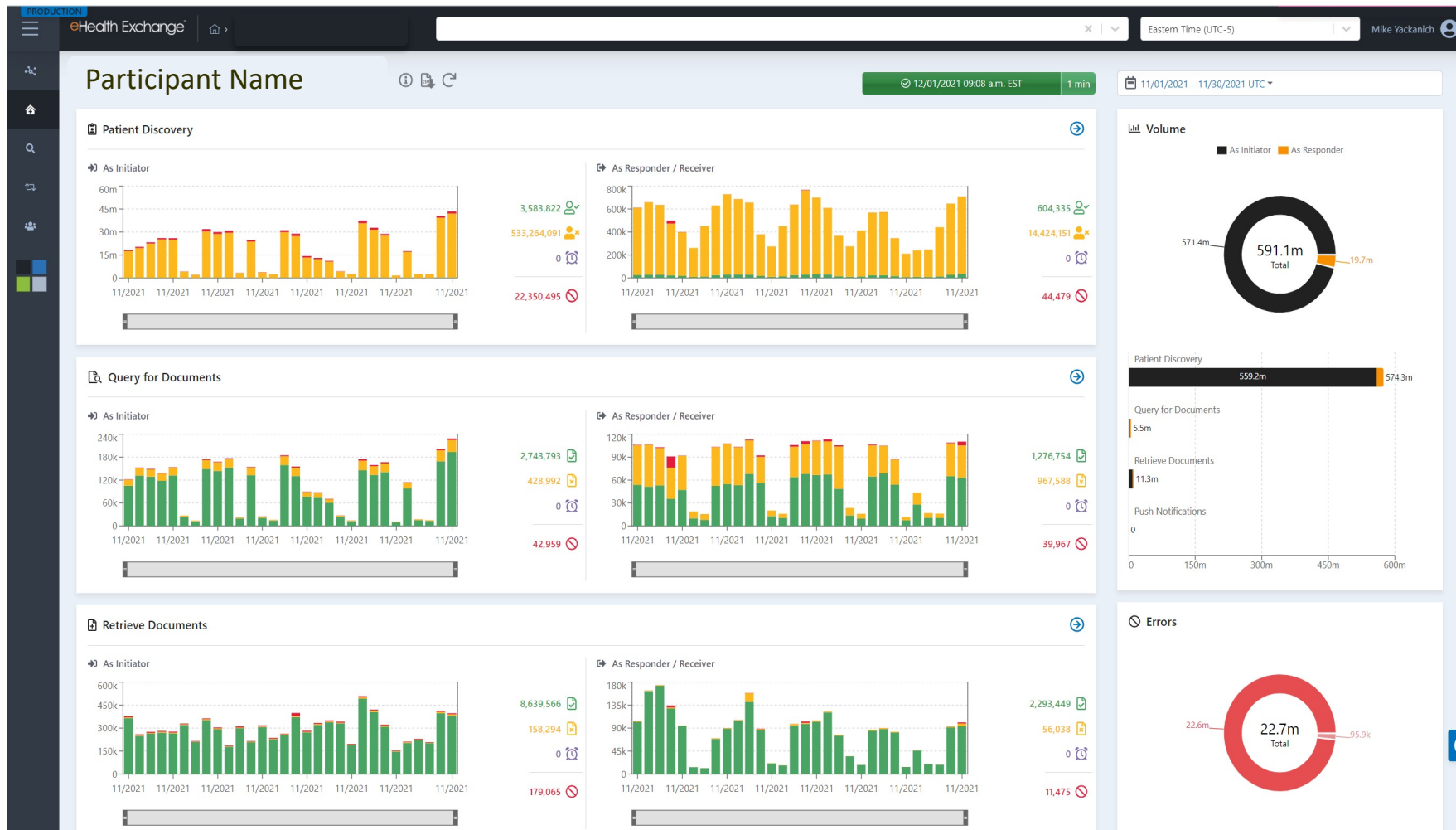
#	Initiator	Requests	Avg Time (s)	Avg Size (KB)
1	ManifestMedex GWPRD01	2256578	1.47s	30.0 KB
2	Federal HIE – DoD, VA, USCG GWPRD01	2255911	4.79s	81.4 KB
3	DaVita HealthCare Partners Inc GWPRD01 GWPRD01	2013491	2.32s	19.5 KB
4	San Mateo County Health GWPRD01	1154370	1.33s	283.5 KB
5	Satellite Healthcare Inc GWPRD01	833849	5.27s	7.8 KB
6	AIMSPATFORM GWPRD01	363280	0.94s	2.1 KB
7	SacValley MedShare GWPRD01	48688	1.87s	261.1 KB
8	Social Security Administration (SSA) GWPRD01	3743	0.42s	96.1 KB
9	HealthIE Nevada (HealthInsight) GWPRD01	2599	0.00s	0.0 KB
10	Atrium Health CareConnect GWPRD01	1320	0.13s	3.4 KB
11	AdventHealth GWPRD01	923	2.43s	2,986.0 KB
12	HealthShare Exchange GWPRD01	746	13.33s	284.3 KB
13	North Dakota Health Information Network (NDHIN) GWPRD01	357	0.76s	3.0 KB
14	Providence St Joseph Health HIE GWPRD01	175	0.54s	55.3 KB
15	KONZA (Kansas Health Information Network, Inc. - KHIN) GWPRD01	145	0.34s	3.9 KB
16	San Diego Regional Health Information Exchange GWPRD01	23	1.58s	1.0 KB
17	Michigan Health Information Network (MHIN) GWPRD01	11	0.27s	207.7 KB

Hub Status and Transaction Metrics (Global View)



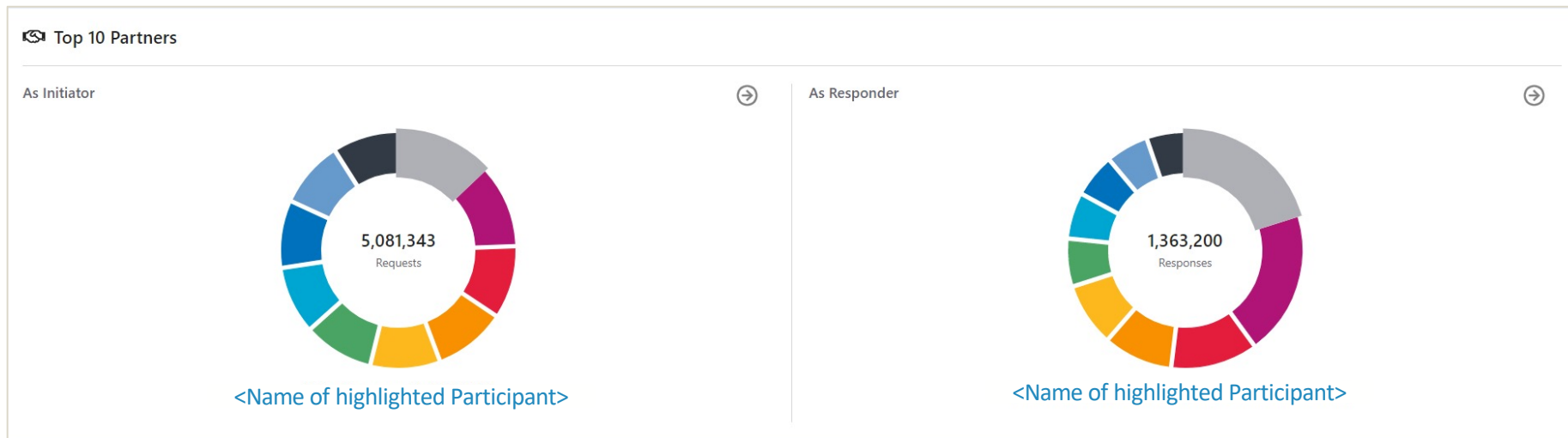
- Overall Hub status
- Hub transaction metrics
- Participants' responding gateway status
- Trending data
- *No PHI/PII on the Dashboard*

Participant Status and Transaction Metrics



- Your data exchange metrics
- Avg response times
- Trending data
- Drill-down/Download Capability
- *No PHI/PII on the Dashboard*

Top Exchange Partners



- Who are *you* querying?
- Who is querying *your* organization?
- Request volume, response times, size – by xact type
- Results available as csv

Responding Partners

11/01/2021 12am - 11/30/2021 12am UTC

Select transaction type

#	Partner	Requests	Avg Time (s)	Avg Size (KB)
1	Blue Cross of Michigan	5081343	3.27s	104.6 KB
2	UnitedHealthcare	4513391	0.78s	150.3 KB
3	Interstate Inland Health	3908557	0.46s	114.7 KB
4	UnitedHealthcare	3882444	2.56s	196.6 KB
5	United Regional Medical Center	3763179	1.01s	281.6 KB
6	Providence Health and Services (Washington and Oregon)	3761792	1.02s	281.6 KB
7	Providence Health and Services (Oregon and California)	3624853	0.87s	85.6 KB
8	UnitedHealthcare	3621389	0.59s	58.5 KB
9	UnitedHealthcare	3586796	0.42s	35.7 KB
10	Providence (Ore)	3545006	0.59s	58.2 KB
11	UnitedHealthcare (United)	3499971	0.47s	38.9 KB
12	UnitedHealthcare (United)	3448888	0.40s	34.0 KB

Initiating Partners

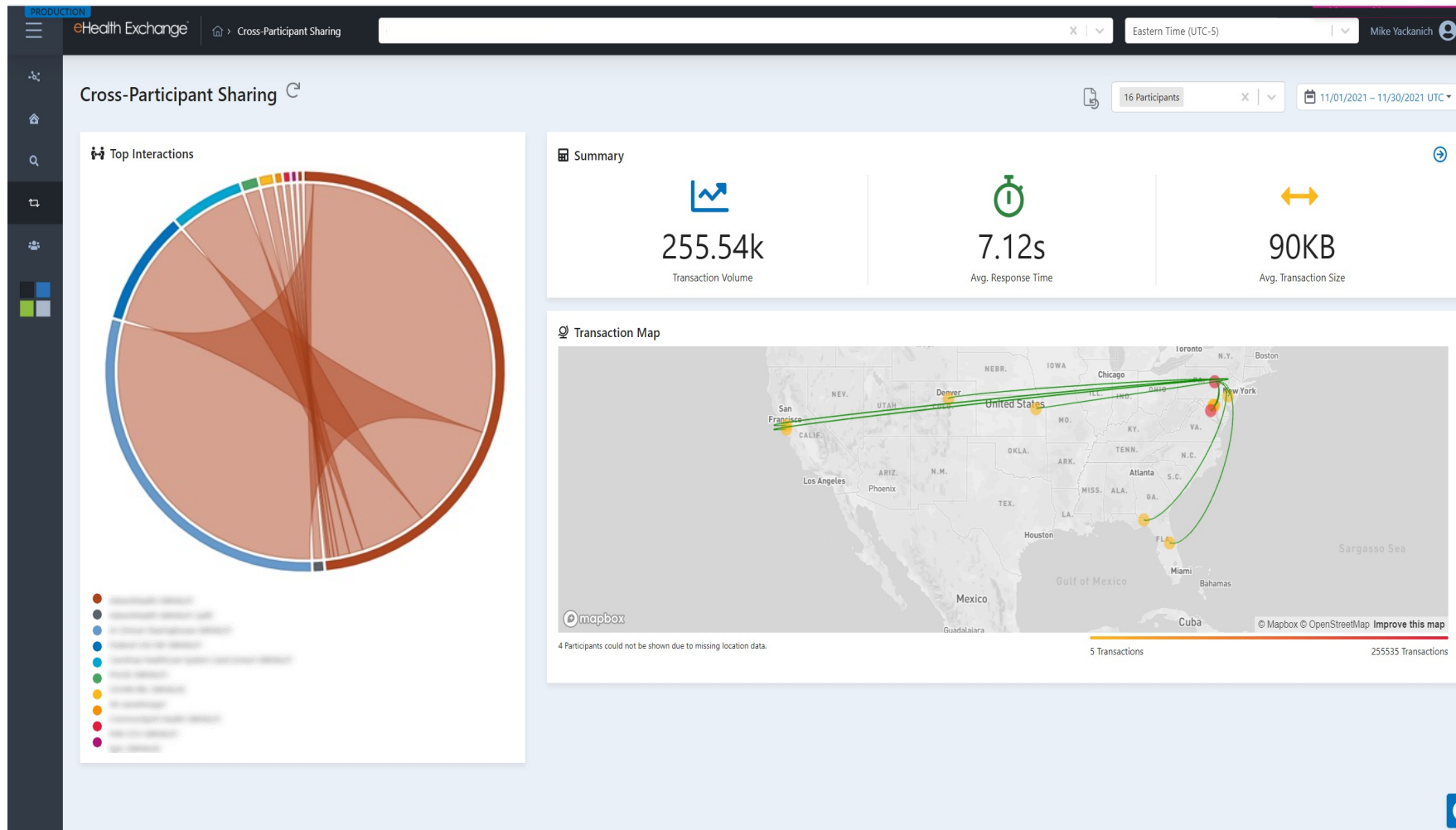
11/01/2021 12am - 11/30/2021 12am UTC

Select transaction type

#	Partner	Requests	Avg Time (s)	Avg Size (KB)
1	Blue Cross of Michigan	1363200		
2	UnitedHealthcare	1350527		
3	Interstate Inland Health	809568		
4	UnitedHealthcare	643735	5.18s	29.0 KB
5	United Regional Medical Center	587713	3.32s	11.9 KB
6	Providence Health and Services (Washington and Oregon)	444480	4.34s	21.0 KB
7	Providence Health and Services (Oregon and California)	429158	6.92s	40.2 KB
8	UnitedHealthcare	403171	5.46s	30.0 KB
9	UnitedHealthcare	395154	7.38s	26.7 KB
10	Providence (Ore)	359257	8.11s	38.6 KB
11	UnitedHealthcare (United)	359106	8.29s	47.0 KB
12	UnitedHealthcare (United)	357556	5.86s	36.7 KB

Transaction Type: Patient Discovery, Push Notifications, Query for Documents, Retrieve Documents

Cross-Participant Transaction Metrics



- Additional graphical representation of data exchange partners
 - Cord diagram
 - Flight path

How do I access the Dashboard?

Each organization is provisioned with an “Authorized Agent” user account. That user account can then create additional accounts for access to their organization’s Dashboard.

- Contact your organization’s authorized agent to request an account
OR
- Contact the Hub Service Desk for assistance in identifying your authorized agent
 - servicedesk@hub.ehealthexchange.org or 833-793-0188

Environment	URL
PROD	https://insightsprod.ehealthexchange.org/#/login
VAL	https://insightsstage.ehealthexchange.org/#/login



2021 Accomplishments

Key Highlights

eHealth ExchangeTM

2021 Accomplishments

Innovative Value

Increased Value & Stickiness

- Upgraded Hub for FHIR R4 support
- Setup & successfully tested query & retrieve of **discrete FHIR resources** vs entire C-CDAs (FDA)
- Initiated FHIR FDA adverse event notification design
- **Achieved 96% Content Quality Validation**
- Continued PDMP FHIR Proof of Concept with CDC, DOJ, ONC, NE, PA, MD, UT

Policies & Procedures

Governance & Process Rigor

- Updated 3 Operating Policies & Procedures
- Updated the Validation Plan
- Delivered TECCA & Info Blocking Education
- Prepared to apply to become a TECCA QHIN (Qualified Health Information Network)

Expanded Community

Increased Reliance on Data Exchanged Use

- **Added 19 new participants including FDA**
- Increased # C-CDAs exchanged 18% to 650M
- Carequality – 18 participants responded to 21M Patient Discovery requests
- Implemented Hub transformations to overcome interoperability barriers
- Expanded eCR so 22 participants + 1 CQ network now send to APLH AIMS via Hub

Insightful Analytics

Hub “Dashboard” Web Portal”

- Increased retention of summary data from 12 to 24 months
- Improved (reduced) latency between Hub and Hub Dashboard during periods of increased-volume

Specifications

Standardization

Rolled-out notification specifications permitting:

- IHE SOAP XML based transactions using IHE ITI-41 and ITI-80;
 - FHIR-based push of FHIR resources and/or CDA documents
- Contributions to HL7 FHIR standards bodies:
- HL7 UDAP
 - ONC FAST – Hybrid/Intermediary exchange

Business Discipline

Formalized Processes & Executed

- Created 11 new internal SOPs
- Implemented internal automated issue alerting and escalation.
- Migrated help ticket requests to new platform to improve tracking & accelerate resolution.
- Implemented Info Blocking Risk Assessment
- Implemented Business Continuity Recovery Plan
- Implemented Disaster Recovery Plan Readiness

Poll

Please select the link provided in “chat” to anonymously respond to question 3 of 5

Question #3: New Participants

Thinking about new Participants, which are highest priority?

- A. Patient access (so consumers can query to gain access to their data via Apps or PHR's). Later this may evolve to support bi-directional exchange to furnish patient consent or patient access preferences or patient-generated data.
- B. Community-Based Organizations (CBO's such as crisis counselors or housing authorities that may not be HIPAA covered entities but have consent to to query for data (which are used as inputs to match to their social programs)). CBO's may supply referral data in return.
- C. State Public Health Agencies (to query for contact tracing or to support other mandatory reporting requirements). Public Health may furnish registry data in return (PDMP, Immunization or Childhood screening data).
- D. Health Plans (to query for clinical data to support a range of purposes that may include care coordination, clinical quality assessment, risk stratification, prior-authorizations, or claims attachments). Health Plans may furnish claims data, risk scores or gaps-in-care in return.
- E. State Medicaid Agencies (as a subset of health plans, and for the same purposes as health plans, would you think of this type of Participant any differently?). Medicaid agencies may supply claims data or program participation compliance in return.

... if other, please add details in the comments below.

1. RESPONSES: *

URGENT NEED (that is not currently fulfilled) NOT URGENT (or alternatives exist) OPPOSED (I think this is a bad idea)



<https://forms.office.com/r/SnZSesSZt3>

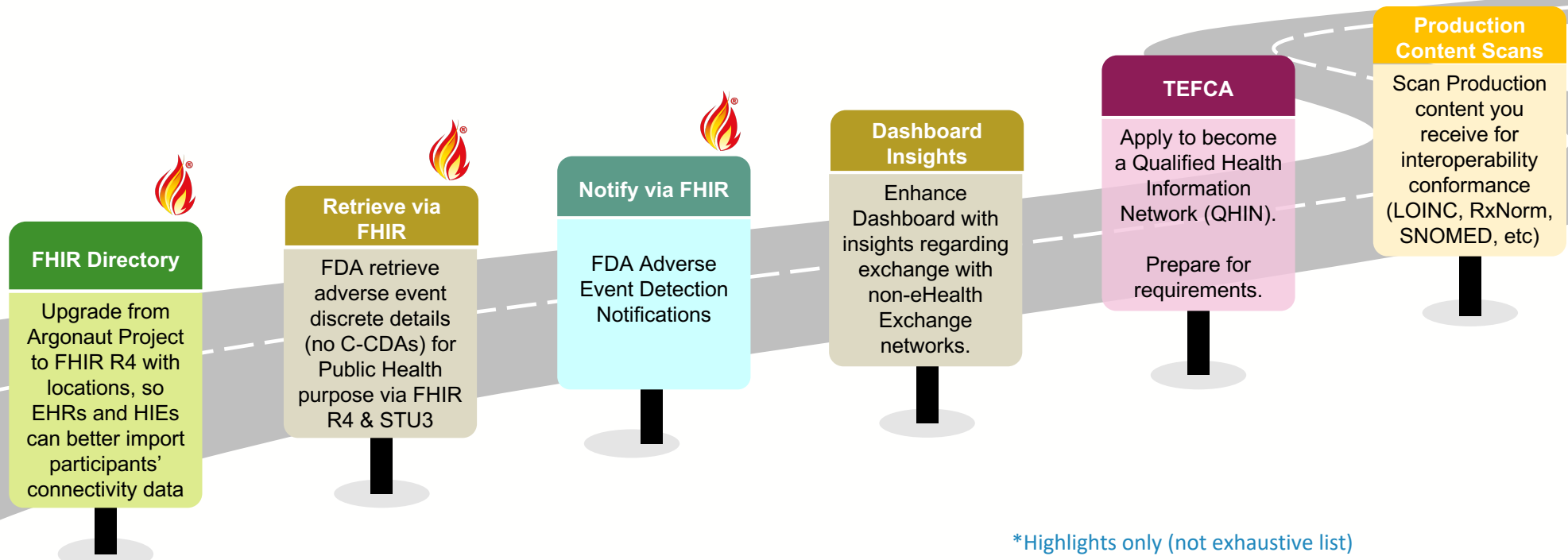
Roadmaps to Streamline Interoperability



2022 Roadmap

Key Anticipated Capabilities

2022 Roadmap Highlights*



*Highlights only (not exhaustive list)

*Market disruptions may change these priorities



2022 Roadmap

TEFCA (Trusted Exchange Framework)

TEFCA Goals



GOAL 1

Establish a floor of universal interoperability across the country



GOAL 2

Create simplified nationwide connectivity

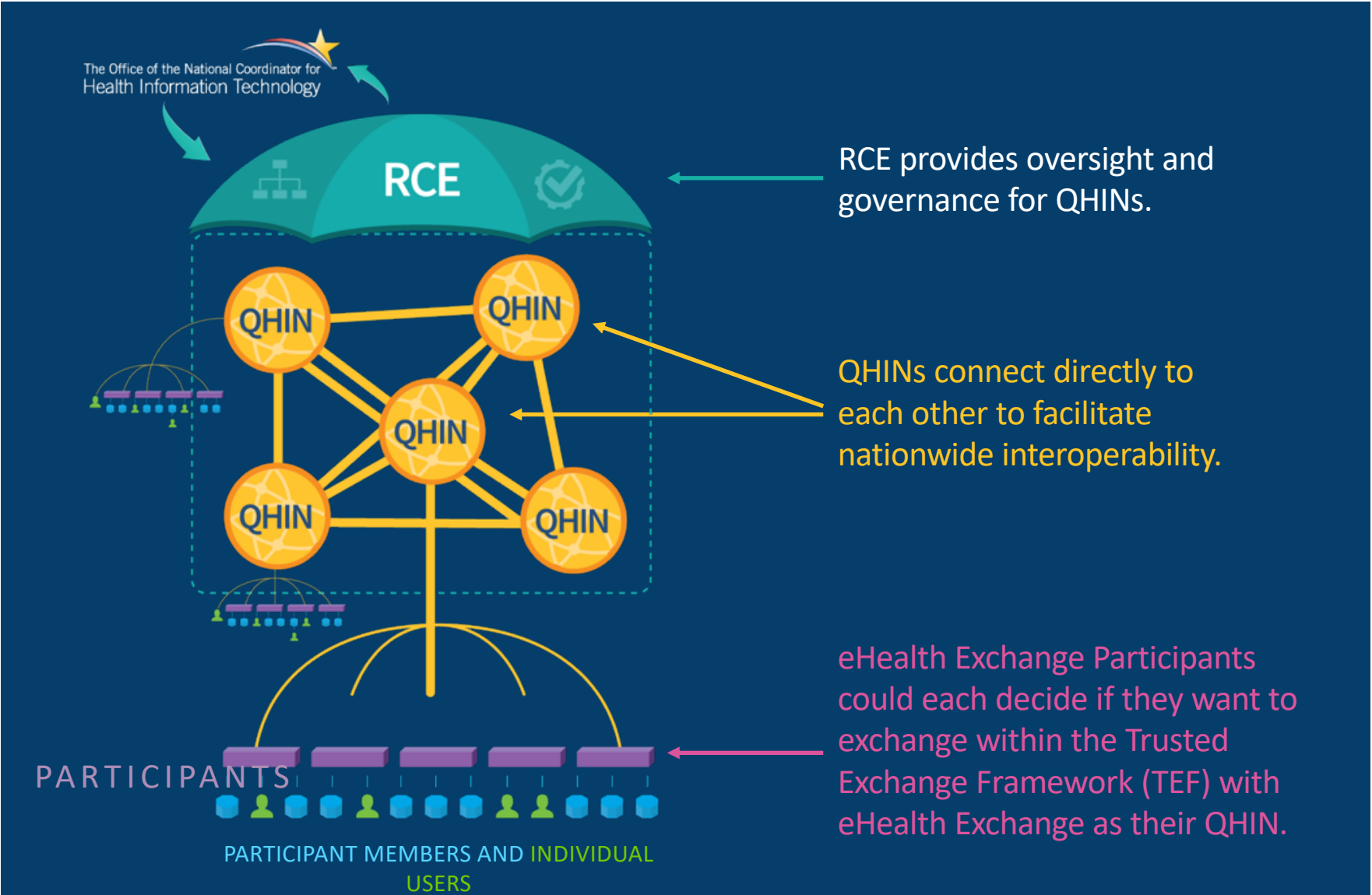


GOAL 3

Provide the infrastructure to allow individuals to gather their data

Simplified connectivity for individuals, health care providers, health plans, public health agencies, and other stakeholders.

How Will the Common Agreement Work?



Trusted Exchange Framework (TEF) Timeline

- Potential QHINs are expected to be able to apply beginning in Jan, Feb, or March 2022.
- The final Common Agreement, SOPs, Technical Agreement, QHIN Directory, etc are not final today.

Sample Approvals Needed

Sample Coordinating Committee Approvals Would be Needed:

1. Applying to become a QHIN (Qualified Health Information Network) would require the Coordinating Committee approve signing the TEFCA (Trusted Exchange Framework Common Agreement) which is still in draft form. See DURSA section 4.03(m).
2. Potential changes to OPPs
3. Definite technical specifications additions

Board Approval Would be Needed:

- For eHealth Exchange to spend money to accommodate new capabilities and higher volume with other networks.

Participants Could Opt-Out of TEF/QHIN/TEFCA Exchange:

- Participants would have the right to opt-out of QHIN exchange according to DURSA section 12.05.
- Participants might opt-out because they cannot or don't want to meet QHIN participant or sub-participant requirements such as:
 - Exchanging for non-Treatment purposes
 - Access Consent Policies (ACP) to facilitate specific written patient authorizations for others to retrieve their data.

Poll

Please select the link provided in “chat” to anonymously respond to question 4 of 5

Question #4: New Services

Question #4: Thinking about new Services, which are the highest priority?

- A. Record Location (RLS, so I can determine where to query, and to reduce the volume of non-match queries).
 - B. Data Quality (I'd like to see real-time, in-line data quality assessments so I can only get high-fidelity data).
 - C. Data Aggregation and De-duplication (since now I get many CDA's, I need to collapse them down).
 - D. Patient Consent (it would be great to have a national service so I could confirm consent for certain use cases).
 - E. FHIR adapter (since my system can't participate with FHIR today, I'd like a solution to bridge from SOAP/CDA).
 - F. Security Monitoring (building on the hub dashboard, I'd like to be alerted of abnormal behavior).
- ... if other, please add details in the comments below.



<https://forms.office.com/r/dbuHtLY0tJ>

1. RESPONSES: *

	URGENT NEED (that is not currently fulfilled)	NOT URGENT (or alternatives exist)	OPPOSED (I think this is a bad idea)
A. RLS	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Participation Request

2022 Roadmap

**FDA Pilot: Adverse Event
Exchange via FHIR**

eHealth ExchangeTM

FDA BEST Initiative Objective

The objective of the Biologics Effectiveness and SafeTy (BEST) Initiative is to ensure post-authorization biologic-product safety and effectiveness through active surveillance

Exchange Pilot Objective

To enable more robust monitoring of post-authorization adverse events while minimizing the burden on providers through an exchange-based FHIR infrastructure.

Regulated Products

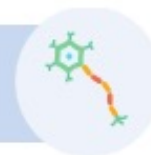
Vaccines (preventative and therapeutic)



Blood (components and derived)



Human Tissues and Cellular Products



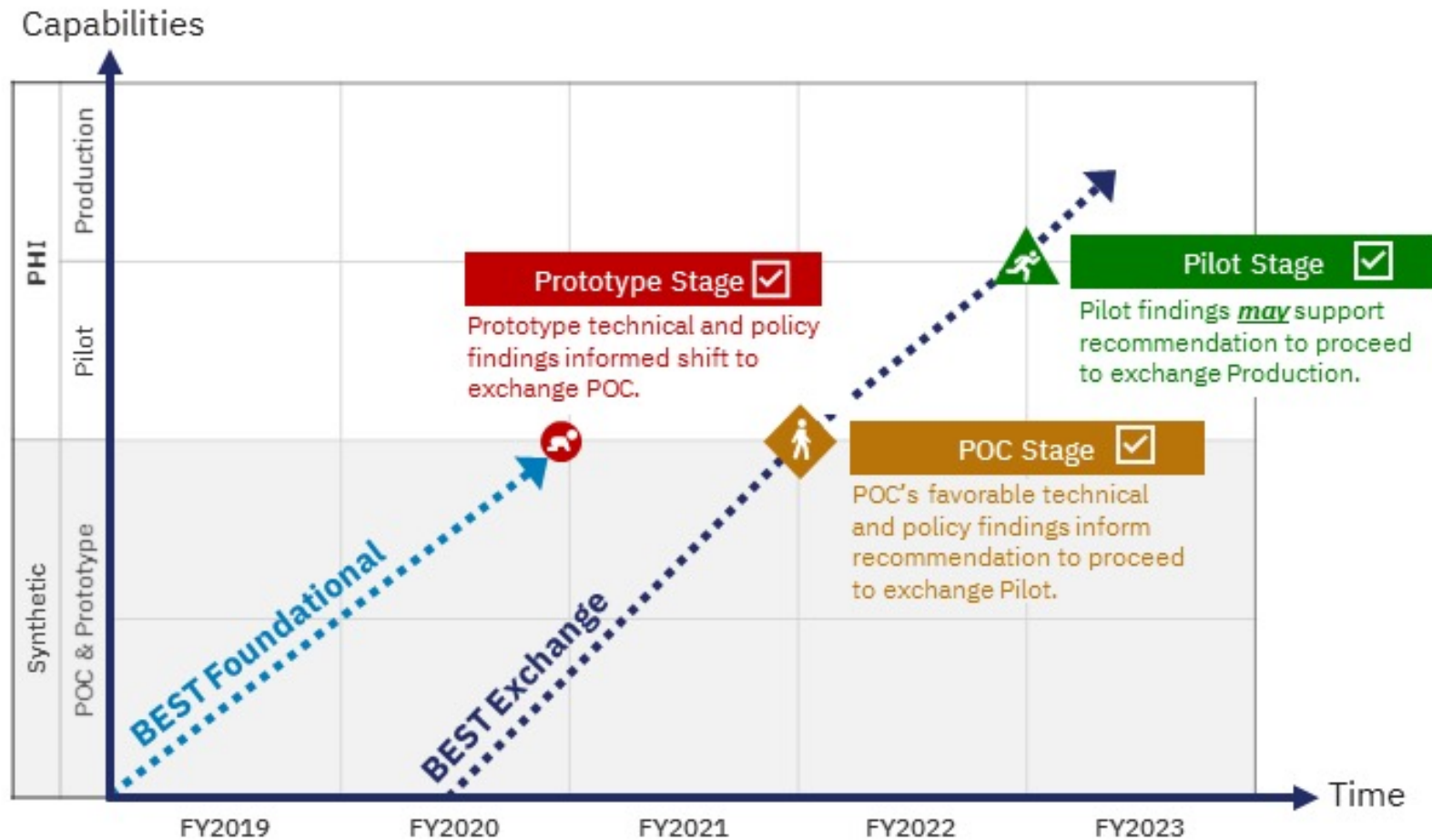
Gene Therapies



Xenotransplantation Products



FDA Exchange Overview-Progress: FY2020-2021



FDA Exchange Overview (Cont.)

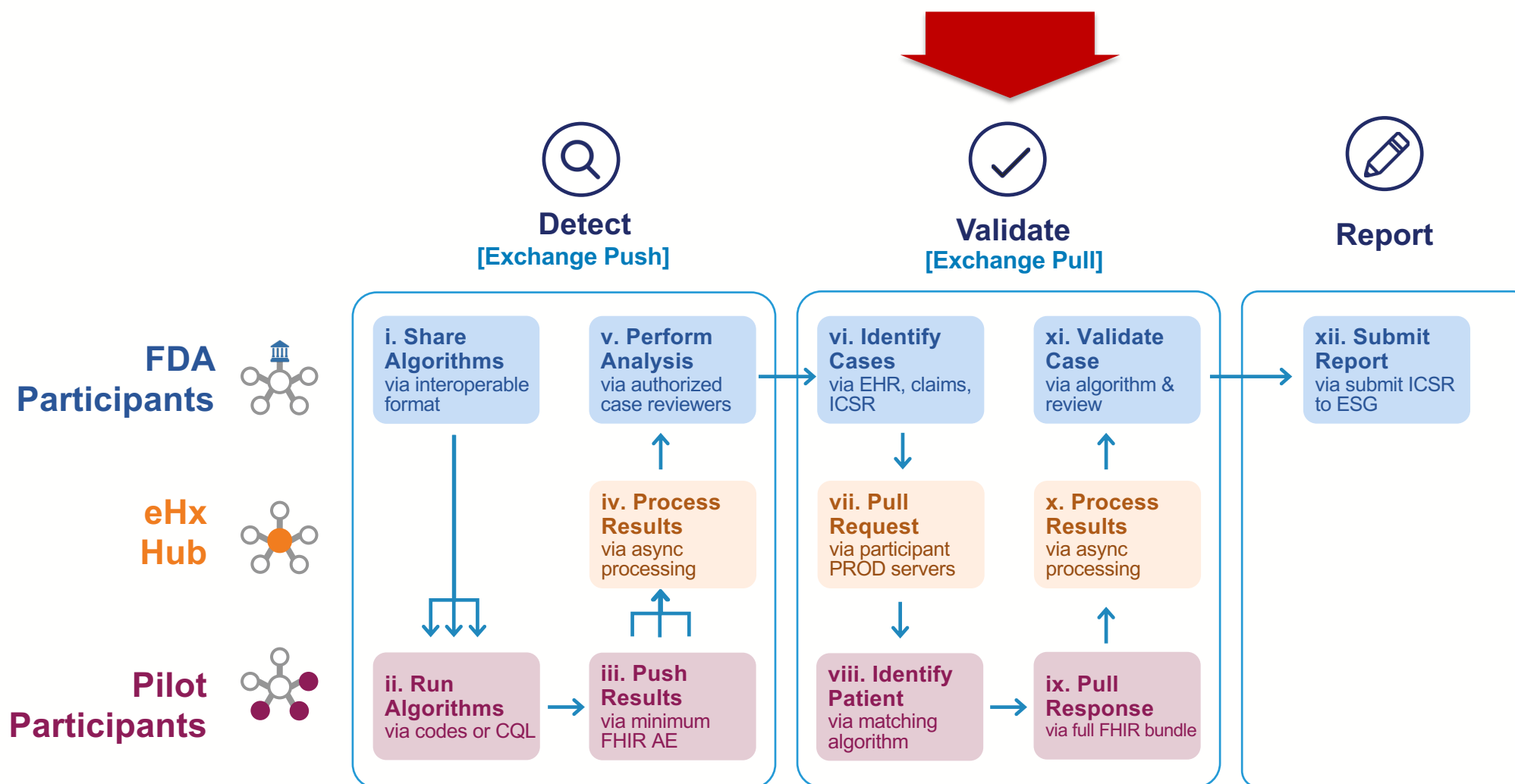
2021 – Proof of Concept (Completed): FDA joined eHx and built a Proof of Concept using synthetic data to connect to 5 participants' FHIR endpoints to create an efficient decision support environment

2022 – Pilot (Planned): FDA is proceeding with a Pilot that will deploy the BEST exchange platform in a secure cloud environment to connect to participants' EHR data

Ask to Participants: FDA is currently seeking participants for the Pilot to:

- Detection (Push): Receive algorithms to detect potential adverse events (AEs) from the platform, run the algorithms on EHR data, and push the results to the eHx Hub
and/or
- Validation (Pull): Identify patients with detected potential AEs via pull request from the eHx Hub, pull responses, and send to the eHx Hub

2021 – POC focused on validation of synthetic cases via exchange

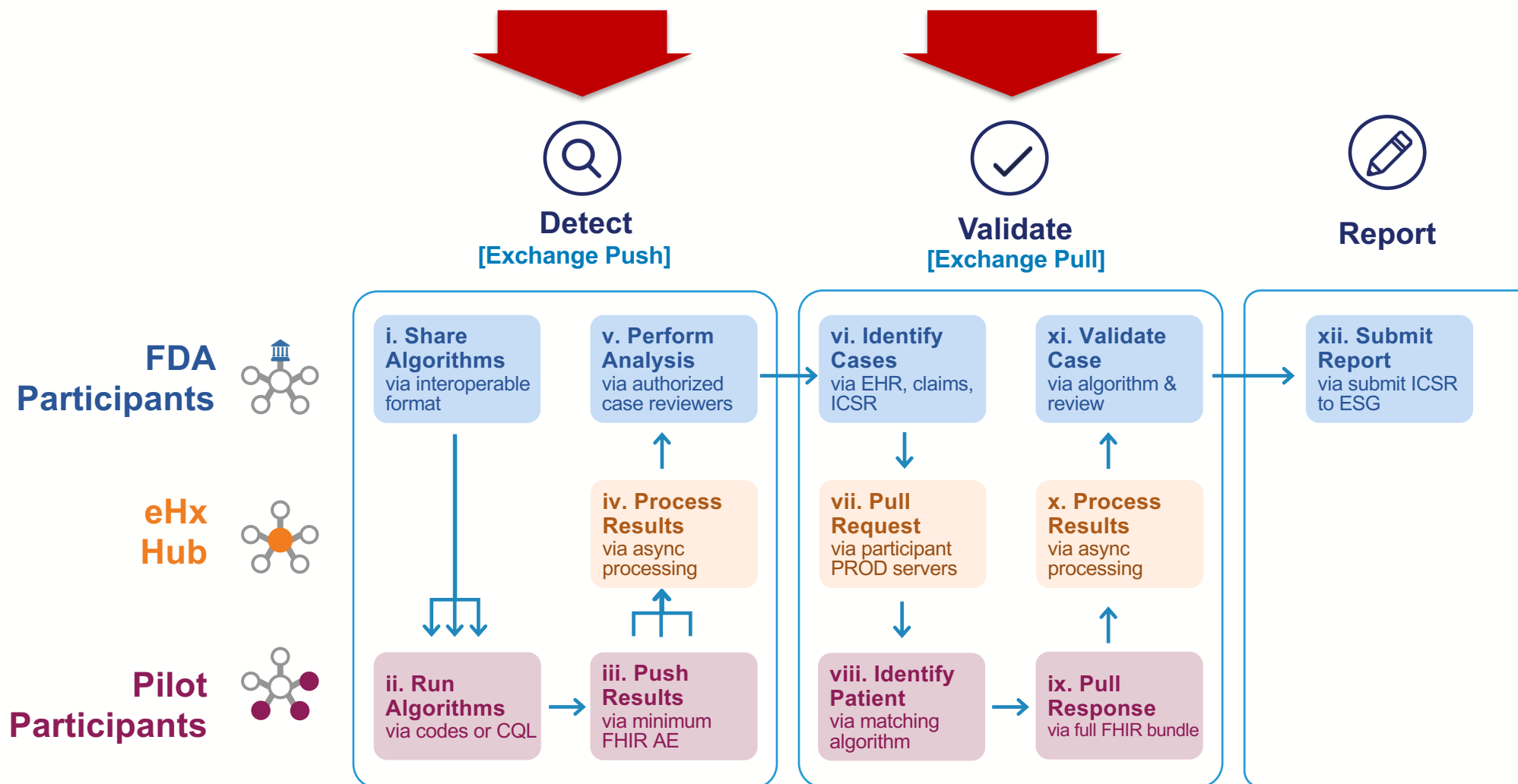


2021 – POC Demo

EHealth Exchange						
CONNECT						
ADMIN						
LOGOUT						
Case ID	Product Type	Date Created	Date Last Updated ↓	Status ↓	Owner	Notes
No data						
Rows per page: 10 0 of 0 < 1 >						

2022 Pilot will focus on both detection (push) and validation (pull) use cases

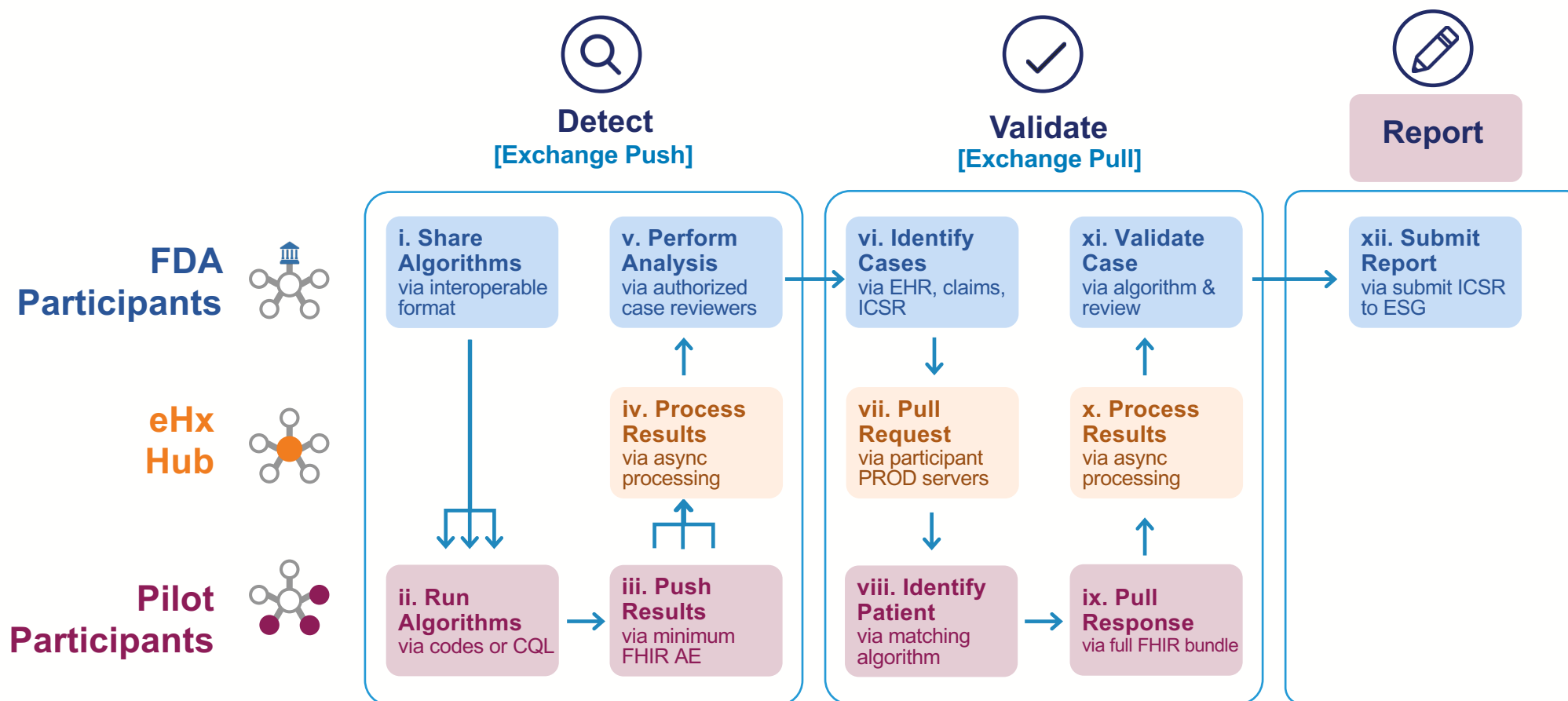
FDA is seeking participants for either detection and validation (i-ix), or validation only (vi-ix)



2022 – Pilot Reporting

After clinical reviews and validation, reports with data elements required for reporting to VAERS will be submitted to FDA.

A de-identification process (anonymization or pseudonymization) will be implemented if needed



Ask: How and why you should participate!

Why participate?

- Support impactful ongoing public health vaccine safety efforts
- Authorship on an innovative paper
- Financial incentive(s)

Interested in being a participant?

- Reach out to Mike McCune (mmccune@ehealthexchange.org)
- Complete a brief survey to help determine suitability to meet pilot requirements (such as having a FHIR R4 endpoint available)

FDA Questions & Answers

Please e-mail questions or concerns to
administrator@ehealthexchange.org

Appendix

Appendix – Recruitment Timeline

- Nov 2021: eHx Monthly
- Dec 2021: eHx Annual (12/16)
- Jan 2022: Epic Corporate Monthly
- Feb 2022: Epic User Groups Regional

Appendix – References

- Developed and balloted a Fast Healthcare Interoperability Resources (FHIR) implementation guide for capturing transfusion and vaccine AE data through the Health Level 7 (HL7) process.
 - In an effort to advance HL7 FHIR data standards to meet the unique needs of post-market adverse event reporting for biologics, the IBM team developed a FHIR Implementation Guide (IG) [for ICSR reporting \[FHIR IG Link\]](#).

2021 – POC Demo-Patient Search

EHealth Exchange

DISCONNECT

ADMIN

LOGOUT

Case ID	Product Type	Date Created	Date Last Updated ↓	Status ↓	Owner	Notes
FHIR STU3je0bkDX--2021-06-29T13:28:13Z	Vaccine	06/29/2021	06/29/2021	Not Reviewed	admin	

EHR Patient Search

Patient Birth Date *

mm/dd/yyyy

Patient Last Name *

Willow

Patient Own Name

One

Patient State

CA

Patient ID

DISPLAY ADDITIONAL OPTIONAL FIELDS

SEARCH

CANCEL

Rows per page: 10 1 of 1 < 1 >

2021 – POC Demo: Query Result

←

EHealth Exchange

DISCONNECT

ADMIN

LOGOUT

Case ID	Product Type	Date Created	Date Last Updated ↓	Status ↓	Owner	Notes
1a37d622-d847-92--2021-07-01T14:28:41Z	Transfusion	07/01/2021	07/01/2021	Not Reviewed	admin	Validating case detected via claim...
5ede45ee-3c28-aa--2021-07-01T14:26:56Z	Vaccine	07/01/2021			admin	Validating case detected via EHR a...

EHR Patient Search

Patient Birth Date *

07/16/1996

EHR Patients Available

ID	Name	Birth Date	Gender	Data Providers
Alan324 Considine246		1996-07-16		HSXMarketStreet

SELECT

CANCEL

DISPLAY ADDITIONAL OPTIONAL FIELDS

SEARCH

CANCEL

Rows per page: 10 1-2 of 2

2021 – POC Demo: Case Creator

The screenshot displays a web application interface for creating a new case. A modal window titled "Case Creator" is centered on the screen, overlaying a table of existing cases. The modal contains the following fields:

- *Start Date:** 01/01/2010
- *End Date:** 01/01/2020
- *Product Type:** Transfusion
- *Biologic of Interest(s):** Red Blood Cells
- *Adverse Event(s):** Hypotensive Transfusion Reacti...
- Notes on the Case:** (Empty text area)

At the bottom of the modal are two buttons: "SUBMIT" and "CANCEL".

The background interface shows a table with columns: ID, Product Type, Date Created, Date Last Updated, Status, Owner, and Notes. A single row is visible with the following data:

ID	Product Type	Date Created	Date Last Updated	Status	Owner	Notes
45ee-3c28-aa-2021-07-0111-56Z	Vaccine	07/01/2021	07/01/2021	Not Reviewed	admin	Validating case detected via EHR a...

At the bottom right of the background interface, there is a pagination control showing "Rows per page: 10" and "1 of 1".

2021 – POC Demo

←

□

👤

↶

⬇

✓

🚩

☰

ADMIN

🔧

LOGOUT

Start Date mm/dd/yyyy 📅

End Date mm/dd/yyyy 📅

Category ▾

Recommended Evidence

Submit

Reset

Drag a column header here to group by that column

🔍 Search...

Start Date ↑	Category	Type	SubType ↑	Result (units)	dataProvider
02/09/2012 21:10	Procedure			Documentation of current medicati...	
01/16/2013 02:49	Procedure			Documentation of current medicati...	
01/26/2014 12:34	Procedure			Documentation of current medicati...	

Rows per page: 25 ▾ 1-3 of 3 < 1 >

Case Info ^

Case ID: 61530de4-bb71-ac-2021-07-01T14:30:13Z

Case Start Date: 01/01/2010

Case End Date: 01/01/2020

Patient ID: 61530de4-bb71-ac9b-99e4-335064ce+6ec2

DOB: 07/16/1996

Age (at start of case): 24

Gender: male

Notes: Validating case detected via ICSR

EHR List ▾

Current View ▾

Pilot Participation Requirements

Validation (Pull) Use Case:

- FHIR production server capable of responding to eHx Hub queries

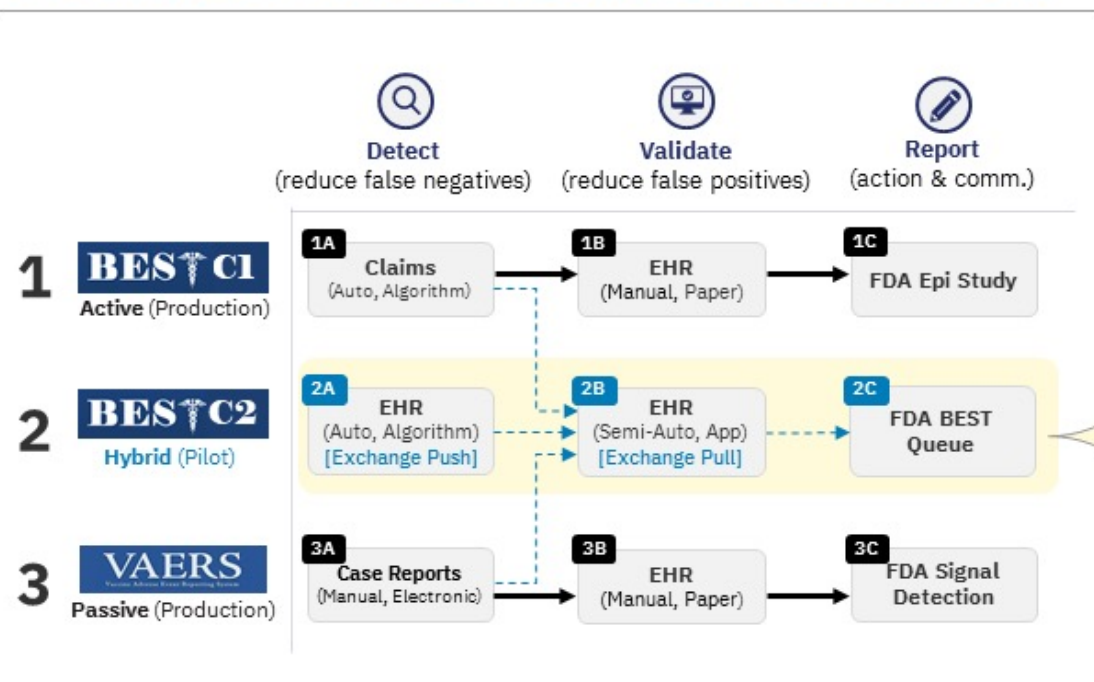
Detection (Push) Use Case:

- CQL engine connected to your FHIR endpoint
- FHIR production server capable of sending results to eHx Hub

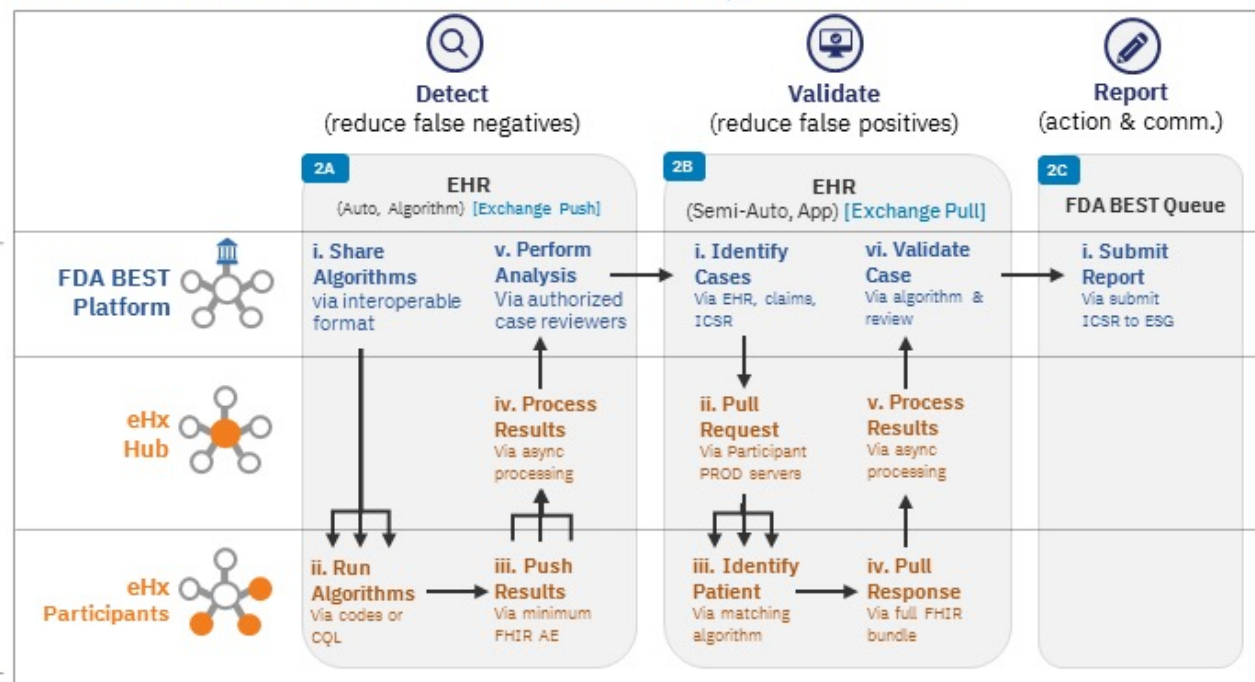
FDA Exchange BEST Pilot Workflow

Support both Push and Pull use cases:

FDA BEST Post-Market Framework



FDA BEST C2 Exchange Pilot

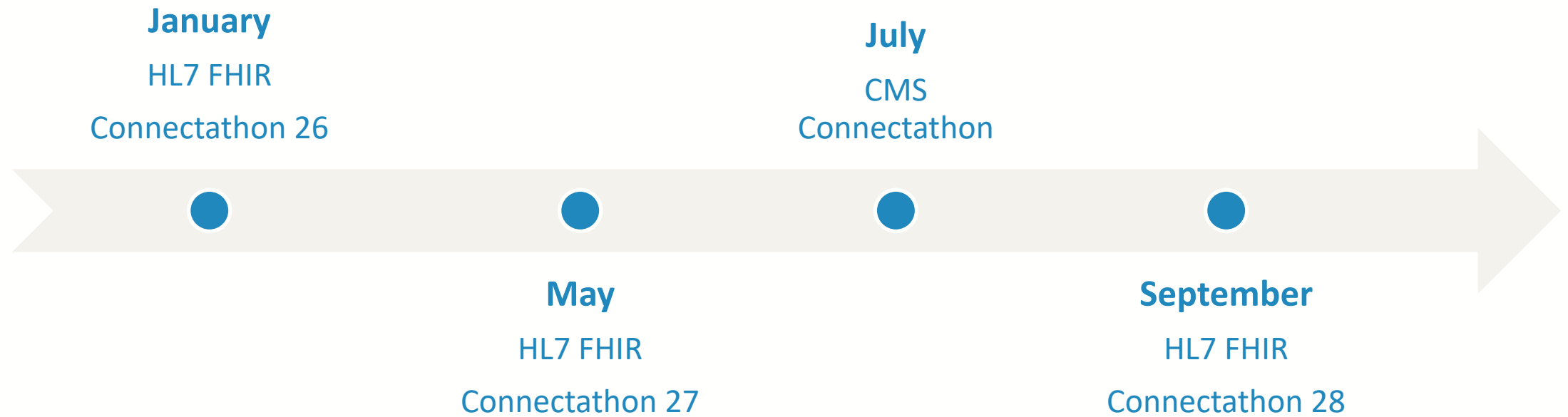




2022 Roadmap

Related FHIR Capabilities

2021 FHIR Community Participation Highlights



- **MedMorph**
(Making EHR Data More Available for Research and Public Health)
- **ONC FAST = FHIR At Scale Taskforce**
(Exchange & National Directory US Realm tracks)
- **Patient Empowerment/Patient Request for Corrections**
- **Electronic Case Reporting (eCR)**
- **UDAP/Security**

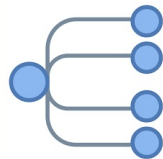
eHealth Exchange Hub - Use Cases



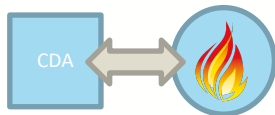
FHIR Resource Repository



FHIR Proxy



FHIR Aggregator



FHIR / CDA Transformation

eHealth Exchange Hub - Use Cases



FHIR Resource Repository

- There will be need to *temporarily* persist FHIR resources, for subsequent aggregation purposes
- Hub does not *currently* persist data
- No other current use cases requiring data persistence

eHealth Exchange Hub - Use Cases



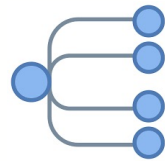
FHIR Proxy

- Hub as Trusted Third Party/Intermediary
- Hub handles backend authorization (typically OAuth 2.0)
- Requestor only needs to connect to Hub to access *many* target responder FHIR resource repositories
- Routing is provided as part of request
- Optional URL rewriting will be available

Also exploring...

FHIR/FHIR version transformation using sanctioned/official HL7 lossless conversion (DSTU2 and above)

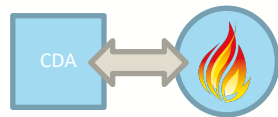
eHealth Exchange Hub - Use Cases



FHIR Aggregator

- Requestor targets a responder OR requests geographic (or other custom) fan-out
- Patient search request to Hub triggers workflow
- “Bundle profile” is provided as part of request (i.e., resources of interest)
- All patient matches and retrieved resources are *temporarily* persisted in Hub Resource Repository
- Hub returns FHIR Bundle back to requestor (sync or async)

eHealth Exchange Hub - Use Cases

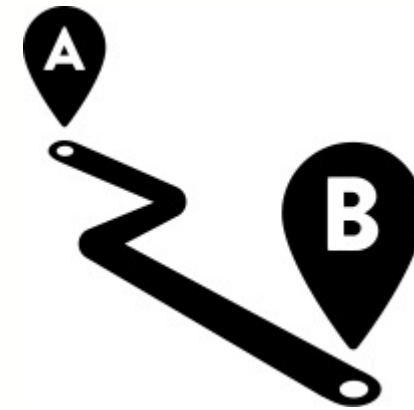


FHIR / CDA Transformation

- “Meeting Participants where they’re at”
Initiator unable to act as FHIR Client
Responder unable to act as FHIR Server
- Leverage available CDA/FHIR transforms

eHealth Exchange Hub – FHIR Proxy Routing

- URL Path (<Base URL>/<RouteInfo>/...)
 - Chosen by FAST-Exchange (FHIR At Scale Taskforce)
- HTTP Header
 - e.g., X-Destination
- Querystring Parameter
 - Technique currently used for Hub SOAP-based routing
- Embedded within FHIR Payload (POST only)
 - MessageHeader.destination.endpoint (current MedMorph preference)
 - submissionSet.intendedRecipient
- Other Considerations
 - JWT-based (e.g., a routing claim)
 - Hostname-based (e.g., via DNS resolution)



eHealth Exchange Hub – Security

- Front-end authorization
 - Two-way/mutual TLS (most likely)
 - Hub as OAuth 2.0 (optional)
 - Active Intermediary
 - Passive Intermediary (token passthru)
 - HL7 UDAP (future)
- Back-end authorization
 - OpenEpic: OAuth 2.0, client credentials grant type, private-key signed JWT to obtain access token
 - CernerConnect: OAuth 2.0, client credentials grant type, with client secret
 - API Key (used in some environments)
 - Token Passthru
- Mediate across different trust domains
 - e.g., eHealth Exchange to Carequality



CALL TO ACTION!

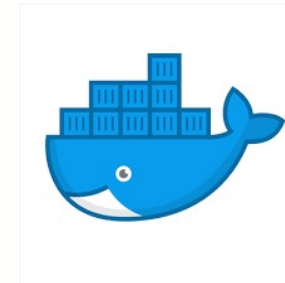
- Participate in one of our active proof-of-concept/pilot programs
 - Use cases in process
 - FDA BEST
 - Prescription Drug Monitoring Program (PDMP)
 - FHIR Proxy
 - Others...
 - Currently engaged:



U.S. Department
of Veterans Affairs
Veterans Health
Administration

- Engage with community and eHealth Exchange directly (Tech Workgroup)
- What are your FHIR plans? How can eHealth Exchange help?

eHealth Exchange Hub PoC - Environment



Want to test?

FHIR Resource Repository (R4): <http://concept01.ehealthexchange.org:52774/hubonfhir/r4>

FHIR Proxy: Contact techsupport@ehealthexchange.org for details

Poll

Please select the link provided in “chat” to anonymously respond to question 5 of 5

Question #5: RLS

Question #5: What is your opinion regarding a Record Location Service (RLS):

1. Today, with current query volumes *

- ☐ I have or use an RLS already - it works, I am happy
- ☐ I have or use an RLS already - I want an alternative
- ☐ I don't have or use a RLS, but want one
- ☐ I don't have or use a RLS, and do not want one

2. Future, with TEFCA and/or continued growth over 2-3 years (assume 2-3x today's volumes) *

- ☐ I have or use an RLS already - it works, I am happy
- ☐ I have or use an RLS already - I want an alternative
- ☐ I don't have or use a RLS, but want one
- ☐ I don't have or use a RLS, and do not want one



<https://forms.office.com/r/aagb0QxKci>

The background of the slide features a blue-tinted image of a doctor's hands and a stethoscope. The doctor's hands are visible at the bottom, with one hand resting on a surface and the other near a stethoscope. The stethoscope is positioned on the left side of the image. The background is divided into two main sections: a lighter blue area on the left with a subtle pattern of overlapping circles, and a darker blue area on the right with a repeating pattern of small, stylized human figures.

2022 Roadmap

Directory Upgrade to FHIR R4

Directory Introduction

Directory Purpose

- The eHealth Exchange directory conveys each participant's web service endpoints for exchanging patient clinical data. This is traditionally done with the transactions of patient discovery, query for documents and retrieve documents.
- In the future, FHIR endpoints may be published in the directory to exchange patient clinical data via FHIR.
- In addition to web service endpoints, organizational address and organizational contacts are listed along with data elements such as:
 - Hub service subscriptions
 - Administrative status
 - Hub routing status (Hub responder, Hub initiator, Hub responder and initiator, testing)
 - State(s) of operation
 - Use cases

Directory Usage

Suggested Directory Usage

- To be effective, the directory must have the latest information so participants can connect to your organization.
- The web service endpoints must be correct for your organization or the Hub will not be able to connect to your responding gateway.
- Please retire and inactivate legacy gateway entries to avoid confusion – email techsupport@sequoiaproject.org
- Please keep your organization's directory entry name up to date using a publicly consumable “doing business as” name. Coming up in 2022, participants will use a web-based search portal to find participant provider locations on a U.S. map. The “doing business as” name will come from the directory and may be associated to each provider location.
- Your organization must authorize a response for clinical data requests to every participant listed in the eHealth Exchange directory. * If your organization limits authorization by the home community ID (HCID) of the requester, then the directory provides a list of each participant's HCID.
- In addition, if you are exchanging with Carequality, you must authorize a response to all entries in the Carequality directory. A new HubAware Carequality directory (with a list of both eHealth Exchange and Carequality entries) is now available under FHIR STU3 only and will be available using FHIR R4 in the future.

Directory Additions and Modifications

New or Modified Directory Elements - Highlights

- State(s) of Operation – a list of state(s) where your organization does business. For example, the state(s) where your organization has provider or payer locations.
 - To be used with the group query feature in the future.
 - Note: This used to be called “U.S. state of HIE”
- Per organization:
 - National Provider Identifier (NPI)
 - Clinical Laboratory Improvement Amendments (CLIA) Number for laboratories
 - CMS Certification Number (CCN)
- Defined under each Organization address location:
 - Role: provider, agency, research, payer, diagnostics, supplier, HIE/HIO, member
 - Service delivery role type: Hospital, gastroenterology lab, ER, inpatient laboratory, etc.
 - **Note: This will be critical for the CY 2022 release of the web-based search portal**
- Defined per Endpoint:
 - Downtime (scheduled downtime)

Directory Additions – population of sub-participant entries

New Directory Capability

- With the R4 HAPI based directory release, your organization can add a sub-participant directory entry that defines a provider or payer which is accessible under your participant gateway.
- A typical sub-participant directory entry could define a hospital, clinic or doctor's office that has contributed patient information accessible under your participant gateway.
- The eHealth Exchange has curated hospital sub-participant information for many of our participants and plans to populate accumulated hospital provider information in the directory during CY 2022.

Directory Consumption

FHIR Client API

- Access the directory with a FHIR client using a FHIR API key provided by Sequoia technical support – email techsupport@sequoiaproject.org for a FHIR API key
 - Provides access to both FHIR STU3 and FHIR R4 APIs
 - Provides read-only access – no update or create operations

Web-based Directory Portal

- Coming in FY 2022 at about the same time as the FHIR R4 release - details to be communicated as delivery nears
- Role based access for updates to existing directory entries and creation of new directory entries
- Drop-down selections for entries where possible
- Download the entire directory for offline review

UDDI (SOAP API) API continued support

- The new FHIR HAPI based directory will support a traditional UDDI/SOAP interface
- Newer data elements introduced with STU3/R4 will not be available under the UDDI/SOAP interface
- Access will utilize SSL/TLS certificate-based security, as in the past – directory clients may optionally verify the UDDI server certificate

Background - Reason for Directory Changes

Current state

- Current directories are based on an unofficial release of FHIR prior to STU3
- Previous implementation guide (IG) is just a PDF. No formal definitions (in the form of FHIR conformance resource) for profiles, extensions, value sets, and code systems
- Unable to use off the shelf FHIR tooling without modification
- Unable to transfer content to other FHIR servers without modification

Future state

- Directories based on the official release of FHIR R4
- IGs created using FHIR resources such as StructureDefinition, ValueSet, etc. and run through the FHIR IG publisher
- Compliant content will work with FHIR reference implementations, the FHIR validator, FHIR servers, etc. out of the box

Change Highlights

The changes fall into 3 key categories

- Basic structural repairs
- STU3 IG updates (not in production)
- R4 IG updates

Implementation guide snapshot

Chapter 1: Introduction

1.1. Introduction

The Sequoia Project® Healthcare Directory is designed to accommodate the needs of Sequoia Project initiatives.

The primary use case for the directory is the acquisition of organization-level information, including electronic end points. The Sequoia Project is a heavily engaged member of the three main organizations creating the technical standards used by the directory, including the Argonaut Project, HL7, and IHE International. Many of the characteristics of the current FHIR Provider Directory Standard for Trial Use v3 reflect Sequoia Project contributions to, and requirements of, the standard.

Please see the [change logs](#) in this documentation for information about changes to this document, and to the software and operations described by this document.

1.2. Conventions Used

XML examples in this documentation use the following formatting convention:

```
<partOf>
  <!--Home Community ID of parent org, if any-->
  <identifier>
    <use value="official"/>
    <type value="HCID"/>
    <system value="http://www.hl7.org/oid"/>
    <value value="1.1.1.1"/>
  </identifier>
</partOf>
```

Text to be entered at a terminal uses the following formatting convention:

```
curl -X GET "https://server.com/abc"
```

Structural Repairs

Goal

- Core FHIR STU3 compatibility for resource instances
- Minimum necessary to allow directory content to be processed using FHIR STU3 libraries and stored on compliant STU3 FHIR servers

Key Changes

- Fixed elements that were out of order
- Corrected misspelled element names
- Changed non-FHIR elements to extensions
- Added missing required elements where possible (system for known codes, etc.)

Implementation

- Fixes were implemented using transforms on the Organization, Endpoint, and Location resources
- A reverse (unfix) transform was also created for backwards compatibility



It's like retrofitting an iconic bridge to bring it up to building code.

STU3 IG Updates

Purpose

- Express the old PDF IG content using FHIR conformance resources and FHIR tooling

Details

- Created StructureDefinition, ValueSet, and CodeSystem resources for all computable content
- Converted PDF prose documentation to markdown and XHTML for inclusion in the IG
- Extracted FHIR examples from the PDF and converted to FHIR XML Resources that validate against the computable IG content

Content

Detailed Definitions

Mappings

XML

JSON

SD.1 StructureDefinition-SequoiaOrganization

SD.1.1 Formal Views of Profile Content [↗](#)

Description of Profiles, Differentials, and Snapshots.

The official URL for this profile is: <https://sequoiaproject.org/fhir/sphd-stu3/StructureDefinition/SequoiaOrganization>

Published on Sat Apr 04 05:05:16 EDT 2020 as a active by .

This profile builds on [US Core Organization Profile](#)

Text Summary

Differential Table

Snapshot Table

XML Template

JSON Template

All

Name	Flags	Card.	Type	Description & Constraints
Organization		0..*	US Core Organization Profile	US Core Organization Profile
Domains	S	0..*	Coding	Domains URL: https://sequoiaproject.org/fhir/sphd-stu3/StructureDefinition/Domains Binding: Domains (required)
HubServiceSubscriptions	S	0..*	Coding	HubServiceSubscription URL: https://sequoiaproject.org/fhir/sphd-stu3/StructureDefinition/HubServiceSubscriptions Binding: Hub Service Subscriptions (required)
AdministrativeStatus	S	0..1	Coding	Extension URL: https://sequoiaproject.org/fhir/sphd-stu3/StructureDefinition/AdministrativeStatus Binding: Administrative Status (required)
HubRoutingStatus	S	0..1	Coding	Extension URL: https://sequoiaproject.org/fhir/sphd-stu3/StructureDefinition/HubRoutingStatus Binding: Hub Routing Status (required)
identifier	S	1..*	Identifier	Identifies this organization across multiple systems
active	S	1..1	boolean	Whether the organization's record is still in active use
type	S	1..*	CodeableConcept	Kind of organization Binding: OrganizationType (required)

Note: This IG was never fully put into production

FHIR R4 Implementation Guides (IGs)

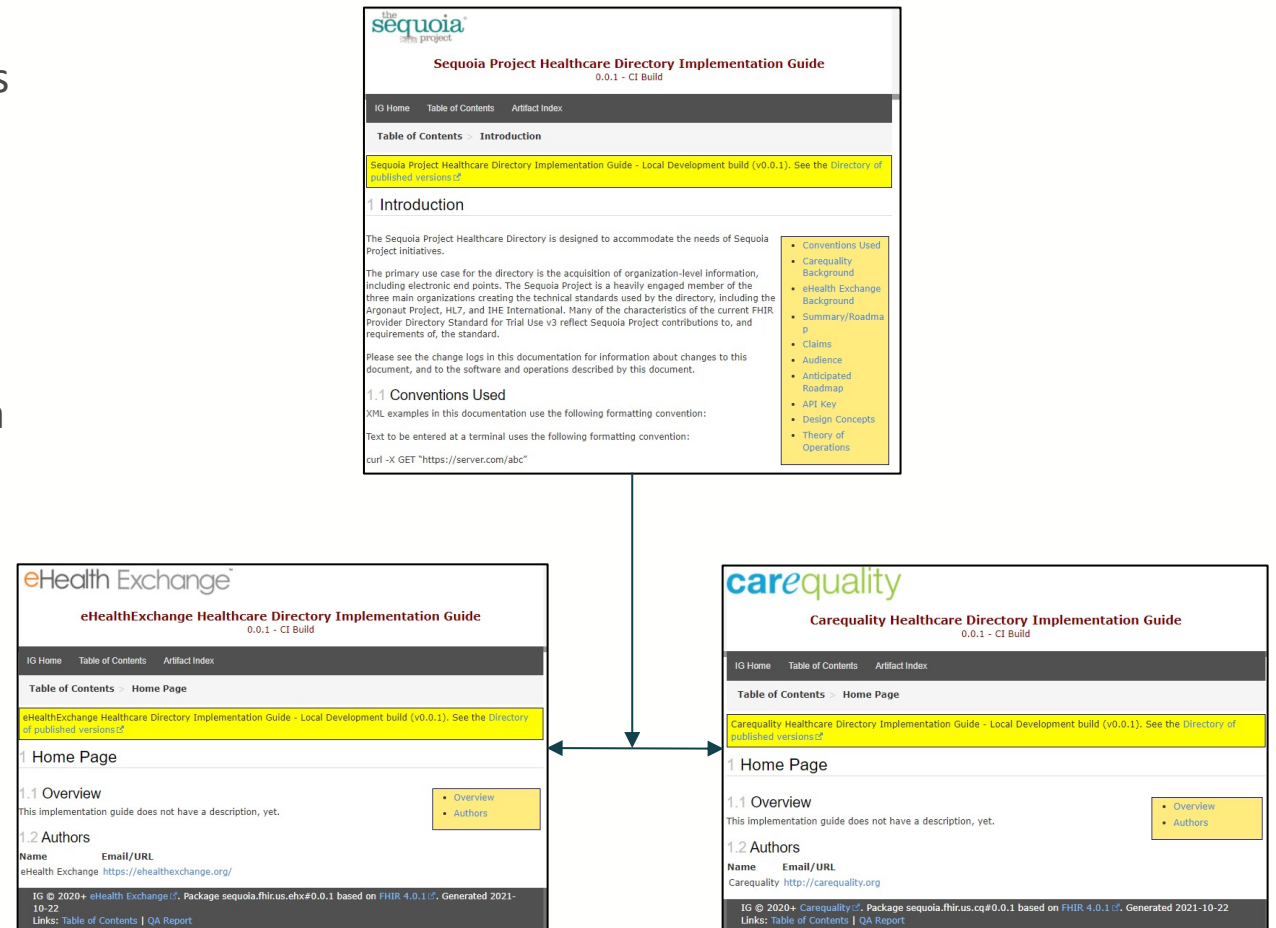
Purpose

- Port the FHIR STU3 IG to R4
- Separate eHealth Exchange and Carequality requirements

Details

- Resulted in 3 IGs:
 - Sequoia base IG for common requirements
 - eHealth Exchange and Carequality IGs for their specific requirements (dependency on the Sequoia IG)
- Upgraded all profiles and extensions for FHIR R4
- Profiles inherit from US Core (FHIR R4 version) where available
- Changed names, URLs, etc. to conform with FHIR publishing best practices
- Added custom branding to all IGs
- Created R4 transforms for converting legacy content and validated the result against the IGs.

IG Inheritance Model





New Testing Capabilities

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eHealth Exchange™

Testing Innovations Planned for 2022

- Production PHI Content Testing Proof of Concept for VA/DoD Partner's Data Quality
 - **Similar** to the existing Content Testing Program in that it examines the exchanged data content for conformance
 - With a few **key differences**:
 - PHI-enabled in secure HIPAA-hosted environment
 - Active with live exchange randomly sampled from Hub transactions
- FHIR Query Initiator and Responder Transport Testing Capabilities
 - New Vendors onboarding wish to begin leveraging FHIR transports for onboarding to the eHealth Exchange
 - Testing conformance for the [Carequality FHIR-Based Exchange Implementation Guide](#)

Poll Results

- Time-permitting we'll review survey results end of today's meeting
- Results will otherwise be posted at <https://ehealthexchange.org/communications>



Please engage!

How might I obtain additional information?

How	When	Where
1. Visit eHealth Exchange Web Site	Any time	https://ehealthexchange.org
2. Monthly Participant Web Meetings	Typically the 3rd Thursday of Each Month at 1 pm ET	https://ehealthexchange.org/events
3. Weekly Technical Workgroup	Most Thursdays 4-5 ET	https://ehealthexchange.org/events
5. Email	Anytime	administrator@ehealthexchange.org
6. Epic User Group Meeting	August 22-25, 2022	Verona, WI (Exhibit Hall/Observation Deck)
6. CIVITAS (formerly SHIEC) Annual Meeting	August 2022?	?
6. Annual In-Person Meeting	December 2022	Washington, DC

Questions & Answers with Coordinating Committee & eHealth Exchange staff

Please e-mail questions or concerns to
administrator@ehealthexchange.org

The Coordinating Committee

		Organization	Representing			Organization	Representing
Matt Eisenberg, MD		Stanford Health Care	Health Systems	Cindy Pan		Veterans Health Administration	Federal Agencies
Jarrod Pearson		DaVita	"Other" Category (e.g. ambulatory, pediatric, dialysis, intermediaries, vendors, payers)	Col Jeffrey A. Ford (USAF)		Defense Health Agency	Federal Agencies
Pam Matthews, RN		East Tennessee Health Information Network	Health Information Organizations	Mitch Thornbrugh		Indian Health Service	Federal Agencies
Mike Dittemore, RN		Lewis & Clark Information Exchange (LACIE)	Health Information Organizations	Jude Soundararajan		Social Security Agency	Federal Agencies
John Kansky		Indiana Health Information Network	Health Information Organizations	Ryan Stewart		CommonSpirit	Health Systems
Patti Cuartas, PA		Mount Sinai Health System	Health Systems	Dede Ainbinder		Health Gorilla	"Other" Category (e.g. ambulatory, pediatric, dialysis, intermediaries, vendors, payers)
Paul Matthews		OCHIN	"Other" Category (e.g. ambulatory, pediatric, dialysis, intermediaries, vendors, payers)	Pat Russell, RN (non-voting)		eHealth Exchange	eHealth Exchange staff

