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**TriRivers**

HEALTH PARTNERS

*Promoting transformation through technology*

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# Integrating Multiple Vendor Interoperability into an IHE Integrated Health Information Exchange

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Iowa HIMSS Chapter Meeting  
Presentation

Cedar Rapids, IA

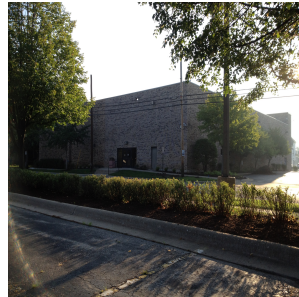
May 14, 2013

Phil Wasson, FACHE  
President and CEO  
TriRivers Health Partners

# TriRivers Health Partners



SwedishAmerican Health System,  
Rockford, IL



903



Wight Centre, Rockford,  
IL



FHN, Freeport, IL



SwedishAmerican Medical Center,  
Belvidere, IL



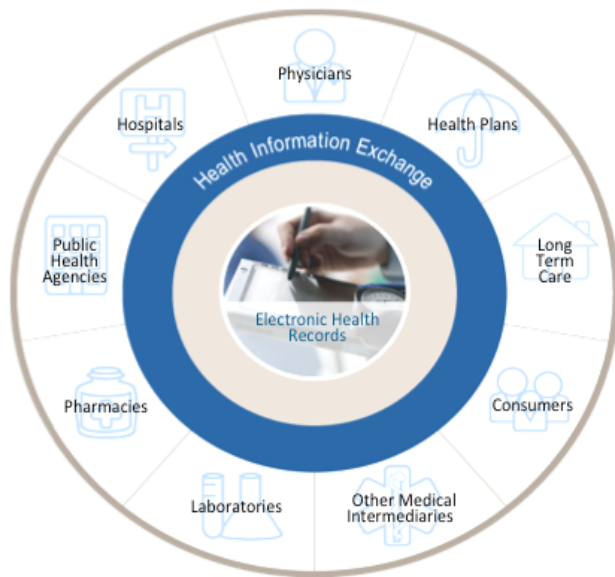
# HIE is a Community

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An HIE community exists for the purpose of increasing the accessibility of information across multiple organizations so that clinicians can make more informed decisions about the care that they provide.

- **First...** Some Communities are Geographically Focused While Others Are Not.
- **Second...** Is the Organizational Structure of the Community.
- **Third...** Is the Scope of the Content that is Shared.
- **Fourth...** Is the Size, Scope and Political Jurisdiction(s) that regulate it.

# HIE is really a Community EcoSystem



HIE Community EcoSystem

The HIE Community EcoSystem Serves to:

- Creates adoption of the use of information across the Community.
- Creates financial sustainability for the Community.
- Facilitates important EHR adoption of the use of information within the Community.
- Allows participants to continue to manage and own their data internally.
- Operates within the EHR's workflow, it is not just a portal.
- Allows the expansion of the EcoSystem to additional verticals.

# “95% of the problems of Interoperability are that the systems ARE NOT workflow enabled!”

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Farzad Mostashari, MD  
National Coordinator for Health  
Information Technology

*“Five percent of the problem is people and 90 percent of the problem is systems,” said Farzad Mostashari, MD, ScM, national coordinator of health IT, in opening remarks at the Health IT Policy Committee on May 7.*

*Mostashari said that while progress has been made moving healthcare into the digital realm, “we are about five percent on the way from changing workflow and redesigning care to take advantage of those technologies.”\**

*Gaps and challenges still remain to widespread use of interoperable systems and HIE across providers, settings of care, consumers and patients, and payers.\*\**

Sources: \* *“Health IT Policy Committee: Mostashari urges workflow changes for better outcomes”*, [www.clinical-innovation.com](http://www.clinical-innovation.com), May 7, 2013.

\*\* *Federal Register*, Vol 78, No. 45, March 7, 2013

**Just Announced - HIPAA Omnibus Rule Resource Center »**

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## Will 'Direct' Exchange Doom HIEs?

Sizing Up the Impact of Secure Messaging Protocol

By [Marianne Kolbasuk McGee](#), May 13, 2013. Follow Marianne [@HealthInfoSec](#)

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Will the use of the Direct Project secure messaging protocol for the exchange of health data end up killing off some struggling **health information exchange** organizations once HITECH Act funding for HIEs ends during 2014? That's a question some observers are asking.

The Direct protocol offers a way to meet the secure data exchange requirements for Stage 2 of the **HITECH Act** electronic health record incentive program without necessarily having to participate in a regional or statewide HIE.

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**HITECH Tips:**  
Using EHR Security Functions for Protecting Patient Information

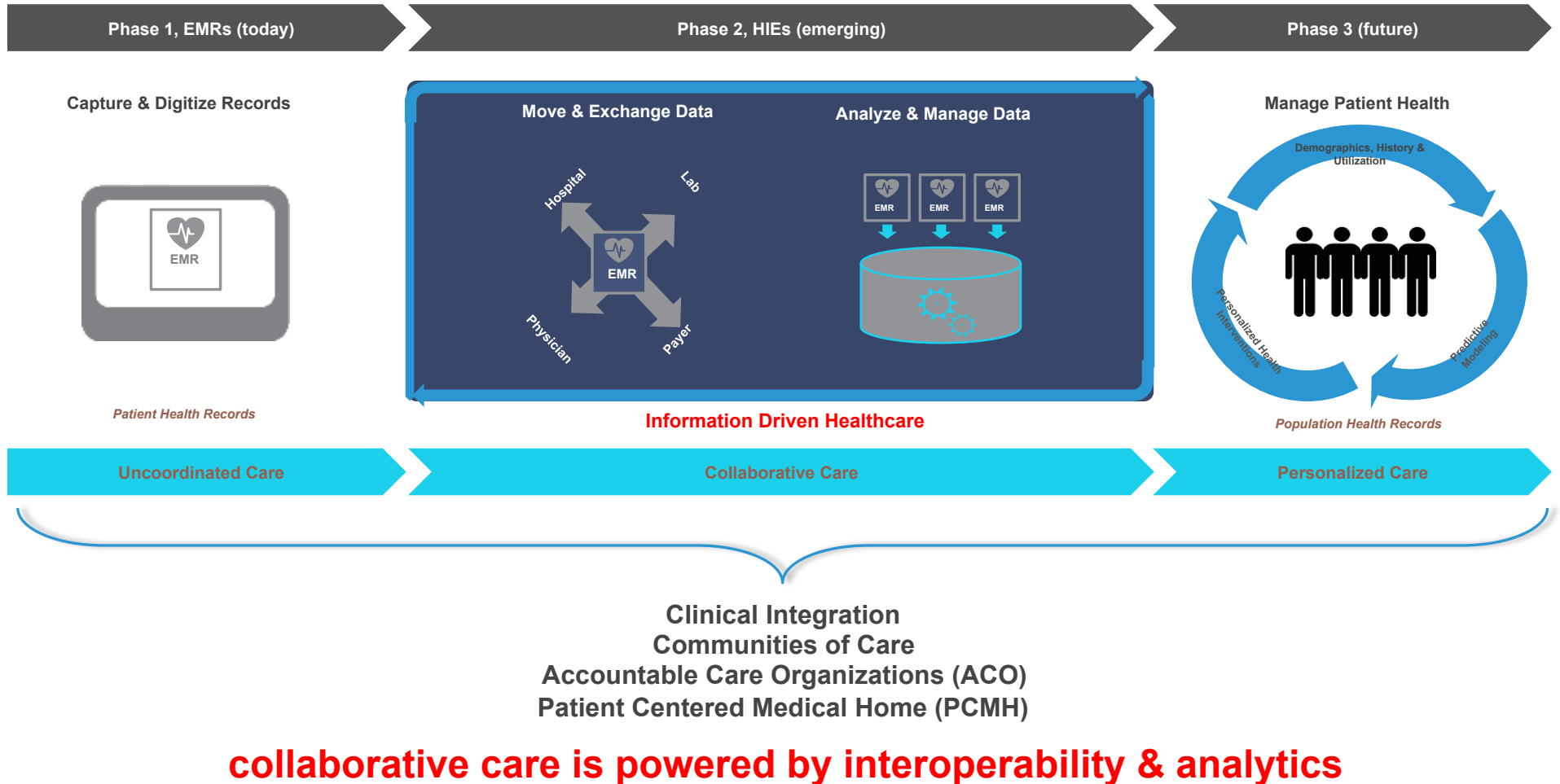


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**Solutions**

# The Evolution Towards Collaborative Care Models

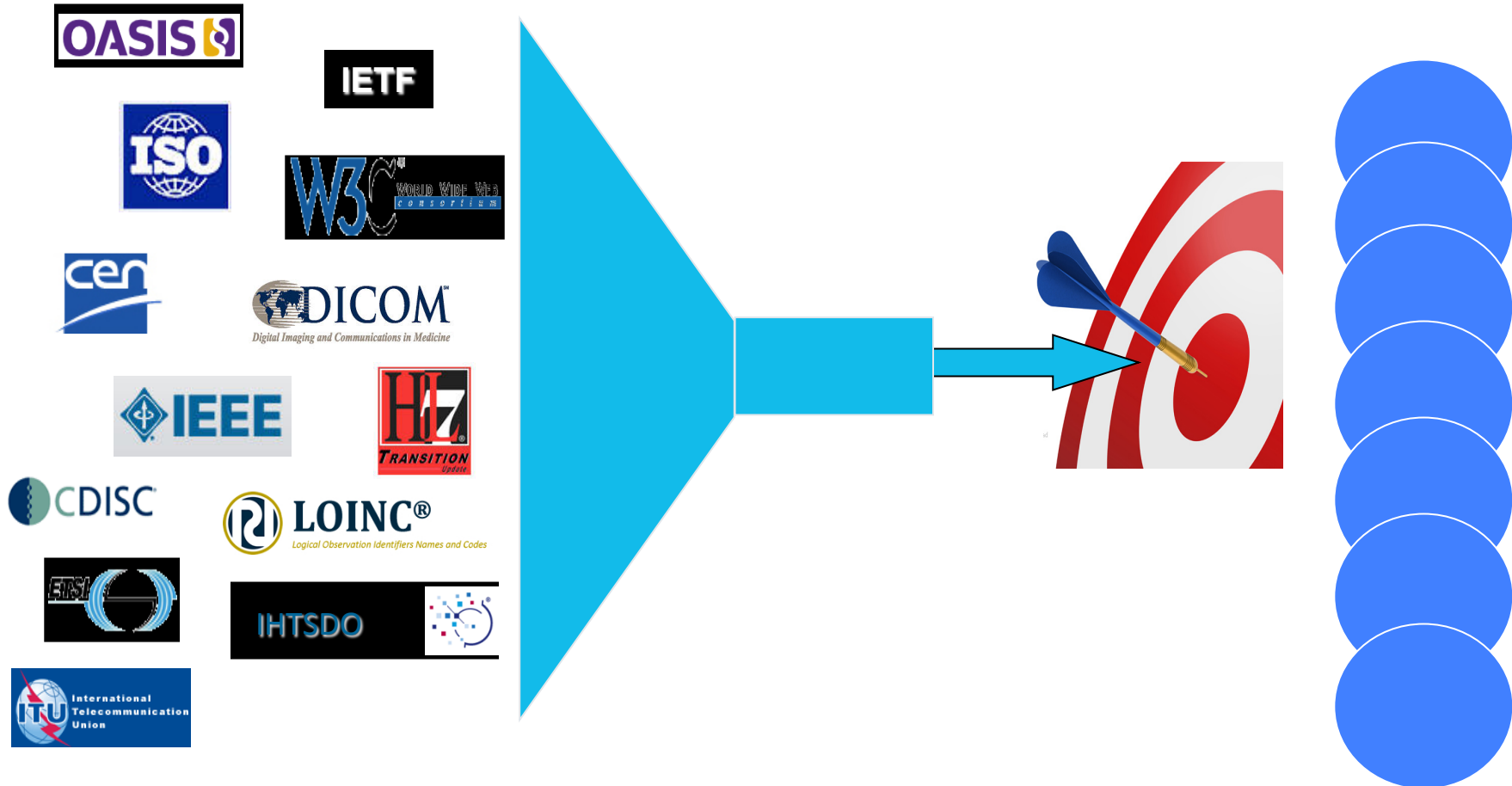
## The Evolution of Healthcare Delivery Today



# Interoperability: Highest Cause of Health IT project failures

Base Standards

eHealth Projects



Health Interoperability Standards: how can we realize the promise ?



# Standards: Available...Necessary...Not Sufficient

Existing Standards Are:

But Unfortunately Not Sufficient

**Foundational** – to interoperability and communications

**Broad** – allow for varying interpretations and implementations

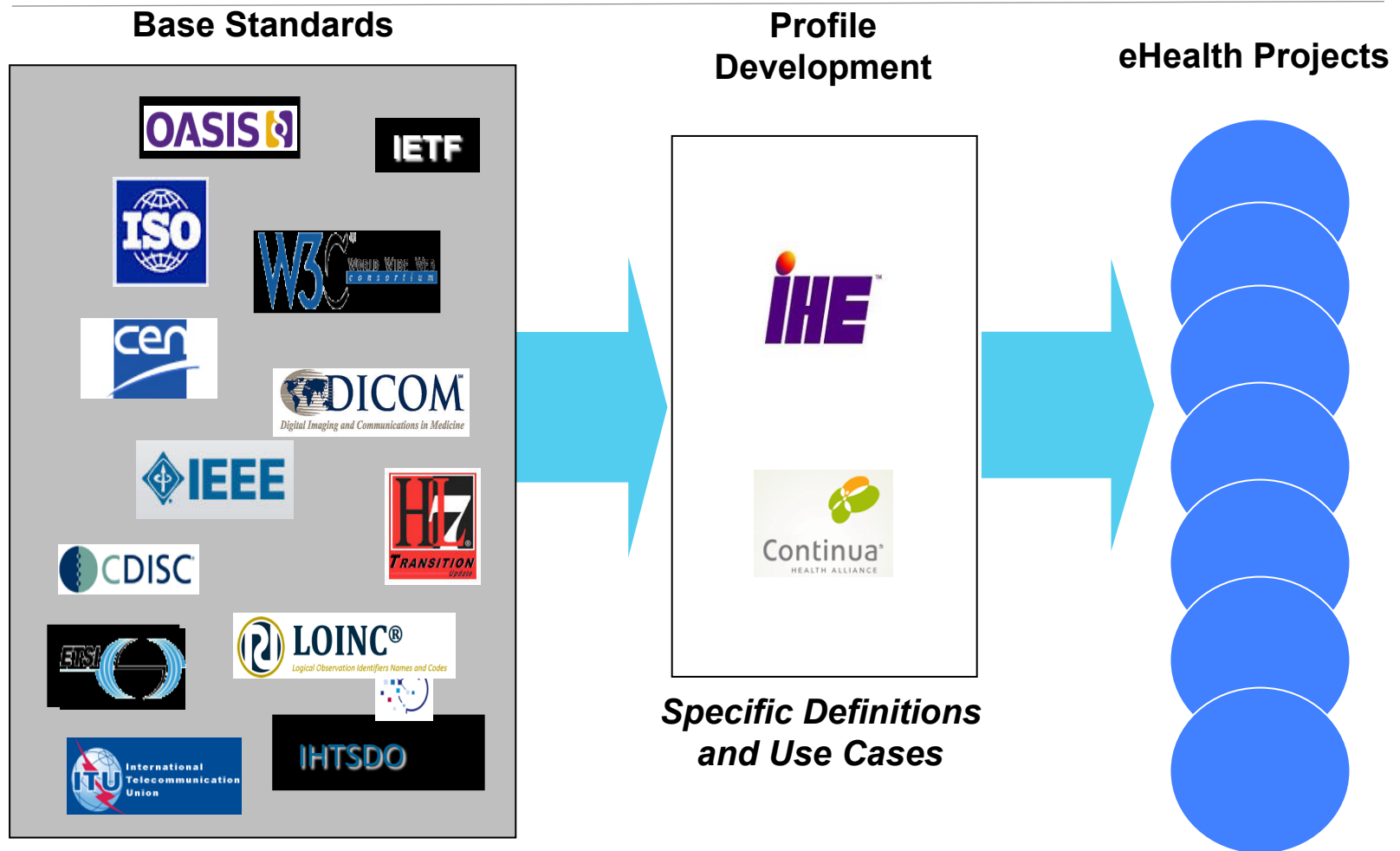
**Narrow** – may not consider relationships between standards domains

**Plentiful** – often redundant or disjointed

**Focused** – standards implementation guides focus only on a single standard

**IHE brings a focused use based process for applying multiple standards to create more effective interoperability.**

# IHE Interoperability: From a problem to a solution



**IHE is a forum for agreeing on how to implement standards and processes for creating interoperability**

## IHE Offering A Framework for Interoperability

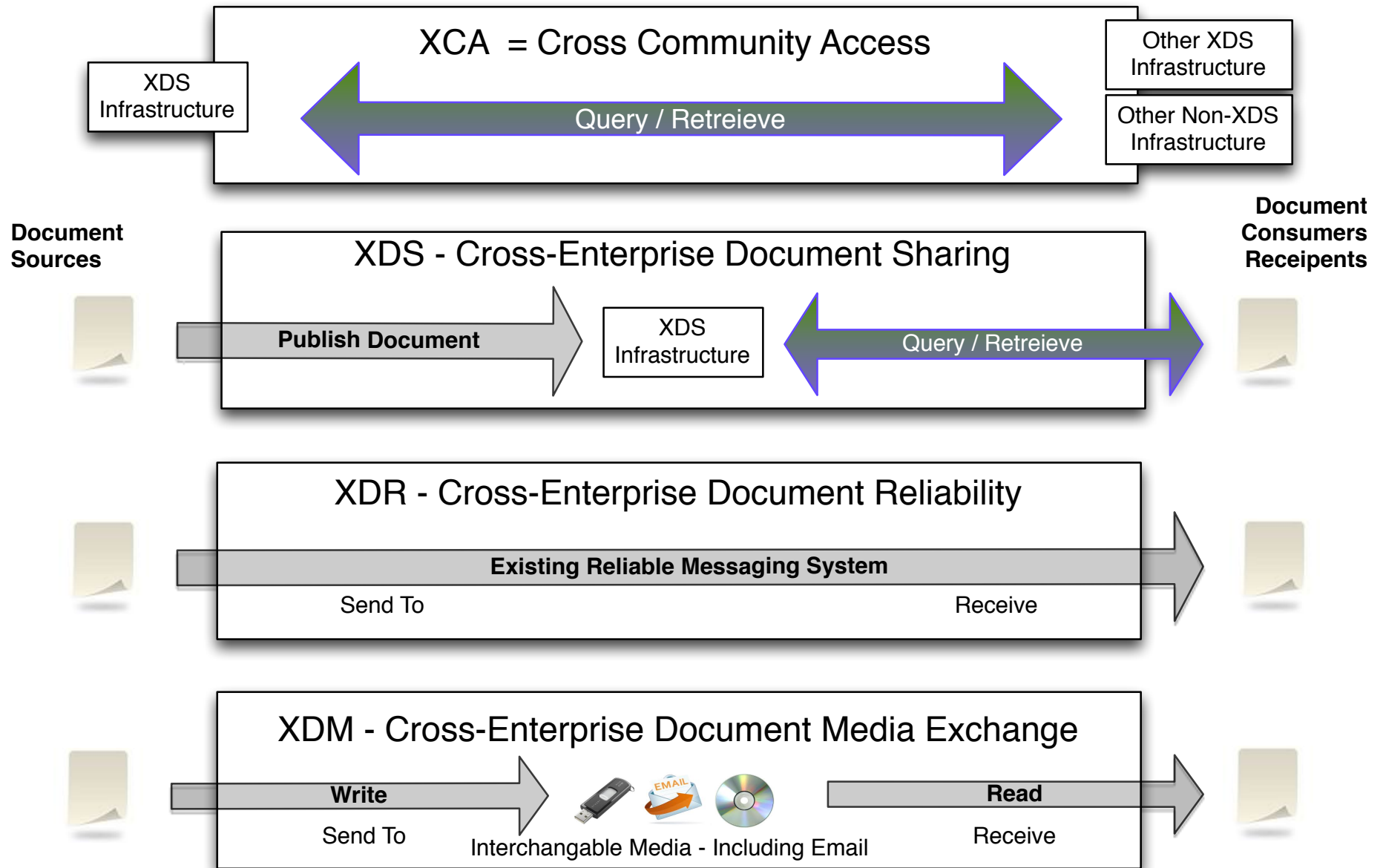
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- A common technical framework for harmonizing and implementing multiple standards.
  - ✓ Application-to-Application
  - ✓ System-to-System
  - ✓ Setting-to-Setting
- Enables seamless health information movement within and between enterprises, regions, states, and nations.
- Promotes unbiased selection and coordinated use of established healthcare and IT standards to address specific clinical needs.





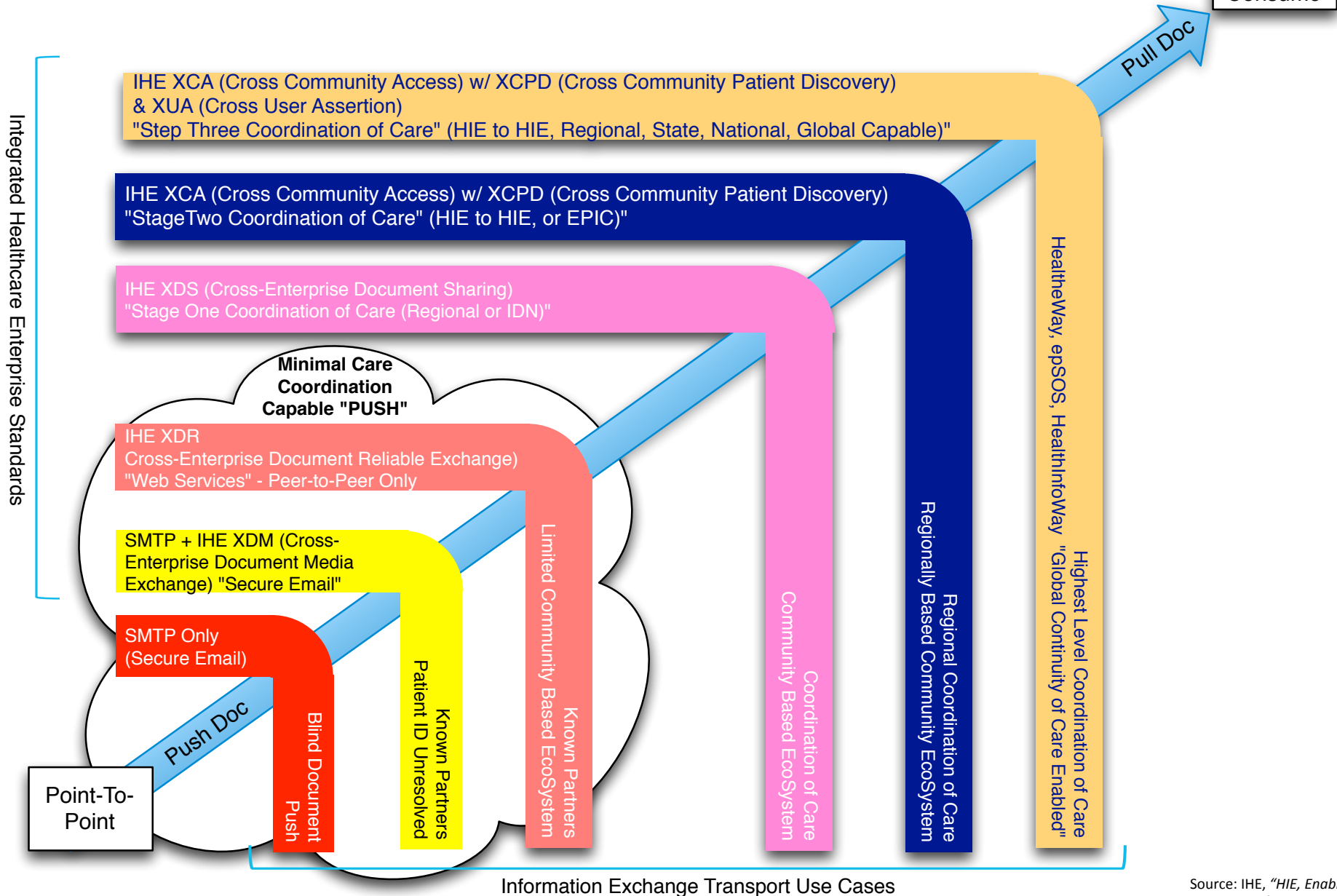
# IHE Document Sharing Models





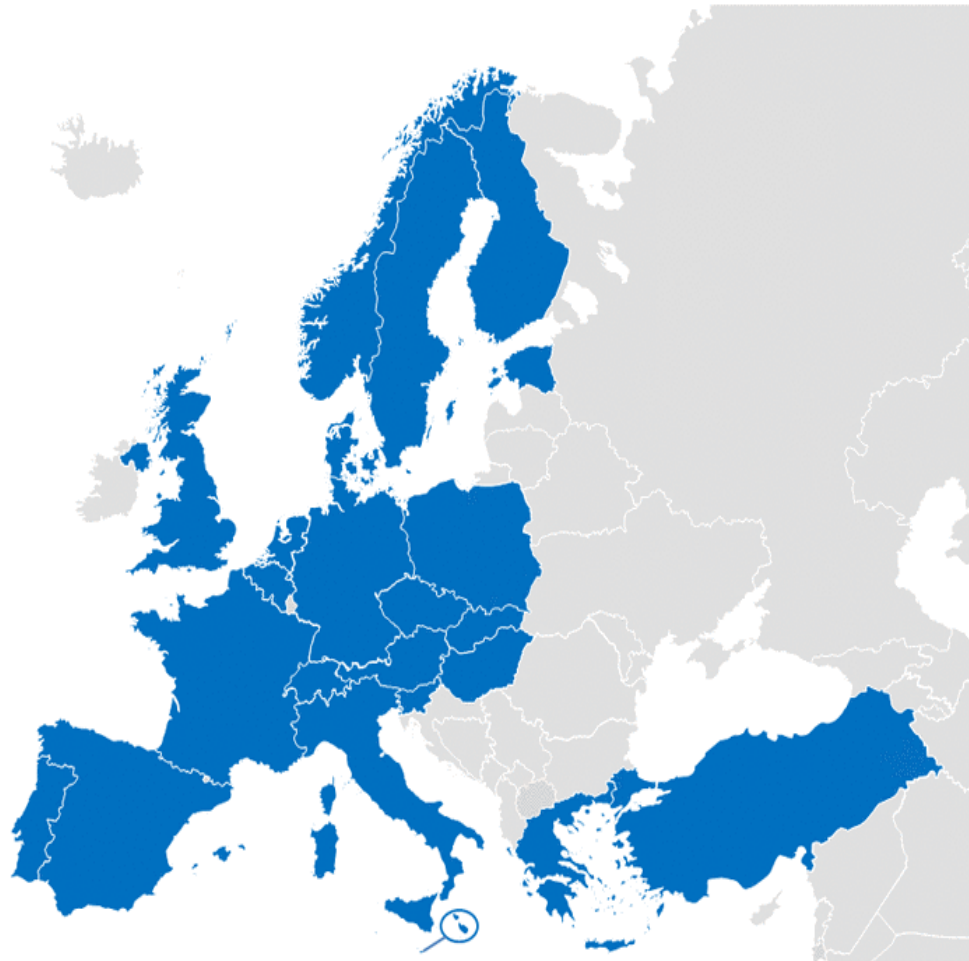
# IHE Document Use Case Continuum

Publish, Share, & Consume





# European Patients Smart Open Services



## epSOS in Figures

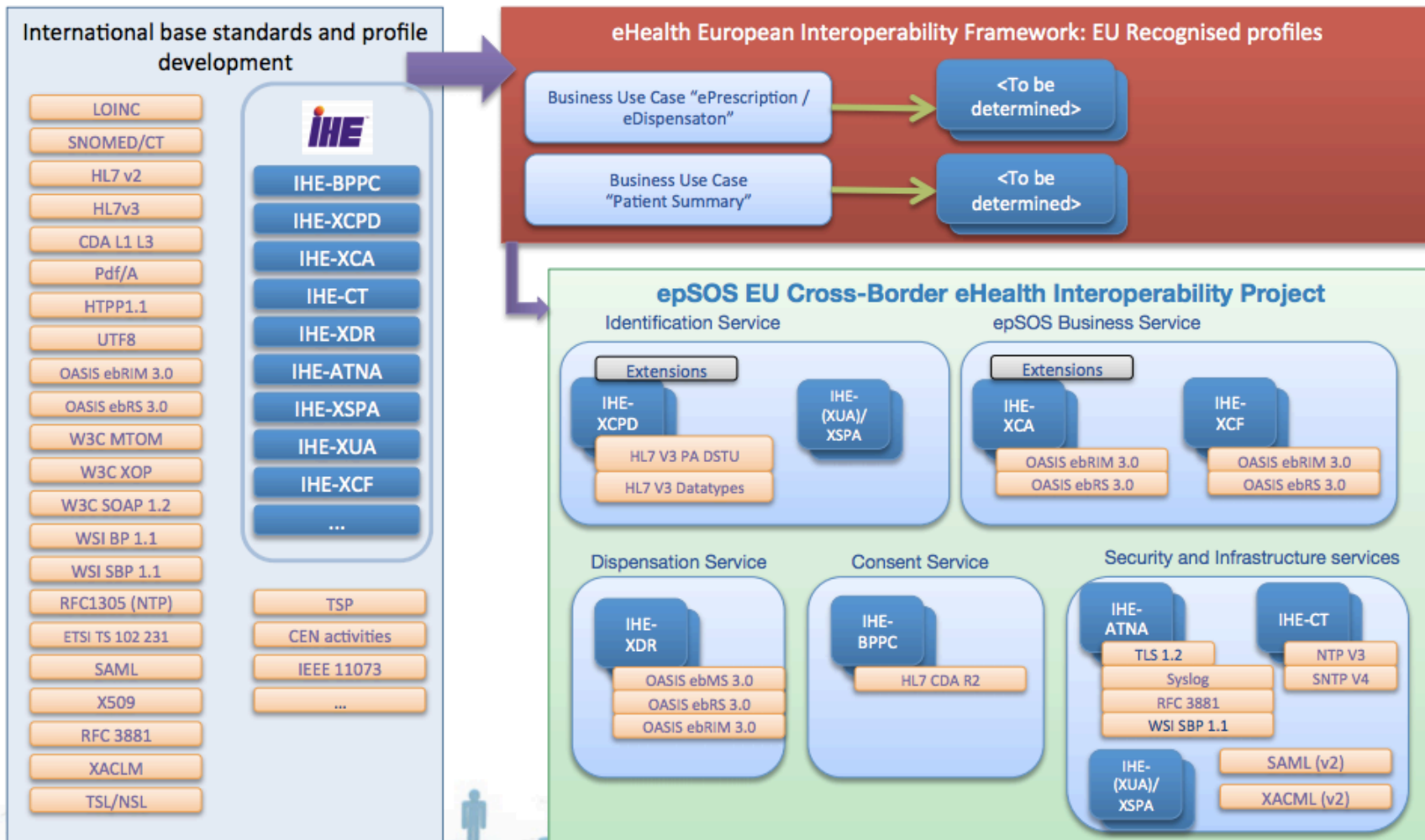
Duration	6 Years LIVE Operation, 5 Years Planning and Implementing
Volume	36.5 Million Patients
Consortium	47 “Beneficiaries”
Countries	20 EU and 3 non-EU Countries

## Infrastructures Involved

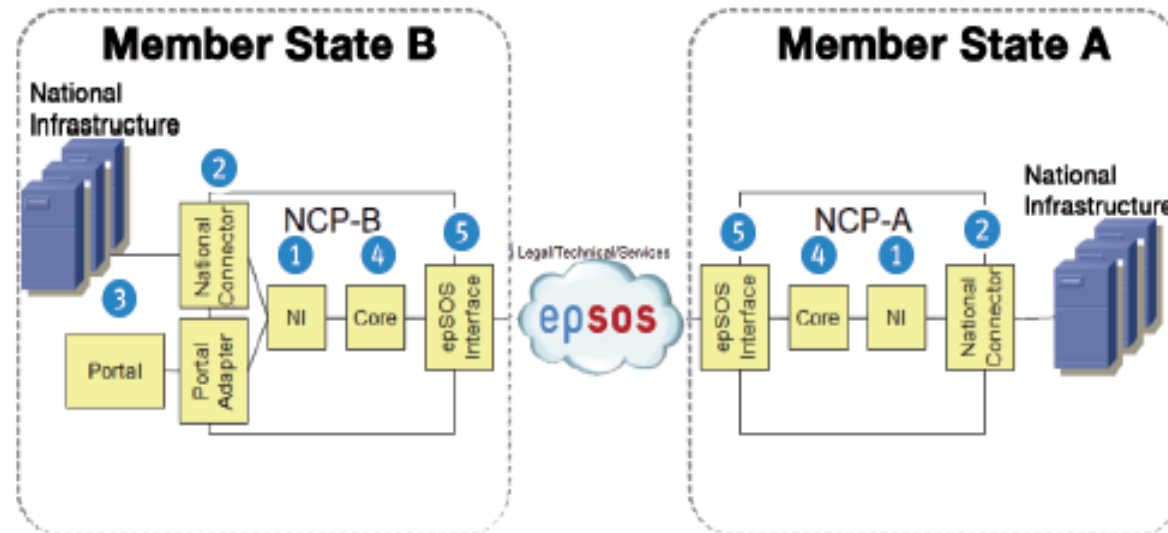
Points of Care	3,445
Hospitals	183
Pharmacies	2,149
Other Providers	1,113
Health Professionals	30,157



# epSOS has placed significant work towards Interoperable Standards



# The epSOS Basic Architecture



	epSOS Model	US Model
1	The National Interface	XCA, XCPD, XUA - Gateway Interface - <i>“HIE to HIE Interoperability Functioning at Stage 3”</i>
2	The National Connector Point (NCP)	Local / Regional Connection Points <i>“TriRivers”</i> , Also a Stage 3 Level HIE Functioning System
3	The Portal & Portal Adaptor	Platform as a Service <i>“PAAS”</i> – Patient Access to HIE Data
4	The Core Elements	XDS, XDR, PIX, PDQ – Stage 1 Level HIE Functioning System
5	The epSOS Interface	eHealthyway Gateway, Required for all Stage 3 functionality. This is the policy control point as well.



# epSOS Standards

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## epSOS Systems and Standards

- Based upon IHE profiles
- Implemented as Web Services
- Communication is initiated by the consumer
- Each participating nation provides for an NCP

## epSOS Identification and Authentication

- Patients, Documents, and Objects (Images) are identified within the healthcare process.
- ID parameters are established by home country based upon pre-determine ID parameters.
- Health professionals are authenticated within the home country which includes a role attribute.

## epSOS Security

- Security is formulated through epSOS Governance
- Service providers and users must be approved.
- Security Policy is part of a Framework Agreement
- Defined in ISO/IEC TR 13335 (ISO/IEC 27000)

## epSOS Semantics

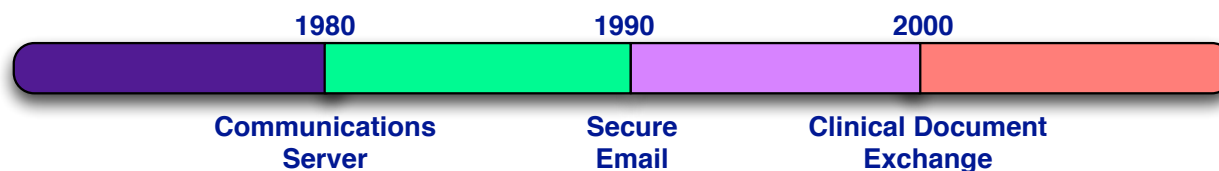
- Accommodates different semantics and language diversities by epSOS.
- epSOS uses specific semantic services using key components.

# An Information Exchange EcoSystem is Enhanced Every 10 Years

TECHNOLOGY MODELS USED (DISCRETE, MESSAGING, INTEGRATED)

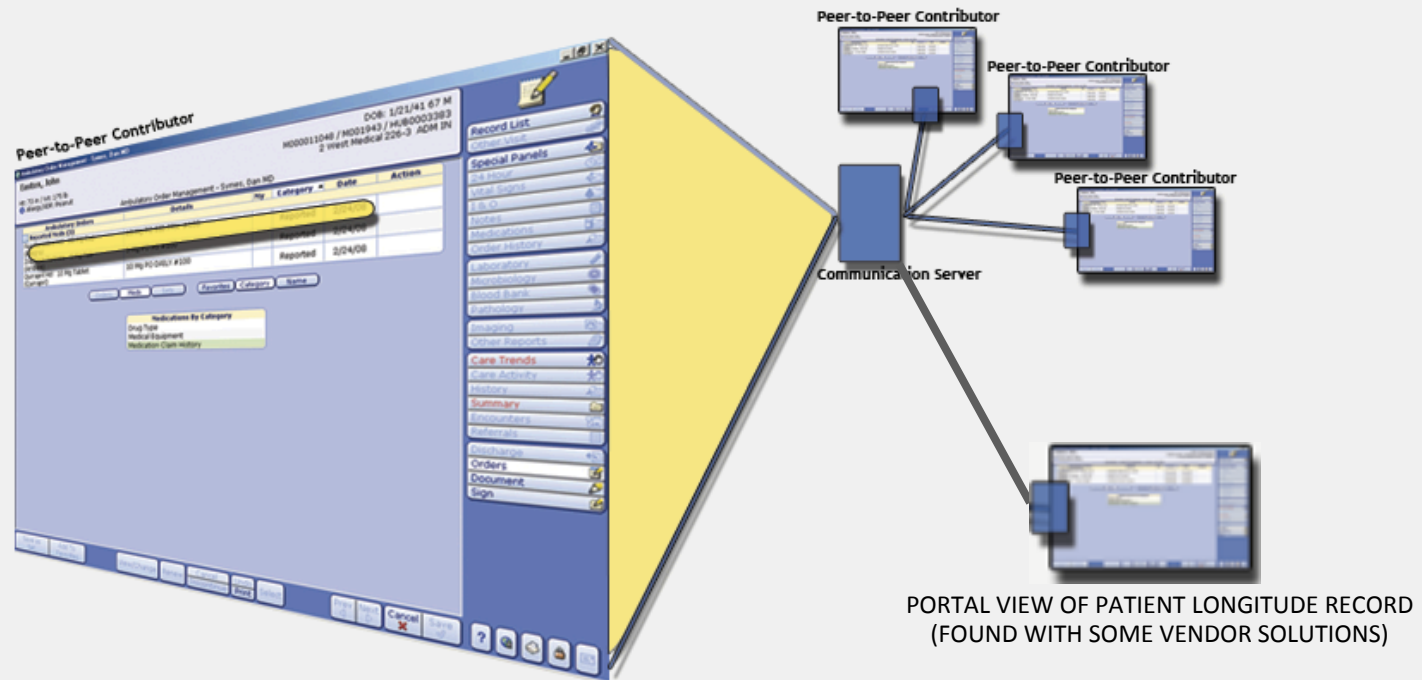
Types of Interoperability	EMR Solutions	HIE Solutions
<p>Integration Engine or AKA "Communication Server" (HL7 Only)</p>	<ul style="list-style-type: none"> <li>- Peer-to-Peer</li> <li>- All data is integrated into EMR</li> <li>- Patient Consent, in some cases ALL OUT or ALL IN</li> <li>- Can extract/integrate to most EMR's</li> </ul>	<ul style="list-style-type: none"> <li>- Portal viewing of longitude CCD</li> <li>- Email notification of changes to patient's CCD</li> <li>- Centralized repository</li> <li>- Federated data</li> </ul>
<p>Messaging or AKA "Secure Email" (XDM or XDR)</p>	<ul style="list-style-type: none"> <li>- Peer-to-Peer</li> <li>- Information is available to view separately</li> <li>- Data is encrypted</li> <li>- No Implementation or IT resources needed</li> </ul>	<ul style="list-style-type: none"> <li>- No Central Repository</li> <li>- Providers directory is "Yellow Pages" based</li> <li>- Data can be sent to any known receiver</li> <li>- No policy or governance to collaborate</li> </ul>
<p>Clinical Document Exchange or AKA "Fully Integrated" (XDS / XCA)</p>	<ul style="list-style-type: none"> <li>- Documentation is available in the native EMR</li> <li>- Patient consent and policy is individually handled</li> <li>- Relevant data is consumed as evidenced based data</li> <li>- Unlimited points of collaboration</li> </ul>	<ul style="list-style-type: none"> <li>- Data is available natively in the EMR from all contributors</li> <li>- SSO of the underlying EMR provides credentialing policy</li> <li>- Highly scalable, Highly flexible</li> <li>- Hybrid, Federated architecture</li> <li>- ISO 27002 secure compliant</li> </ul>

## Time Period of Technology Introductions



# An information exchange ecosystem

## TECHNOLOGY MODELS USED (DISCRETE)

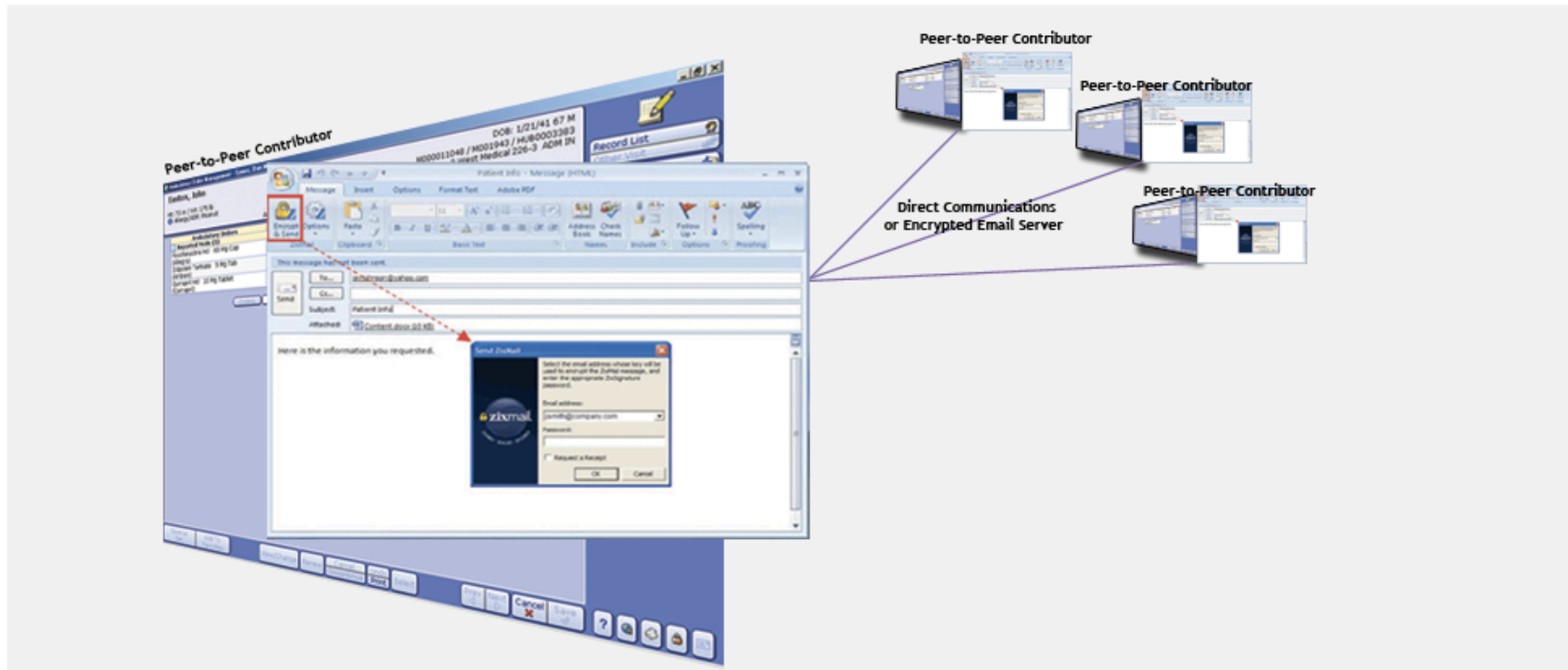


### COMMUNICATION SERVER-BASED INTEROPERABILITY

All data is automatically placed into the individual patient chart - No Clinical Evidence of added data elements - Data is contributed by unknown resources to the treating clinician - No Medical Summary or Previous Patient Encounter Summary - No Patient Consent controls - Duplication Patient Management is an IT resource requirement - Typographical Errors, Duplicate Therapy, Medication and Patient Demographics are known issues - Scalability, Flexibility and outside owned-groups deter adaptation

# An information exchange ecosystem

## TECHNOLOGY MODELS USED (MESSAGING)

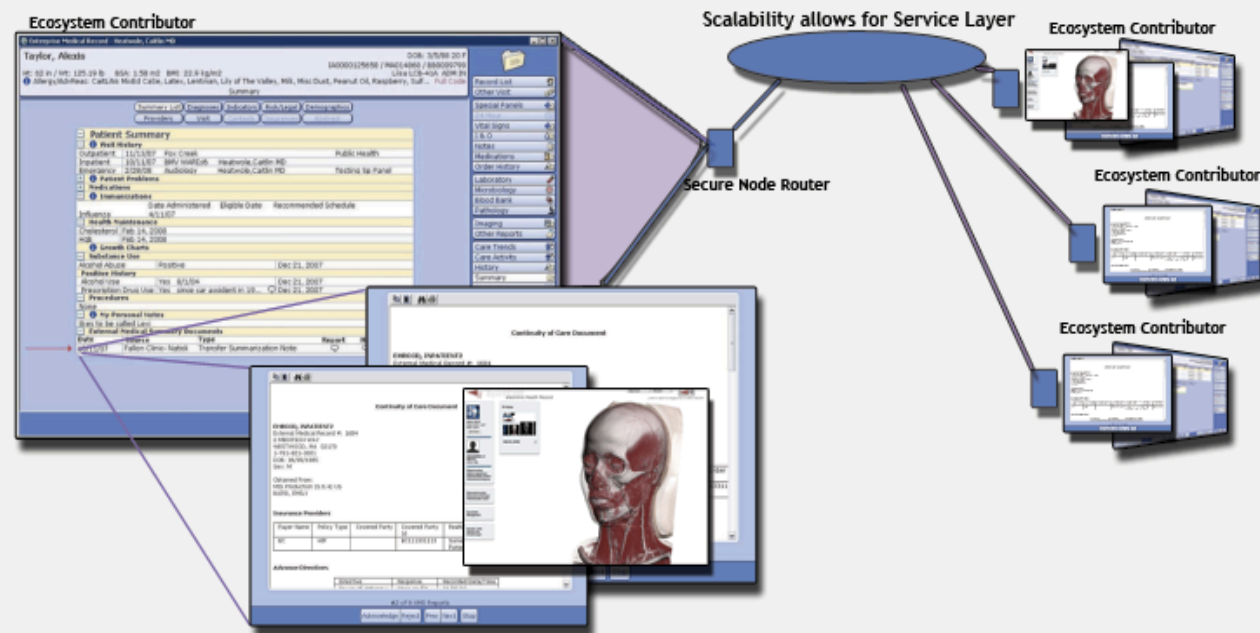


### MESSAGING-BASED INTEROPERABILITY

Similar to Faxing, the Clinician must know the location of the data and e-mail address of the contributor - Most data is non-transferable to an EMR, typically transcribed, printed or linked to the patient record, if available - The publisher of the data can be held legally responsible, under HIPPA guidelines, for the life of the e-mail, including forwarding, unauthorized viewing and interstate travel - Messaging is often a staff requirement, like faxing, numerous requests for information and required HIPPA consent are needed - No Patient Consent controls - Log-in security is password protect, not credential validated - Not part of the EMR workflow, may or may not be native to UI - Scalability, Flexibility and outside owned-groups deter adaptation

# An information exchange ecosystem

## TECHNOLOGY MODELS USED (INTEGRATED)



### CLINICAL DOCUMENT EXCHANGE

All data is normalized and standardized for CDS consumption - Medical Summaries and Evidenced-based information is shared between patient-centric contributors - Documents are filtered based on patient consent, provider credentials and policies of the exchange - Patients are cross-referenced to the ecosystem, document availability is native in the clinicians choice of EMR - Cisco based ecosystem is ISO 27002 security, IHE, epSOS and NwHIN compliant - Clinician remains in control of documents to view and consume as evidence-based treatment requires - Highly Scalability, Highly Flexibility - Hybrid, Federated architecture

# ILHIE Illinois Privacy Legislation

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- New privacy legislation governing behavioral health allowing regular PHI allowing mandatory Opt-In.
  - Good Legislation
  - Aligns Illinois with Federal Government definition of behavioral health PHI.
  - Aligns Illinois very well with the Healthway DURSA (Data Use and Reciprocal Support Agreement) process.
- ILHIE is quietly trying to define and regulate HIE's.
  - Concerns about the regulation of private exchanges, such as IDN's, requiring them to be certified.
  - Concern about the cost of certification, will HIE's be required to pay large fees to connect to ILHIE to be certified.
  - State solution is to send MPI data to a State MPI database unrestricted, quoted cost is \$30K per hospital per year, no provider cost quote made public yet.
- No XCA, XCPD, XUA, or BPPC model is available yet.
- Still heavily pushing DIRECT as the solution.

# TriRivers HIE Status – April 2013

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- Phase 1a – Epic → MEDITECH CCD Transfer using HIE Software - LIVE
- Phase 1b – Rockford Pilot Affinity Domain involving; SAHS-Epic, SAH-MEDITECH, Crusader Community Health-eCW, and Rockford Gastro-NextGen
- Added to Phase 1b - XCPD, XCA, XUA, & BPPC connectivity with two other HIE's. Anticipated connection date with an ICA enabled HIE 60 to 90 days after testing is moved to TriRivers.
  - Also setting up a Test Affinity Domain with Holyoke Health System in MA with the Rockford HIE Pilot in Rockford, IL for demonstration and testing of XCA, XCPD, and XUA.
- Phase 2 is being discussed now and includes bringing in members of the NIHIE facilities; FHN, Rockford Health System, etc. in a Fall 2013 timeframe.
- Phase 2b will be extending TriRivers Connectivity to other US HIE entities.
  - Connection of up to 7 HIE's utilizing XUA, XCA, and XCPD.
  - Canada and epSOS would also be connected.
  - Healthway connection could be accomplished....HOWEVER?
- Also there are active conversations going on with Wisconsin facilities.
- We are also finalizing our 18 month HIE Business Plan.

# Consent Models

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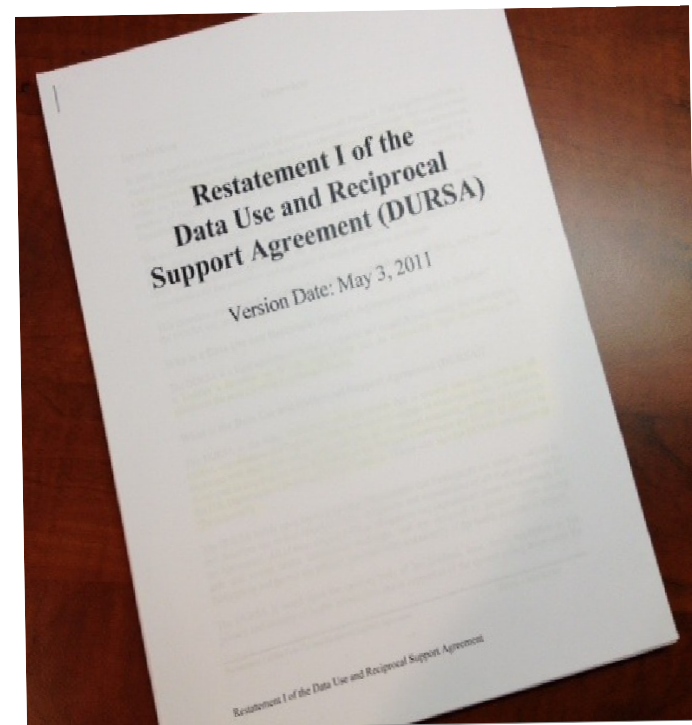
- No Consent Model – Patients are automatically placed into the exchange
- Opt Out In Full Model – Default Opt Out in Full with patient consent to Opt In
- Opt In In Full Model – Default Opt In in Full with patient consent to Opt Out
- Patient Consent Models Involving Consent Granularity
  - Opt Out with Exceptions Model
  - Opt In with Exceptions Model
- Full Out-In Model, with Granularity



# DURSA

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- The DURSA = Data Use and Reciprocal Support Agreement
- The DURSA evolved out of the NwHIN now organized under HealthWay
- The DURSA is a legal framework created to promote and establish trust among HIE Participants.
- This multi-party trust agreement is entered into voluntarily and eliminates the need for point-to-point agreements.
- The DURSA is governed by a DURSA committee made up of participants and is governed by the HIE entity.

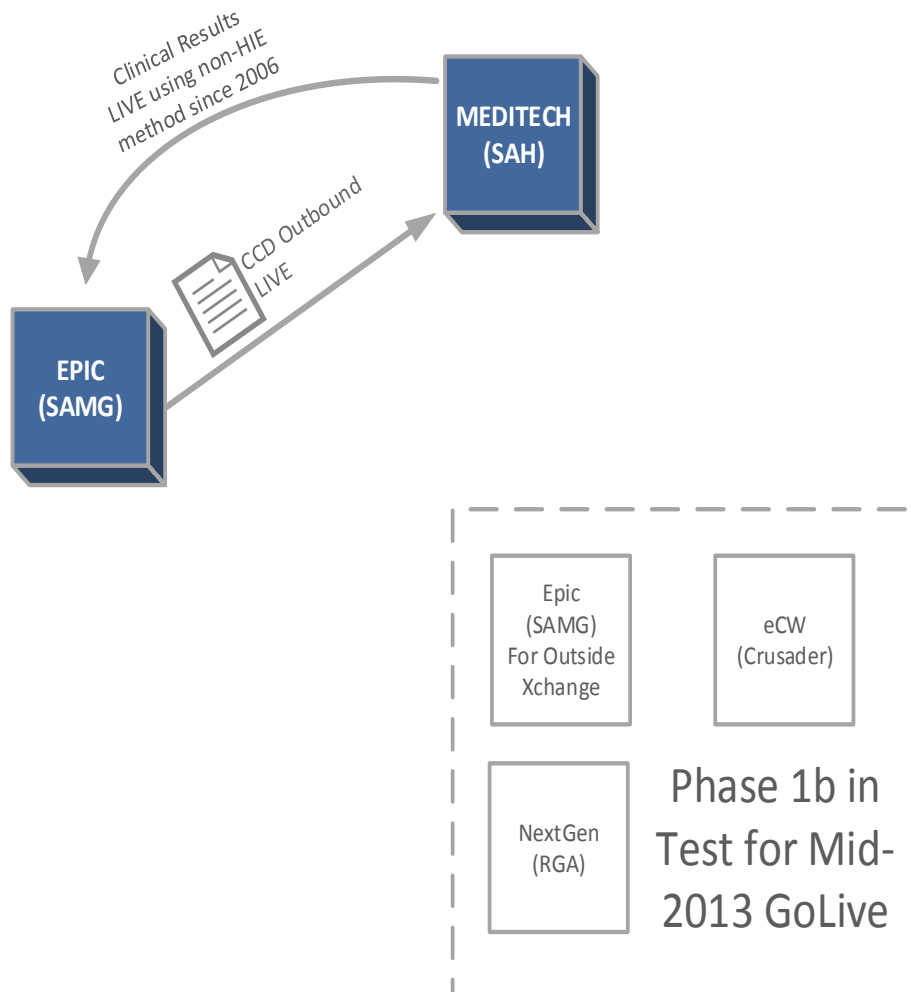


# DURSA addresses the following issues:

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- Multi-Party Agreement
- Participants Actively Engaged in HIE
- Includes Privacy and Security Obligations
- Requests for Information are Based on a Permitted Purpose
- Participants have a Duty to Respond
- Future use of Data Received from Another Participant is Manageable (even across State lines)
- Outlines the Respective Duties of Submitting and Receiving Among Participants
- There is Autonomy Principle for Access
- Policies Exist for Use of Authorizations to Support Requests for Data
- Participants have Breach Notification Requirements
- Participants are Bound by Mandatory Non-Binding Dispute Resolution
- Participants are Allocated of Liability Risk

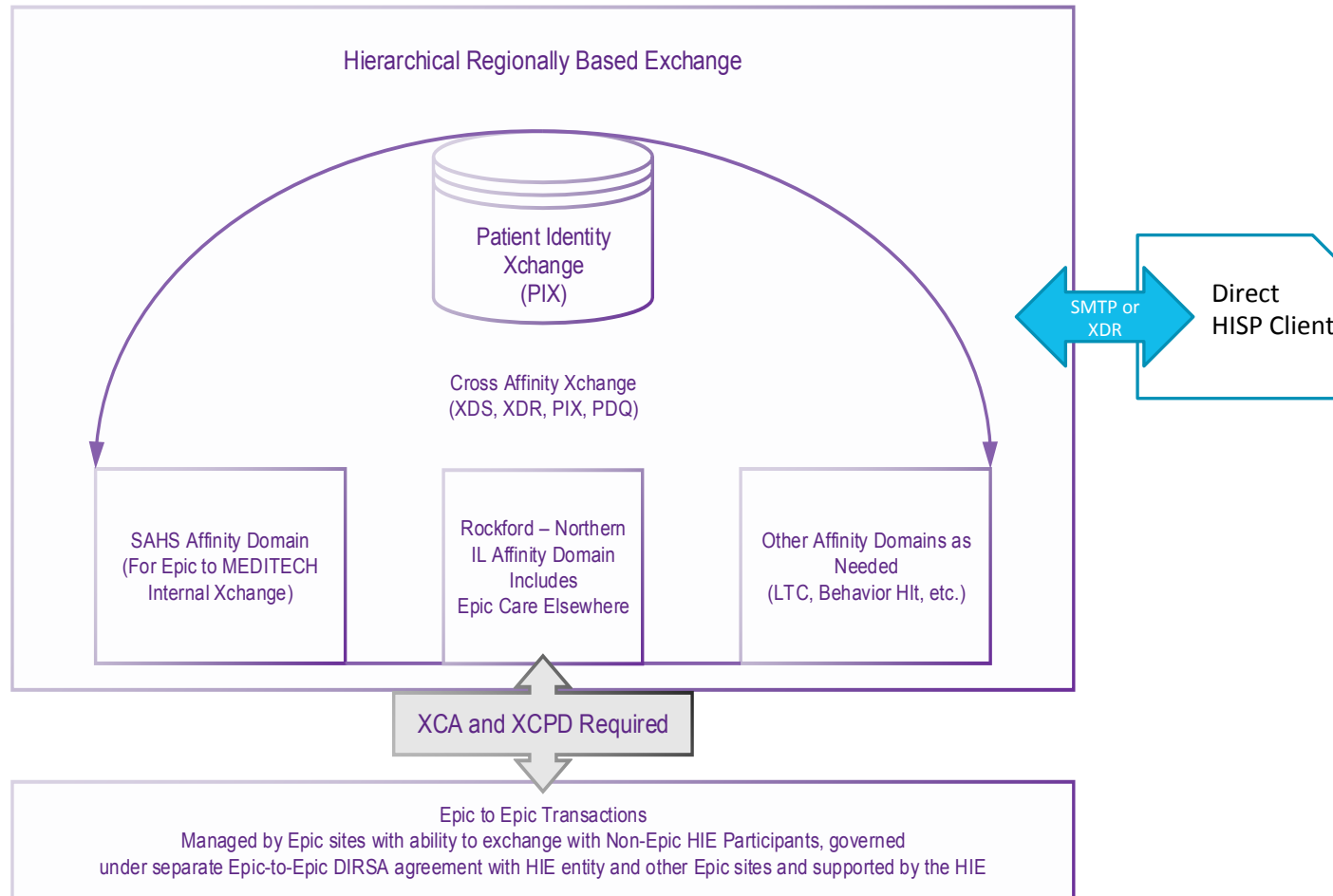
# TriRivers HIE Phase 1a is LIVE



## Epic → MEDITECH CCD Integration, Results and Discoveries

- Self-Developed Xtract (TriRivers) and CCD Creation Method (Tiani)
- More than 1 Million Patients in SAHS Affinity Domain's PIX/PDQ
- > 450 K created CCD's extracted from Epic and held in Tiani's Document Registry/Repository
- Nearly 100% Patient Match between Epic and MEDITECH.
- Avoids \$75 K of Epic CCD Costs Annually
- Working to replace eMPI with PIX/PDQ
- Evaluating Tiani's Enterprise Viewer as TriRivers HIE PACS Enterprise PACS Viewer (Eliminates \$80 K Annually)

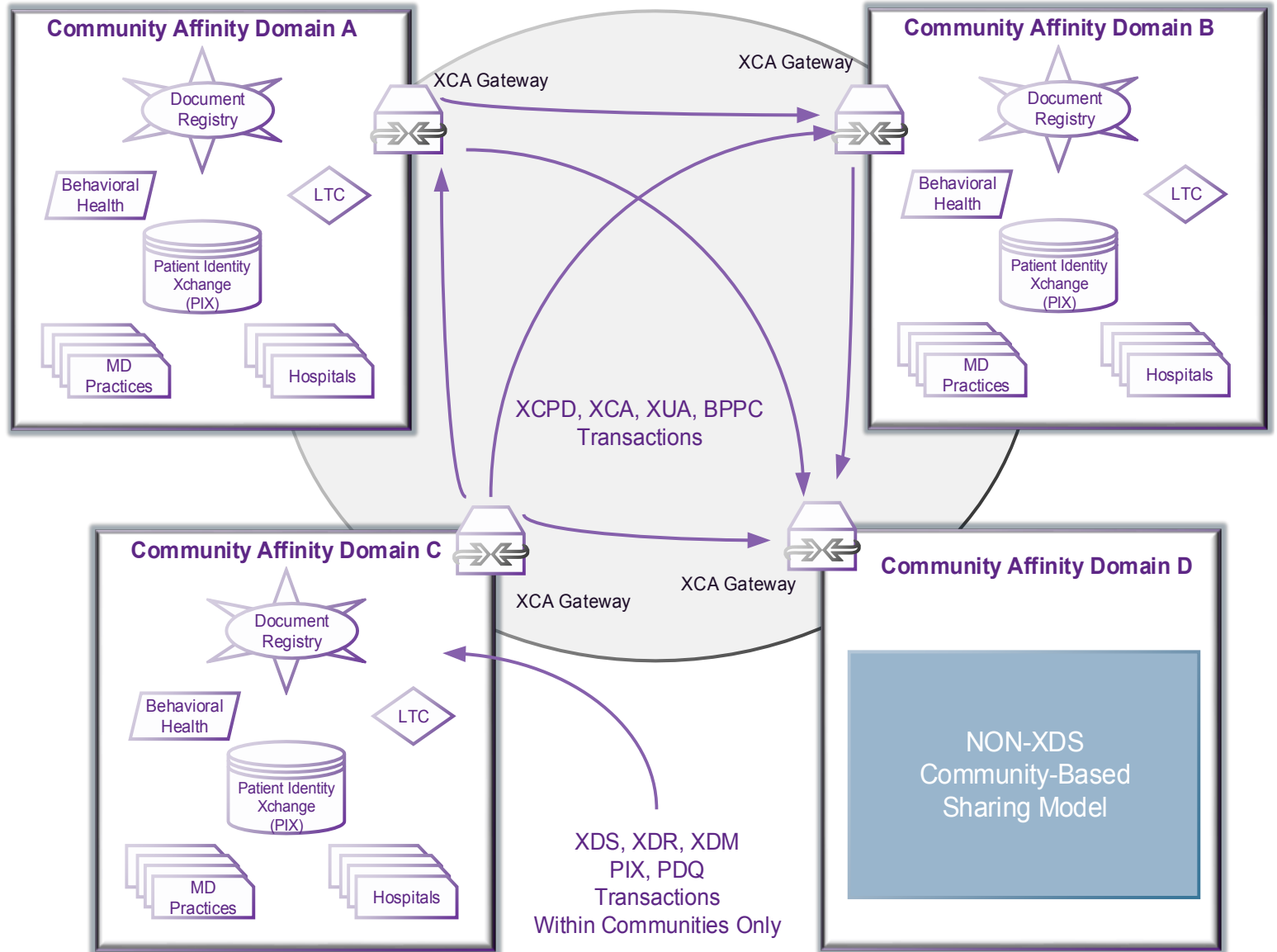
# TriRivers HIE Domain Integration



# Cross-Community Peer-to-Peer HIE Sharing using IHE Certified Profiles

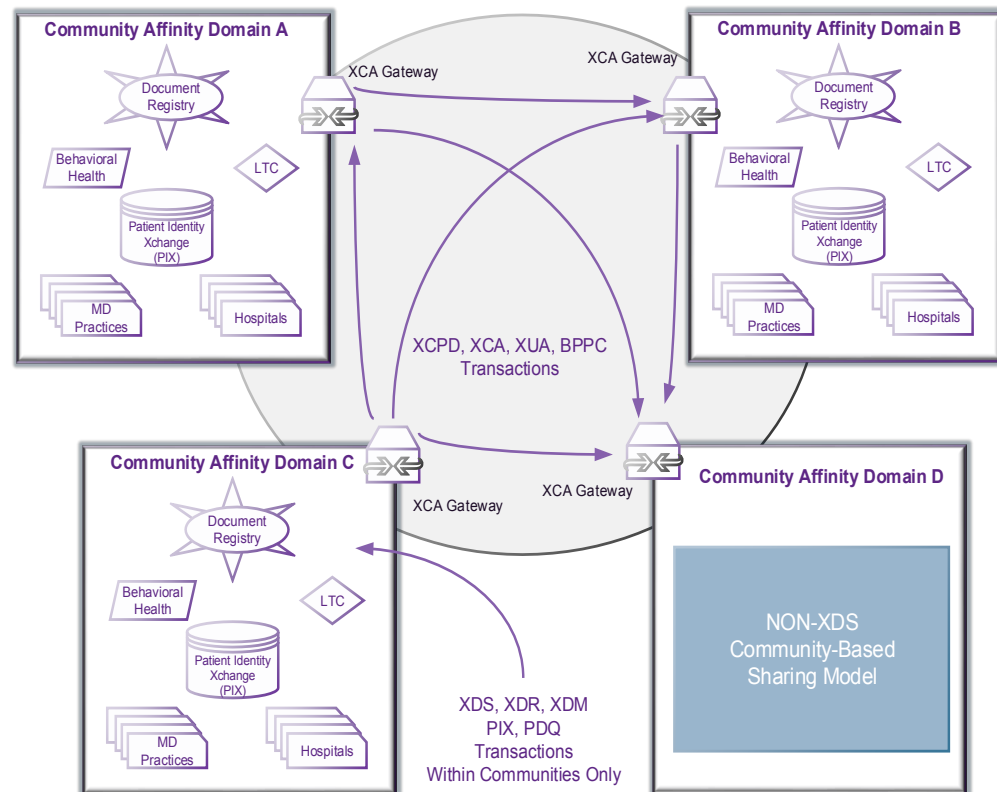
## Characteristics of an XCA Connected Community

1. Highly Federated Model
2. Can be Geographically Aligned or Diverse
3. Organizationally Focused or Diverse
4. Application Diverse or Limited
5. Scope of Content Shared is Administered
6. Similar Goals to increase the ability to share data
7. Governance under document sharing structure i.e., DURSA

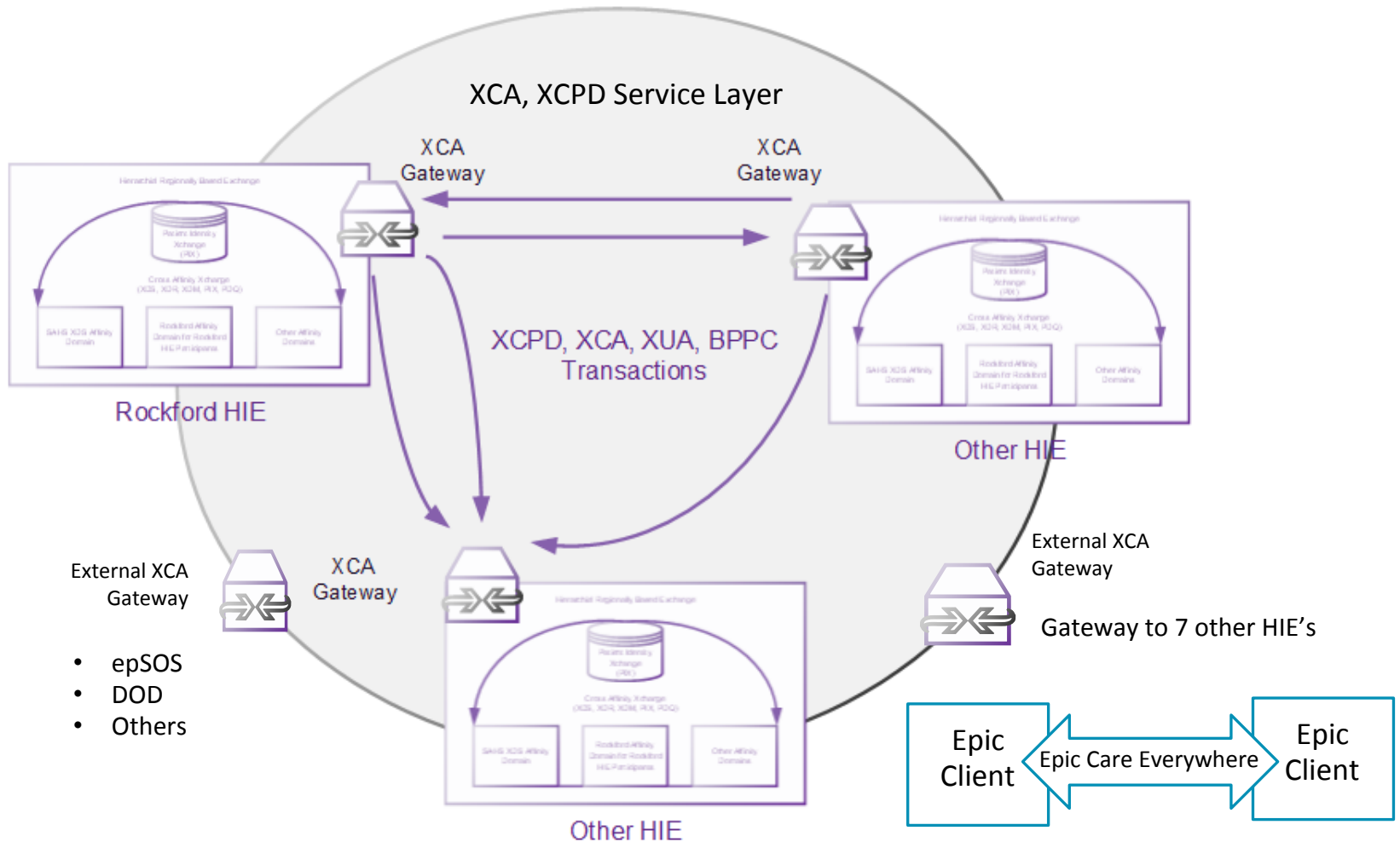


# TriRivers HIE-to-HIE Testing is Actively Underway

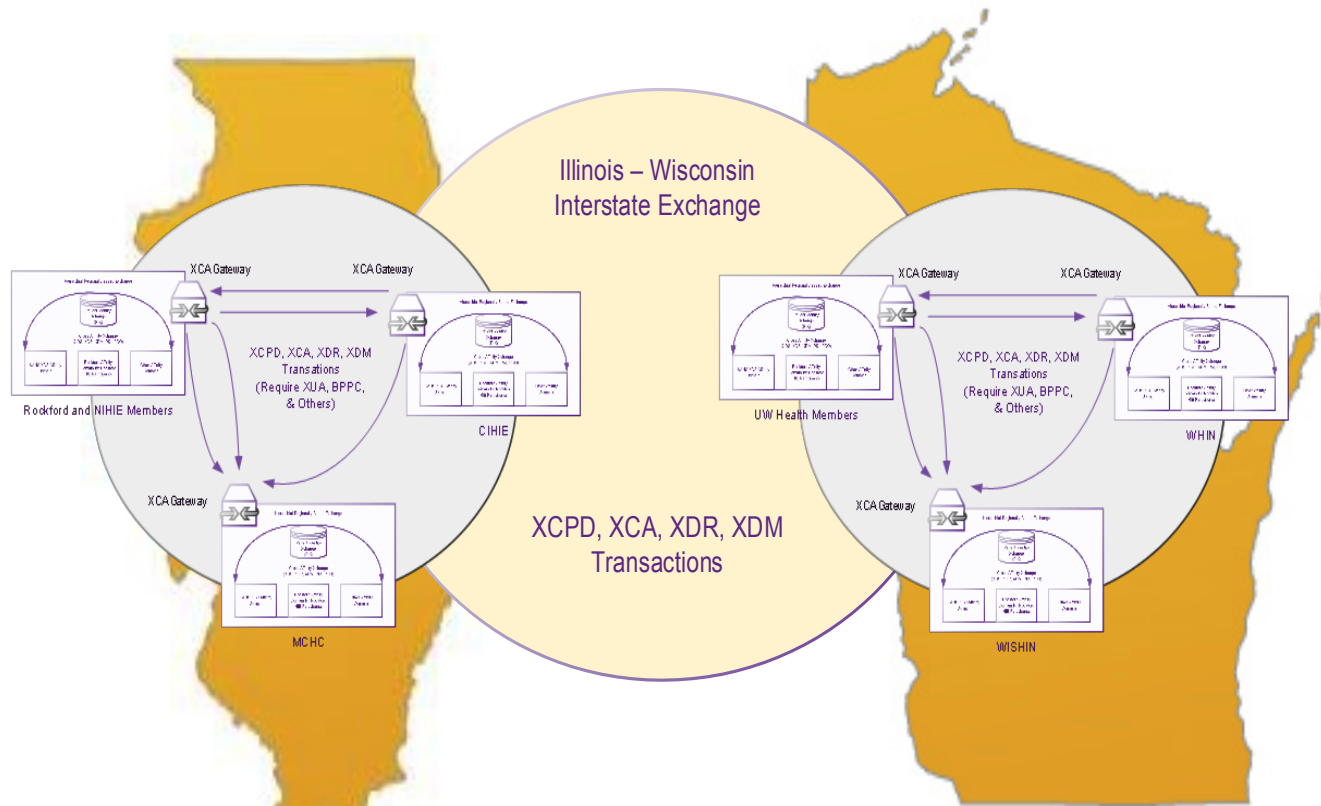
- HIE-to-HIE testing was initiated between 3 HIE's across 2 states in late March 2013 and the vendors have achieved successful XCA and XCPD testing.
- Final testing is planned to be moved to TriRivers by June.
- We will need to implement a "Modified Community Centric DURSA" agreement between the organizations and their participants.
- It is anticipated, that HIE-to-HIE exchange can be live and in technical production, including patient policy, consent, discovery and record exchange connectivity in 30-60 days.



# Regional IHE XCA Data Sharing



# Wisconsin – Illinois Interstate Xchange





# Challenges with EHR Vendor Implementations

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- One vendor implements within their own HIE vendor exchange and as a result the more advanced profiles of XCA and XCPD must be used.
- One vendor doesn't support basic web services security standard: SAML (Security Assertion Markup Language). This has posed a challenge to do policy enforcement at the HIE. We had to develop a custom solution to work around this inadequacy.
- A couple of our vendors don't support BPPC (Basic Patient Privacy Consents). Those that do, only support it under specific configurations, for those that do support it, they have only just started.
- One vendor required that they host the connectivity server that was needed for their product in order to connect it to the HIE, with hosting charges added, of course for the contracted site.
- Many vendors' CCDs are "encounter based." Each and every patient visit generates a new CCD.
- In many cases we had to develop or understand the triggers that push a CCD or respond to a PIX/PDQ query.
- When querying the HIE, some EMRs simply display back to their user whatever documents it got from the HIE, even if some of those documents were created by their own system earlier. In other words, they displayed back their own CCDs.

# Cost Model is based upon the Federated Model Approach

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- Each site is encouraged to work with other providers within their Community EcoSystem.
- Each site pursues their vendor's interoperable interface option which is integrated within the Community EcoSystem. Providers DO NOT leave their core EHR application to access records from other providers through the HIE.
- Epic sites will pay \$0.70 cost per patient per year for each consumed or contributed record to the EcoSystem, this cost is to mimic the Epic Care Everywhere model for Epic sites.
- Non-Epic sites pay a one time licensing fee, based upon relative size with larger hospitals paying more than smaller hospitals or critical access hospitals. Licensing costs are one-time and an 18 to 24% annual maintenance fee is required.
- Non-Epic sites will incur a \$0.70 per patient per year fee when consuming a record from outside of their Community EcoSystem.
- Non-Epic sites can exchange records within their primary Community EcoSystem without transaction fees.
- Providers pay a small licensing fee with the licensing fee less than \$10,000 regardless of the practice size. Maintenance is charged at \$300 per provider per year.



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**TriRivers**

HEALTH PARTNERS

*Promoting transformation through technology*

# Questions / Discussion

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