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Patient Identification & Matching: A Data Exchange & RHIO Perspective

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Agenda

I. Overview of EHR initiatives and their challenges
   - Business, patient, and technology considerations

II. Architectures being tested
   - Federated, hybrid, centralized

III. Standards
   I. IHE, HL7

IV. Canada
   - They're ahead of us in many ways

V. Client Registry and architecture

Accurate patient identification *is imperative*

Electronic Health Record & Health Information Exchange

EHR Foundation Elements:

- **Improve patient care and reduce medical risks**
- **Realize return on investment for strategic IT initiatives**
- **Improve customer service with reduced risk**
- **Comply with regulations**
- **Enhance operational productivity and efficiency**

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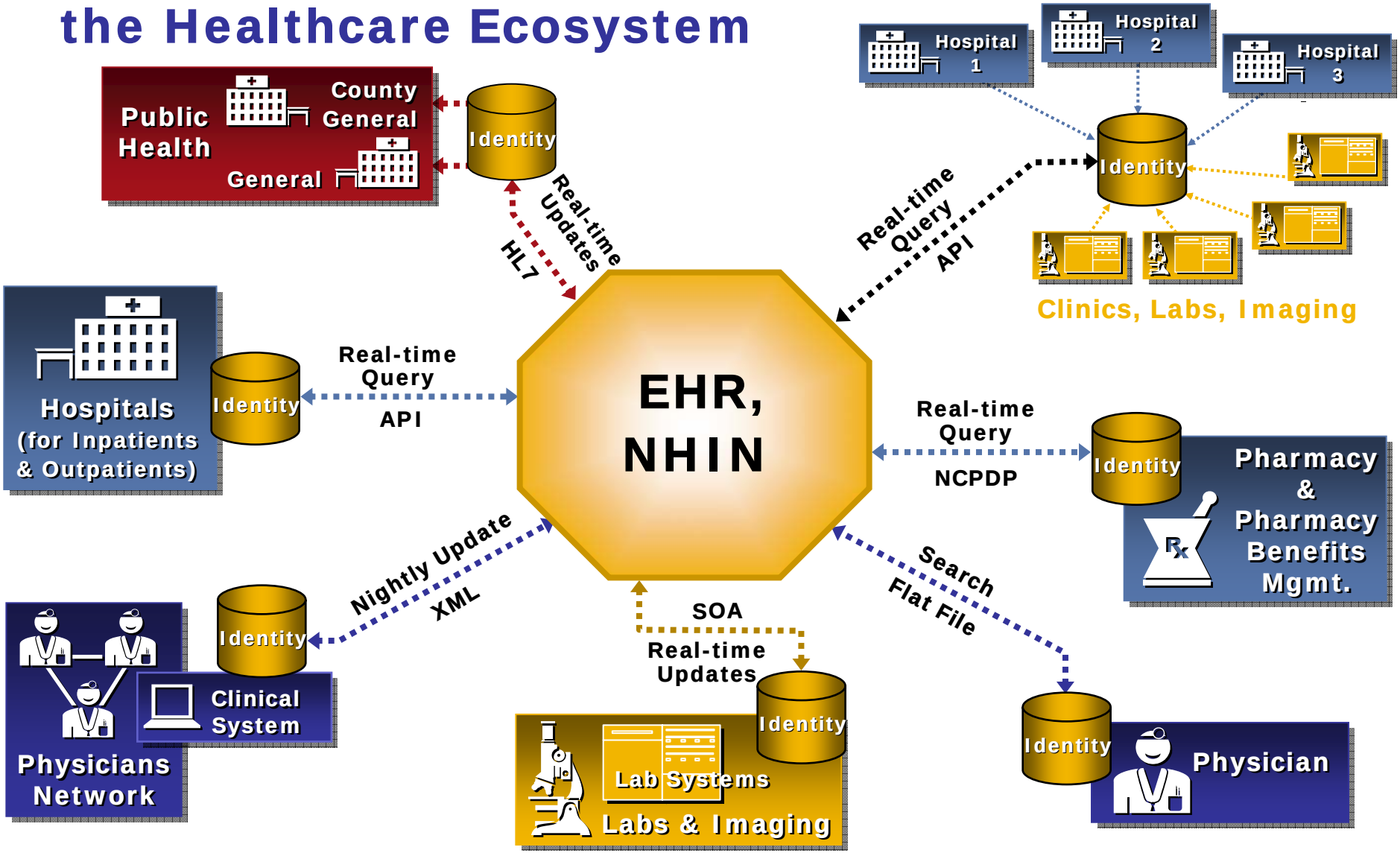
Interoperability challenges of the Healthcare Ecosystem



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National Identifier and Client Registry:
Not mutually exclusive

National Patient Identifier

- Requires launch by government agency or organization
- Backporting to existing records expensive and perhaps impossible
- May heighten consumer privacy & confidentiality concerns
- One (of many) data elements for patient ID
- Not silver bullet-- will have data quality errors just like existing data
- Compatible with EMPI technology to manage evolving strategy

Client Registry/Federated

- Views national identifier as just another piece of data to facilitate patient matching
- Manages current environment with no identifier as well as potential future identifier
- Data maintained within firewalls of source system
- Readily deployed in short timeframe with standards, retrospective or prospective
- Requires EMPI technology

National identifier and registry approach complimentary and help advance patient matching, interoperability, and EHR initiatives in a collaborative, timely manner!

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Slide 5

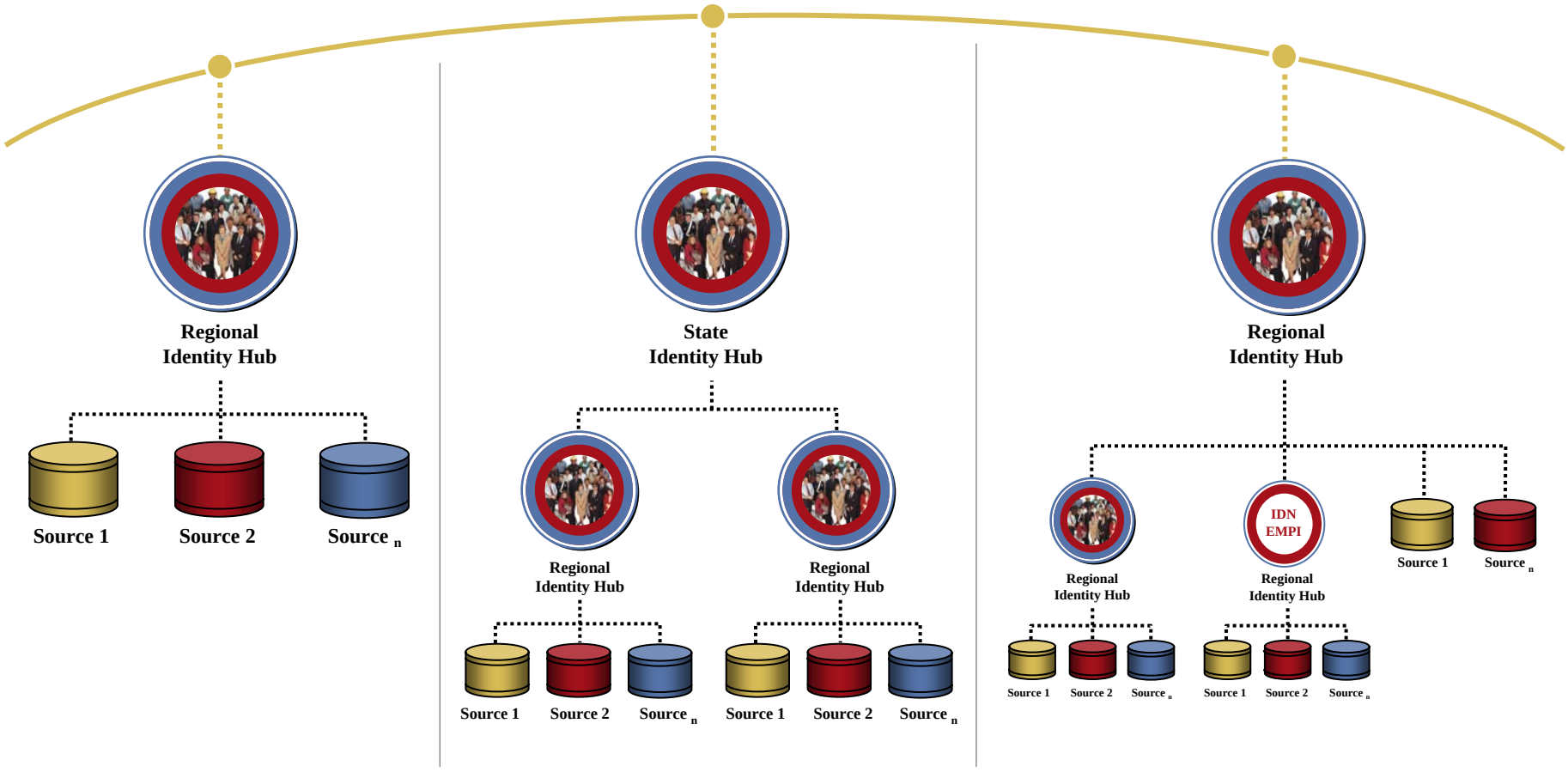
MTC1

"I don't like this approach to the message here. I don't think we are in a battle with the national identifier strategy, only with the perception that it negates the need for what we do. CR/Federated is an architectural approach to the solution that is practical in allowing for one or more registries to add up to the whole of the population, a fundamental requirement. The national identifier is a strategy to add another attribute to those that can be known to identify a person in an effort to improve the accuracy of matching and searching within and across a patient's records. A CR/Federated architecture takes advantage of all data that can help properly identify a person's records, including the national identifier."

Michael Competiello, 7/31/2006

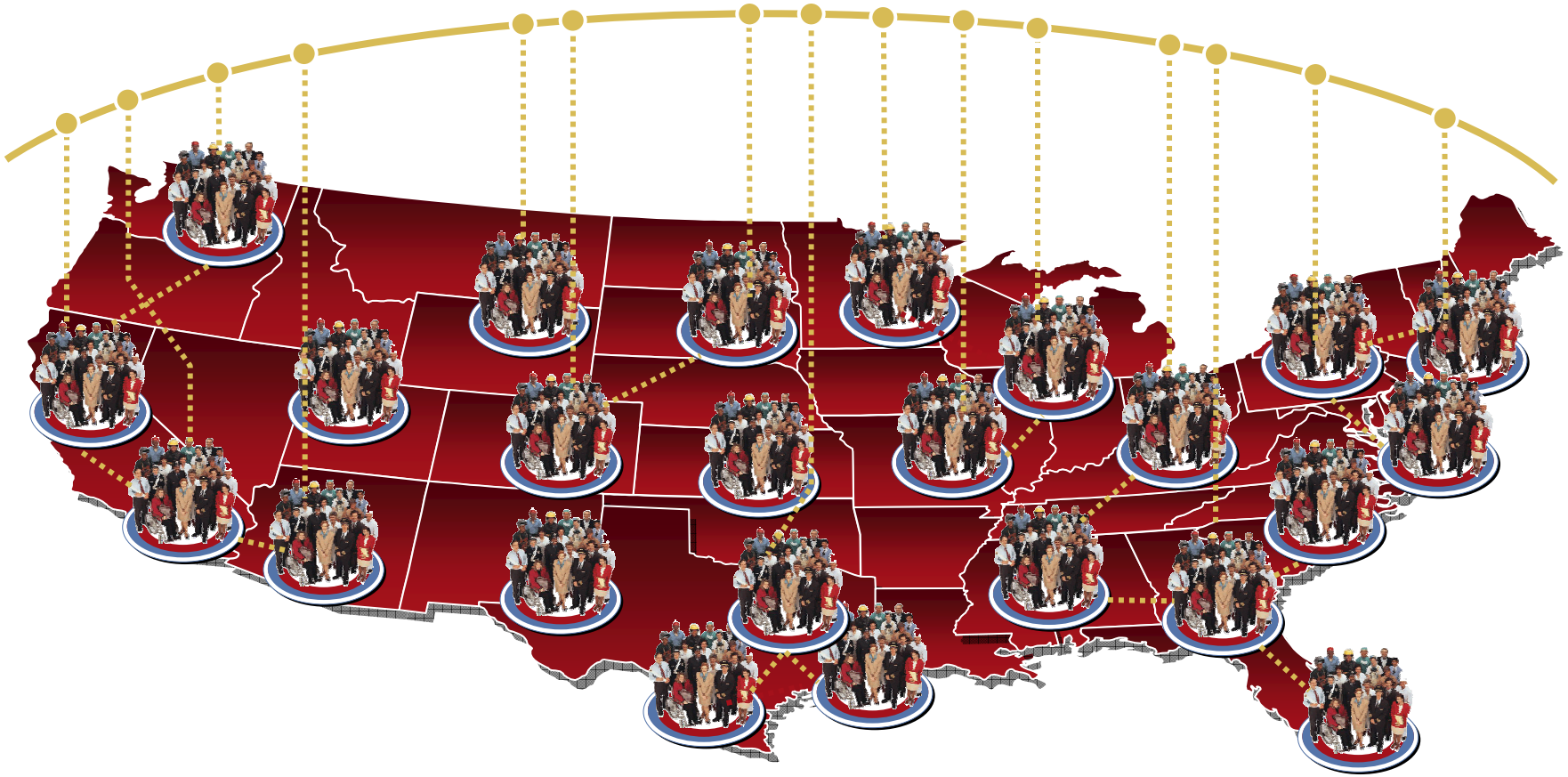
National View Architecture Model

Regional or state hubs with peer-to-peer communications for exchanging patient information



Potential Framework for NHIN

Mission Statement: ***To create an interconnected, electronic health information infrastructure to support patient safety and better healthcare***



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NHIN Architecture Prototype Project

Key Facts & Potential Benefits

- **Announcement 11/11/05 of Awardees**
  - **4 NHIN Awardees to create NHIN architecture prototypes**
  - **RFI November 15, 2004 followed by RFP June 6, 2005**
- **Design and demonstrate a standards-based network prototype over the coming year**
  - **Prototype vs. Functional Network**
- **Demonstration Goal**
  - **Develop and evaluate prototypes of an NHIN architecture that maximize use of existing resources to achieve interoperability among HC Applications – particularly EHRs**
- **Demonstrate the solution in 3 marketplaces / communities**
- **Demonstrate the solution via three use cases**
- **Contract: 12 month duration with option period to increase participation and for further demonstration**

NHIN Prototypes

IBM

- Taconic, NCHICA
- Hybrid
- IHE

accenture

- KY, WVA, Eastern TN
- Hybrid
- SSL

CSC

- MA Share, Indiana, Mendocino
- RLS

NORTHROP GRUMMAN

- HealthBridge, UHHS, Santa Cruz
- Centralized

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Patient Matching & Data Exchange Models

Federated

- All data remains controlled, secured by site creating data
- EMPI used as focal point to determine where patient has data (Record Locator Service)

Centralized

- Large central repository of clinical data
- All data storage, input and output, controlled from central store
- Assignment of internal identifier at inbound transaction used by some to facilitate faster query response

Hybrid

- Limited centralization of data, i.e. biosurveillance, lab, meds, quality measurement
- Much data remains federated and stored at point of creation
- May also be called co-op

Patient ID must also be addressed *in all models*

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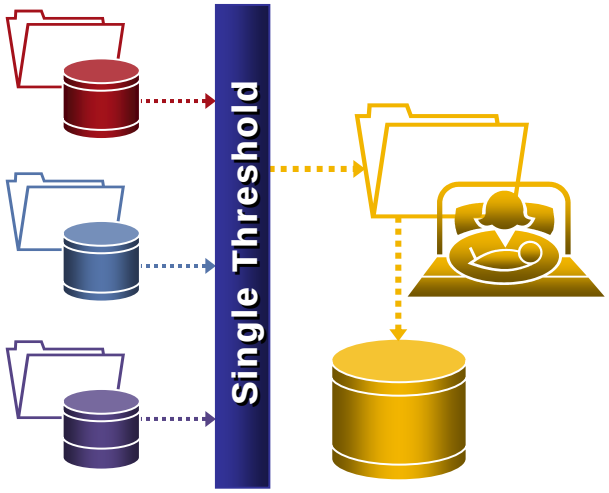
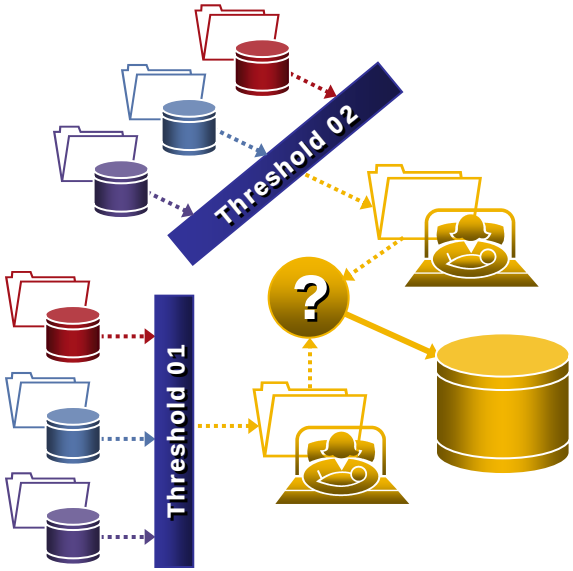
Operational considerations





- **Threshold setting for patient matching**
  - **Single**
    - **Only best record**
    - **Best records above threshold**
  - **Dual**
    - **Autolink above highest threshold**
    - **Resolve ambiguous linkages in "gray zone" (aka Data stewardship)**
- **Data presentation**
  - **Attributes, views unique to user and roles**
- **Audit and Security**

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What is the "role" of Standards?

HEALTHCARE INFORMATION TECHNOLOGY STANDARDS PANEL

- Having compatible methods for identifying and matching patients across systems is desirable
  - Reduces cost of joining networks
  - Allows for better gauging of match quality of foreign networks
- Standards in this area are helpful, but not sufficient
  - Still need a way to endorse the industry-preferred standard
  - Still need a way to describe proper usage of the standard
  - Still need a way to ensure compliance
- The Health Information Technology Standards Panel (HITSP) was formed to perform this kind of "harmonization" activity for HIT standards

HEALTHCARE INFORMATION TECHNOLOGY STANDARDS PANEL

HITSP activities related to Patient Matching

- **HITSP has created Interoperability Specifications to endorse standards for three contexts to date**
  - **Electronic Health Records – exchange of lab data**
  - **Biosurveillance – transfer of clinical data to public health officials**
  - **Consumer Empowerment – patient control over sharing of registration histories and medication lists**
- **These contexts all endorsed two common transactions based on work from Integrating the Healthcare Enterprise (IHE)**
  - **HITSP Interoperability Specification: Patient ID Cross-Referencing Transaction (PIX)**
  - **HITSP Interoperability Specification: Patient Demographics Query Transaction (PDQ)**

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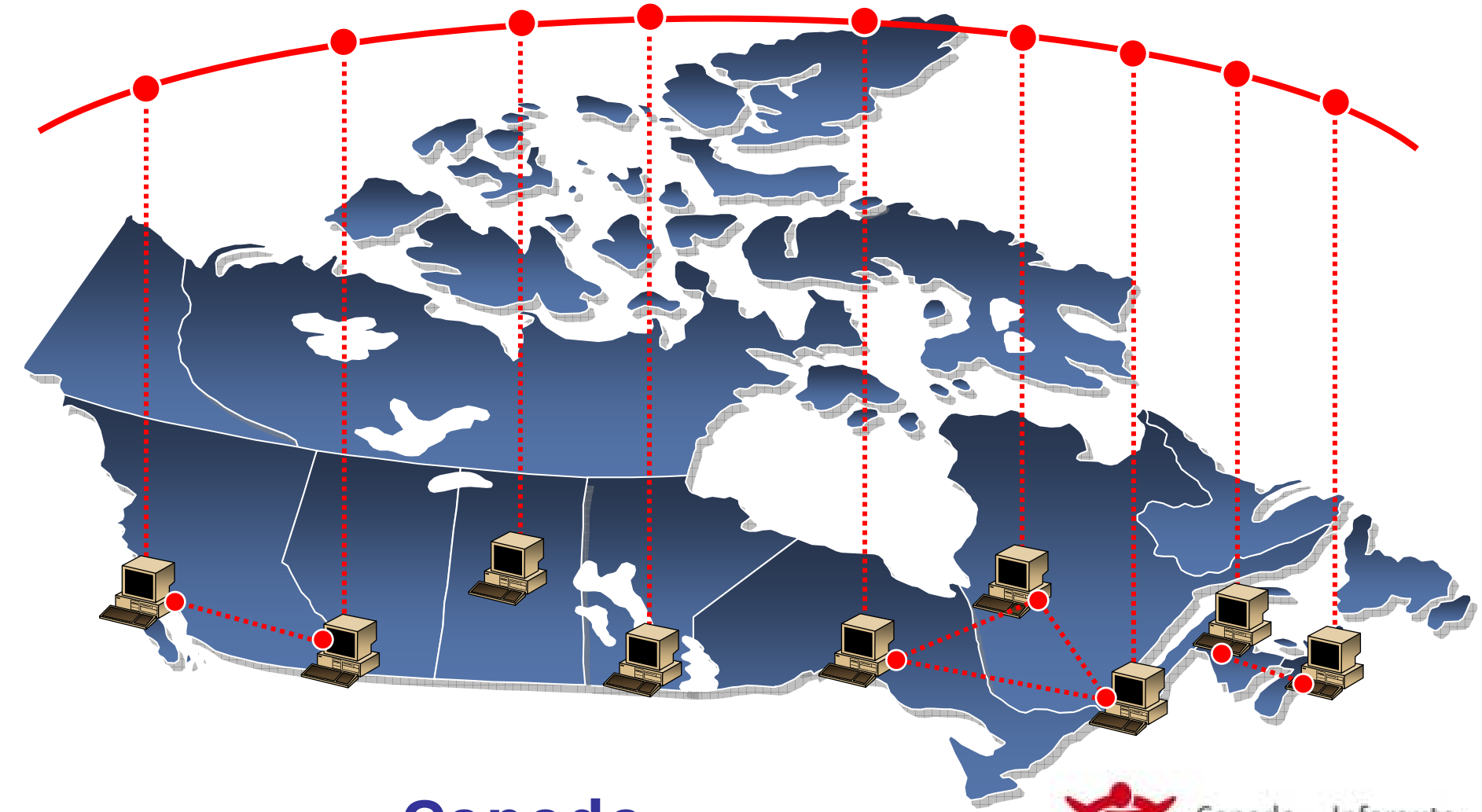
IHE & PIX/PDQ

Drive interoperability by answering the questions:

- **Do we know this patient?**
  - **PIX/PDQ Query from client to PIX/PDQ Manager**
- **What information do I have about this patient?**
  - **PIX/PDQ Manager Response to query**
- **Is this the correct patient?**
  - **PIX/PDQ Manager must handle, accurately, the matching and linking with tunable probabilistic algorithms**
- **Where did this patient information come from?**
  - **Domain based HL7 Messages Identify sources**
- **What "view" do I have of this patient?**
  - **Security applied at the application, PIX/PDQ Manager, or both**
- **What else do I know about this patient?**
  - **Extending the PIX/PDQ Manager and using other IHE profiles (i.e. XDS)**

ASTM & Voluntary National Healthcare Identifier (VNHID)

- ASTM balloting E31 healthcare informatics group is balloting a new standard with initial results due late November
- Includes implementation guidelines that are structured around EMPI to manage identifier and undefined org to assign identifiers:
  - Voluntary national healthcare identification (VNHID)-open
  - Encrypted voluntary identification – EUHID
    - 31 classes primarily geared around medical categories that are most
  - Journal of ASTM, Volume 3, Issue 2, February 2006



Canada

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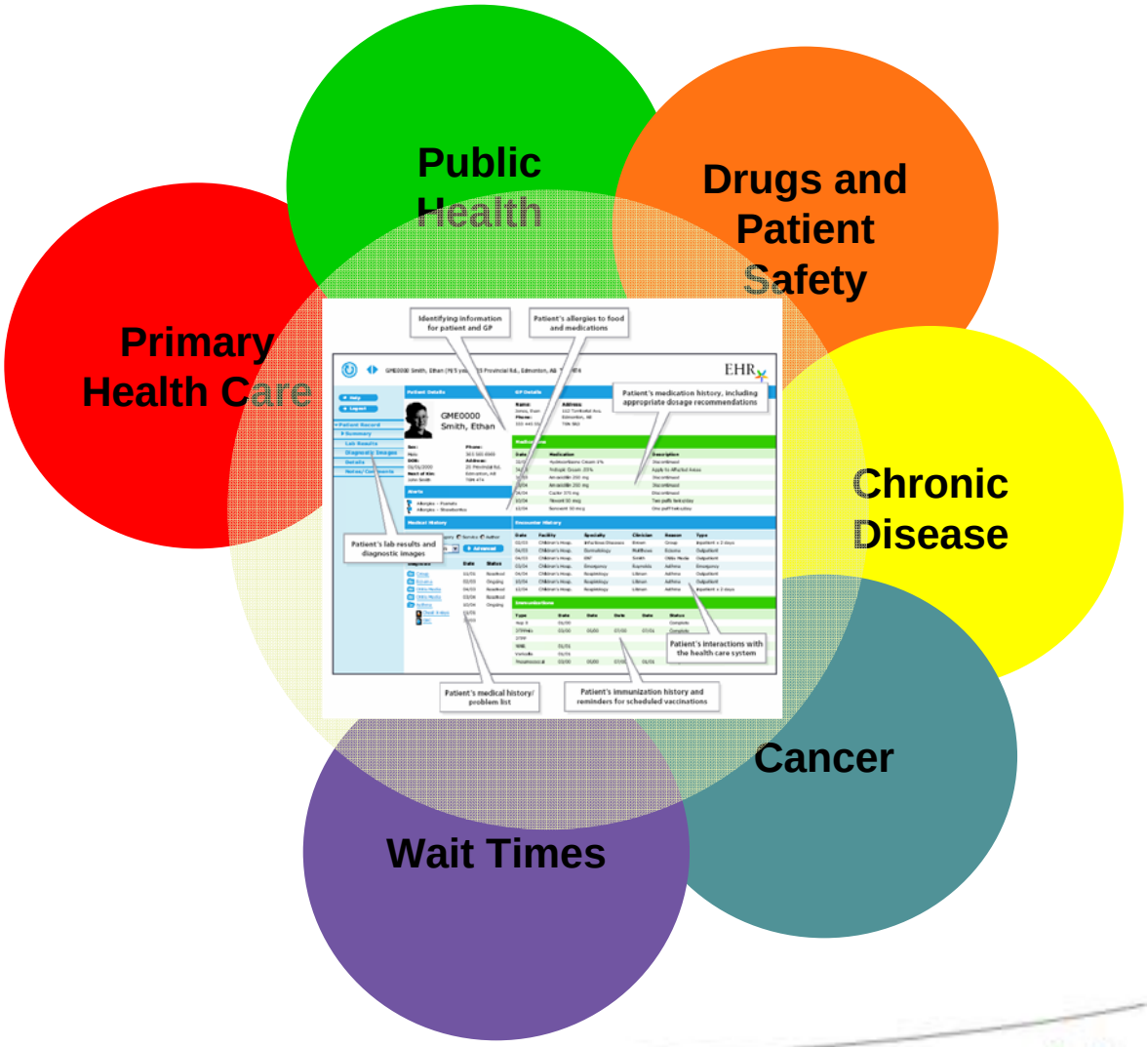
Electronic Health Records

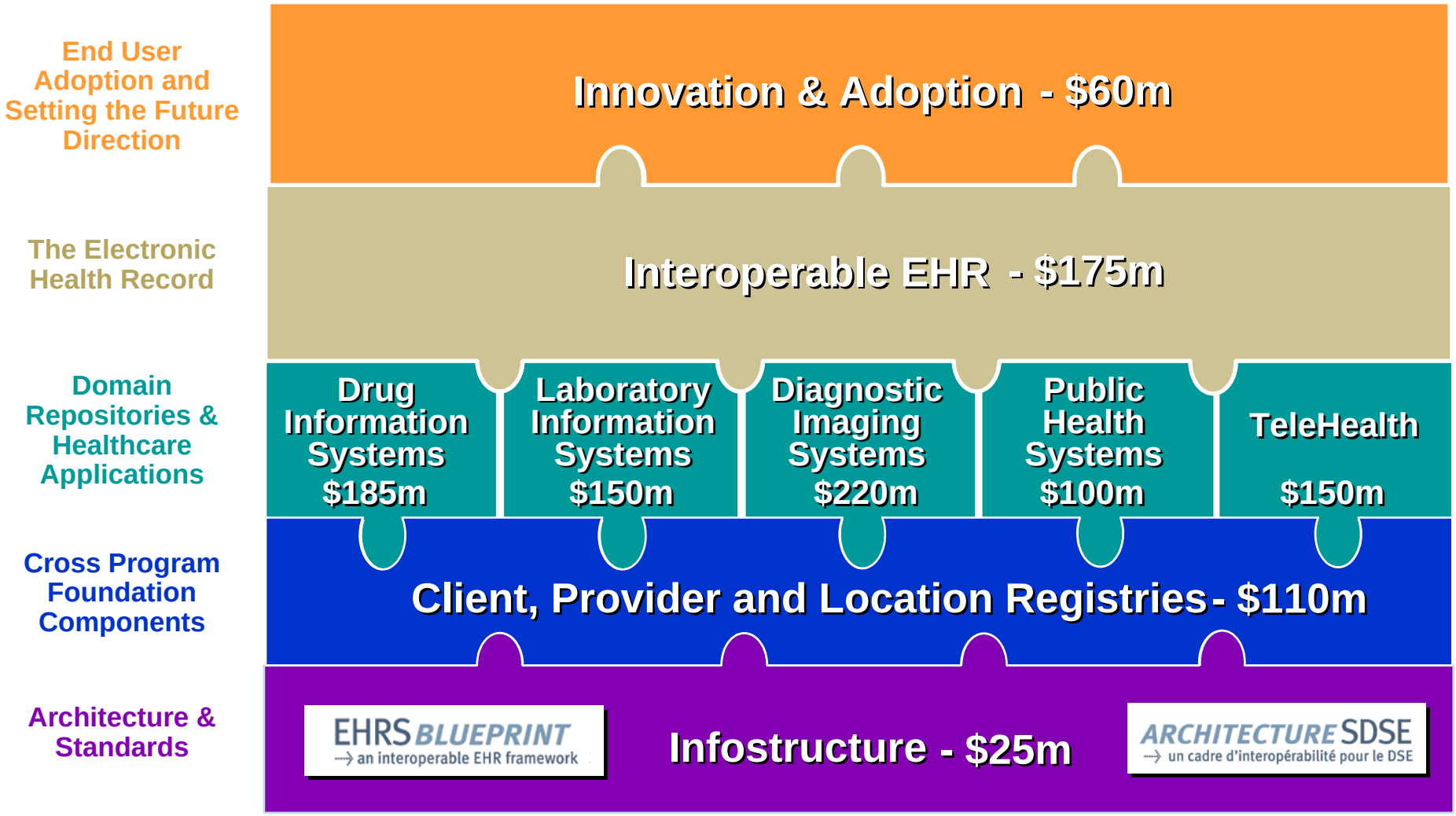
Supporting National Health Care Directions

Electronic health record systems can help improve patient health outcomes, decrease duplication, error and costs; and reduce waits. Without electronic health records, national directions to improve primary health care, public health, drugs drug and patient safety, chronic diseases, cancer and wait times will not be successful.

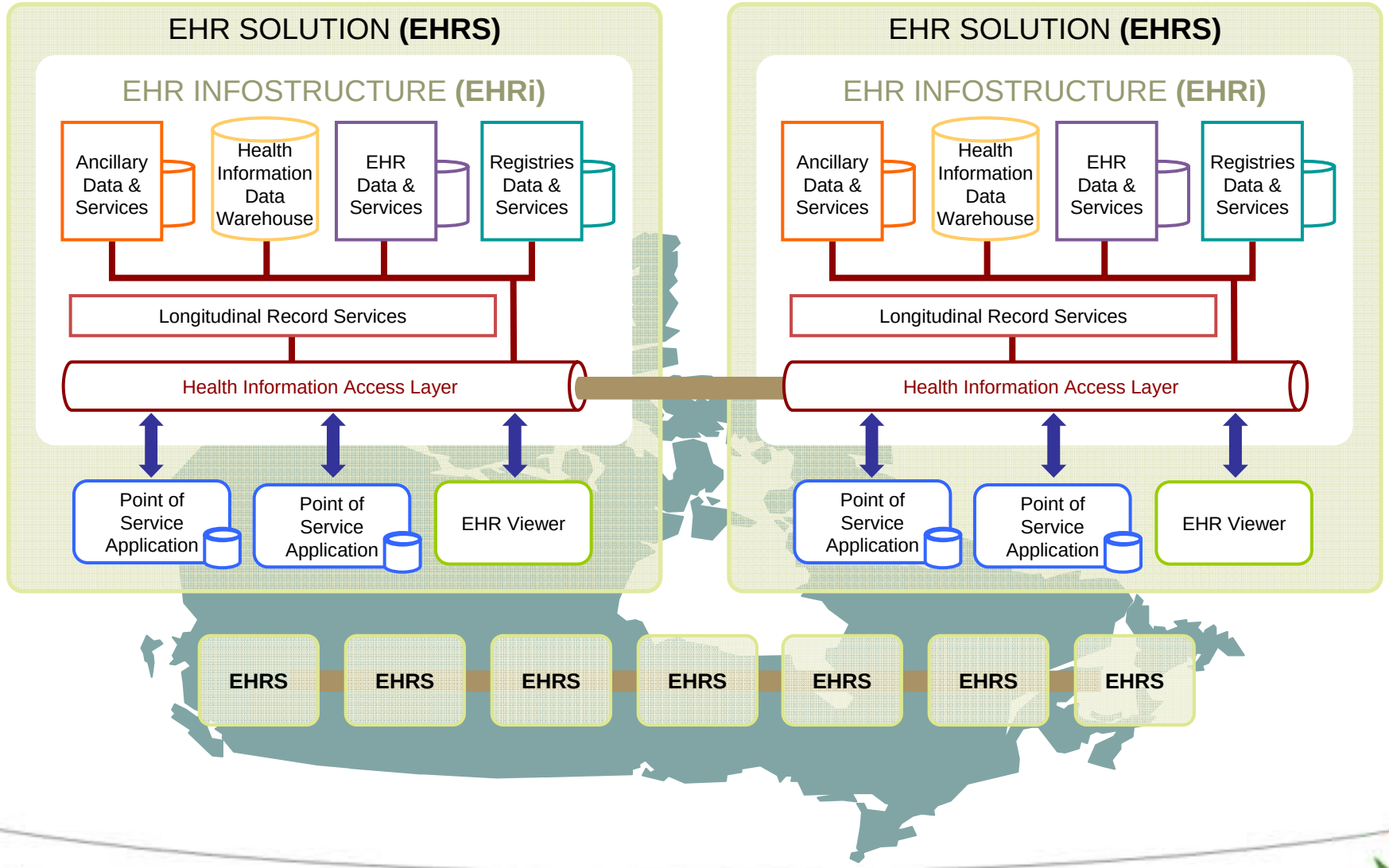
Electronic health record systems form the foundation for a health information and communications infostructure that can enable modern health care delivery.



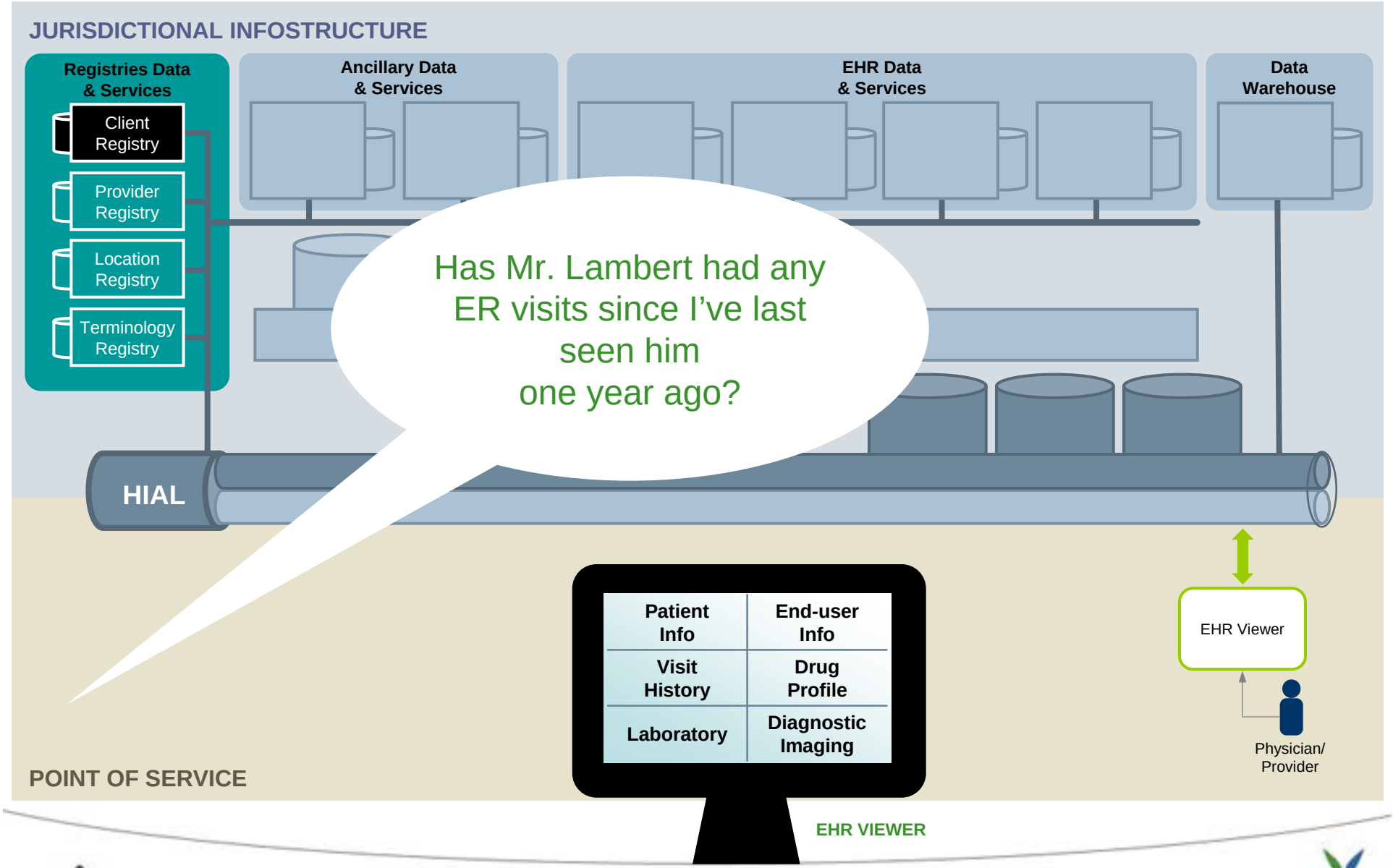
What Does Infoway Do?



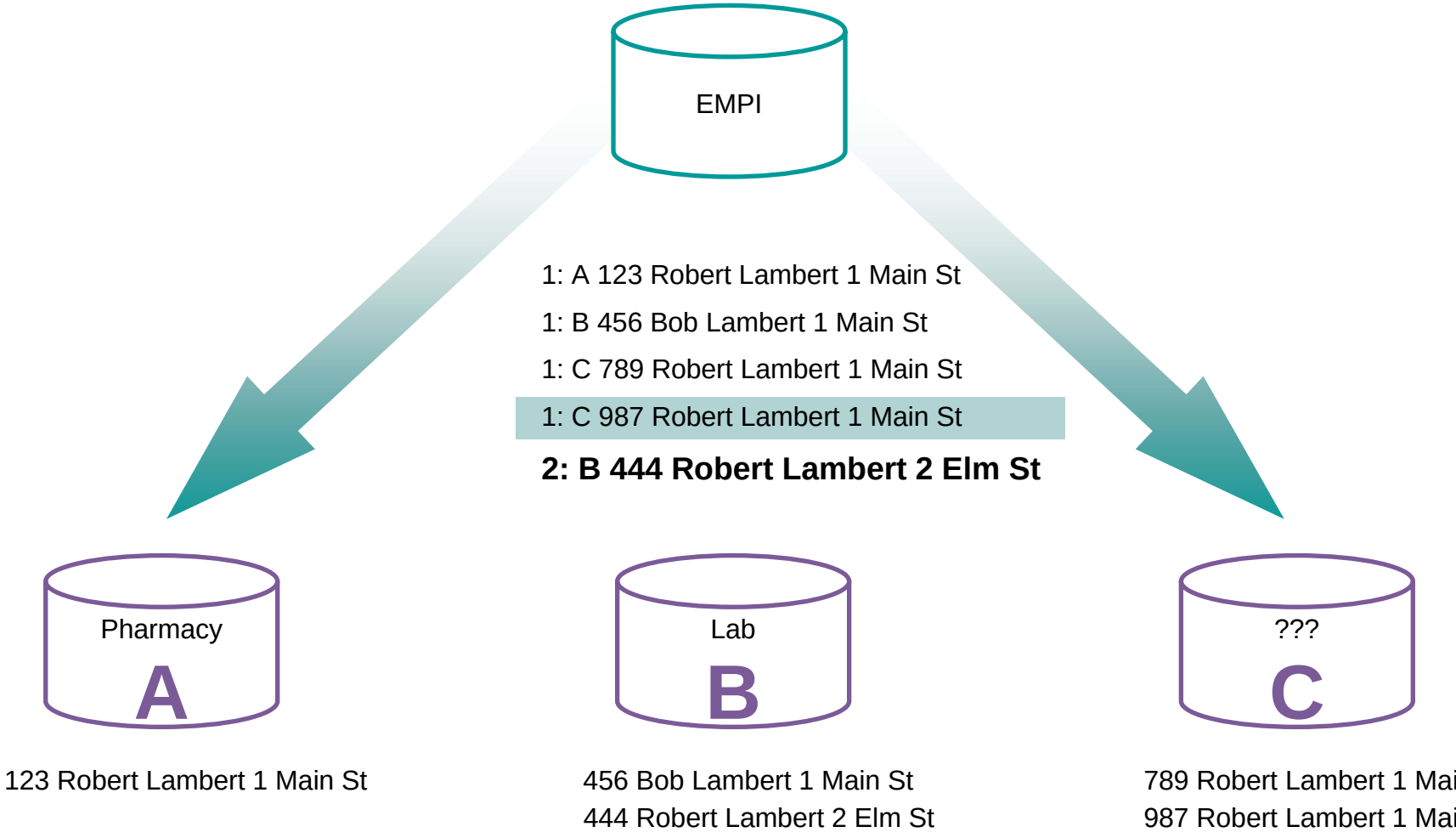
EHRS Blueprint Recommended Approach: A Pan-Canadian EHR Service



EHR Infostructure: Why A Client Registry?



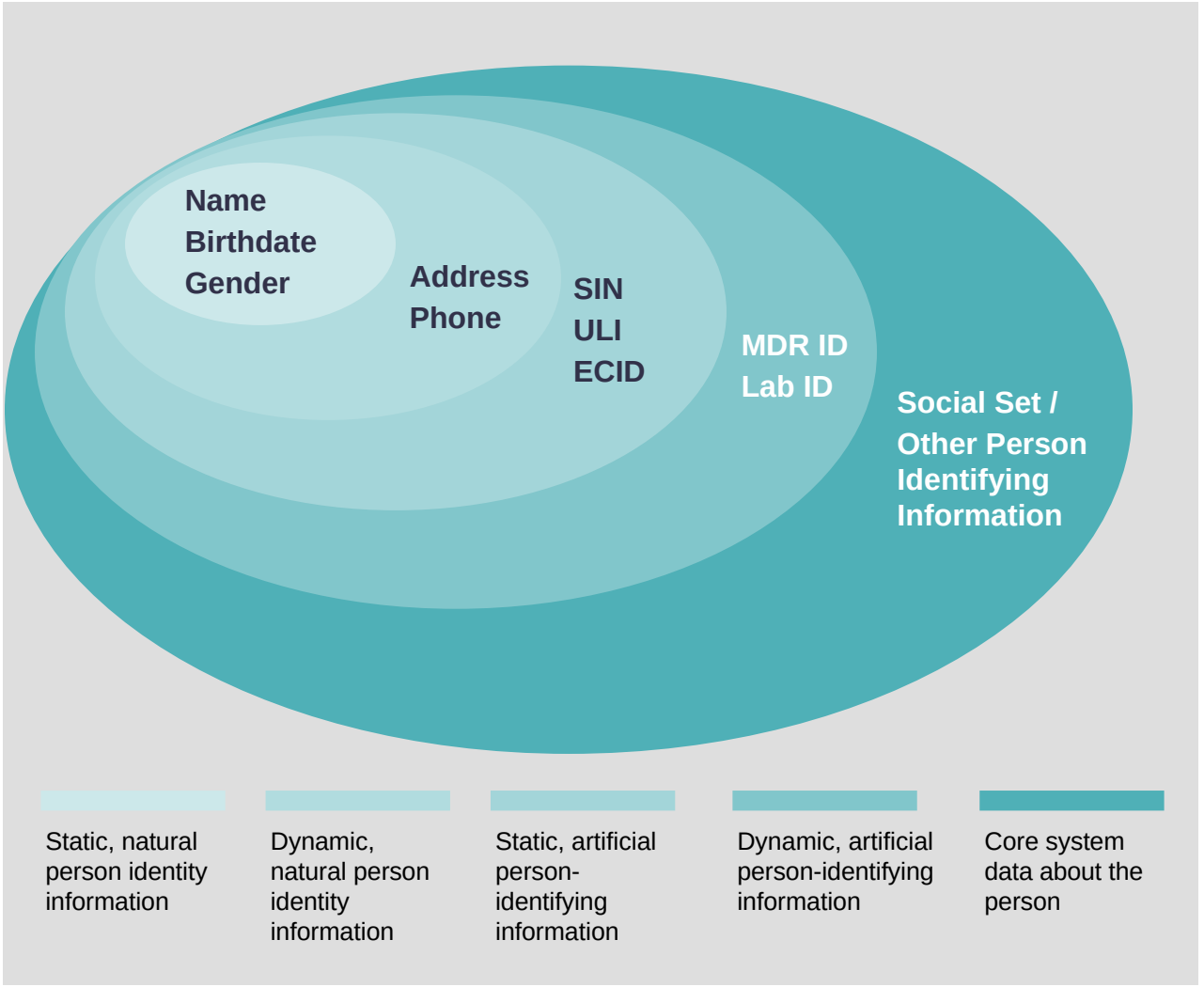
EHRi Client Registry: The Challenge within a Jurisdiction



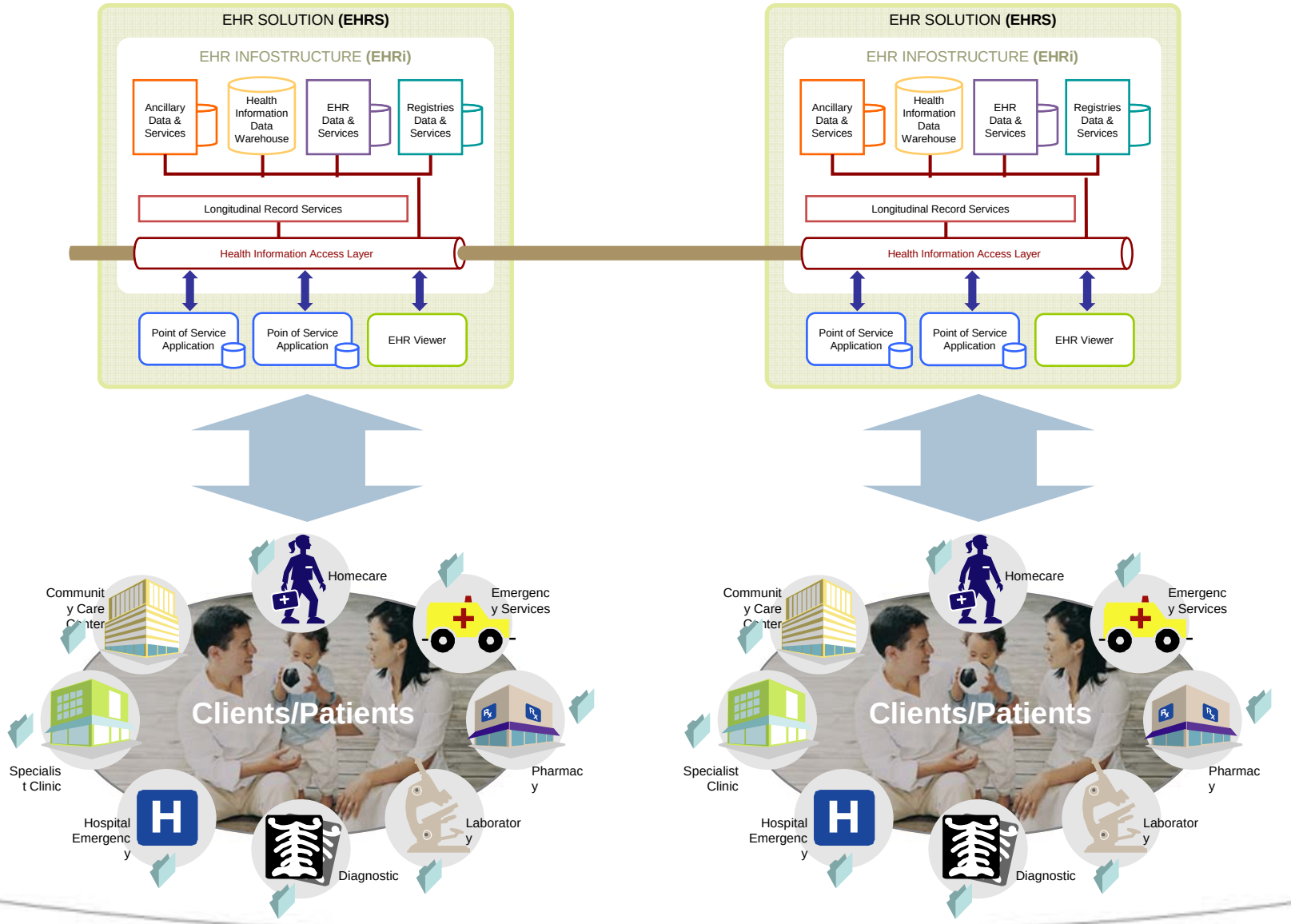
EHRi Client Registry: What Data?

The generation (or sourcing) of the **EHRI Client Identifier (ECID)** is a service offered by the Client Registry.

The ECID is the foundation for interoperability both locally and across EHR Infostructures.



EHRS Serving Healthcare Service Delivery



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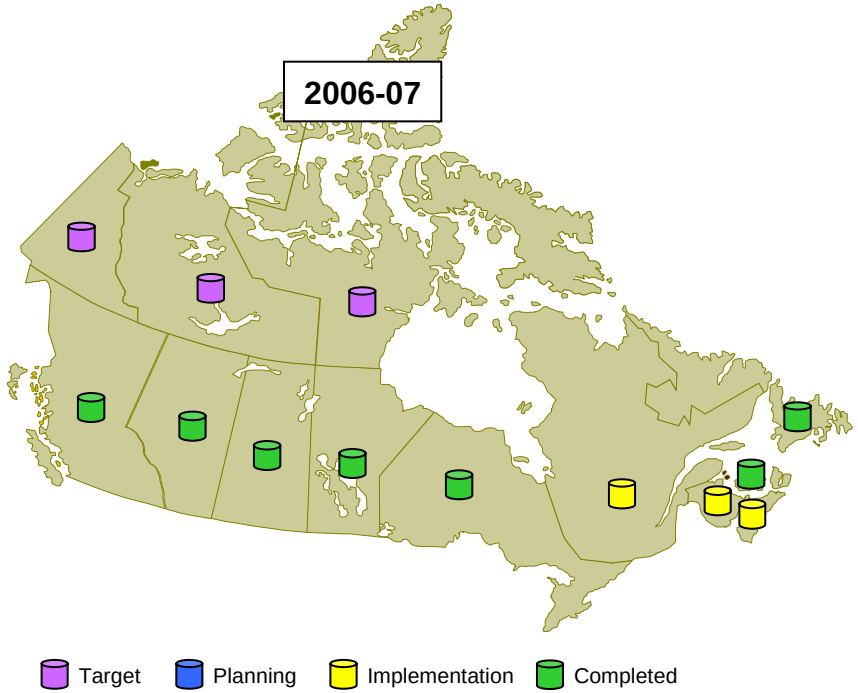
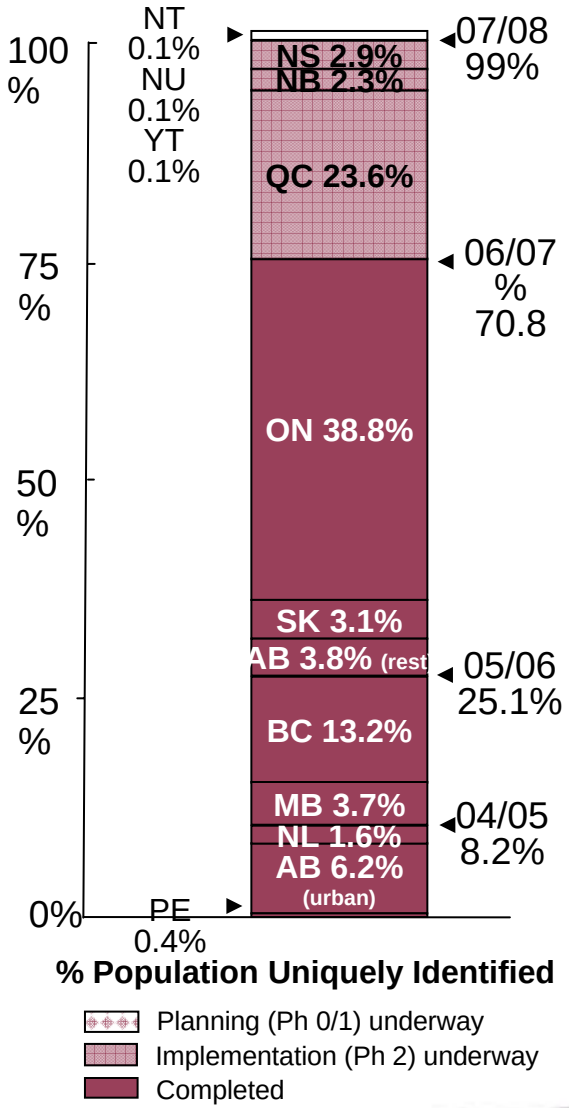
Client Registry

- **2006-07 Program Actions**
  - Project Implementation in QC, NB, NS
  - Complete in AB (urban), PE, NL, BC, AB, SK, ON, MB
  - Pan-Canadian HL7 v3 messaging standards for client registries completed





Client Registry Messaging Standards

Standard	Business Functions	Key Dates
Messaging: HL7 v2.4 & v3.0 **Vocab:** HL7 Domain Tables **EIP:** **Currently Available**: 1. Messaging Package Overview 2. Implementation Guide, 3. V2.4 Conformance Profiles, 4. Client Registry Schemas	1. Add Client – to a registry 2. Update Client – to data in a registry 3. Delete Client – to delete a client record added in error to a registry 4. Link Client – linking of two records (both records remain active) 5. Unlink Client – the unlinking of two records in a registry 6. Merge Client – merging of two records 7. Unmerge Client – unmerging of two records 8. Get Client Demographics Query Request – to request demographic data when the client identification is known 9. Get Client Demographics Query Response 10. Query Client – list of clients matching query parameters 11. Query Client Response	*International* • HL7 Membership Ballot – passed Jan06 • ISO-TC215 "Subjects of Care" – harmonized • IHE Integration Profiles (PIX/PDQ) being re-purposed for HL7v3 – approved for 2006 Roadmap *National* • HL7 Canada – Realm localization ballot reconciliation Fall 2006 • Stable for Use approval by SSC March 2006. SAC Approved as Stable for Use January 2006

National View Architecture Model

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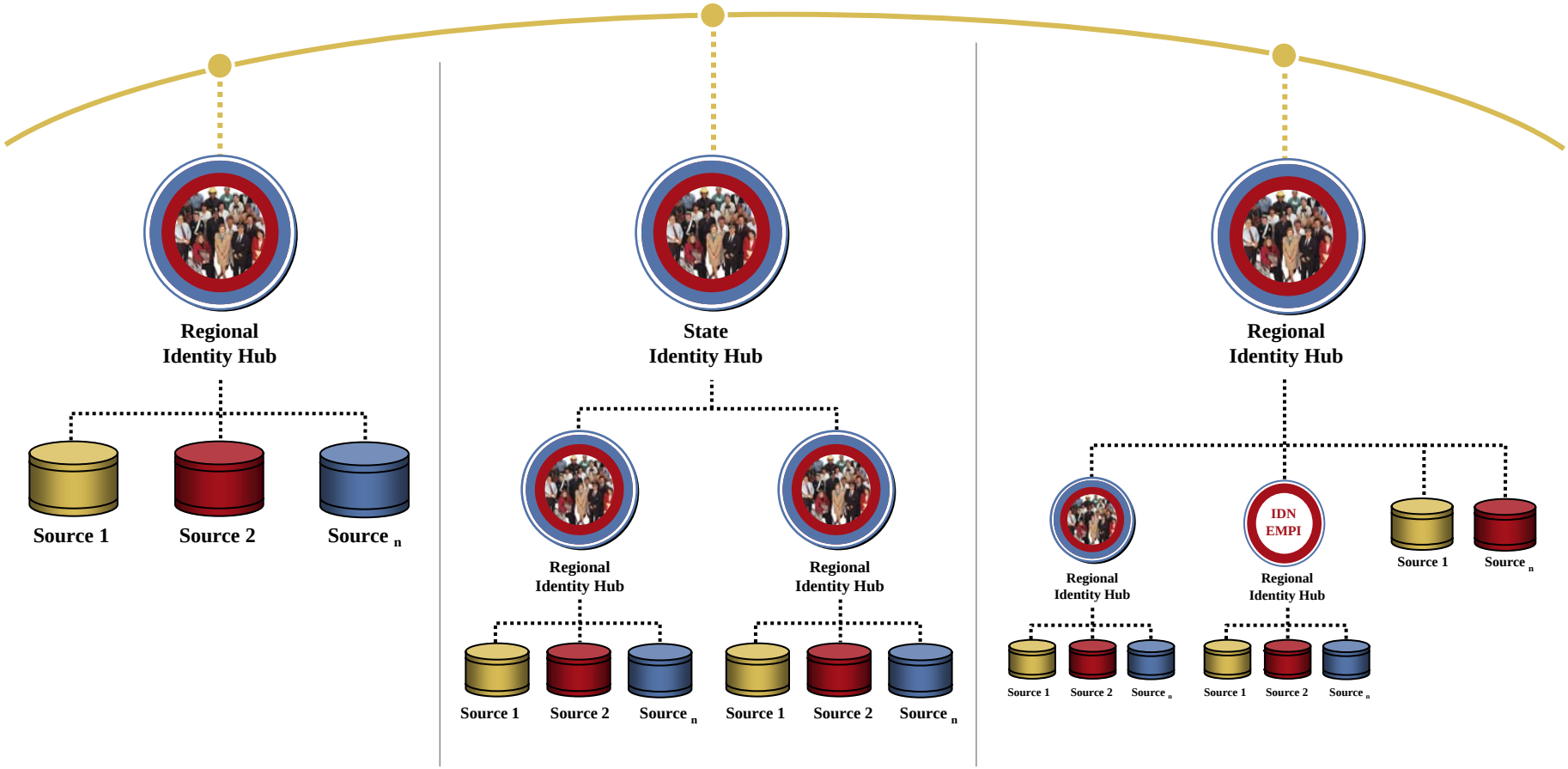

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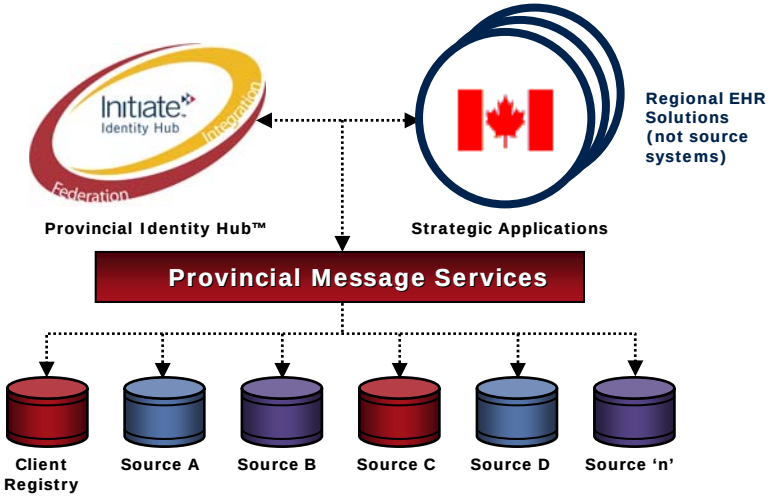
Case Study: British Columbia Architecture

Two-tier model

- CR application data synchronized with EMPI to facilitate merge activity and ensure proper number assignments
- Provincial Identity Hub has all direct source systems records and a view of all regional source system records and represents the entire population
- Messaging layer serves to present normalized message formats from various sources to the provincial environment and validates CR numbers as part of its routing process
- Searches can be made provincial wide, regional wide and locally to support business functions appropriately
- Provincial and Healthcare numbers are housed, checked for uniqueness in EMPI
- Contains the minimum data set for the CR and additional fields that meet their business needs
- Supports additional synchronization efforts between the Provincial Hub and the Regional Identity Hubs



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Questions?

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