

# Provider Directory Affinity Group Discussion

- August 31, 2015: Standards and Architecture

About this deck:

This deck of slides and notes is provided as background material in preparation for a discussion of various topics related to standards and architecture for Provider Directories. This deck of slides will not be presented during the discussion but certain slides/notes might be referenced as the discussion unfolds.

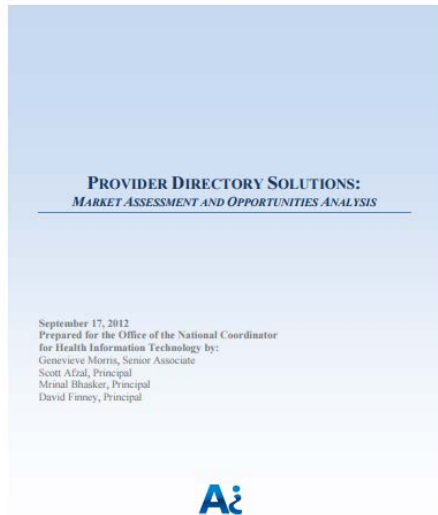
Participants can feel free to use any of this information for their own purposes to advance Provider Directory developments in their states. Two slides are examples taken from Oregon, but were found in publicly available documents.

# Provider Directory

Standards Considerations

# ONC Document: Provider Directory Solutions

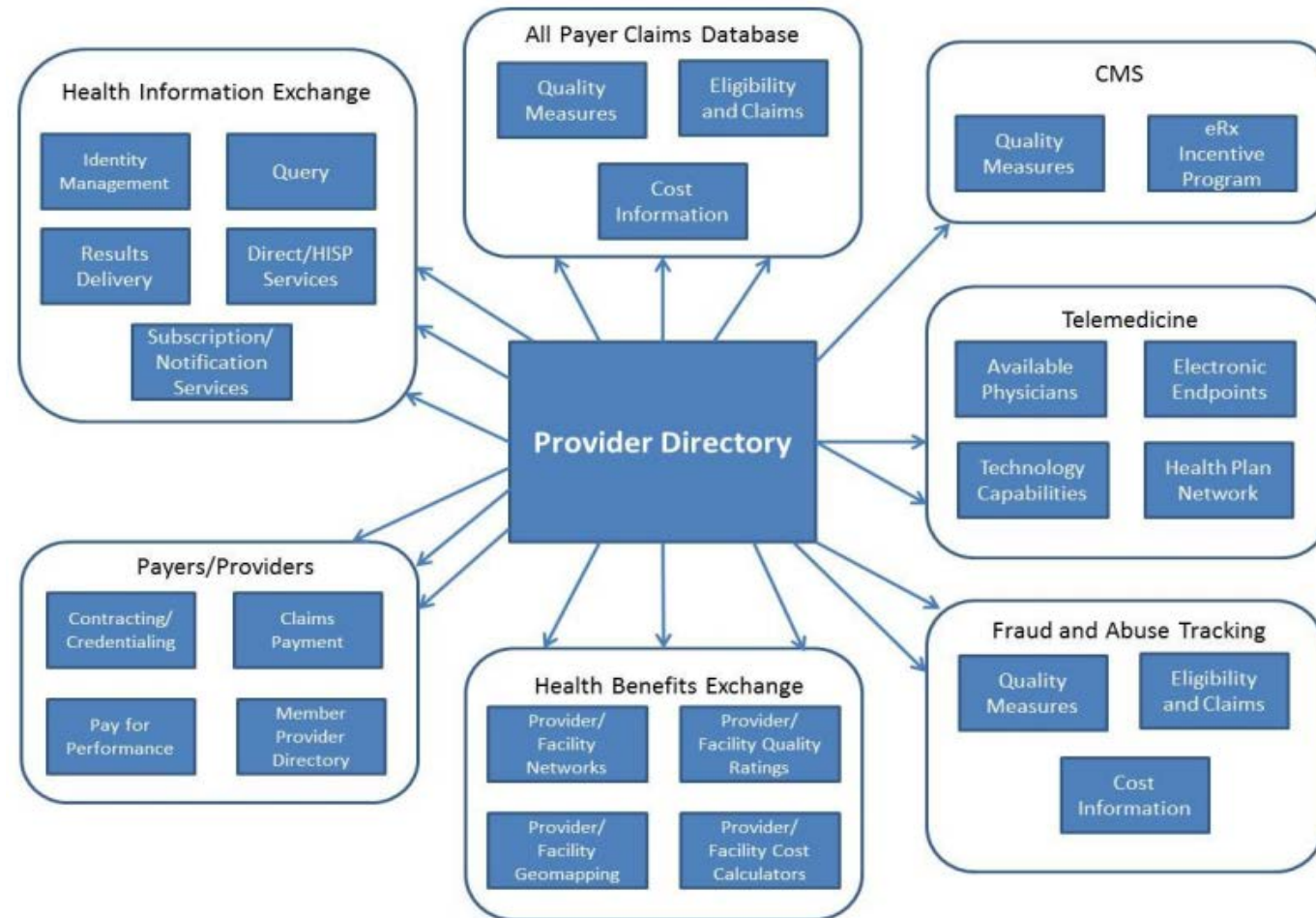
[https://www.healthit.gov/sites/default/files/provider\\_directory\\_solutions\\_final.pdf](https://www.healthit.gov/sites/default/files/provider_directory_solutions_final.pdf)



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- Uses for Provider Directories
  - Payers/Providers; Health Benefit Exchanges
- Key Technical Concepts
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- Analysis
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  - HIO Focus on Core Activities
  - Competitive Landscape and Political Dynamics
  - Starting Points and Evolutionary Pathways
  - Business Opportunities
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  - Massachusetts; OneHealthPort; Vermont
- Appendix B: Additional PD Use Cases
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  - CMS Physician Quality Reporting System (PQRS) and eRx Incentive Program
  - Statewide All-Payer Claims Database
  - Telemedicine Networks
  - Medicare and Medicaid Fraud and Abuse Tracking
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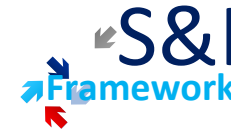
# High Level Use Case Diagram



# Standards

- Necessary to enable sharing of directory information across organizations
- Help maximize the flexibility and usability of a directory across multiple organizations, agencies, and use cases
- Standards enable exchange but trust must still be established
- Standards and protocols used by the Internet to support web services are well established, and include Domain Name Service (DNS), Representational State Transfer (REST), and Simple Object Access Protocol (SOAP)
- If data elements of the web services can be standardized, a trust framework can be built, and provider directories can start to be shared
  - **Healthcare Provider Directory does this!**

# S&I Framework (Standards and Interoperability)



The S&I Framework is a collaborative community of participants from the public and private sectors who are focused on providing the tools, services and guidance to facilitate the functional exchange of health information. The S&I Framework uses a set of integrated functions, processes, and tools that enable execution of specific value-creating **initiatives**. Each S&I Initiative tackles a critical interoperability challenge through a rigorous process that typically includes:

- Development of clinically-oriented user stories and robust use cases
- Harmonization of interoperability specifications and implementation guidance
- Provision of real-world experience and implementer support through new initiatives, workgroups and pilot projects
- Mechanisms for feedback and testing of implementations, often in conjunction with ONC partners such as NIST

**Provider Directory is a Closed Initiative in the S&I Framework**

# S&I Framework: Provider Directory Initiative

Consensus approved final work products:

## 1. Use Case 1 Implementation Guide – Certificate Discover for Direct

1. PDF: [http://wiki.siframework.org/file/view/Certificate%20Discover%20for%20Direct%20Project%20Implementation%20Guide\\_v8.%200.pdf](http://wiki.siframework.org/file/view/Certificate%20Discover%20for%20Direct%20Project%20Implementation%20Guide_v8.%200.pdf)

2. DOC:

<http://wiki.siframework.org/file/view/Certificate%20Discover%20for%20Direct%20Project%20Implementation%20Guide.doc/404490164/Certificate%20Discover%20for%20Direct%20Project%20Implementation%20Guide.doc>

## 2. Use Case 2 Data Model:

1. PDF: <http://wiki.siframework.org/file/view/ESI%20data%20model.pdf>

2. XLS: <http://wiki.siframework.org/file/view/data%20model.xls/404491230/data%20model.xls>

## 3. Use Case 2 Standards Mapping Spreadsheet: Data Element Mapping

1. PDF: <http://wiki.siframework.org/file/view/ESI%20Data%20Element%20Mapping.pdf>

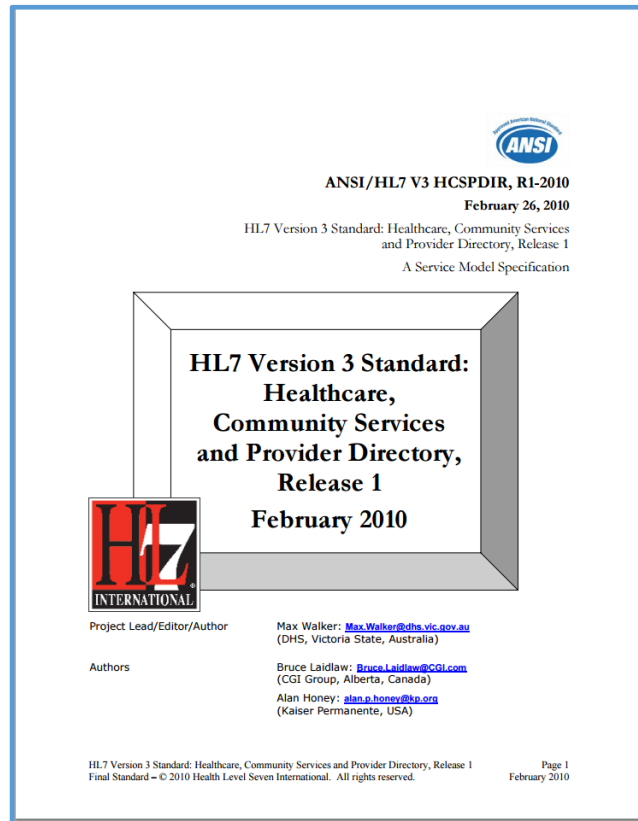
2. XLS: <http://wiki.siframework.org/file/view/Data%20Element%20Mapping.xls/404492284/Data%20Element%20Mapping.xls>

## 4. Use Case 2 query and Response Examples:

1. PDF: <http://wiki.siframework.org/file/view/ESI%20Query%20and%20Response.pdf>

2. XLS: <http://wiki.siframework.org/file/view/Query%20and%20Response.xlsx/404492304/Query%20and%20Response.xlsx>

# HL7 Provider Directory Standard

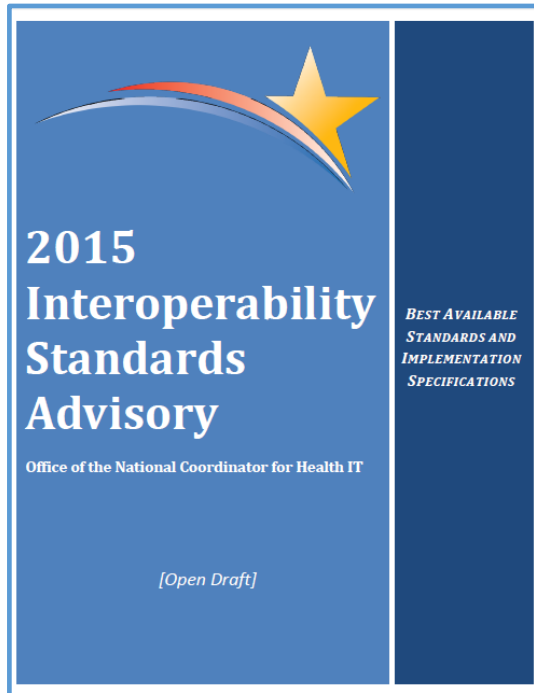


HL7 and its members provide a framework (and related standards) for the exchange, integration, sharing, and retrieval of electronic health information. These standards define how information is packaged and communicated from one party to another, setting the language, structure and data types required for seamless integration between systems. HL7 standards support clinical practice and the management, delivery, and evaluation of health services, and are recognized as the most commonly used in the world

Healthcare, Community Services and Provider Directory Standard:  
[http://wiki.siframework.org/file/view/HL7\\_V3\\_HCSPDIR\\_R1\\_2010FEB.pdf](http://wiki.siframework.org/file/view/HL7_V3_HCSPDIR_R1_2010FEB.pdf)



# 2015 Interoperability Standards Advisory: HPD is recommended for Provider Directory



Purpose (listed alphabetically)	Standard(s)	Implementation Specification(s)
Query for documents outside a specific health information exchange domain	<a href="#">IHE-XCA (Cross-Community Access)</a>	
	<a href="#">IHE-XCPD (Cross-Community Patient Discovery)</a>	
	<a href="#">NwHIN Specification: Patient Discovery</a>	
	<a href="#">NwHIN Specification: Query for Documents</a>	
Data element based query for clinical health information	<a href="#">NwHIN Specification: Retrieve Documents</a>	
	<a href="#">Fast Healthcare Interoperability Resources (FHIR)</a>	
Image exchange	<a href="#">Digital Imaging and Communications in Medicine (DICOM)</a>	
Resource location	<a href="#">IHE IT Infrastructure Technical Framework Supplement, Care Services Discovery (CSD), Trial Implementation</a>	
Provider directory	<a href="#">IHE IT Infrastructure Technical Framework Supplement, Healthcare Provider Directory (HPD), Trial Implementation</a>	
Publish and subscribe	<a href="#">NwHIN Specification: Health Information Event Messaging Production Specification</a>	

# 2015 Edition Health IT Certification Criteria

- **DEPARTMENT OF HEALTH AND HUMAN SERVICES**
- **Office of the Secretary**
- **45 CFR Part 170**
- **RIN 0991-AB93**
- **2015 Edition Health Information Technology (Health IT) Certification Criteria, 2015**
- **Edition Base Electronic Health Record (EHR) Definition, and ONC Health IT Certification**
- **Program Modifications**
- **AGENCY:** Office of the National Coordinator for Health Information Technology (ONC),  
Department of Health and Human Services (HHS).
- **ACTION:** Notice of proposed rulemaking with comment period.

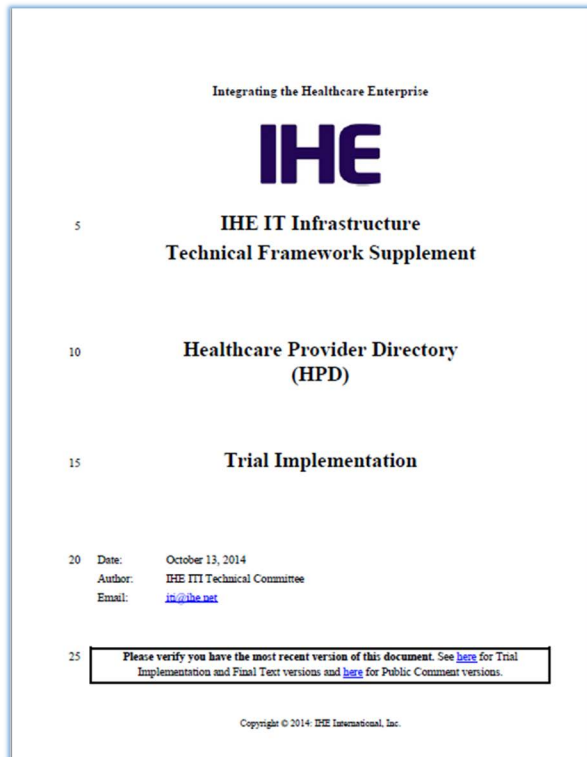
# 2015 Edition Health IT Certification Criteria,

continued

- Healthcare Provider Directory – Query Request
  - **2015 Edition Health IT Certification Criterion**
  - § 170.315(h)(4) (Healthcare Provider Directory – query request)
- Healthcare Provider Directory – Query Response
  - **2015 Edition Health IT Certification Criterion**
  - § 170.315(h)(5) (Healthcare Provider Directory – query response)
- In addition we propose including an optional capability within this certification criterion to address federated requirements. In this optional capability, we propose that the Health IT Module would be required to follow the approved federation option of for (sic) IHE HPD to accomplish querying in federated environments. The federation change proposal was approved in September, 2014 was incorporated into the IHE HPD Profile.

# Healthcare Provider Directory (HPD)

[http://www.ihe.net/uploadedFiles/Documents/ITI/IHE\\_ITI\\_Suppl\\_HPDPDF.pdf](http://www.ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_Suppl_HPDPDF.pdf)



## IHE Context

- IHE – Integrating the Healthcare Enterprise – [www.ihe.net](http://www.ihe.net)
- Engaging HIT Stakeholders in a Proven Process
- Domain Committees (13) – IT Infrastructure is one of these
- Integration Profiles (in Domains) – a Framework for Interoperability
  - HPD is one of these integration profiles
- Connectathons: Testing Interoperability and Conformance
- Product Registry and User Handbooks: Advice for Purchasers and Implementers

IHE Product Registry – 14 products have registered product integration statements for HPD

**IHE Product Registry**

IHE Product Registry Introduction Search Integration Statements TF

### Search Integration Statements

**Search criteria**

Like

Organization

System name

System type

System sub type

Domain

Integration profile: HPD - Healthcare Provider Directory

Actor

Publication Date: Any

Int Prof. option

Transaction

**14 Integration Statements for this search**

	Organization	<a href="#">Adaptive TechSoft</a>
	System/Product name	CareWare
	Version	3.5
	Publication Date	2/9/15
	Integration statement	<a href="#">View</a>
	Similarity	<a href="#">Find similar systems</a>

	Organization	
	System/Product name	
	Version	
	Publication Date	
	Integration statement	
	Similarity	

# Sample Integration Statement

Integrating the Healthcare Enterprise...



IHE Integration Statement			
Vendor	Product Name	Version	Date
CareEvolution, Inc.	HIEBus	2011-2012	31 Jan 2012
This product implements all transactions required in the IHE Technical Framework to support the IHE Integration Profiles, Actors and Options listed below:			
Profiles Implemented	Actors Implemented	Options Implemented	
Emergency Department Referral	Content Creator	None	
Healthcare Provider Directory	Provider Information Consumer	None	
Healthcare Provider Directory	Provider Information Directory	None	
Healthcare Provider Directory	Provider Information Directory	Provider Information Feed	
Healthcare Provider Directory	Provider Information Source	None	
Immunization Content	Content Consumer	View Option	

# Healthcare Provider Directory

[http://www.ihe.net/uploadedFiles/Documents/ITI/IHE\\_ITI\\_Suppl\\_HPD.pdf](http://www.ihe.net/uploadedFiles/Documents/ITI/IHE_ITI_Suppl_HPD.pdf)

- HPD Scope
  - Designed to maintain a structured list of attributes for both organizations (such as clinics) and people (such as physicians)
  - Allows extensibility
  - Largely semantically interoperable
  - Leverages ISO standard (21091)
  - Designed to enable cross organizational directory access
- HPD Underlying Standards Used
  - Health Informatics – Directory services for health care providers, subjects of care, and other entities (ISO/TS 21091)
  - IETF LDAPv3
  - DSMLv2
  - SOAP 1.2

# Provider Directory

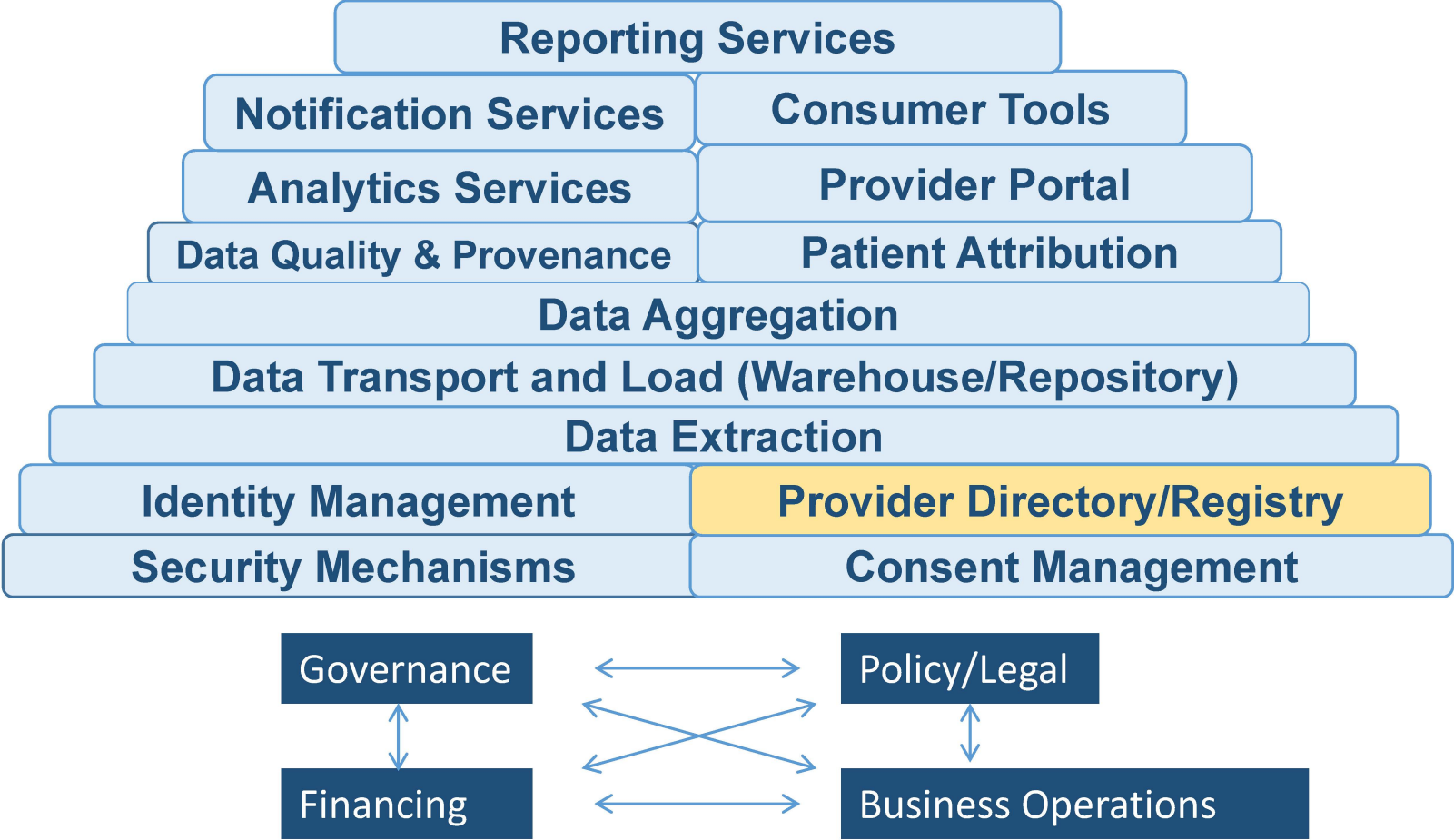
Architecture Considerations



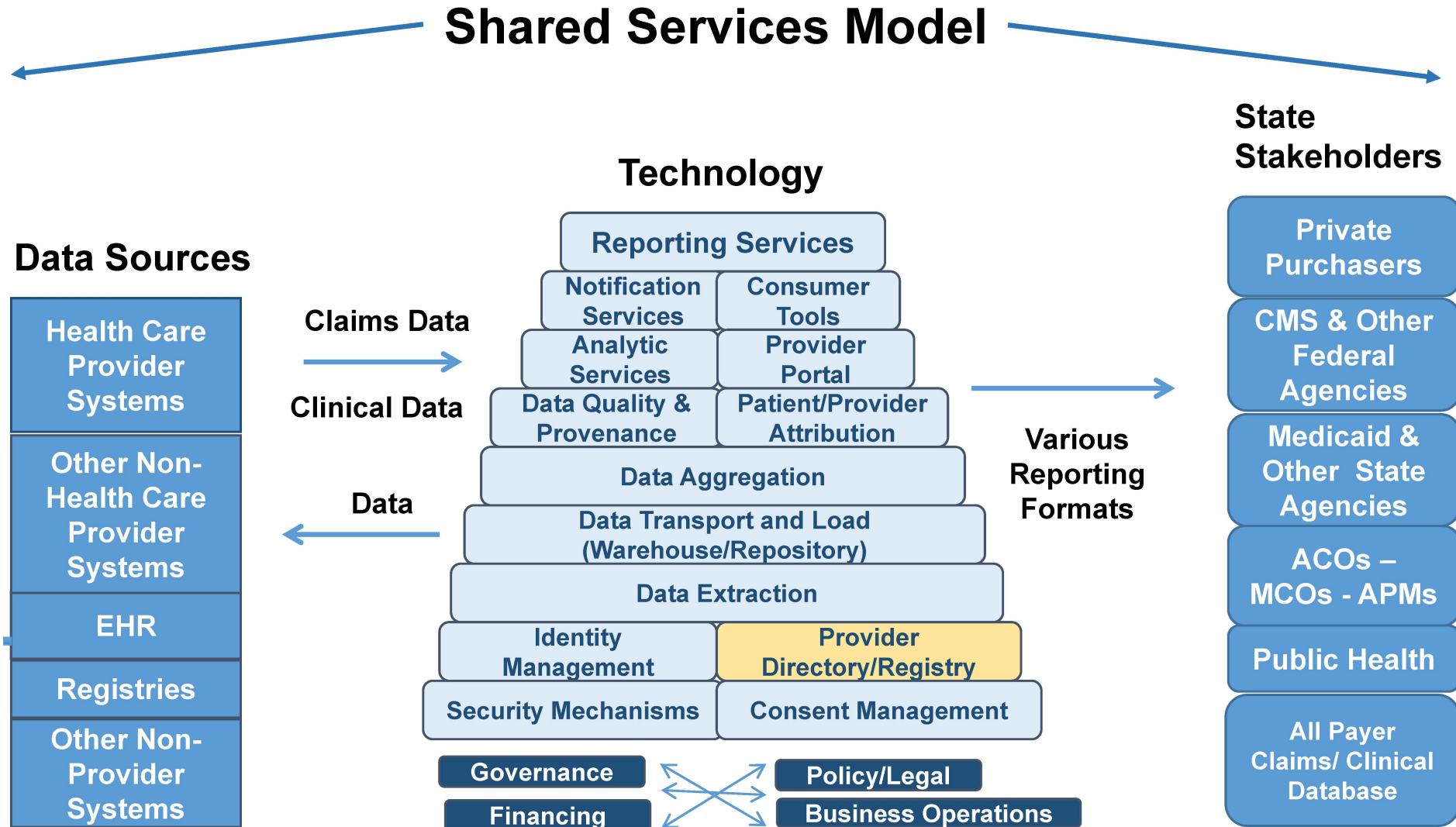
# Provider Directory Architecture Considerations

- There are many component architectures that contribute to an Enterprise Architecture
  - Business Architecture
  - Information Architecture
  - Data Architecture
  - Security Architecture
- Each of these is important but it's too much ground to cover in the context of a single affinity group discussion
- The material provided here focuses on the technical architectural models that can be applied to a Provider Directory solution

# Provider Directory is Part of the Health IT Stack for Value-based payment models and the Learning Health System



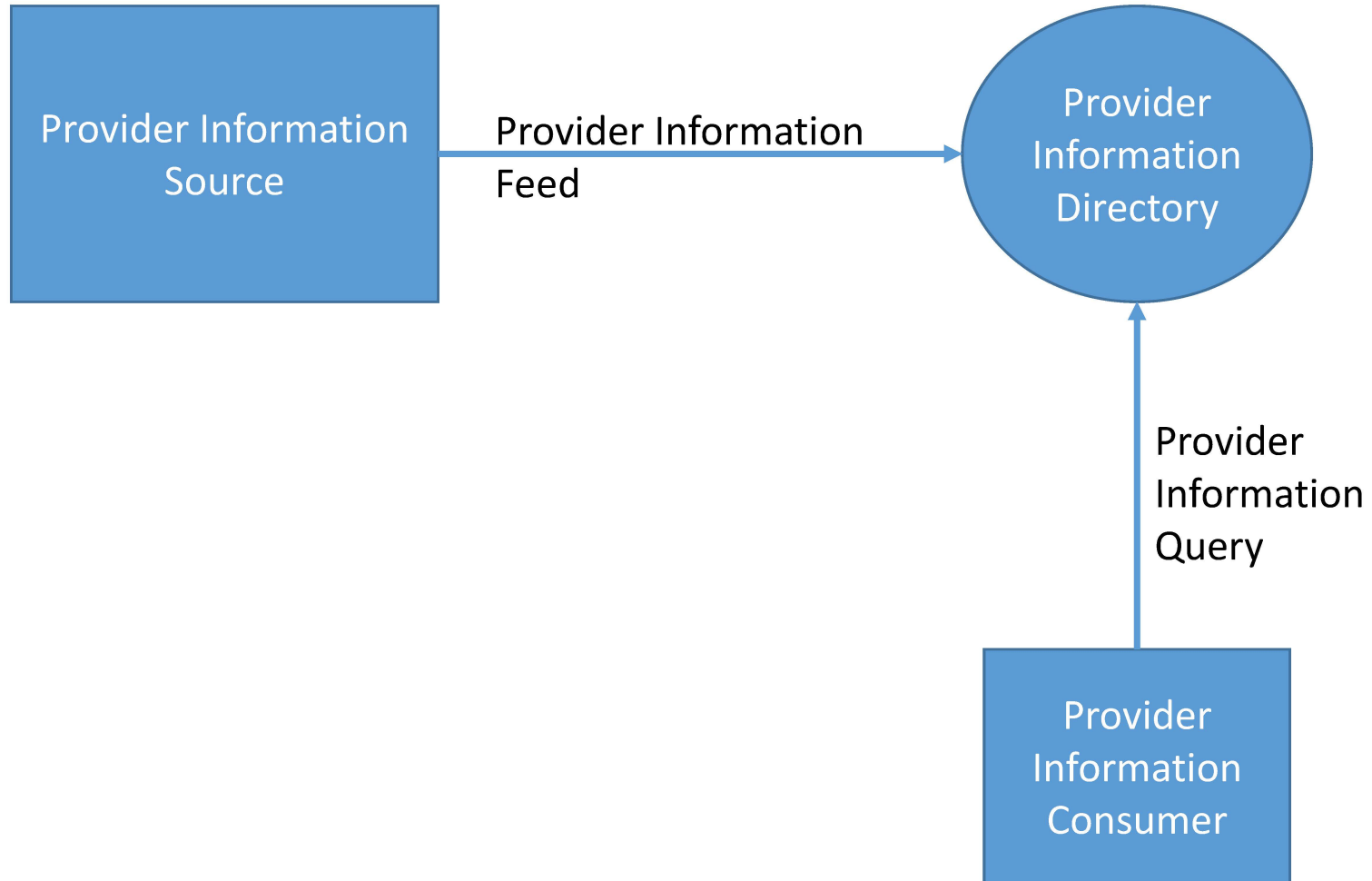
# Applying the Shared Services Stack



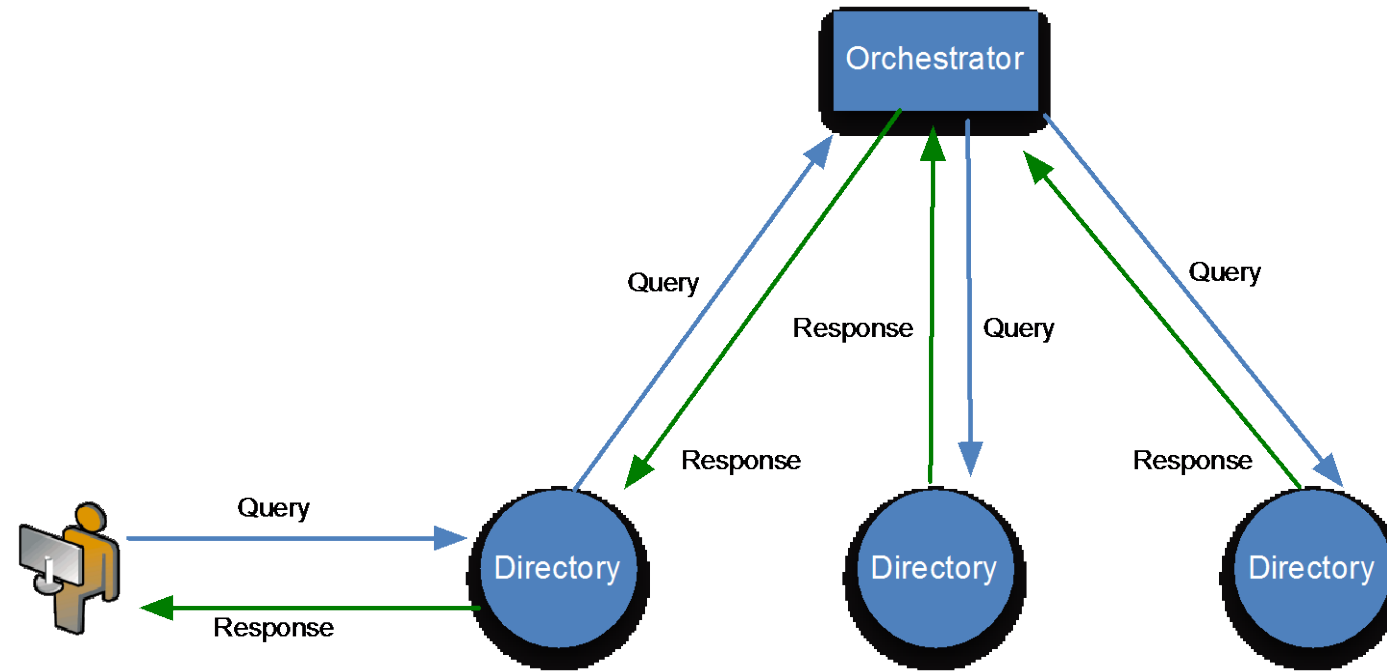
# Provider Directory Architecture Models

- Basic Provider Directory Model
  - Also represents a Centralized Model
- Simple Federated Directory Model
  - Single high-level node with subordinate directories
- Complex (Federated Directory networks) Federated Directory Model
  - Multiple high-level nodes each with subordinate directories

# Basic (centralized) Provider Directory Model

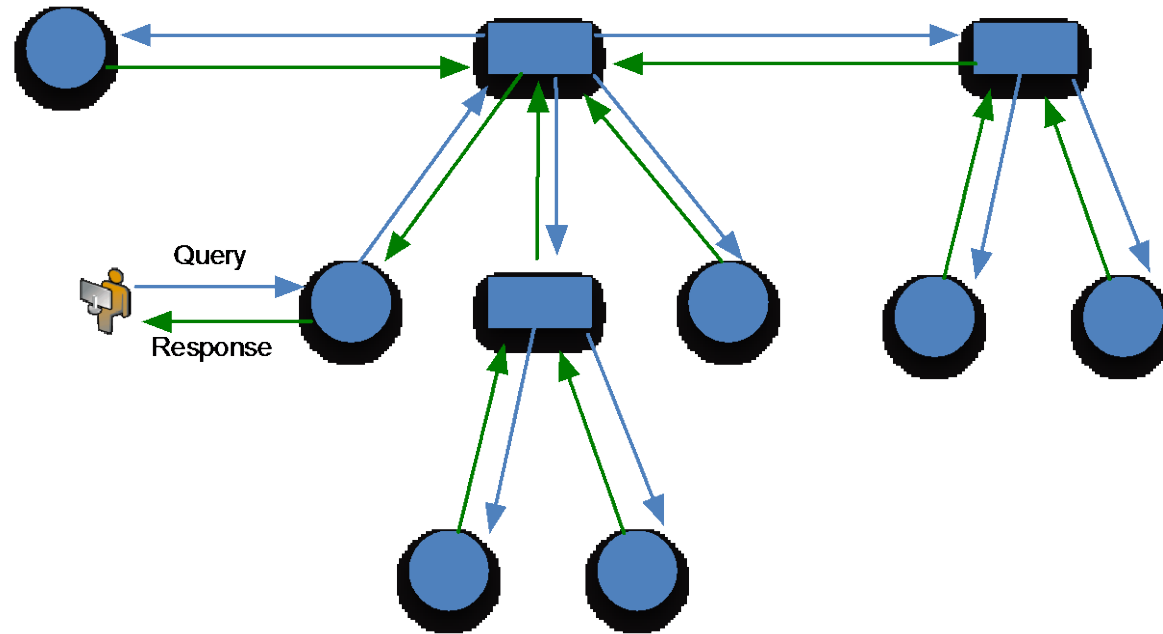


# Simple Federated Directory Model



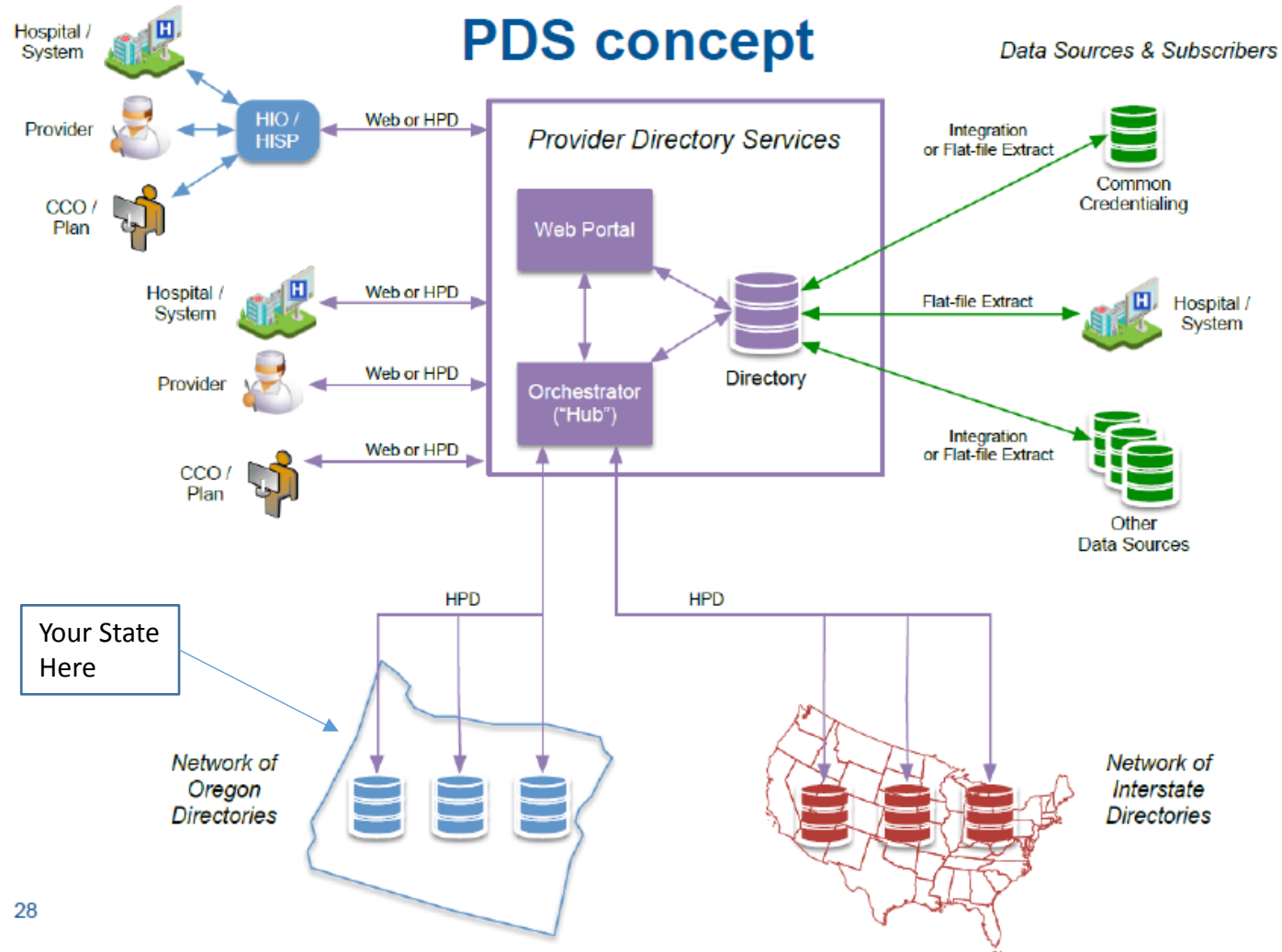
Directory networks forming today are often *federated*, arranged hierarchically with queries distributed to data holders.

# Federated Directory Networks



These networks can be both broad and deep, with numerous peers and multiple layers.

# Example: Oregon's High-Level Provider Directory Architecture

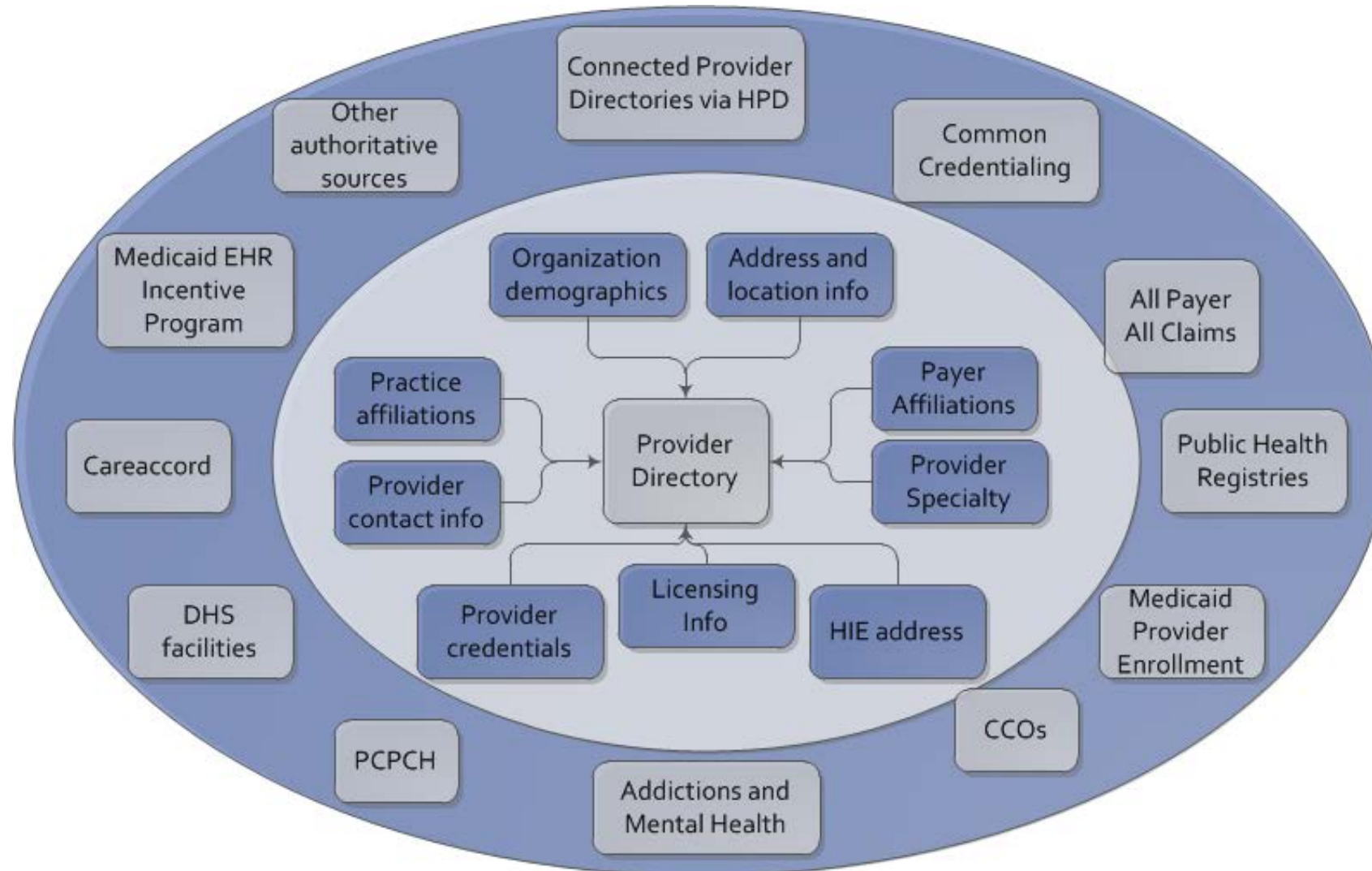




## Data Sources are a Significant Part of the PD Architecture Also

- Other Provider Directories connected via HPD
- Sources of credentialing information
- All Payer All Claims databases
- Public Health Registries
- Medicaid Provider Enrollment
- Medicaid EHR Incentive Program
- PCMH, ACO or other organized initiatives

# Oregon Example of Data Sources and the Data of Interest



## Useful Links (Right-click and choose “open hyperlink”)

- **ONC: Provider Directory Solutions:** <http://bit.ly/1PCXU0V>
- **S&I Framework final products:**
  - Use Case 1 Implementation Guide – Certificate Discover for Direct
    - PDF: <http://bit.ly/1PCYRWU> DOC: <http://bit.ly/1PWRA5c>
  - Use Case 2 Data Model:
    - PDF: <http://bit.ly/1UaVMUW> XLS: <http://bit.ly/1JBHzJy>
  - Use Case 2 Standards Mapping spreadsheet: Data Element Mapping:
    - PDF: <http://bit.ly/1PWS1wf> XLS: <http://bit.ly/1EpdSvm>
  - Use Case 2 Query and Response Examples:
    - PDF: <http://bit.ly/1hJyZyc> XLS: <http://bit.ly/1NEjFjq>
- **HL7 Provider Directory Standard:** <http://bit.ly/1LGqzEu>
- **2015 Interoperability Standards Advisory:** <http://www.healthit.gov/standards-advisory>
  - (HPD is the recommended standard for Provider Directory – see IHE links below)
- **2015 Edition Health IT Certification Criteria:** <http://1.usa.gov/1D33FwF>
- **IHE – Integrating the Healthcare Enterprise:** [www.IHE.net](http://www.IHE.net)
  - Healthcare Provider Directory (HPD): <http://bit.ly/1KSdMJf>
- **ONC Resource Center Learning Event – July 28, 2015**
  - Identity Management and Provider Directory: <https://engage.vevent.com/rt/cms~072815>
- **Oregon Bundled Procurement Request for Information:** <http://bit.ly/1NYf9Jx>