The Role of Standards-Based Profiles in Establishing and Supporting Interoperability

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The great thing about standards – *there are so many to choose from!*

Standards: Necessary…Not Sufficient

- Standards are
  - Foundational - interoperability and communications
  - Broad - varying interpretations and implementations
  - Focused - may not consider relationships to other standards or domains
  - Plentiful - often redundant or disjointed
  - Partial – no single standard addresses full user tasks

Needed: a process for profiling multiple standards for coordinated implementation

Integrating the Healthcare Enterprise: A Framework for Interoperability

- A common 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, nations
- Promotes unbiased selection and coordinated use of established healthcare and IT standards to address specific clinical needs

IHE: Connecting Standards to Care

- Coordinate implementation of standards to meet clinical and administrative needs
  - Clinicians and HIT professionals identify the key interoperability problems they face
  - Providers and industry work together to develop and make available standards-based solutions
  - Implementers are able to follow common guidelines in purchasing and integrating effective systems

IHE: A forum for agreeing on how to implement standards and processes for making it happen

Proven Standards Adoption Process

Develop technical specifications

Testing at Connectathons

IHE Demonstrations

Products with IHE

Identify available standards (e.g. HL7, DICOM, IETF, OASIS)

Document Use Case Requirements

Timely access to information

Simplified integration

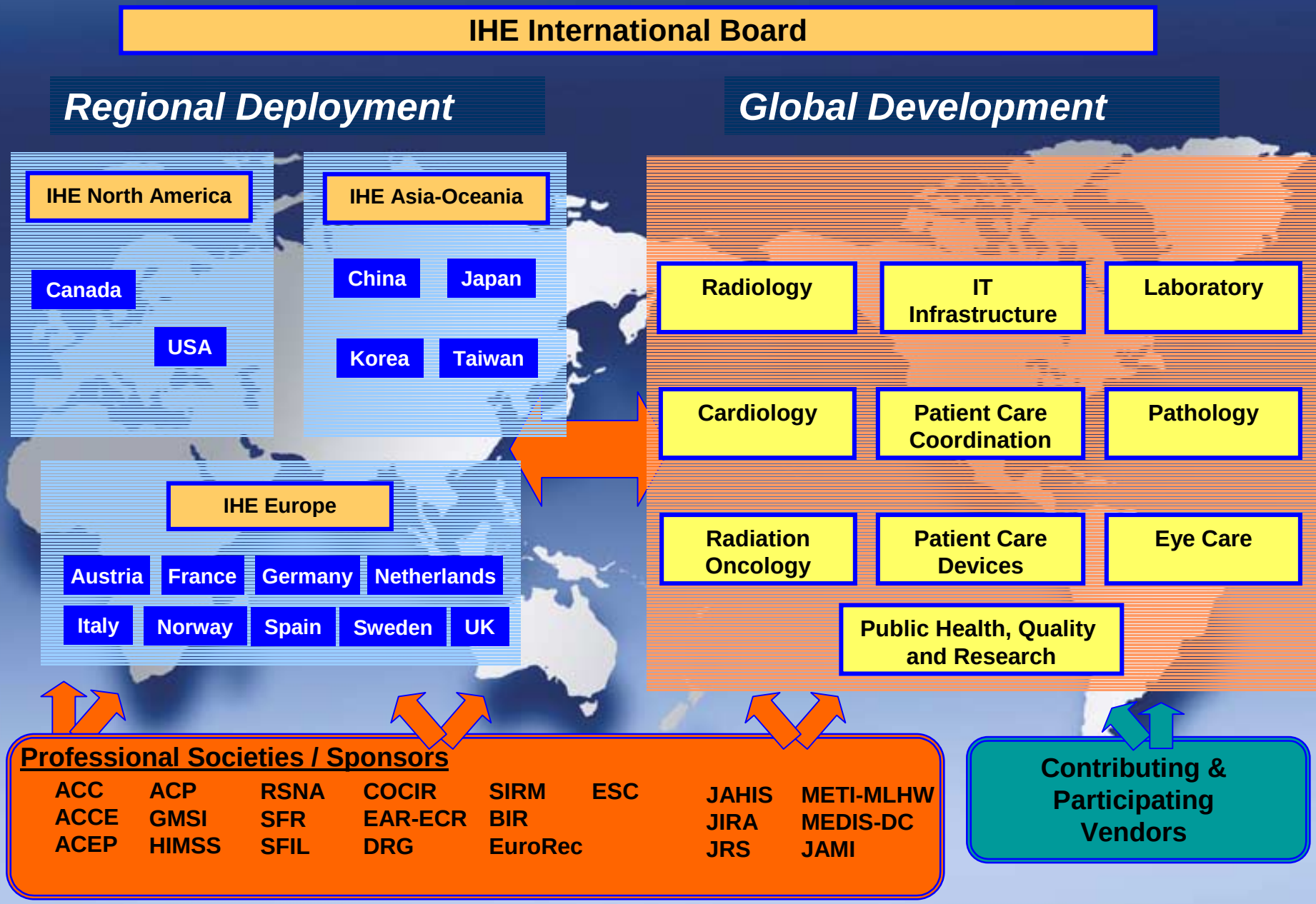
IHE International Sponsors and Members

- International and Domain Sponsors
  - Healthcare Information Management Systems Society (HIMSS)
  - Radiological Society of North America (RSNA)
  - American Academy of Ophthalmology (AAO)
  - American College of Physicians (ACP)
  - American College of Clinical Engineering (ACCE)
  - American College of Emergency Physicians (ACEP)
  - American Society for Therapeutic Radiation Oncology (ASTRO)
  - GMSIH (IT France), JAHIS (IT Japan), SFIL (laboratory)
- IHE International membership
  - New governance established in October 2007
  - Broad multi-stakeholder membership: www.ihe.net/governance

IHE Participants and Relationships

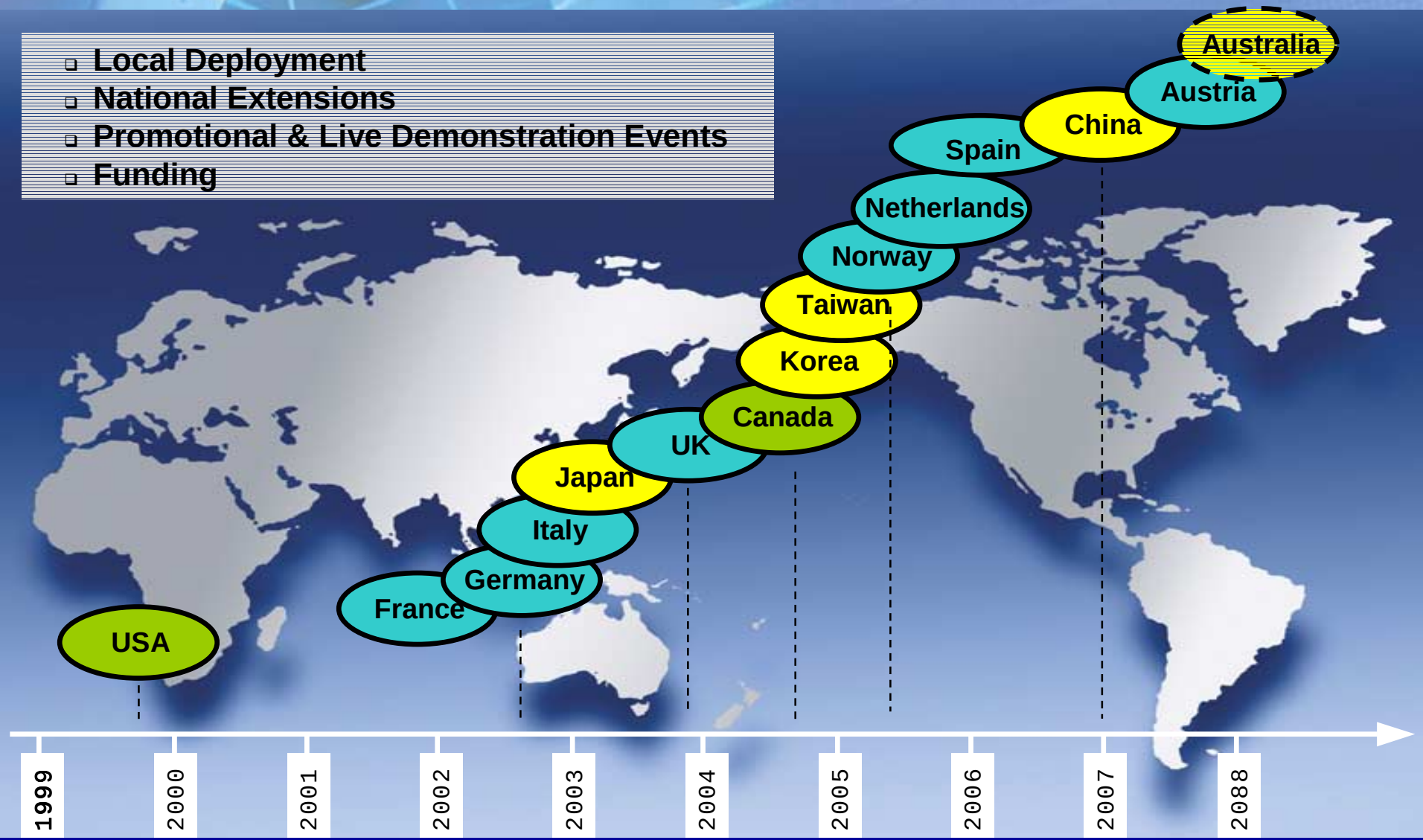
- Participants include:
  - **Users - Clinicians, Staff, Administrators, CIOs, Governments**
  - **Vendors of Information Systems and Equipment**
  - **Consultants**
- Relationship with Standards Development Organizations (SDOs):
  - **HL7, DICOM, ISO, CDISC, ASTM, W3C, IEEE, IETF, and many others**
  - **Approved via ISO/TC 215 allowing for IHE profiles to be published as ISO deliverables**
- National Adoption of Healthcare IT Standards
  - **US-HITSP, Canada-Infoway, many others worldwide**

IHE Organizational Structure



International Growth of IHE

- Local Deployment
- National Extensions
- Promotional & Live Demonstration Events
- Funding

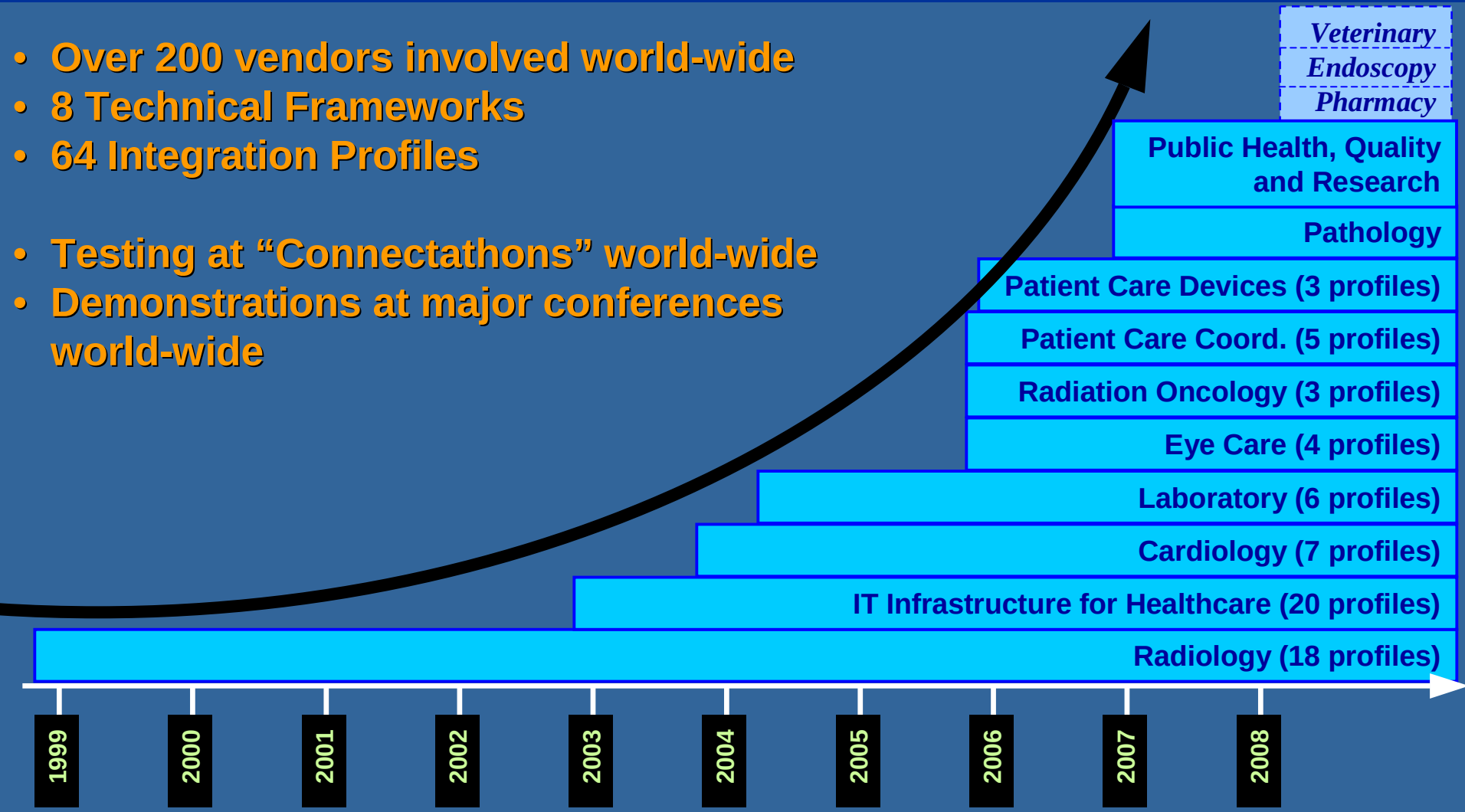


Pragmatic global standards harmonization + best practices sharing

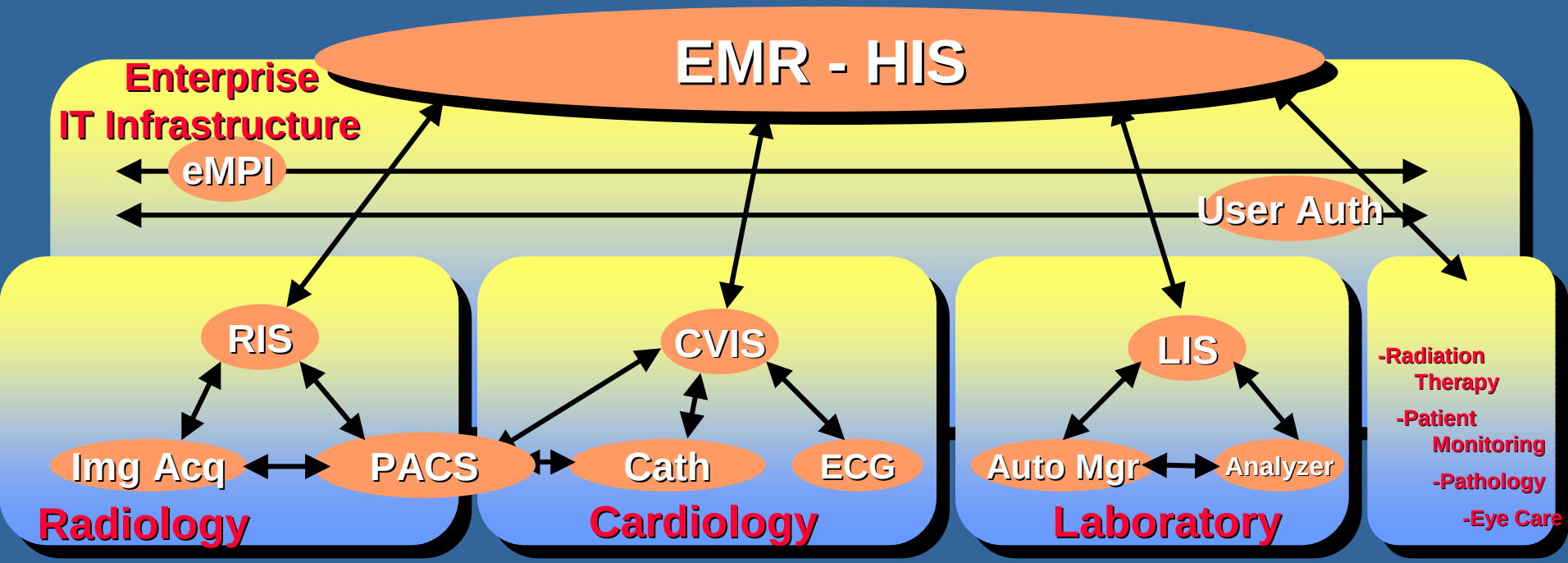
Growth in IHE Domains

- Over 200 vendors involved world-wide
- 8 Technical Frameworks
- 64 Integration Profiles

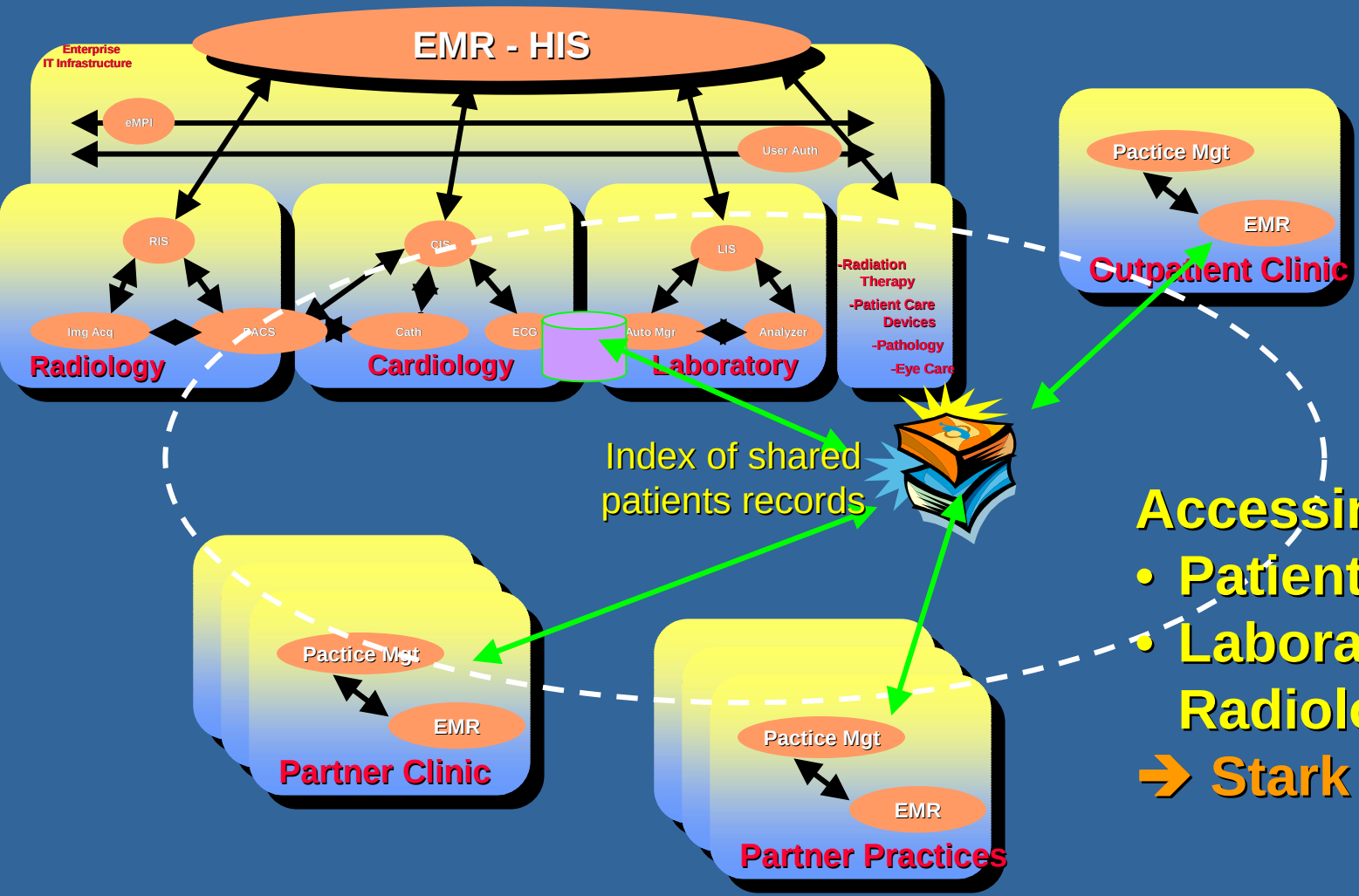
- Testing at "Connectathons" world-wide
- Demonstrations at major conferences world-wide



IHE Interoperability within the Enterprise



IHE Profiles for extending the Enterprise



Accessing:

- **Patient Charts**
- **Laboratory, Radiology results**

➔ Stark Relaxation

IHE Integration Profiles for Health Info Nets

What is available and has been added this cycle

Clinical and PHR Content

- **Emergency Referrals**
- **PHR Extracts/Updates**
- **ECG Report Document**
- **Lab Results Document**
- **Scanned Documents**
- **Imaging Information**
- **Medical Summary** (*Meds, Allergies, Pbs*)
  Format of the Document Content and associated coded vocabulary

Health Data Exchange

Cross-Enterprise Document Sharing
Registration, distribution and access across health enterprises of clinical documents forming a longitudinal record

Cross-Enterprise Document Pt-Pt Reliable Interchange

Cross-Enterprise Document Media Interchange

Cross-Community Access

Security & Privacy

Basic Patients Privacy Consents
Establish Consents & Enable Access Control

Cross-Enterprise User Attestation
User Attributes fro Access Control

Document Digital Signature
Attesting "true-copy and origin

Audit Trail & Node Authentication
Centralized privacy audit trail and node to node authentication to create a secured domain.

Consistent Time
Coordinate time across networked systems

Patient ID Mgmt

Patient Demographics Query

Patient Identifier Cross-referencing
Map patient identifiers across independent identification domains

Other

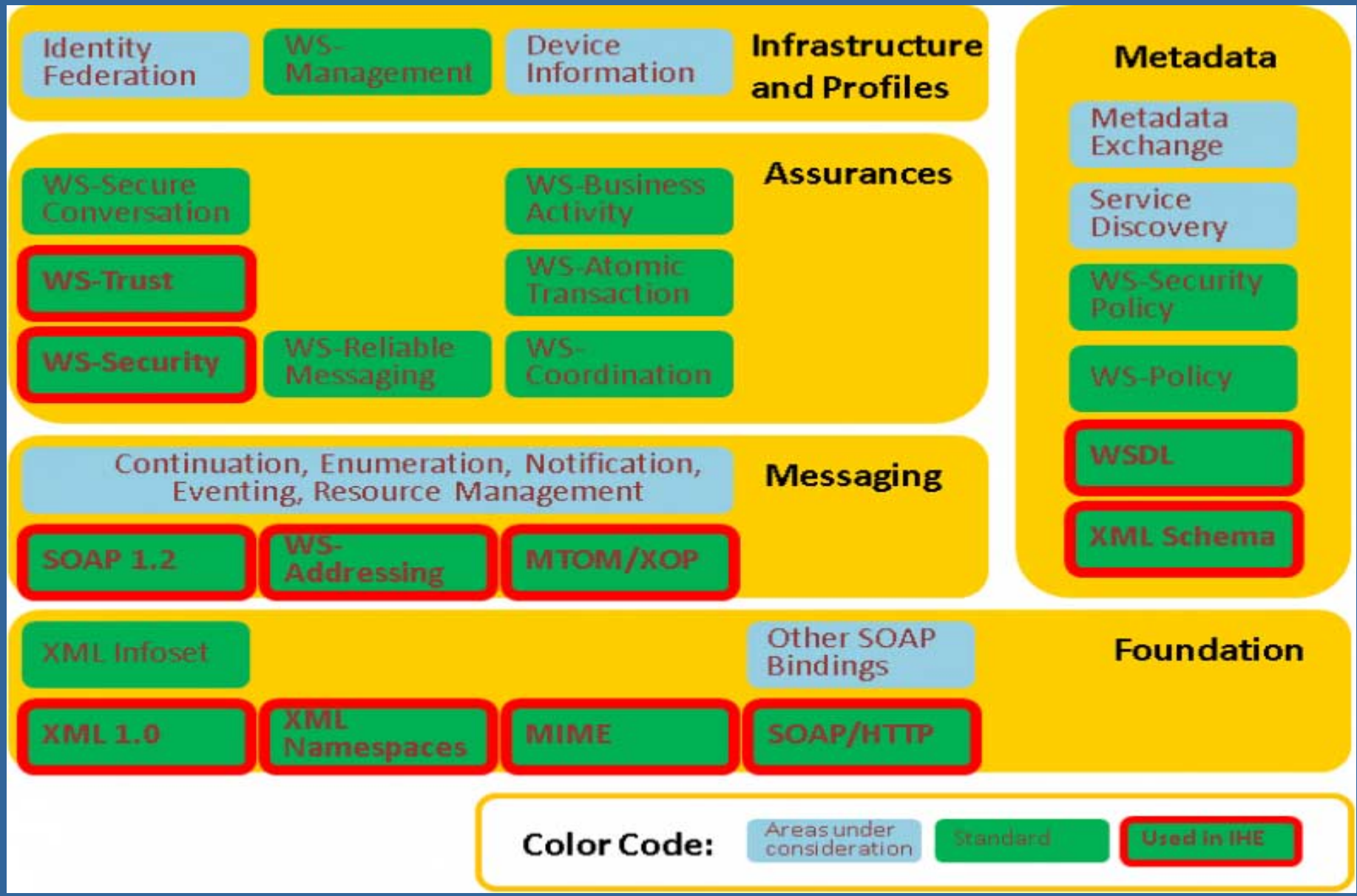
Request Form for Data Capture
External form with custom import/export scripting

Notification of Document Availability
Notification of a remote provider/ health enterprise

The Role of Web Services

- **Web Services provide a SOAP-based messaging infrastructure and transport mechanism**
  - One important piece of syntactic interoperability.
- **IHE Profiles combine syntactic (WS) and semantic (non-WS) interoperability specifications to deliver a service oriented healthcare interoperability.**
  - IHE uses a similar approach to WS-I in profiling web services specifications, with universally applicable guidelines presented as part of the IHE Technical Framework.
  - Individual IHE profiles further refine the IHE Web Services guidelines in the context of each use case.
  - As various use cases add new requirements to the use of web services, these universal IHE WS guidelines continue to evolve.

Web Services Standards and IHE



Use of Advanced Web Services

beyond SOAP, XML, MIME, Namespace, Schema, WSDL

IHE Profiles	WS-Addressing	MTOM /XOP	WS-Security	WS-Trust
Cross-enterprise Document Sharing-b (XDS.b)	X	X		
Cross-Enterprise Document Reliable Interchange (XDR)	X	X		
Request Form for Data Capture (RFD)				
Patient Identifier Cross-referencing HL7 V3 (PIXV3)	X			
Patient Demographics Query HL7 V3 (PDQV3)	X			
Query for Existing Data (QED)	X			
Cross Community Access (XCA)	X	X		
Cross-enterprise User Assertions (XUA)			X	X

Service Oriented Architecture and IHE

- **A Service Oriented Architecture (SOA) is an architectural style for creating and using business processes packaged as services.**
- **As a business practice, SOA improves organizational agility.**
- **Web services are often used as the underlying technology of SOA implementations.**
- **IHE's use of web services enables healthcare organizations to adopt SOA while using IHE profiles and transactions.**

New IHE profiles using WS in 2008

- *Sharing of Terminology Value Sets (SVS)* profile provides a means through which healthcare facilities can receive a common, shared terminology managed in a centralized fashion.

- Add new web services functionality to enhance existing profiles helps solve new use cases:
  - **Receipt of web service responses asynchronously for an *Asynchronous XDS-b***

- Addition of publish/subscribe capabilities to XDS in development as a white paper.

IHE and Web Services:

http://wiki.ihe.net/index.php?title=IHE_ITI_Web_Services_Glossy

Future Directions

- The IHE process relies on standards developing organizations (SDOs) to produce standards which are fully vetted, and have broad base of support among implementers.
- As OASIS and the W3C approve new web services specifications which provide efficient support for specific healthcare use cases, IHE will continue to widen and deepen the use of web services in integration profiles.
- IHE also collaborates with the Healthcare Services Specification Project (HSSP). Several of the IHE profiles can be used as implementations of services specifications developed by the HL7 and OMG processes.

IHE and US Healthcare IT Standards Harmonization

HITSP Interoperability Specifications and supporting IHE Profiles

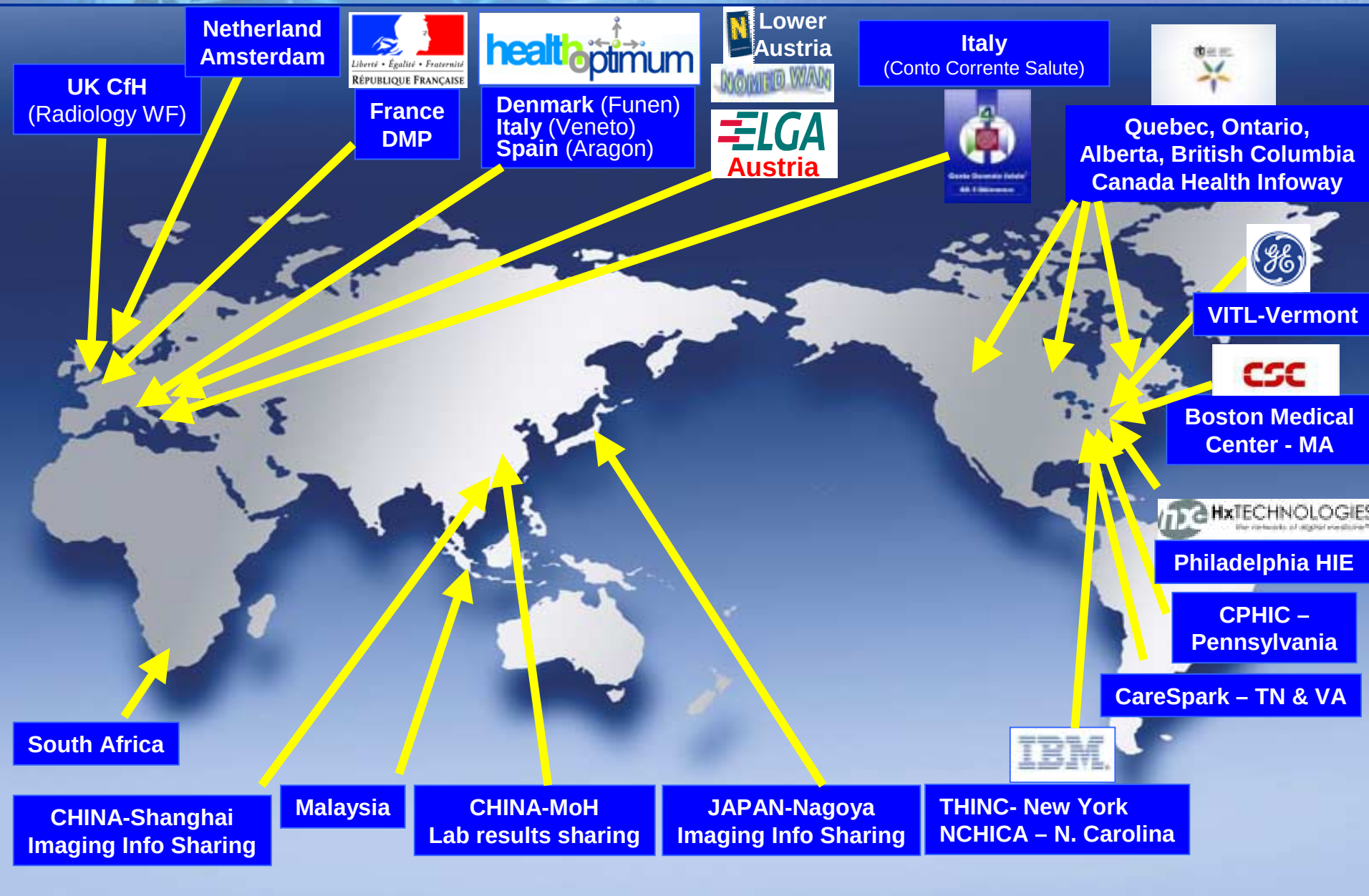
Electronic Health Record Laboratory Test Results **IS-01** NAV - PDQ - PIX XD*Lab - XDS	**Emergency Responder** **IS-04** ATNA - CT - EDES - PDQ - PIX - XCA XDS - XDS-MS - XUA - BPPC - XPHR
Biosurveillence **IS-02** NAV - PIX - PIX - RFD - XD*Lab XDS - XDS-MS - XDS-I	**Consumer Empowerment** and Access to Information via Media **IS-05** ATNA - CT - PDQ - PIX XD*Lab - XDM - BPPC
Consumer Empowerment Registration and Medication History **IS-03 v2.1** XDS - PIX - PDQ - XPHR	**Quality** **IS-06** ATNA - CT - DSG - QED - XDS-MS - XUA XDS - NAV - XDR - PIX - RFD - XCA - BPPC
Consumer Empowerment Access to Clinical Information **IS-03 v3** ATNA - BPPC - CT - DSG - PDQ - PIX XCA - XD*Lab - XDS - XUA - XPHR	**Medication Management** **IS-07*** *still in development ATNA - BPPC - CT - PDQ - PIX XCA - XDS - XUA - XPHR

Upcoming Use Cases Later in 2008-2009

Patient Provider Secure Messenger	Immunization and Response Management
Personalized Healthcare	Remote Monitoring
Public Health Case Reporting	Consultations and Transfers of Care

18 IHE Profiles adopted by HITSP Interoperability Specifications

National and Regional Projects Using IHE Profiles



2008 HIMSS Interoperability Showcase

Featured this year in the Showcase…

- 76 connected applications, 32 IHE profiles
- Secured Health Information Exchange with broad content
- Clinical Scenarios, focusing on clinician and patient access and information sharing across the continuum of care
- Population Health, Quality and Research
- Privacy and Security
- HITSP Interoperability Specifications
- Health information exchange with patient care devices
- Personal health record solutions
- Financial and administrative systems for billing and claims attachments (CAQH/CORE)
- Expanded distributed demonstration in an HIE format showing connectivity with vendor booths

The 2008 Cast:

Vendors Connected	51
Supporters	22
Total	**73**

Showcase Partners

- **HITSP**  
  - Interoperability to support HITSP Use Cases
- **CAQH** 
  - Interoperability between Provider & Health Plan
- **Clinical Research** 
  - Bridging Healthcare Data to Clinical Research
- **Cable Industry** 
  - Providing high-bandwidth support to the EHR

How to Participate in IHE

As a User or Vendor Committee Member

- Become an IHE member: Free at www.ihe.net/governance
- Become a member of a Domain's Planning or Technical Committees

As a User, Consultant or Vendor Interested Observer

- Become an IHE member: Free at www.ihe.net/governance
- Provide Public Comments on Technical Framework Supplements
- Attend Demonstrations, Educational Events and Workshops

How to Use IHE

As a Vendor Implementer

- Implement IHE Integration Profiles
- Test systems through Connectathon process
- Publish an IHE Integration Statement for products

As a User Implementer or Consultant

- Use IHE Integration Profiles to develop interoperability strategy
- Use Connectathon Results and Integration Statements to evaluate vendors
- Demand IHE Integration Profile compliance in RFPs

Providers and Vendors

Working Together to Deliver

Interoperable Health Information Systems

in the Enterprise

and Across Care Settings

http://www.ihe.net


IHE
changing the way healthcare
www.ihe.net
connects
WWW.IHE.NET