

# Interpreting IHE Technical Frameworks

IHE 2010-2011 Test Cycle

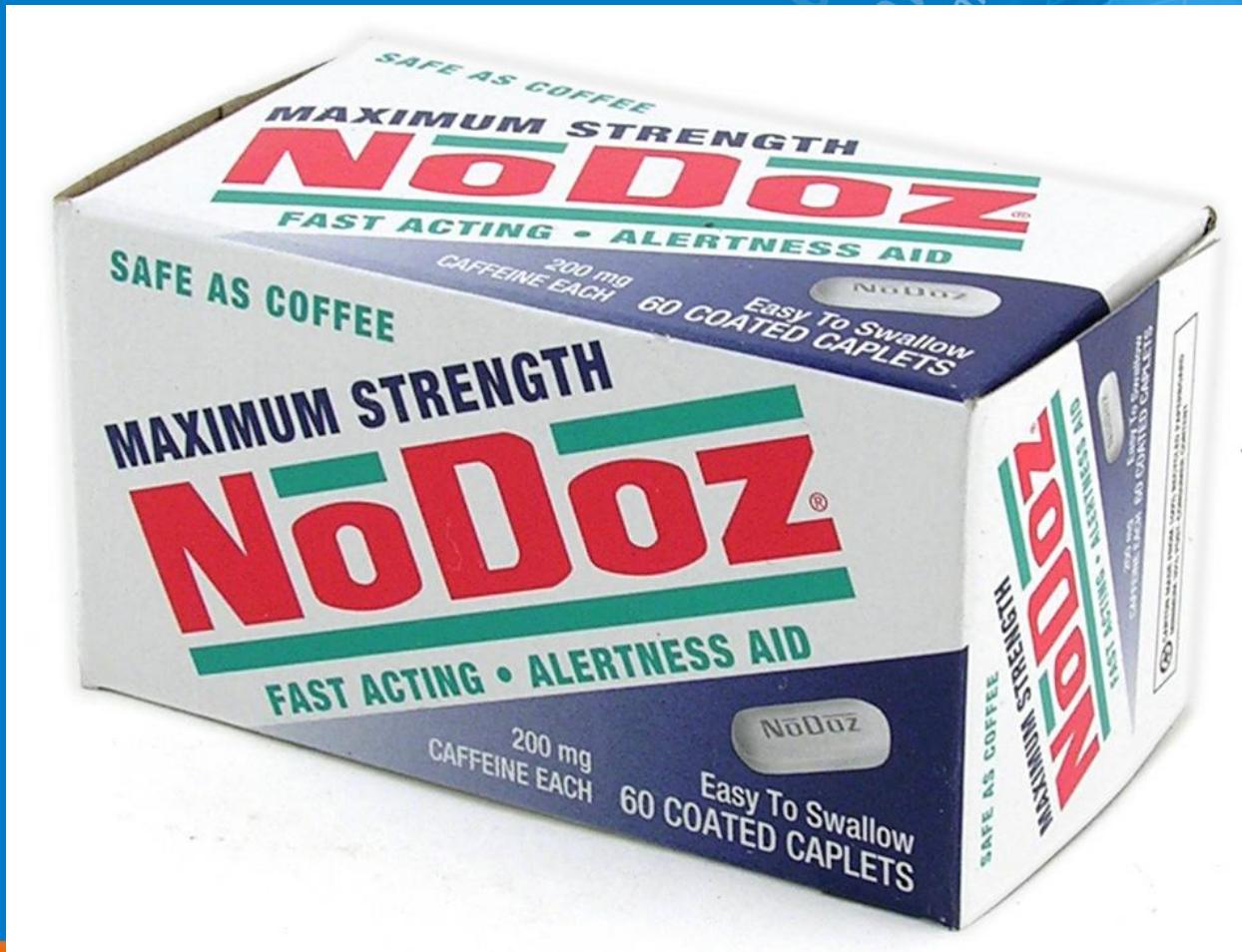
Steve Moore

Mallinckrodt Institute of Radiology

# Audience

- **First time participants**
  - Engineers who need to implement IHE Integration Profiles
  - Users who want to purchase products that use IHE Integration Profiles
- **If you have been to a Connectathon ...**
  - Spend this time doing something else

# Audience Requirements



# Today's Agenda



- IHE Terminology
  - Structure of IHE Technical Frameworks
  - Stages of IHE documentation
  - Interpreting an IHE Integration Statement
  - Navigation
    - Finding IHE Technical Frameworks
    - IHE Product Registry
- 

# Not Covered Today

- **Specific items in an Technical Framework**
  - Why does actor A do this?
  - Why did you choose standard X?
- **Connectathon test process**
- **Demonstration requirements**
- **Test software**
- **Drawing a foul with an effective dive**


# Terminology: *Domain*



- **Domain**
    - A sponsor + organizations interested in solving interoperability issues in a specific area of healthcare
  - **Definition by example:**
    - Radiology
    - Cardiology
    - IT Infrastructure
- 

# Domain Organization



- **Sponsor**
    - Typically a professional society
  - **Committees**
    - Planning
    - Technical
  - **Integration Profiles**
    - This is the main output for a domain
    - Authored/owned by a domain
- 

# *Integration Profile*



- Describe the solution to a specific integration problem, and documents the system roles (Actors), standards and design details for implementers to develop systems that cooperate to address that problem.
  - **PIX: Narrowly scoped to describe how to link patient identifiers from different sources**
  - **PDQ: Find me the list of all patients with demographics “like this”**

# Actor




- IHE Actors are responsible for producing, managing and/or acting on information in the context of an IHE Profile.
  - An Actor is defined in terms of its primary responsibility.
  - Each IHE Profile assigns specific requirements to specific actors.
  - One Actor might participate in multiple Profiles
  - A product might implement multiple Actors

# Name the IHE Actor



# Name the IHE Actor



- Alarm Reporter ?
  - Alarm Communicator ?
  - Display ?
  - Evidence Creator ?
  
  - Some actor names are industry standard
  - Others are neutral to remove bias
- 

# *Transaction*



- Transactions are interactions between actors that communicate the required information through standards-based messages.

# Profile Requirements



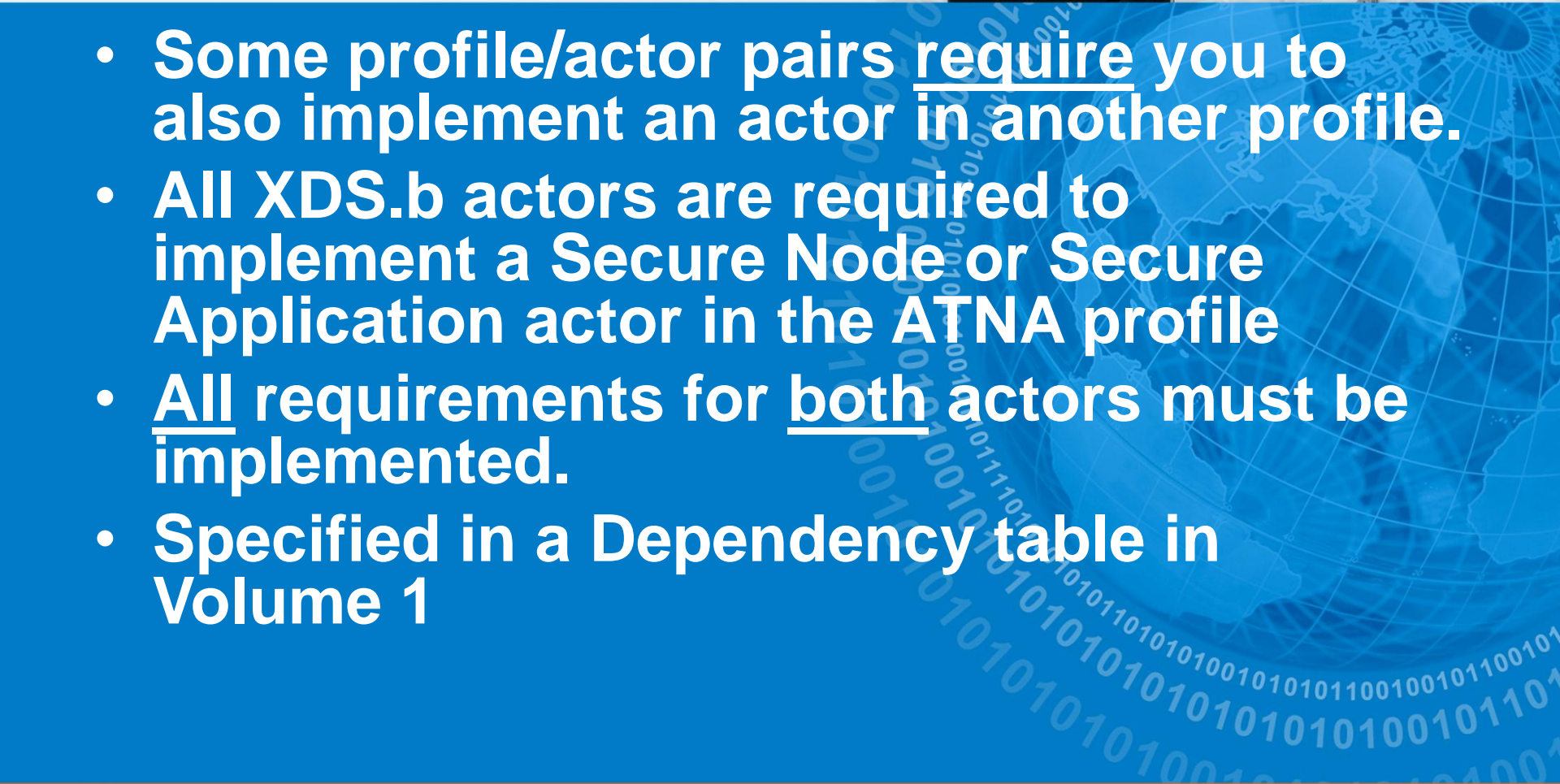
- An **Actor** without a **Profile** has no requirements
  - A Document Registry is referenced in **Transactions**
  - An Integration Profile specifies requirements
    - Transactions to be supported
    - Other documented behavior
  - Requirements need **context** of a profile
- 

# *Named Option*

- Functionality an actor within a profile may choose to implement
  - Enhanced functionality
  - Implementation choice
- Support for CD media is required for the **Media Creator** actor in the Portable Data for Imaging profile
  - There are Options for support of **USB** or **DVD**

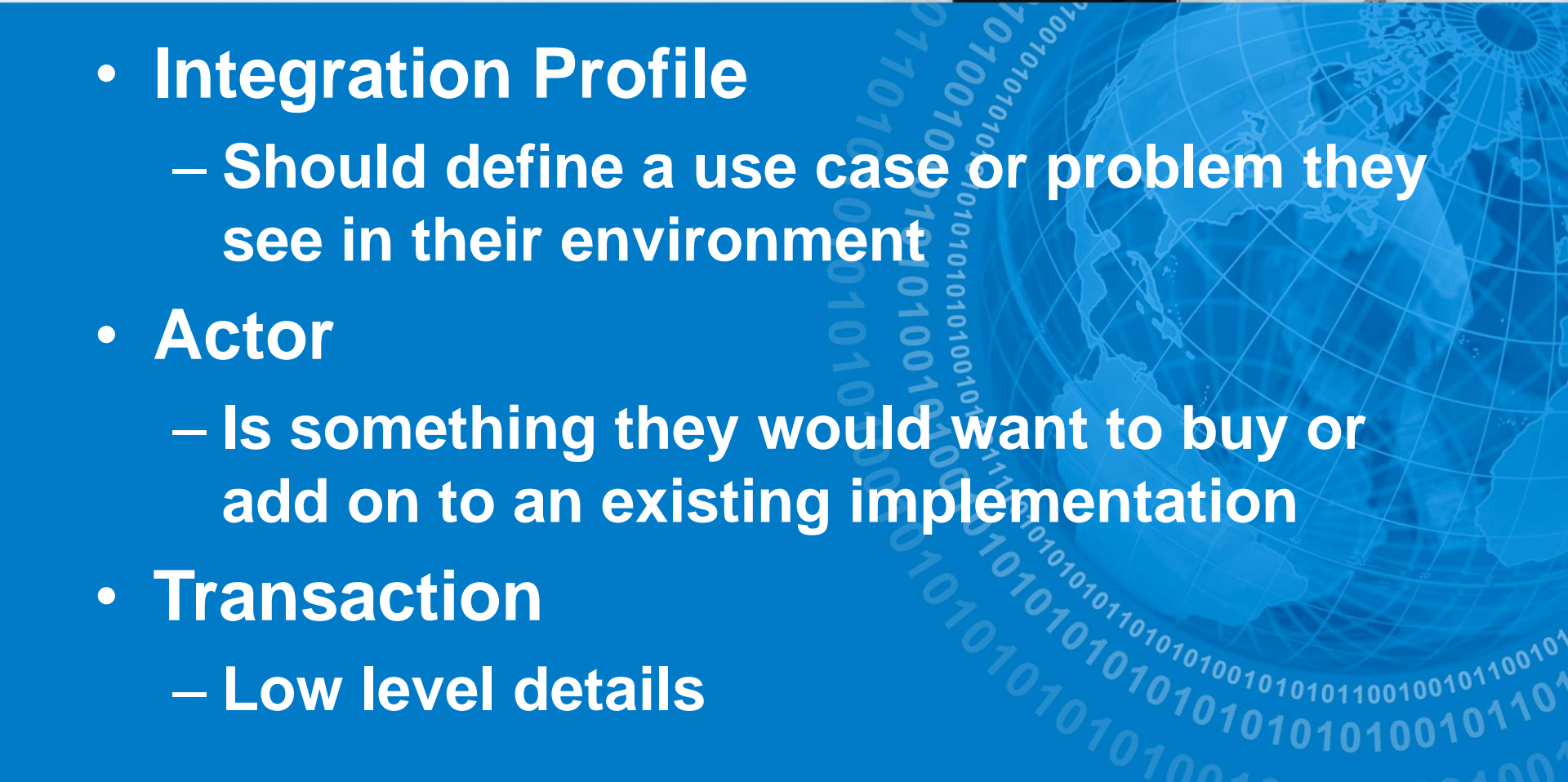
# Profile Dependencies



- Some profile/actor pairs require you to also implement an actor in another profile.
  - All XDS.b actors are required to implement a Secure Node or Secure Application actor in the ATNA profile
  - All requirements for both actors must be implemented.
  - Specified in a Dependency table in Volume 1
- 

# Relationship to Purchasers



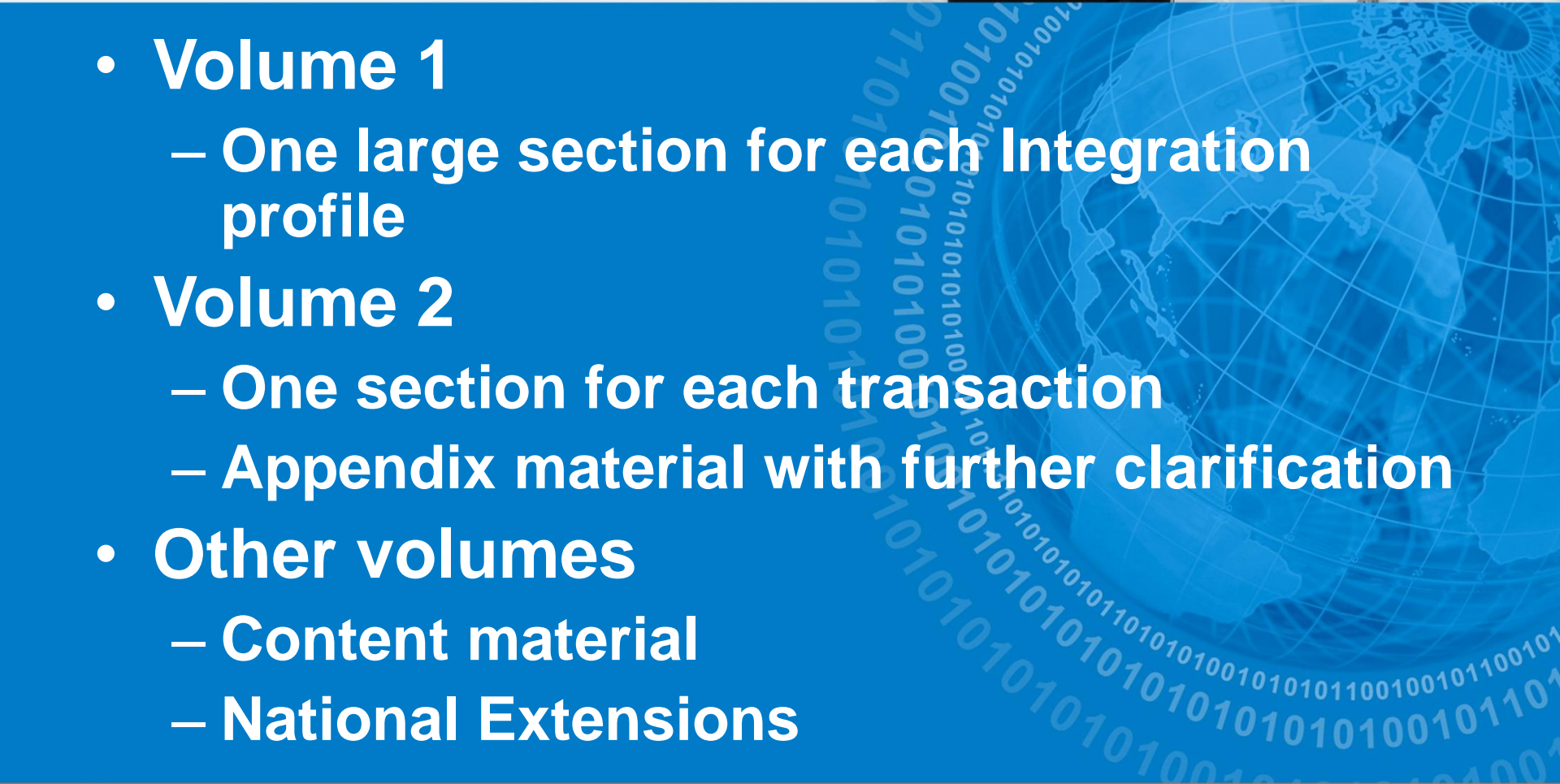
- **Integration Profile**
    - Should define a use case or problem they see in their environment
  - **Actor**
    - Is something they would want to buy or add on to an existing implementation
  - **Transaction**
    - Low level details
- 

# Dramatic Pause

- IHE Terminology
- **Structure of IHE Technical Frameworks**
- Stages of IHE documentation
- Interpreting an IHE Integration Statement
- Navigation
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  - IHE Product Registry

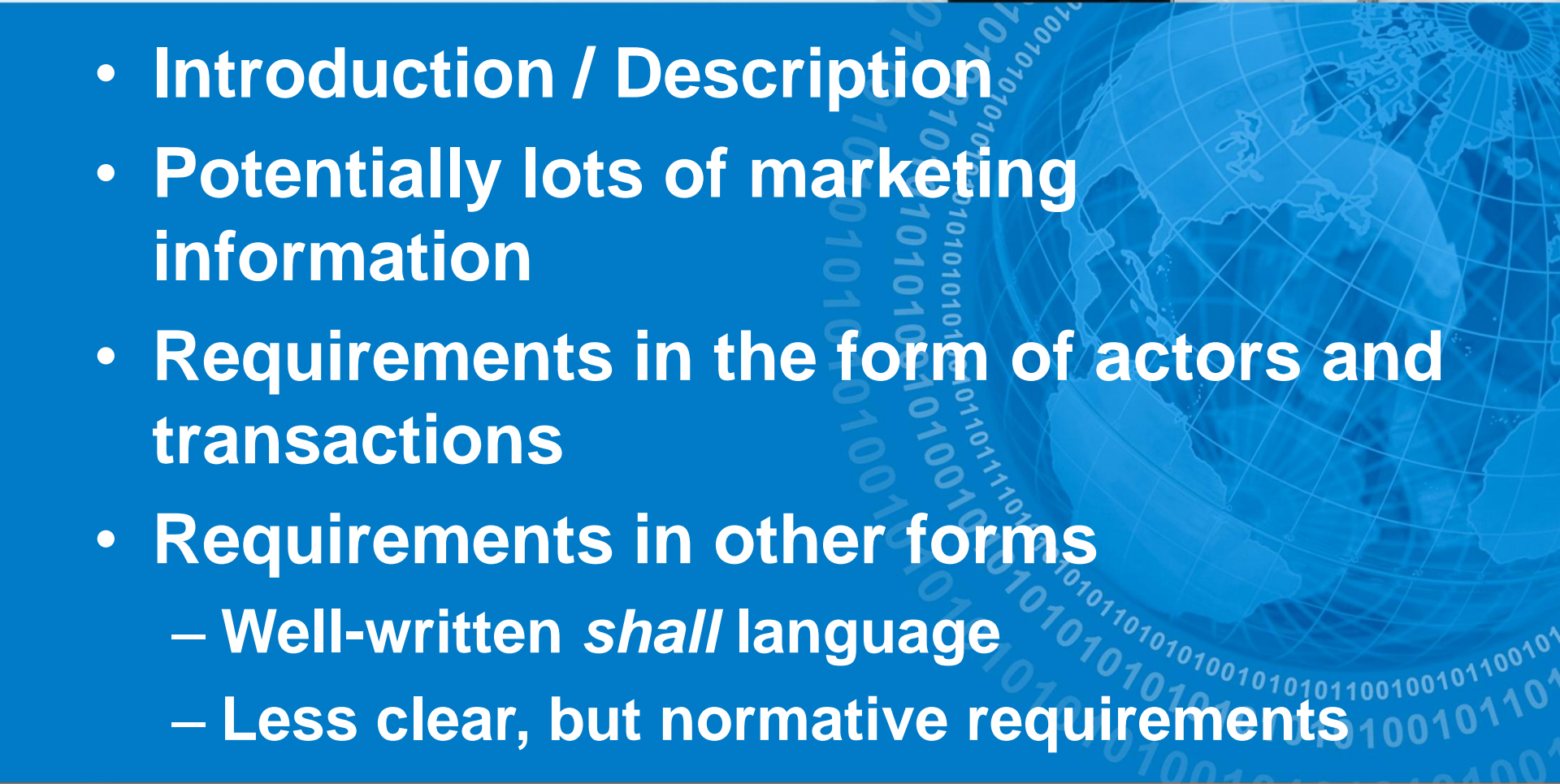
# Technical Framework Layout



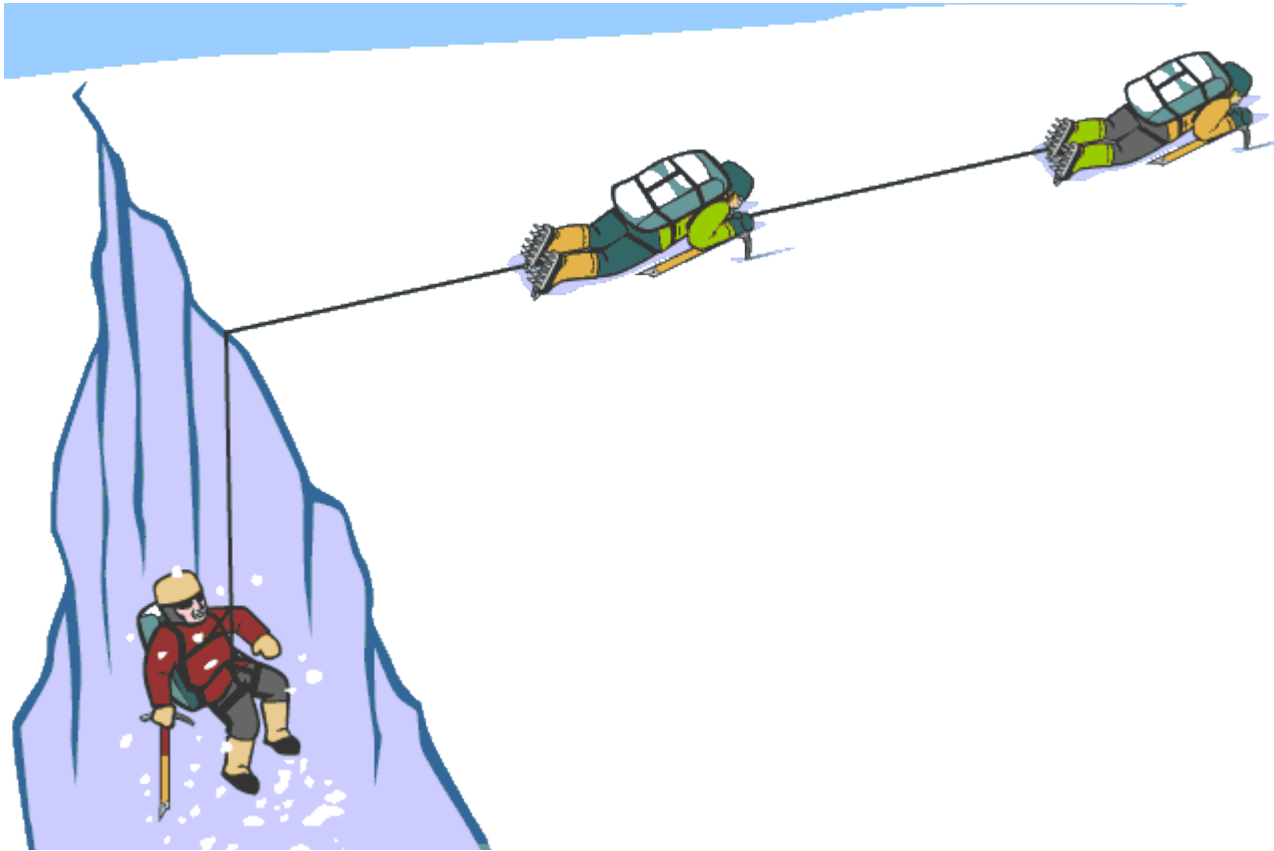
- **Volume 1**
    - One large section for each Integration profile
  - **Volume 2**
    - One section for each transaction
    - Appendix material with further clarification
  - **Other volumes**
    - Content material
    - National Extensions
- 

# Vol 1 Integration Profile Structure



- Introduction / Description
  - Potentially lots of marketing information
  - Requirements in the form of actors and transactions
  - Requirements in other forms
    - Well-written *shall* language
    - Less clear, but normative requirements
- 

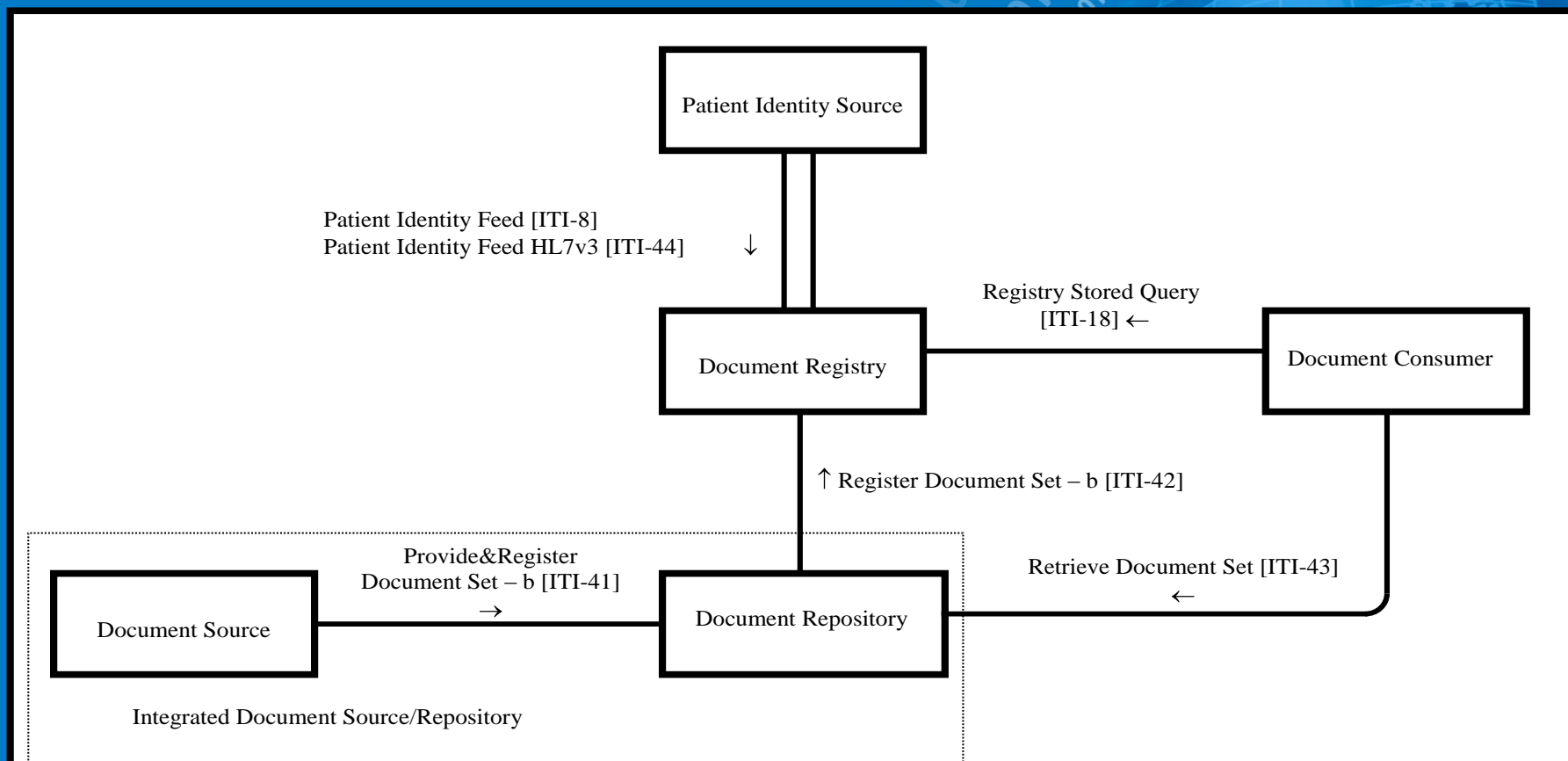
# Take Care When Reading Vol 1



# ITI TF: Volume 1 -> XDS.b

	9.7	Relationship between Secure Node, Secure
70	10	Cross-Enterprise Document Sharing (XDS) ..
	10.1	Actors/Transactions .....
	10.2	Integration Profile Options .....
	10.3	Integration Profile Process Flow .....
	10.4	General Principles .....
75	10.5	Implementation Strategies .....

# XDS.b: Diagram of Actors



**Figure 10.1-1b Cross-Enterprise Document Sharing – b (XDS.b) Diagram**

# XDS.b: Required Transactions

Actors	Transactions	Optionality	Section in Vol. 2
Document Consumer	Registry Stored Query	R	ITI TF-2:3.18
	Retrieve Document Set	R	ITI TF-2:3.43
Document Source	Provide and Register Document Set-b	R	ITI TF-2:3.41
Document Repository	Provide and Register Document Set-b	R	ITI TF-2:3.41
	Register Document Set-b	R	ITI TF-2:3.42
	Retrieve Document Set	R	ITI TF-2:3.43
Document Registry	Register Document Set-b	R	ITI TF-2:3.42
	Registry Stored Query	R	ITI TF-2:3.18
	Patient Identity Feed	O (Note 2)	ITI TF-2:3.8
	Patient Identity Feed HL7v3	O (Note 2)	ITI TF-2:3.44
Integrated Document Source/Repository	Register Document Set-b	R	ITI TF-2:3.42
	Retrieve Document Set	R	ITI TF-2:3.43
Patient Identity Source	Patient Identity Feed	O (Note 1,2)	ITI TF-2:3.8
	Patient Identity Feed HL7v3	O (Note 1,2)	ITI TF-2:3.44

**Table 10.1-1b XDS.b - Actors and Transactions**

# XDS.b: Named Options

Actor	Options	Vol & Section
Document Source	Document Replace	ITI TF-1:10.2.1
	Document Addendum	ITI TF-1:10.2.2
	Document Transformation	ITI TF-1:10.2.3
	Folder Management	ITI TF-1:10.2.3
	Basic Patient Privacy Enforcement	ITI TF-2: 3.15.4.1.3.1
Document Repository	No options defined	
<i>etc...</i>	...	
	...	

**Table 10.2-1b XDS.b - Actors and Options**

# XDS.b: Process Flow

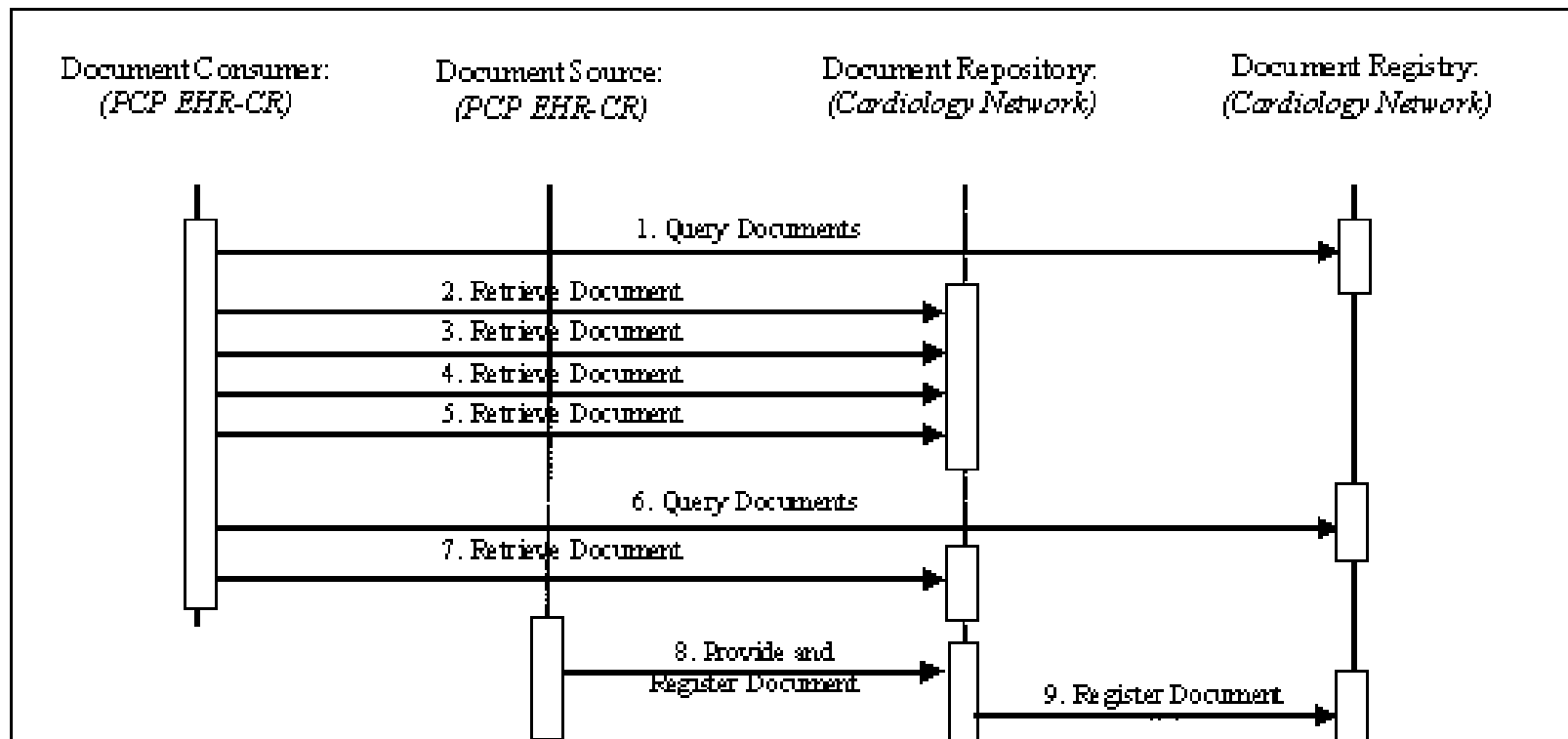


Figure 10.3-3 PCP Query Transactions Process Flow

# Dependencies

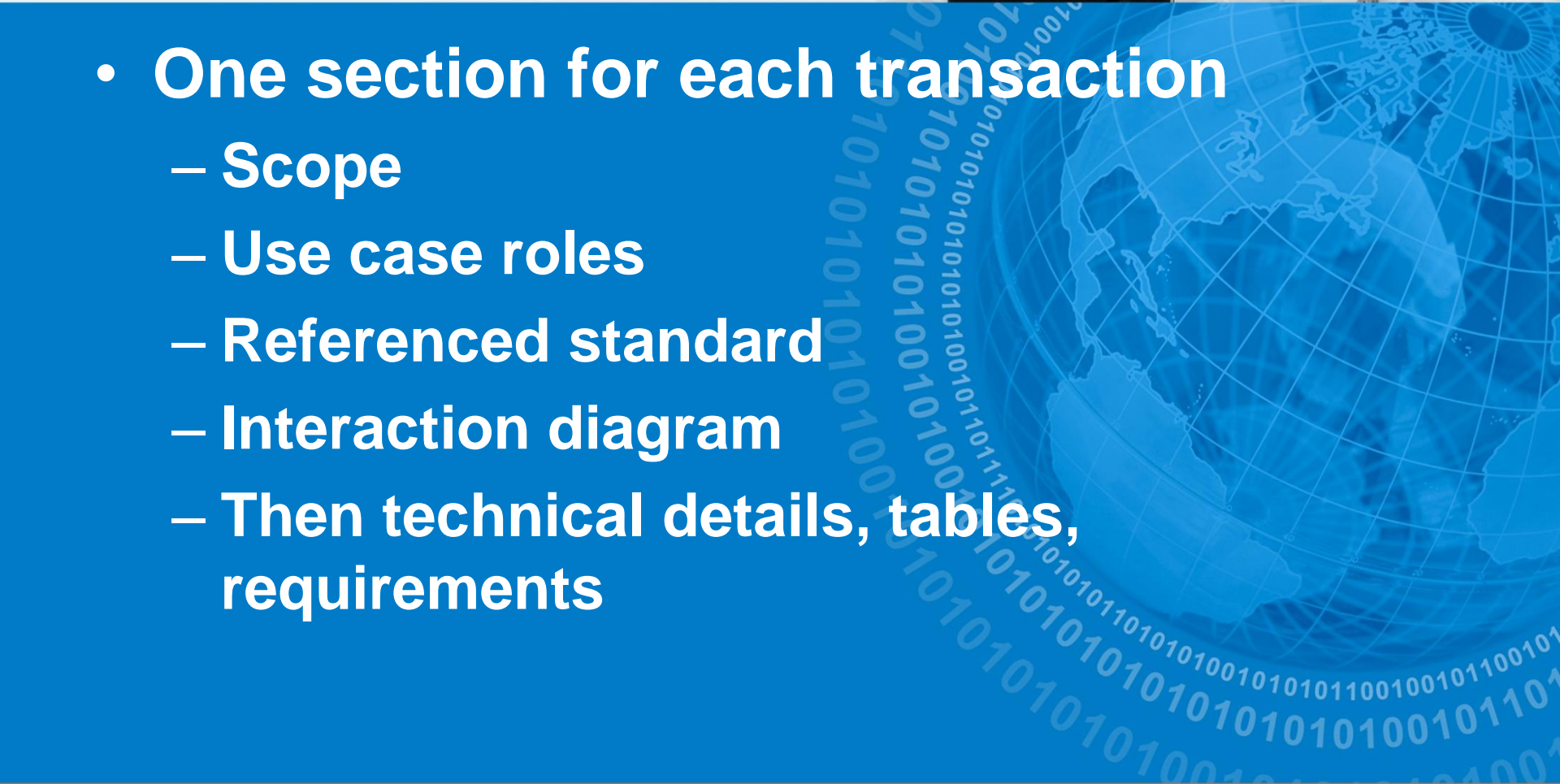


Integration Profile	Depends on	Dependency Type	Purpose
...			
Cross-Enterprise Document Sharing	Audit Trail and Node Authentication	Each XDS Actor must be grouped with the Secure Node Actor.	- Required to manage audit trail of exported PHI, node authentication and transport encryption.
Cross-Enterprise Document Sharing	Consistent Time	Each XDS actor must be grouped with the Time Client Actor	To ensure consistency among document and submission set dates.

**Table 2-1 Integration Profiles Dependencies**

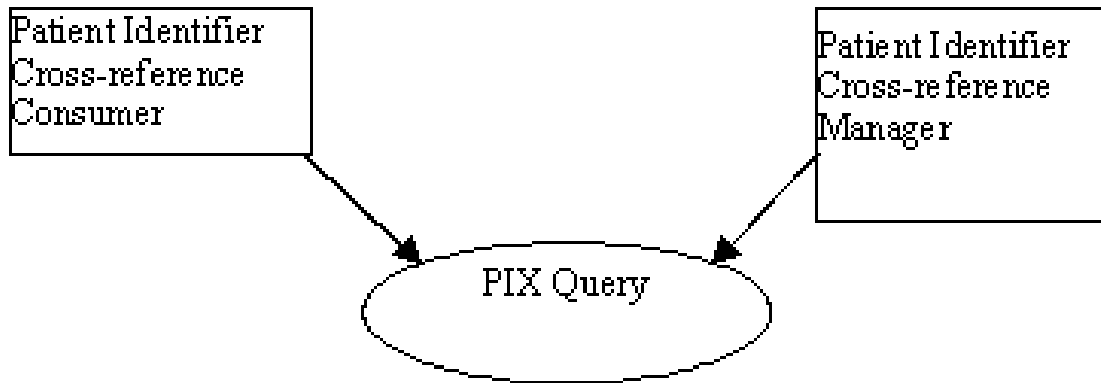
# Vol 2 Transaction Structure



- **One section for each transaction**
    - **Scope**
    - **Use case roles**
    - **Referenced standard**
    - **Interaction diagram**
    - **Then technical details, tables, requirements**
- 

# PIX Query: Use Case Roles

## 3.9.2 Use Case Roles



**Actor:** Patient Identifier Cross-reference Consumer

**Role:** Queries the Patient Identifier Cross-reference Manager for a list of identifiers, if any

**Actor:** Patient Identifier Cross-reference Manager

**Role:** Manages the cross-referencing of patient identifier across Patient Identifier Cross-reference Manager. Upon request it returns a list of corresponding patient identifiers, if any.

# PIX: Referenced Standard



## 3.9.3 Referenced Standard

HL7 2.5, Chapter 2 – Control, Chapter 3 – Patient Administration, Chapter 5 – Query

# PIX: Interaction Diagram

## 3.9.4 Interaction Diagram

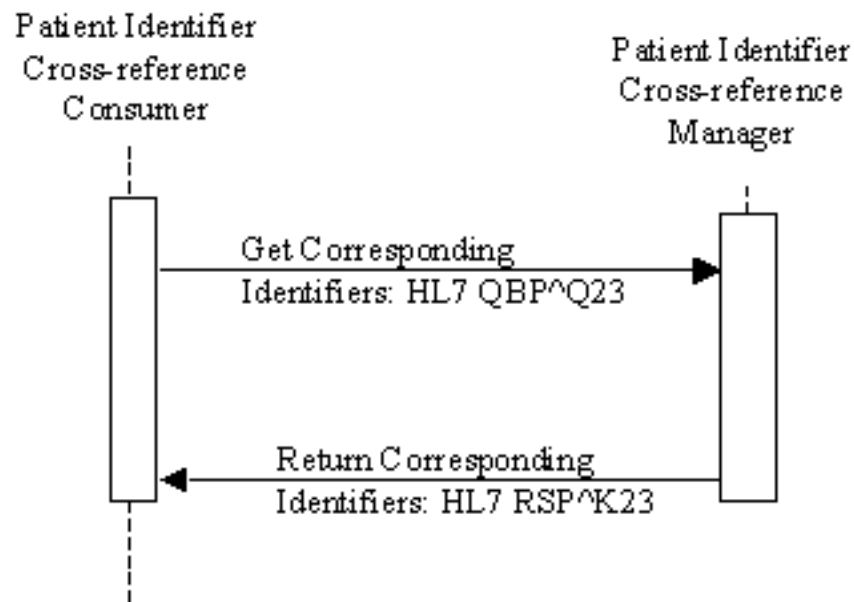


Figure 3.9-1 Get Corresponding Identifiers Sequence

# Add'l details & constraints

## » QPD Segment

The Patient Identifier Cross-reference Consumer Actor is required to send attributes within the QPD segment as described in Table 3.9-2.

SEQ	LEN	DT	OPT	TBL#	ITEM#	ELEMENT NAME
1	250	CE	R	0471	01375	Message Query Name
2	32	ST	R+		00696	Query Tag
3	250**	CX	R			Person Identifier
4	250	CX	O			What Domains Returned

Table 3.9-2 IHE Profile - QPD segment

Adapted from the HL7 Standard, version 2.5

# Intermission

- IHE Terminology
- Structure of IHE Technical Frameworks
- **Stages of IHE documentation**
- Interpreting an IHE Integration Statement
- Navigation
  - Finding IHE Technical Frameworks
  - IHE Product Registry

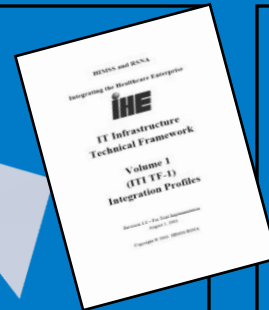
# IHE Development Cycle

IHE Profile  
Drafted &  
Revised

Final Trial  
Implementation  
Posted

Published for  
Public  
Comment  
Technical  
Framework  
Developed

(Months 6-13)



Test at IHE Connectathons



Publish in  
IHE Product  
Registry

Demonstrate at a



Profile Selection by  
Committees (3-5)

IHE Call for  
Proposals Opens  
(Months 1-2)

*IHE Improves  
Safety,  
Quality and  
Efficiency in  
Clinical  
Settings*



Final Results



Install Interoperable  
products in Clinical  
Settings worldwide

Adopted by ISO: TR 28380



# Stages of IHE Documents



- Public Comment
  - Supplement for Trial Implementation
  - Final Text
  - Change Proposals
  
  - Post It notes
  - Project Manager edicts
  - ***You are responsible for all***
- 

# Stages of IHE Documents (2)

- **Public Comment**
  - Publication in supplement form by profile
  - Committee requests public comment on ideas
  - **This version is not tested at a Connectathon**
- **Supplement for Trial Implementation**
  - Committee recommendation for trial
  - Tested at Connectathon
  - **Not ready for Integration Statements or product**

# Stages of IHE Documents (3)



- **Final Text**

- Has been through M Connectathons in N regions
  - **Planning Committee says this is ready for products**
- 

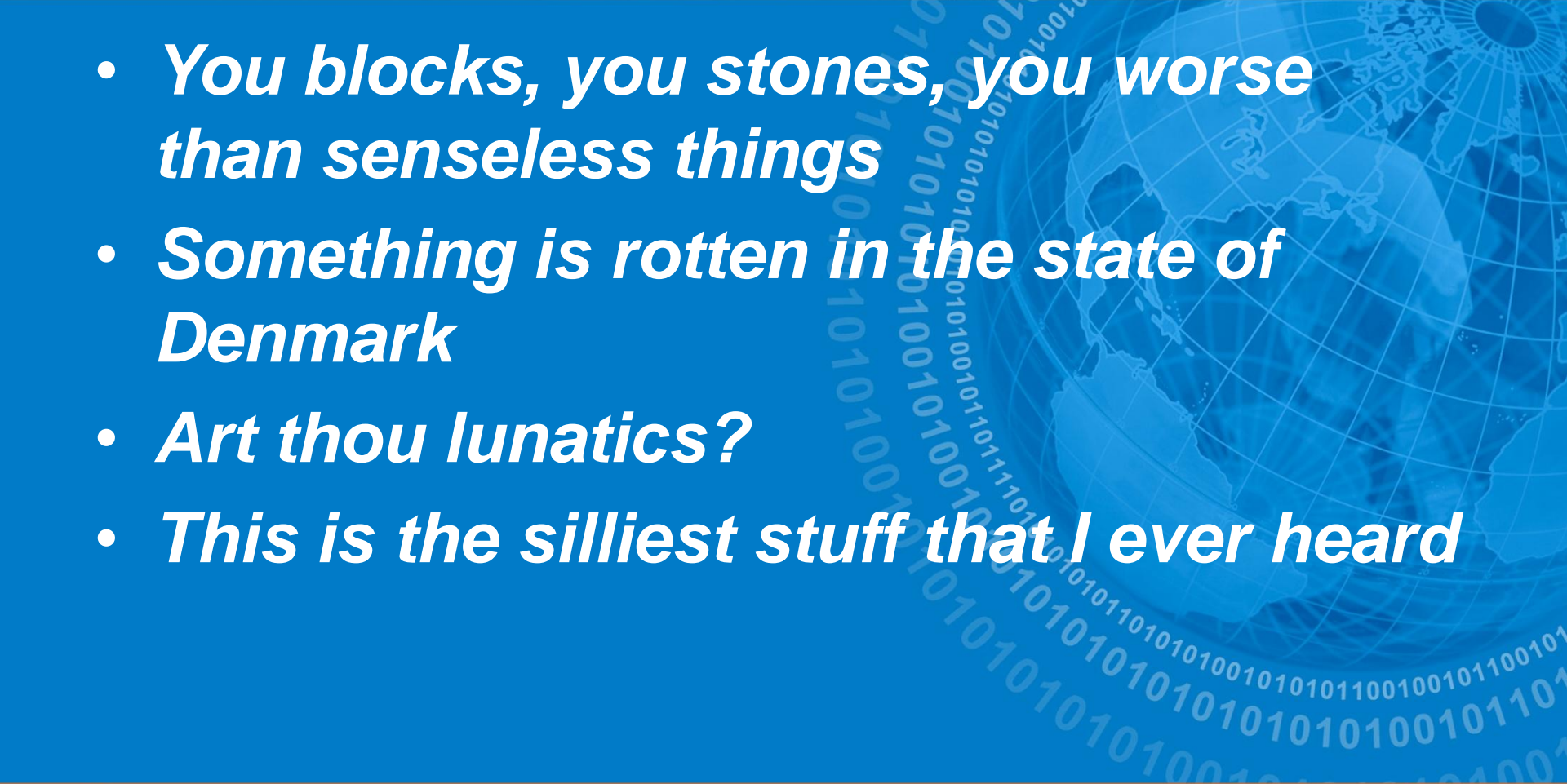
# Stages of IHE Documents (4)



- **Change Proposals**
    - Changes applied to Trial Implementation supplements
    - And, changes applied to Final Text
    - Will eventually be rolled into documentation in the next publication cycle
- 

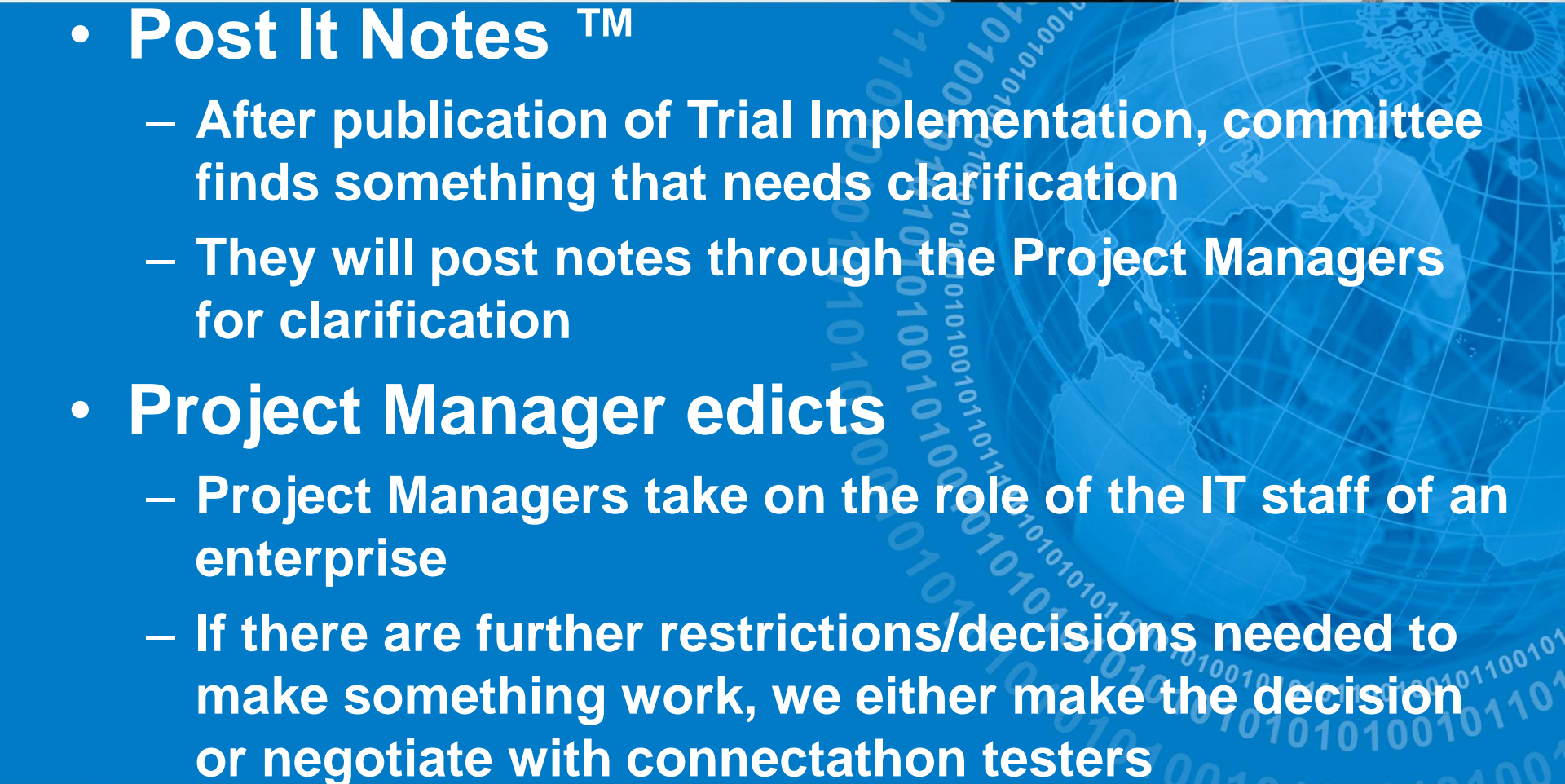
# Project Manager on Committees



- *You blocks, you stones, you worse than senseless things*
  - *Something is rotten in the state of Denmark*
  - *Art thou lunatics?*
  - *This is the silliest stuff that I ever heard*
- 

# Connectathon Additions



- **Post It Notes <sup>TM</sup>**
    - After publication of Trial Implementation, committee finds something that needs clarification
    - They will post notes through the Project Managers for clarification
  - **Project Manager edicts**
    - Project Managers take on the role of the IT staff of an enterprise
    - If there are further restrictions/decisions needed to make something work, we either make the decision or negotiate with connectathon testers
- 

# Stages of IHE Documents (5)

- ***You are responsible for all***
  - Project Managers will work with you to point out all required IHE documentation
  - We will not point out/publish all related standards (we have no ownership)

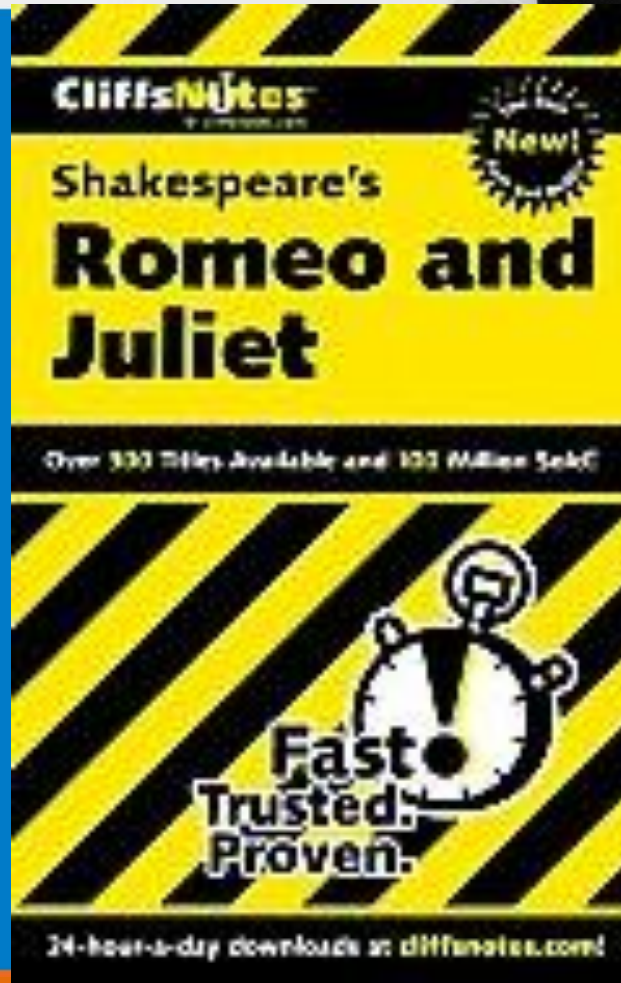
# Flash Forward

- IHE Terminology
- Structure of IHE Technical Frameworks
- Stages of IHE documentation
  - Bonus: Status for 2010-2011
- **Interpreting an IHE Integration Statement**
- Navigation
  - Finding IHE Technical Frameworks
  - IHE Product Registry

# You Have a Product !?

- You have chosen one or more actors in a profile. (You are not required to implement all actors).
- You have implemented all required transactions and dependencies.
  - You may choose to support Named Options.
- You decide to write an Integration Statement,
- Or .....

# You Want to Read an IS



**CliffsNotes**  
Shakespeare's  
**Romeo and Juliet**

Over 330 Titles Available and 100 Million Sold

**Fast  
Trusted.  
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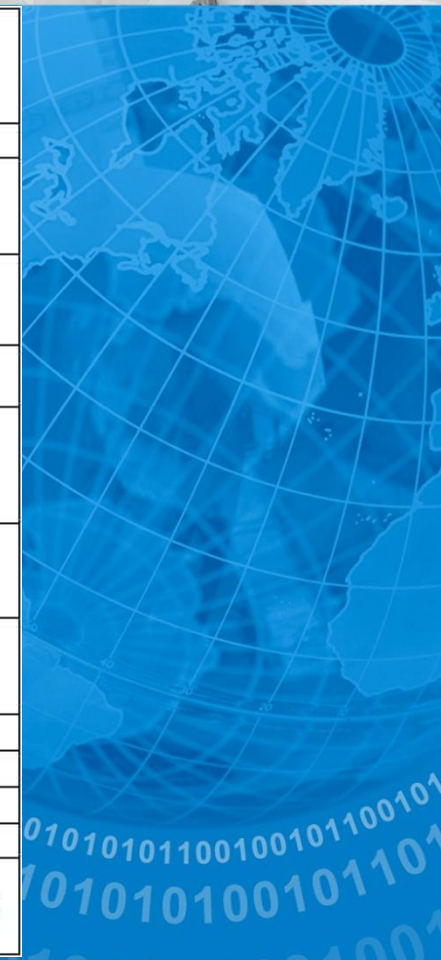
24-hour-a-day downloads at [cliffsnotes.com](http://cliffsnotes.com)



# Integration Statements



IHE Integration Statement			
Vendor	Product Name	Version	Date
Integrated Medical Systems	Mega.CT	V3.2	17 Oct. 2002
This product implements all transactions required in the IHE TF to support the IHE Integration Profiles, Actors and Options listed below:			
Integration Profiles Implemented	Actors Implemented	Options Implemented	
Scheduled Workflow	Acquisition Modality	Patient-based Worklist Query, Assisted Acquisition Protocol Setting	
Portable Data for Imaging	Media Creator	No options defined	
<b>Web address for vendor's IHE information:</b> <a href="http://www.integratedmedicalsistemas.com/ihe">www.integratedmedicalsistemas.com/ihe</a>			
<b>Links to Standards Conformance Statements for Implementation</b>			
HL7	N/A		
DICOM	<a href="http://www.integratedmedicalsistemas.com/dicom/MegaCT-DCS.pdf">www.integratedmedicalsistemas.com/dicom/MegaCT-DCS.pdf</a>		
<b>Links to general IHE information</b>			
In North America: <a href="http://www.ihe.net">www.ihe.net</a>	In Europe: <a href="http://www.ihe-europe.org">www.ihe-europe.org</a>	In Japan: <a href="http://www.ira-net.or.jp/ihe-j">www.ira-net.or.jp/ihe-j</a>	



# Climax



- IHE Terminology
- Structure of IHE Technical Frameworks
- Stages of IHE documentation
  - Bonus: Status for 2010-2011
- Interpreting an IHE Integration Statement
- **Navigation**
  - **Finding IHE Technical Frameworks**
  - **IHE Product Registry**

# Technical Framework



- **IHE Home Page**
    - <http://www.ihe.net>
  - **Final Text + Trial Supplements + CPs**
    - [http://www.ihe.net/Technical\\_Framework](http://www.ihe.net/Technical_Framework)
  - **Supplements in Public Comment**
    - [http://www.ihe.net/Technical\\_Framework/public\\_comment.cfm](http://www.ihe.net/Technical_Framework/public_comment.cfm)
- 

# http://www.ihe.net



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## Welcome to Integrating the Healthcare Enterprise

IHE is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information. IHE promotes the coordinated use of established standards such as DICOM and HL7 to address specific clinical need in support of optimal patient care. Systems developed in accordance with IHE communicate with one another better, are easier to implement, and enable care providers to use information more effectively.

### Learn More:

#### Developers of Healthcare IT Systems

- [Process](#)
- [Profiles](#)
- [Technical Frameworks](#)
- [Participate](#)
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#### Users of Healthcare IT Systems

- [Process](#)
- [Profiles](#)
- [Integration Statements](#)
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# http://www.ihe.net/Technical\_Framework

**iHE** *changing the way healthcare connects*  
www.ihe.net

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## IHE Technical Frameworks

- [Anatomic Pathology](#)
- [Cardiology](#)
- [Eye Care](#)
- [IT Infrastructure](#)
- [Laboratory](#)
- [Patient Care Coordination](#)
- [Patient Care Devices](#)
- [Quality, Research and Public Health](#)
- [Radiation Oncology](#)
- [Radiology](#)

The IHE Technical Frameworks, available for download below, are a resource for users, developers and implementers of healthcare imaging and information systems. They define specific implementations of established standards to achieve effective systems integration, facilitate appropriate sharing of medical information and support optimal patient care. They are expanded annually, after a period of public review, and maintained regularly by the IHE Technical Committees through the identification and correction of errata.

→ **Submit and Review Comments**  
Each draft Technical Framework document and supplement is published initially for a period of public comment. [Documents currently in release for public comment are available here.](#)

Comments from implementers and other interested parties are invited on an ongoing basis. Please submit comments through the [online discussion forums found at http://forums.rsna.org](http://forums.rsna.org)

→ **Anatomic Pathology Technical Framework**  
*Revision 1.2  
November 24, 2008  
Copyright © 2008: IHE International  
Draft for Trial Implementation*

The IHE Anatomic Pathology Technical Committee has published the Anatomic Pathology Technical Framework, rev. 1.2 for trial implementation. It includes the Pathology Workflow integration profile. Comments on the document may be submitted on the forums at <http://forums.rsna.org>.

- [vol. 1 \(PAT-1\): Integration Profiles](#)
- [vol. 2 \(PAT-2\): Transactions](#)

Supplements for Trial Implementation

The Anatomic Pathology Technical Committee invites organizations to begin development work based on the following supplement to the Anatomic Pathology Technical Framework. This profile will be tested at IHE Connections beginning in January 2010. The supplement extends the Anatomic Pathology Technical Framework, Rev. 1.2 for Trial Implementation.

- [Anatomic Pathology Reporting to Public Health \(ARPH\)](#) - Published 2009-08-27

# Public Comment Page

## IT Infrastructure

The IHE IT Infrastructure Technical Committee has published the following supplements to the ITI Technical Framework for public comment in the period from May 24 to June 24, 2010:

- [Cross-Enterprise User Assertion - Attribute Extension \(XUA++\)](#)
- [Deferred Document and Dynamically Created Content \(D3S\)](#)
- [Healthcare Provider Directory \(HPD\)](#)
- [Query Enhancements to Sharing Value Sets](#)
- [XDS Metadata Update \(MU\)](#) - *Note: Comment deadline for this document is July 11, 2010.*

Comments submitted by **June 24, 2010**, will be considered by the IT Infrastructure Technical Committee in developing the trial implementation version of the supplement to be published in August 2010. Comments should be submitted using the online forums at <http://forums.rsna.org>.

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## Patient Care Coordination

### 2010 Supplements for Public Comment

The IHE Patient Care Coordination (PCC) Committee has published the following supplements to the IHE PCC Technical Framework for Public Comment in the period from June 1 to July 1, 2010:

- [Antepartum Profiles](#)
- [CDA Content Modules](#)
- [eNursing Summary \(ENS\)](#)
- [Labor and Delivery Profiles](#)
- [Newborn Discharge Summary \(NDS\)](#)
- [Perinatal Workflow \(PW\)](#)
- [Postpartum Visit Summary \(PPVS\)](#)

Comments submitted by **July 1, 2010**, will be considered by the PCC Technical Committee in developing the trial implementation version of the supplement, to be published in August 2010. Comments should be submitted using the online forums at <http://forums.rsna.org>.

# http://product-registry.ihe.net



## IHE Product Registry Information Page

Gazelle TM GMM PR DDS SIMU Proxy EVS PKI FAQ IHE License

1. [Home](#)
2. [Access PR](#)
3. [Getting Started](#)
4. [FAQ](#)
5. [Release Notes](#)
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[Click to here to enter the Product Registry](#)

### About the IHE Product Registry

The IHE Product Registry is a way to register and search products supporting IHE Profiles with published IHE Integration Statements.

IHE Integration Statements are documents prepared and published by vendors to describe the conformance of their products with the IHE Technical Framework. They identify the specific IHE capabilities a given product supports in terms of IHE actors and integration profiles.

Users familiar with these concepts can use Integration Statements to determine what level of integration a vendor asserts a product supports with complementary systems and what clinical and operational benefits such integration might provide.

IHE provides a process for vendors to test their implementations of IHE profiles. The IHE testing process starts with testing against IHE test Tools and culminates in a multi-party interactive testing event called the Connect-a-thon. The process is not intended to independently evaluate, or ensure, product compliance, but to offer a practical and effective assessment of interoperability.



# Epilogue

## Connectathon Managers for NA & Europe:

- Steve Moore      [moores@mir.wustl.edu](mailto:moores@mir.wustl.edu)
- Lynn Felhofer      [felhofer@charter.net](mailto:felhofer@charter.net)
- Eric Poiseau      [eric.poiseau@inria.fr](mailto:eric.poiseau@inria.fr)

# ***New Webinar Announced!*** ***Thursday, June 24, 2010***

- **Title: IHE Committee Collaboration Tools**
- *New & Current Participant Webinar:* Join us for a quick overview of IHE's collaboration tools, websites, resources and frequently used links. Learn how to navigate the IHE Wiki, IHE FTP site and become engaged on IHE's committee list serves.
- Date: Thursday, June 24, at 10:30am-12:00pm CST
- Registration: Register on-line before entering the webinar.
  - [Register Online](#)
- Visit: [www.ihe.net/Events/webinars2010.cfm](http://www.ihe.net/Events/webinars2010.cfm)

# Next Week's Web Series Presents

- **Title: IHE Connectathon Manager and Monitor Training**

## **Opportunities**

- **Date: Tuesday, June 29, at 11:30am-12:30pm CST**

- **New & Current Participant Webinar:**

IHE Regional deployment groups, HIEs and vendors interested in leveraging IHE's experience, tools, and processes to achieve success in regional or project-focused interoperability testing need to attend this webinar to learn about IHE's Connectathon Manager training events. Plus, learn how you can serve as testing monitors on the Connectathon floor.

- **Registration: Register on-line before entering the webinar**

- **[Register Online Now](#)**

- Visit: **[www.ihe.net/Events/webinars2010.cfm](http://www.ihe.net/Events/webinars2010.cfm)**

# Missed a Past Webinar?

- Download all IHE Webinar presentations & audio recordings throughout the Webinar Series.
  - Visit: [www.ihe.net/Events/webinars2010.cfm](http://www.ihe.net/Events/webinars2010.cfm)
- Media available will include:
  - Audio and visual recording of the presentations
  - PowerPoint slide decks
  - Any additional documents presented during the webinar
- Share the Webinar recordings with your colleagues!
- If you have additional questions contact us at:  
[Secretary@ihe.net](mailto:Secretary@ihe.net)