

North American 2010  
Connectathon & Interoperability Showcase Series

IT Infrastructure Update  
New 2009

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# New and Updated profiles and White Papers

## ● New Supplements

- XCPD – Cross-community Patient Discovery
- DSUB – Document Metadata Subscription
- MPQ – Multi-Patient Queries

## ● Significantly Revised Supplement

- RFD – Retrieve Form for Data Capture

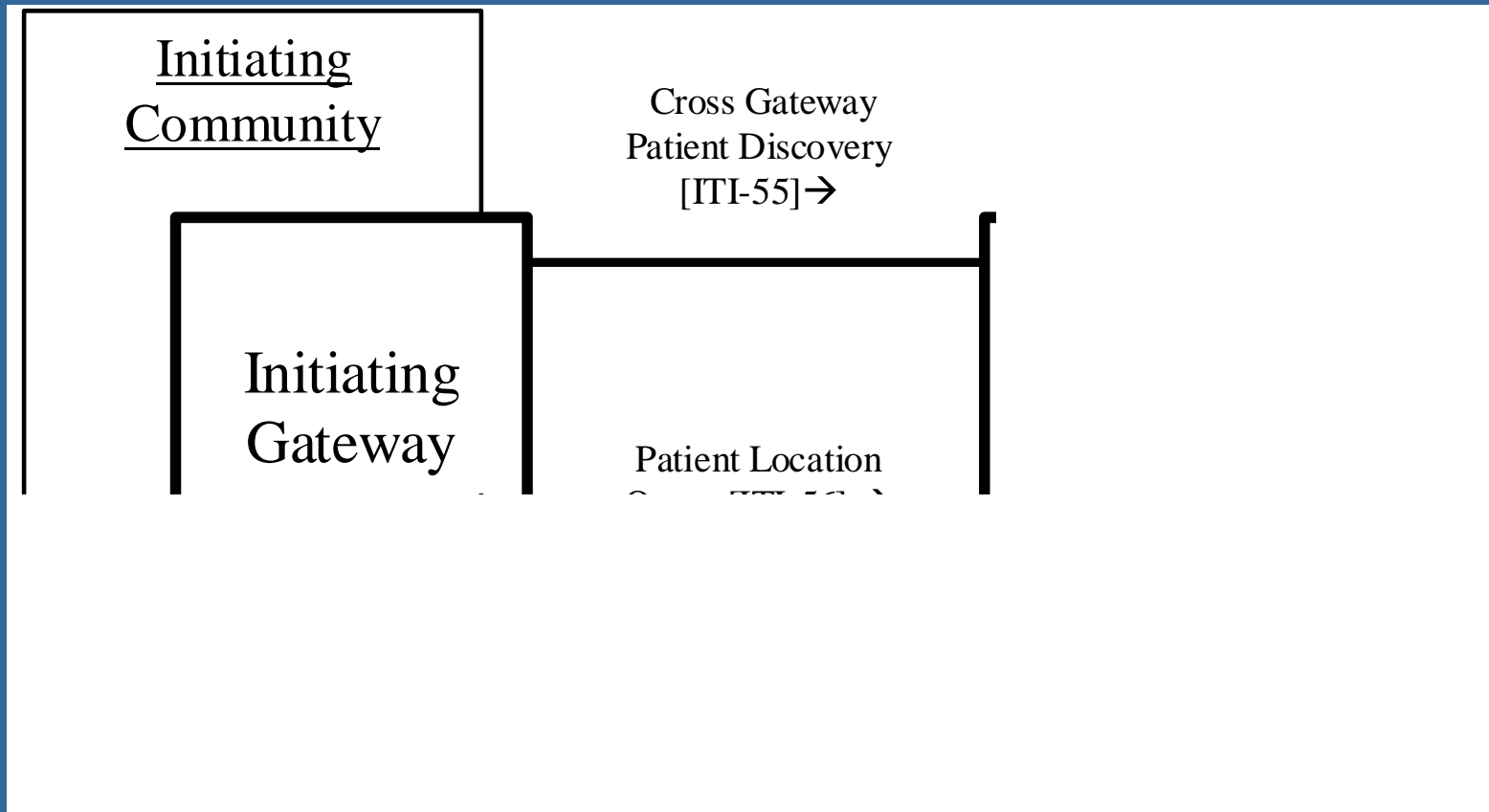
## ● New White Papers

- Access Control
- A Service-Oriented Architecture (SOA) View of IHE Profiles

# XCPD Overview

- The Cross-Community Patient Discovery (XCPD) profile supports:
  - the means to locate communities which hold patient relevant health data and
  - the translation of patient identifiers across communities holding the same patient's data.
- Use Cases
  - Same as XCA
  - Compliments XCA by supporting needed function

# XCPD Actors and Transactions

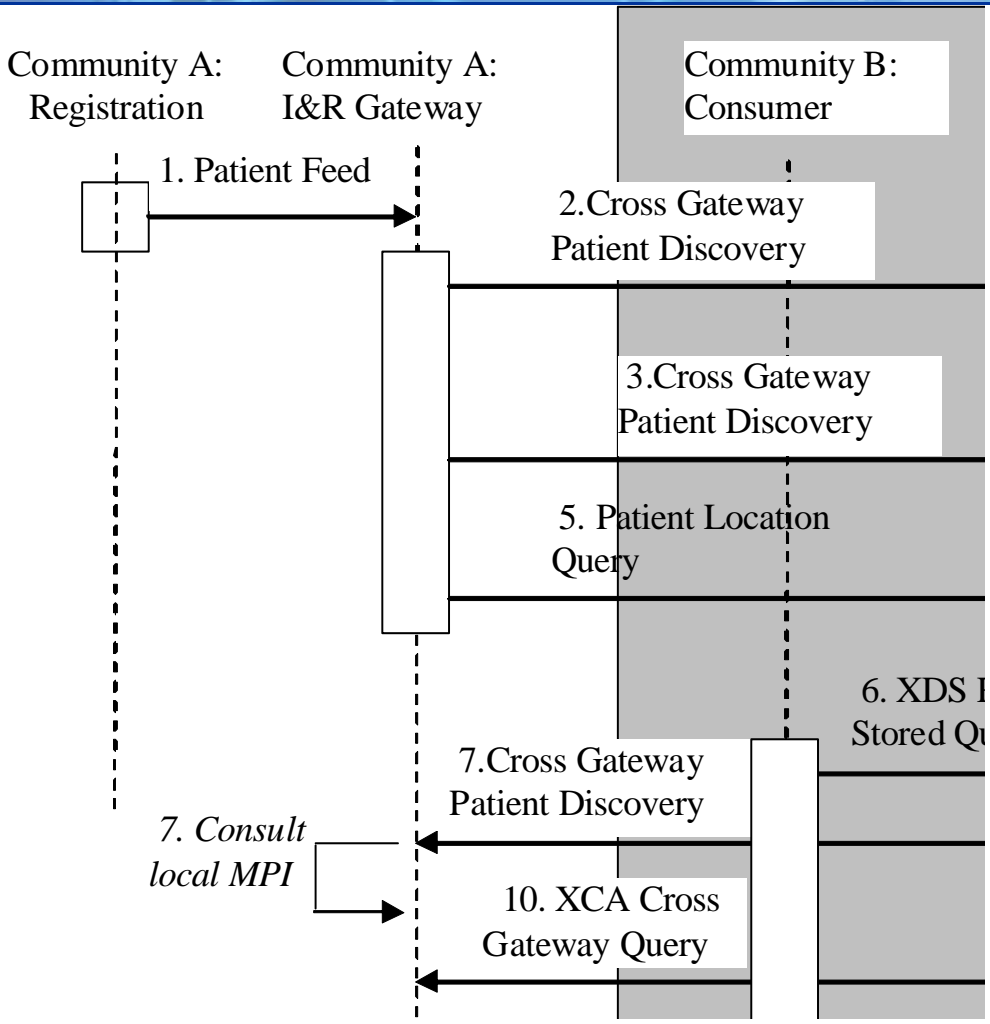


# XCPD Actors and Transactions Defined

- Initiating Gateway - initiates the new XCPD transactions, does not need to be grouped with XCA Initiating Gateway
- Responding Gateway – responds to the new XCPD transactions, does not need to be grouped with XCA Responding Gateway
- Cross Gateway Patient Discovery – discover mutually known patients.
- Patient Location Query – query for a list of communities which may have relevant health data about a particular patient.

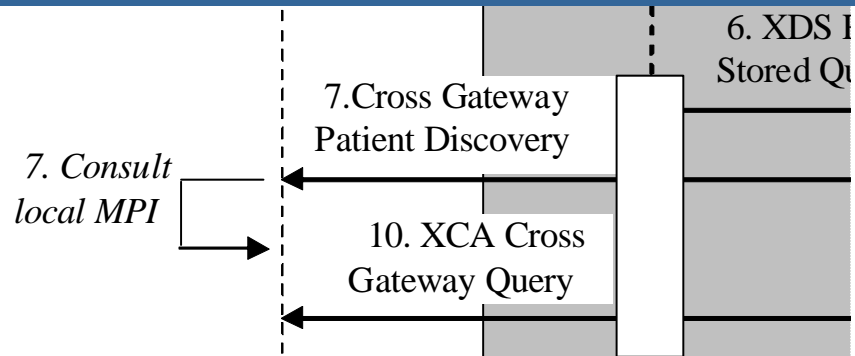
# XCPD Illustration of Use (Informative)

## Steps 1 - 10



# XCPD Illustration of Use (Informative)

## Steps 11-13



# Cross Gateway Patient Discovery Transaction

- Mutual discovery of patients - dual purposes:
  - Query requesting demographic match
  - Feed announcing known patient
- Result is patient identifier correlations, potentially in both initiating and responding side
- Different modes used in different environments:
  - Demographic Query only
  - Demographic Query and Feed
  - Shared/National Patient Identifier Query and Feed
- Includes a revoke message for remove correlations found through this transaction
- Supports both asynchronous and synchronous transport

# Cross Gateway Patient Discovery Transaction Standards

- Based on HL7 V3 Patient Administration DSTU, Patient Topic
  - Patient Registry Query by Demographics
  - Patient Registry Find Candidates Response
  - Patient Nullify
- Design started with PDQ V3 Query (incomplete list of differences with PDQ V3):
  - asynchronous web services exchange
  - mutual discovery of patient identifier correlations
  - special error codes
  - requiring name and gender
  - supports MothersMaidenName and PrincipalCareProviderId
  - specification of homeCommunityId and Community patient id assigning authority.
  - Etc.

# Patient Location Query

- Request for list of communities that may have healthcare data for a specified patient
- Request includes a single patient identifier
- Response includes a list of triples
  - homeCommunityId – identifies community which may have data for the patient
  - CorrespondingPatientId – identifies the patients identifier within homeCommunityId
  - RequestPatientId – same as request parameter
- Standards
  - Based on Appendix V IHE Web Services
  - Content defined by IHE schemas
    - Chose not to use HL7 or ebXML because the simplicity of the request/response content did not warrant complex content

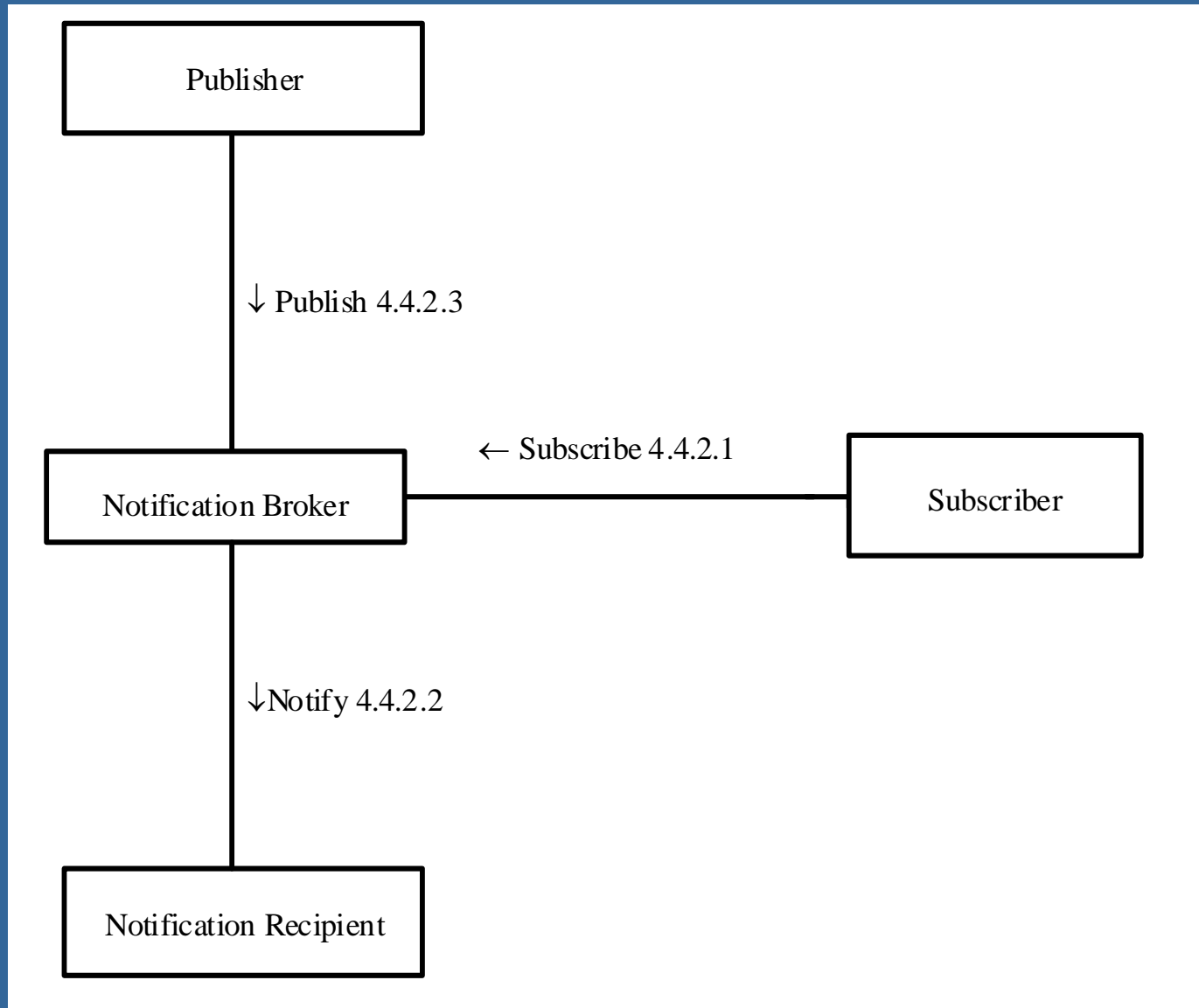
# DSUB Overview

- The Document Metadata Subscription (DSUB) supplement contains two related parts:
  - 1) Publish/Subscribe Infrastructure: General framework for defining web-services based publish/subscribe interactions
  - 2) Document Metadata Subscription (DSUB) Integration Profile: Use of subscriptions within an XDS Affinity Domain or across communities

# Publish/Subscribe Infrastructure

- New Volume 2 section 4.4
- Presents a framework for building event-driven information exchange patterns using a publish/subscribe data exchange model
- Defines the transport of publish, subscribe and notify messages.
- Supports IHE profiles which define the use case specific content to be carried in the publish, subscribe and notify messages
  - Document Metadata Subscription (DSUB) first profile to use this framework.

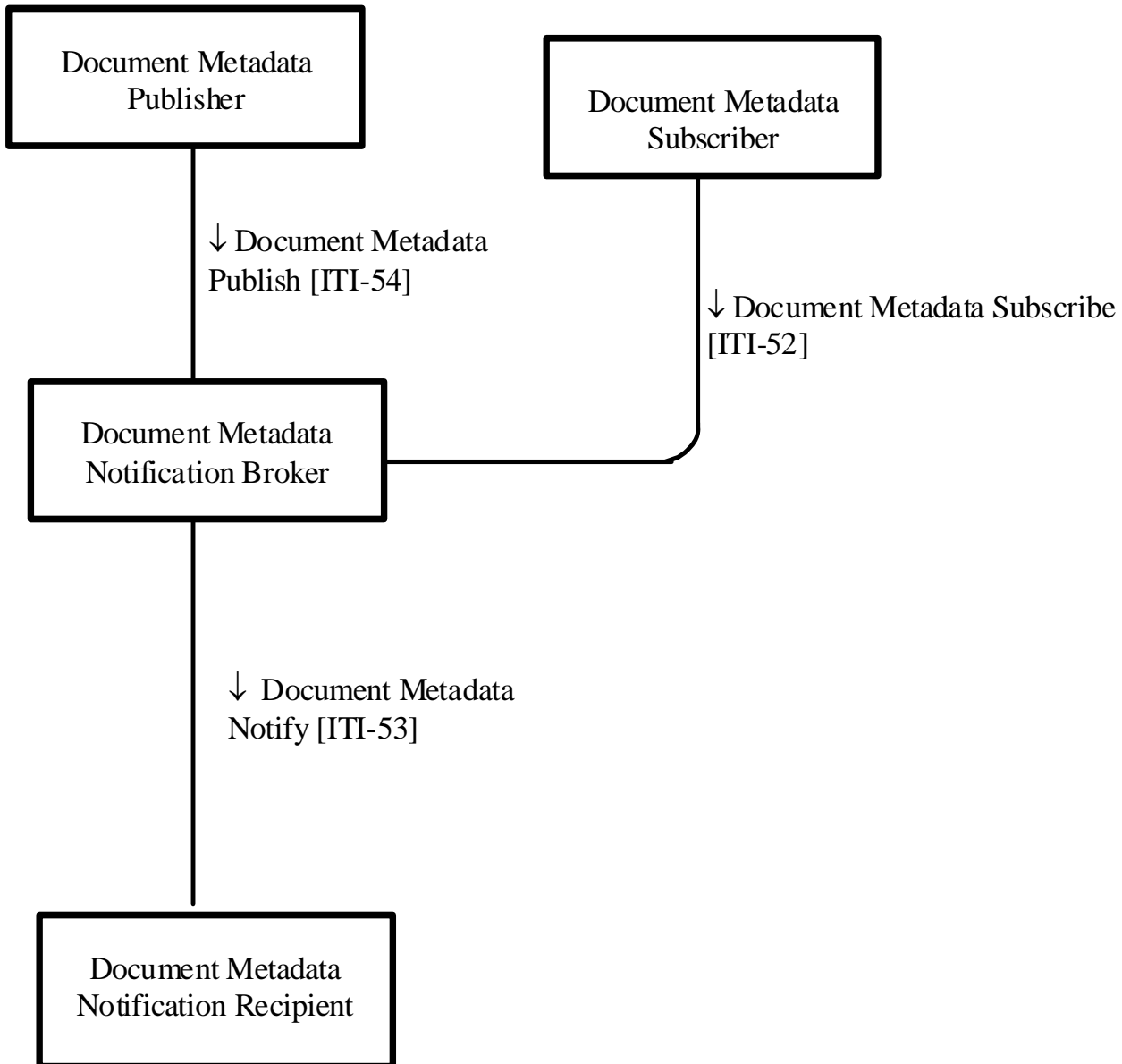
# Publish/Subscribe Infrastructure Actors and Transactions



# Document Metadata Subscription (DSUB) Integration Profile

- Defines a subscription which allows for the matching of metadata during the publication of a new document for a given patient, and results in the delivery of a notification.
- Enabled within an XDS Affinity Domain or XCA environment
- Use Cases
  - Emergency Department: Notification of new document availability during treatment
  - Primary Care Management: PCP receives notification when new documents for patient are available

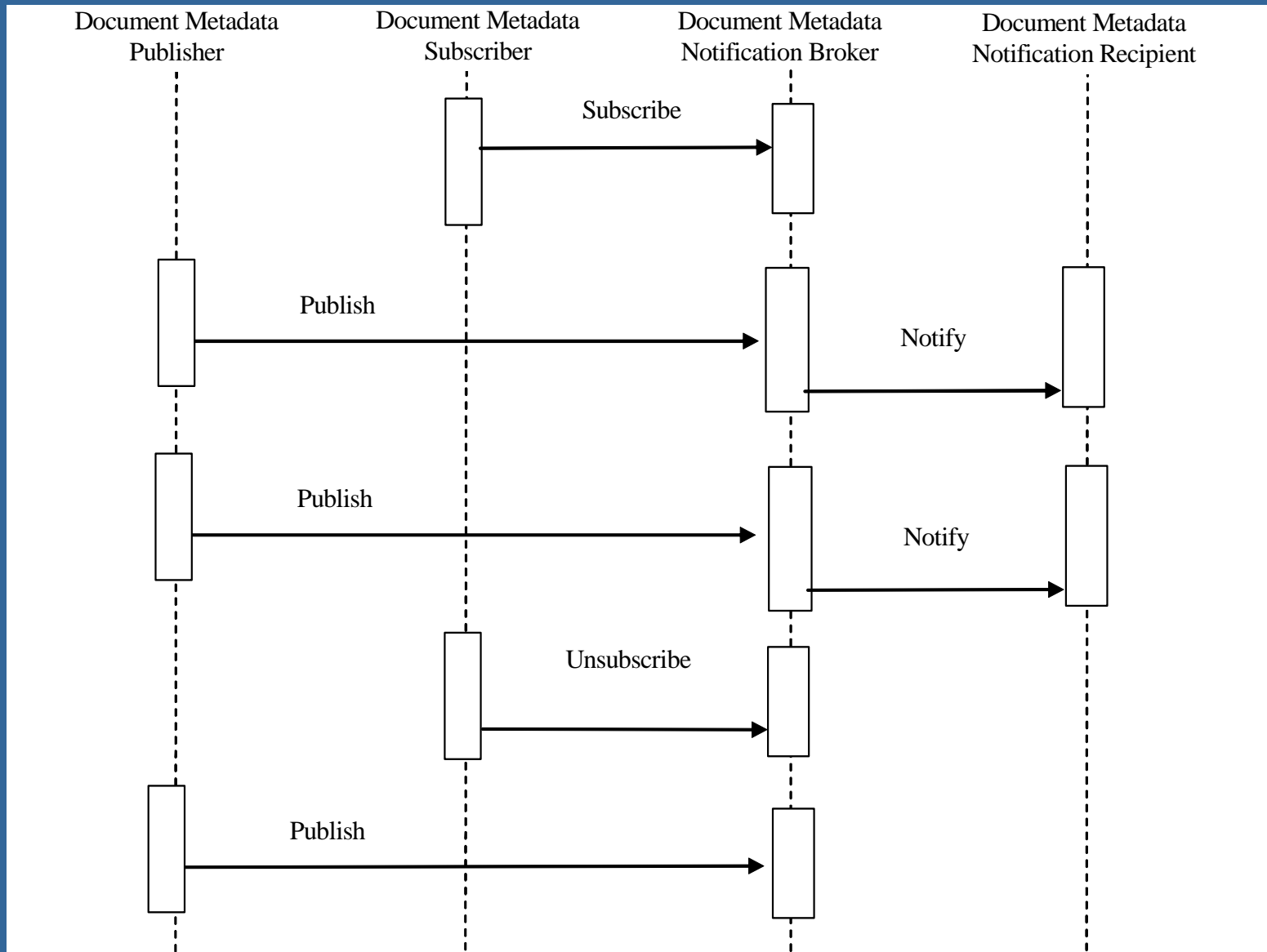
# DSUB Actors and Transactions



# Transactions

- Document Metadata Subscribe : start a subscription for a particular topic and filtering within that topic. Supports full and minimal notifications and where to send the notification.
- Document Metadata Notify : send a notification about the availability of a document or documents of interest, based on the subscribers' filters on selected topics
- Document Metadata Publish : notify that an event occurred for which there may be a subscription.

# DSUB Illustration of Use



# DSUB Implementation

## ● DSUB topic tree

- ihe:FullDocumentEntry : subscribes to Document Entry registration events; the notification shall contain the full metadata describing each matching Document Entry
- ihe:MinimalDocumentEntry : subscribes to Document Entry registration events; the notification shall contain a minimal set of data (identifiers only) describing each matching Document Entry

## ● DSUB Standards

- Web Services Standards
  - WS-BaseNotification 1.3 OASIS Standard
  - WS-BrokeredNotification 1.3 OASIS Standard
  - WS-Topics 1.3 OASIS Standard
  - ITI TF-2x: Appendix V
- Filter expression
  - Registry Stored Query [ITI-18]

# Multi-Patient Query (MPQ)

- The Registry Stored Query transaction [ITI-18] defines a catalog of queries, which require that either a single patient ID, a folder ID, or a submission set ID are present.
- Aggregated queries, i.e. queries not constrained to a single patient, folder, or catalog, are also desired. Examples are: repurposing, secondary use, and monitoring population health.
  - **Quality accreditation organizations** need to be able to aggregate data so that they can perform measurements of how institutions perform.
  - **Clinical Research** needs to be able to combine the results of different patients in a clinical trial.
  - **Public Health** needs to have the means to make aggregated queries on certain fields such as *eventCodeList* in order to identify potential outbreaks and take appropriate decisions.
- MPQ provides two new stored queries which allow for aggregation of content.

# MPO Actors and Transactions

Document Consumer

Multi-Patient Stored  
Query [ITI-51]→



# Multi-Patient Stored Query Transaction

- Between MPQ Document Consumer and MPQ Document Registry
- Based on Registry Stored Query [ITI-18]
  - References all technical content in Registry Stored Query transaction [ITI-18]
  - Introduces two new stored queries
  - Asynchronous Web Services is an option

# MPOQ Defined New Stored Queries

## ● FindDocumentsForMultiple Patients

- Equivalent to FindDocuments but \$XDSDocumentEntryPatientId parameter:
  - is optional (zero values)
  - may have multiple values specified
- At least one of the following parameters is required:
  - ClassCode, EventCodeList, HealthcareFacilityTypeCode
- More of a medical event based query than a patient based query

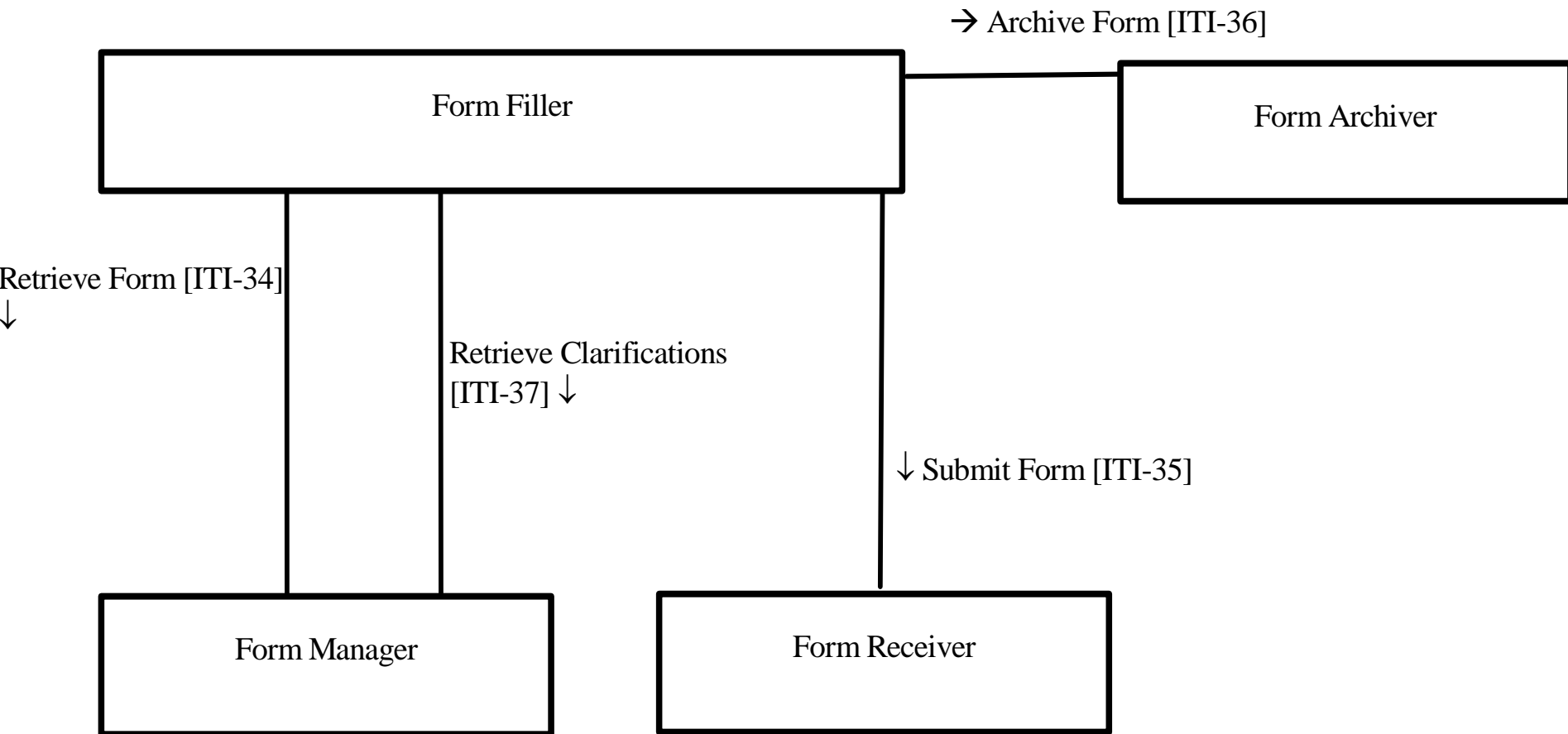
## ● FindFoldersForMultiplePatients

- Equivalent to FindFolders but \$XDSFolderPatientId parameter:
  - is optional (zero values)
  - may have multiple values specified
- At least one of the following parameters is required:
  - folderCodeList
- More of a medical event based query than a patient based query

# Retrieve Form for Data Capture (RFD)

- Same Use Cases; same Actors
- No new Transactions; updated message semantics for Retrieve Form, Retrieve Clarifications
- New Profile Options
  - XForms
  - XHTML
- SOAP for Retrieve Form, Retrieve Clarifications
- New Form Instance ID for Retrieve request and response

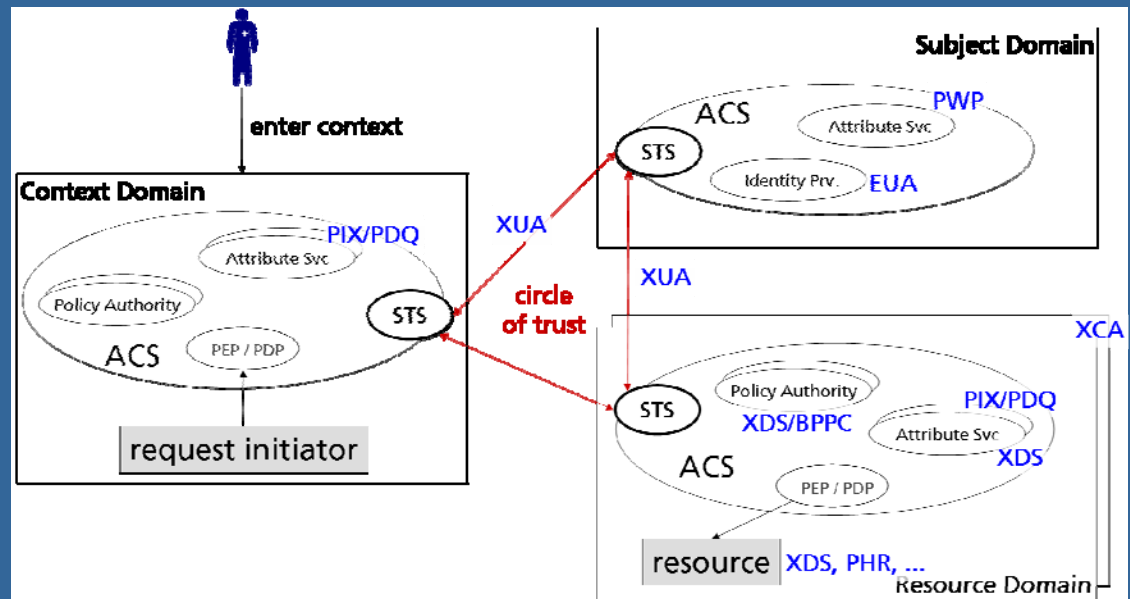
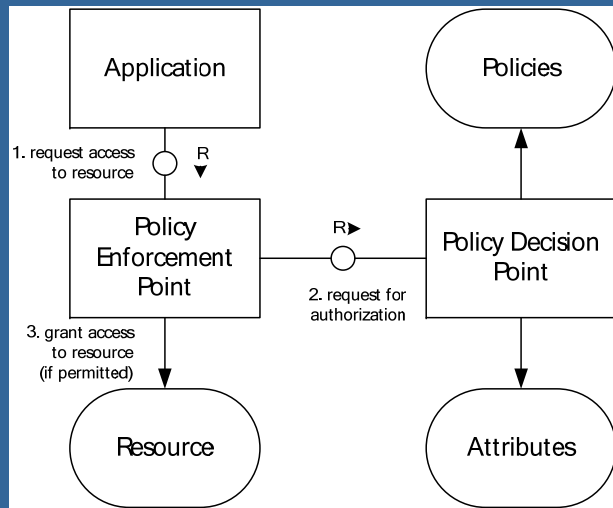
# RFD Actors and Transactions



# Access Control White Paper

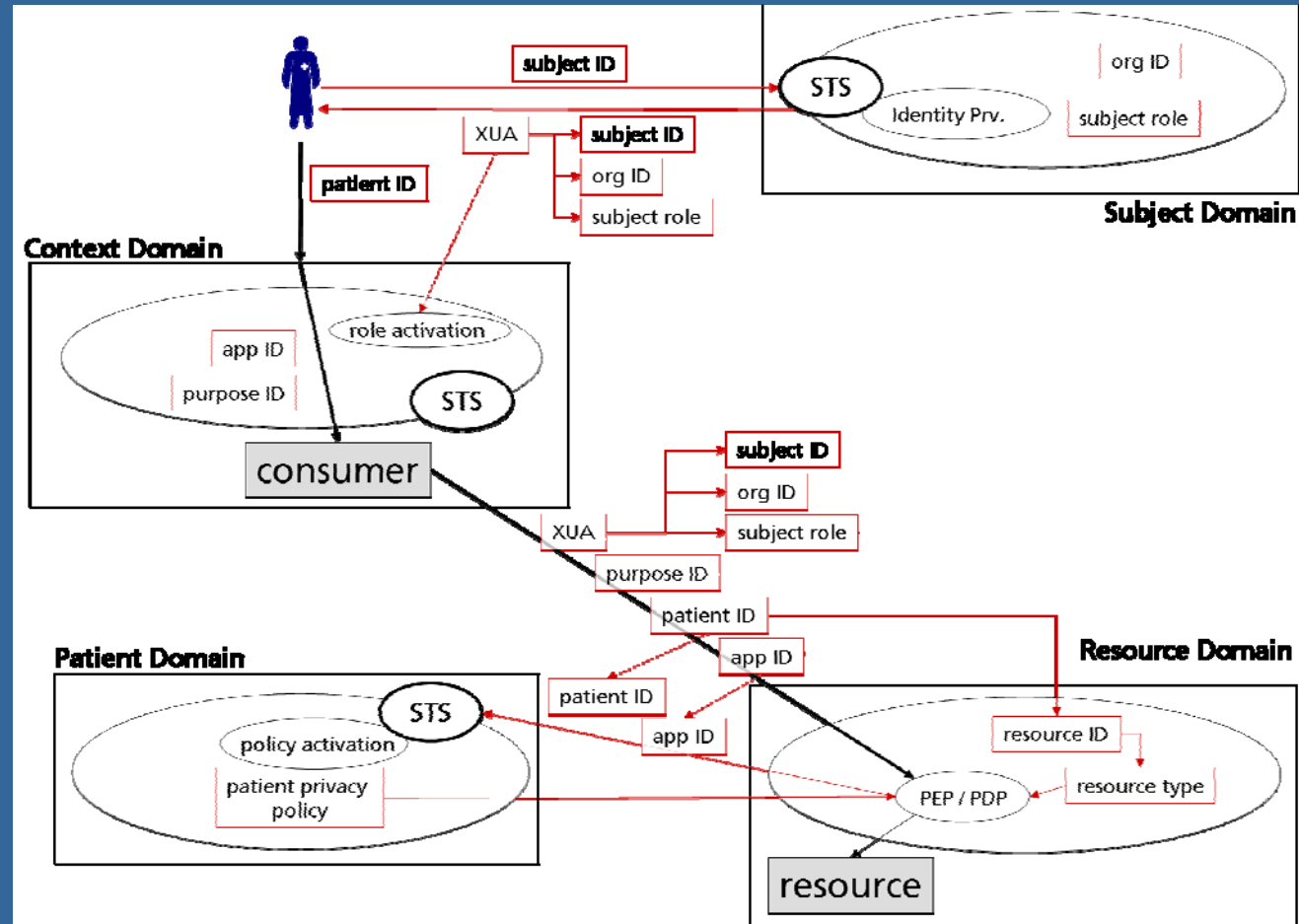
## Review of Access Control Fundamentals / State of the Art in (Federated) Healthcare Environments

- Principles of Secure Design
- SOA Security Principles
- Access Control Models
- Building Blocks of Access Control Systems (ACSs)
- Logical Access Control Domains (including use of information sources described in various IHE profiles)



# Methodology for Designing an Access Control System (ACS)

- Attribute Mapping
- Default Process Flows
- Deployment Opportunities for ACS components



# Access Control White Paper

## ● Policies and Attributes

- Policy Concerns (Patient Privacy Consent, Compliance, Purpose of Use)
- Separation, Co-Existence and Integration of Policy Concerns
- Binding of Policies and Attributes

## ● Recommendations to IHE

- Generic Actors and Transactions
  - Generic Security Token Service Actors
  - Attribute Provider and Consumer Actors
  - Policy Actors
- Proposals for IHE Integration Profiles / White Papers / Cookbooks

# A Service Oriented Architecture (SOA) View of IHE Profiles

- **Explores the relationship between SOA and the IHE Technical Framework**
  - Mapping between SOA and IHE concepts
  - Example of how IHE profiles can be used in a SOA project today
  - Probe into leveraging existing profile work into new service definitions
- **Raises Issues for Further Discussion**
  - How to address SOA within the IHE Technical Framework without legislating a particular architectural approach
  - Potential for service definitions to provide new ways of organizing Technical Framework material



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