Integrating the Healthcare Enterprise

IHE IT Infrastructure (ITI)
Technical Framework
Supplement 2007-2008

Cross-Enterprise Document Sharing-b (XDS.b)

Draft for Trial Implementation

October 10, 2008

Foreword

Integrating the Healthcare Enterprise (IHE) is an initiative designed to stimulate the integration of the information systems that support modern healthcare institutions. Its fundamental objective is to ensure that in the care of patients all required information for medical decisions is both correct and available to healthcare professionals. The IHE initiative is both a process and a forum for encouraging integration efforts. It defines a technical framework for the implementation of established messaging standards to achieve specific clinical goals. It includes a rigorous testing process for the implementation of this framework. And it organizes educational sessions and exhibits at major meetings of medical professionals to demonstrate the benefits of this framework and encourage its adoption by industry and users.

The approach employed in the IHE initiative is not to define new integration standards, but rather to support the use of existing standards—HL7, DICOM, IETF, and others—as appropriate in their respective domains in an integrated manner, defining configuration choices when necessary. IHE maintain formal relationships with several standards bodies including HL7, DICOM and refers recommendations to them when clarifications or extensions to existing standards are necessary.

This initiative has numerous sponsors and supporting organizations in different medical specialty domains and geographical regions. In North America the primary sponsors are the Healthcare Information and Management Systems Society (HIMSS) and the Radiological Society of North America (RSNA). IHE Canada has also been formed. IHE Europe (IHE-EUR) is supported by a large coalition of organizations including the European Association of Radiology (EAR) and European Congress of Radiologists (ECR), the Coordination Committee of the Radiological and Electromedical Industries (COCIR), Deutsche Röntgengesellschaft (DRG), the EuroPACS Association, Groupement pour la Modernisation du Système d'Information Hospitalier (GMSIH), Société Francaise de Radiologie (SFR), Società Italiana di Radiologia Medica (SIRM), the European Institute for health Records (EuroRec), and the European Society of Cardiology (ESC). In Japan IHE-J is sponsored by the Ministry of Economy, Trade, and Industry (METI); the Ministry of Health, Labor, and Welfare; and MEDIS-DC; cooperating organizations include the Japan Industries Association of Radiological Systems (JIRA), the Japan Association of Healthcare Information Systems Industry (JAHIS), Japan Radiological Society (JRS), Japan Society of Radiological Technology (JSRT), and the Japan Association of Medical Informatics (JAMI). Other organizations representing healthcare professionals are invited to join in the expansion of the IHE process across disciplinary and geographic boundaries.

The IHE Technical Frameworks for the various domains (IT Infrastructure, Cardiology, Laboratory, Radiology, etc.) defines specific implementations of established standards to achieve integration goals that promote appropriate sharing of medical information to support optimal patient care. It is expanded annually, after a period of public review, and maintained regularly through the identification and correction of errata. The current version for these Technical Frameworks may be found at www.ihe.net/Technical_Framework.

The IHE Technical Framework identifies a subset of the functional components of the healthcare enterprise, called IHE Actors, and specifies their interactions in terms of a set of coordinated, standards-based transactions. It describes this body of transactions in progressively greater depth. The volume I provides a high-level view of IHE functionality, showing the transactions organized into functional units called Integration Profiles that highlight their capacity to address specific clinical needs. The subsequent volumes provide detailed technical descriptions of each IHE transaction.

This IHE IT Infrastructure Technical Framework Supplement is issued for Trial Implementation through May 2009..

Comments and change proposals arising from Trial Implementation may be submitted to http://forums.rsna.org under the forum:

"Integrating the Healthcare Enterprise"

Select the sub-forum:

"IHE IT Infrastructure 2007-2008 Supplement for Trial Implementation"

The IHE IT Infrastructure Technical Committee will address these comments resulting from implementation, Connectathon testing, and demonstrations such as HIMSS2009. Final text is expected to be published in August 2009..

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1 Introduction

This supplement provides a new implementation choice for the Cross-Enterprise Document Sharing (XDS) Integration Profile based on a use of the Web Services and ebXML Reg/Rep standards that is consistent with the current developments and best practices in the industry.

The current XDS interoperability profile employs different versions of the same standard (ebXML Registry 2.0 and 3.0) and specifications that have been superseded by other ones (like MTOM replacing SOAP with Attachments or SwA). The existing XDS Integration Profile has been renamed to XDS.a but remains technically unaffected by this Integration Profile. The new IHE XDS.b Integration Profile accomplishes the following:

- Updates the XDS Web Services implementation to SOAP 1.2
- Updates the XDS transactions to use ebXML Registry 3.0 metadata
- Updates the Provide and Register Document Set "on-line" mode transaction to use MTOM instead of the legacy SOAP with Attachments (SwA) mechanism
- Defines a new transaction which provides an MTOM binding for the XDS Retrieve Document transaction (new transaction now named "Retrieve Document Set")
- Updates the IHE XDS Registry Stored Query transaction to be consistent with the other XDS.b transactions. The Registry Stored Query transaction is the same in XDS.a and XDS.b
- Provides informative Web Services Description Language (WSDL) contracts for all the required IHE XDS.b Transactions and WSDL fragments for the options
- References the new Patient Identity Feed HL7v3 [ITI-44] transaction in addition to the existing Patient Identity Feed [ITI-8] transaction based on HL7v2.

The IHE XDS.b Integration Profile is the basis for IHE work in the area of security (see XUA Supplement) and Cross Community communication (see XCA Supplement).

1.1 Background

The Web Services technologies standards have evolved over the past few years to a more mature solution for intra- and cross-enterprise integration and are being supported by an increasing number of platform and vendors, both in commercial and open-source implementations. With this change some of the standards used in the IHE XDS Integration Profile have evolved and matured as well.

Although some more advanced specifications are still evolving and subject to change and therefore not suitable for inclusion in an IHE Integration Profile, most of the foundation specifications are solid and adopted by standard bodies:

- W3C Simple Object Access Protocol (SOAP) 1.2 [SOAP12]
- W3C Web Services Description Language (WSDL) 1.1 [WSDL11]
- W3C XML-binary Optimized Packaging (XOP) 1.0 [XOP10]

- W3C Message Transmission Optimization Mechanism (MTOM) [MTOM]

[SOAP12], [WSDL11] form today the basis for all the Web Services specification and are widely implemented in the industry. [MTOM] and [XOP10] add an efficient way to transport attachments reducing the requirements in terms of bandwidth and resources required to encode/decode the attachment.

1.2 Scope of Supplement

The new Web Services transactions affect primarily the technical implementation of the integration profile. The new transactions are "semantically equivalent" to the existing ones to facilitate bridging and integration scenarios with current IHE XDS implementations. For this reason this supplement proposes to maintain a single XDS chapter in the ITI TF Volume 1 that documents two closely related integration profiles: XDS.a, the existing version of XDS, and XDS.b, the new version more closely aligned with current standards. In addition the coexistence and migration strategies related to those two implementation "flavors" will be specified thus allowing easier interoperability (under specific conditions) between XDS.a and XDS.b.

The changes between XDS.a and XDS.b can be summarized as:

- Change in the metadata format from ebXML Reg/Rep RIM 2.1 to version 3.0
- Added a new repositoryUniqueId attribute to the document metadata
- Defined a new transaction "Retrieve Document Set" for XDS.b to replace the XDS.a Retrieve Document [ITI-17] transaction
- Define updated bindings for Registry Stored Query to reflect changes in the web services specifications

The transactions specified in the XDS.b profile are therefore modified as follows:

- Register Document Set-b [ITI-42]: updated SOAP binding and document metadata format
- Registry Stored Query [ITI-18]: updated SOAP binding to reflect changes in the IHE namespace convention
- Provide and Register Document Set-b [ITI-41]: new MTOM binding and updated document metadata format
- New XDS.b transaction Retrieve Document Set (ITI TF-2:3.43) with MTOM binding

1.3 Open Issues and Questions

1. **A019:** Review XDR on-line for MTOM upgrade

Proposal to update XDR to ebRIM 3.0 document metadata format and hold moving to final text for another year. XDR is still bound to XDS.a Provide and Register Document Set.

Proposed Resolution: Leave XDR as is, bound to XDS.a and ebRIM 2.1and maintain the Trial Implementation version for next year, advising people that it may evolve toward ebRIM 3.0 and MTOM for on-line mode.

2. **A026:** Review Registry Stored Query to include the correct WSDL and namespaces according to action **A028**

- Section 3.18.3 Add SOAP 1.2
- Section 3.18.4.1.2.7
  - IHEWSP201 should be informative as it is not reflected on the wire and does not affect interoperability
  - The table under IHEWSDP201 also should be in the informative appendix
  - IHEWSP202 should not be here as the WSDL is defined per actor/profile, please refer to the Document Registry sample WSDL in Appendix W - XDS.b Supplement
  - See 3.43.5 in the XDS.b supplement for an example of how the normative section of the WSDL should be specified
  - Change section 3.18.4.1.2.7.1 to refer to Appendix W of the XDS.b supplement
- Section 3.18.4.1.4
  - IHEWSP201 should be informative as it is not reflected on the wire and does not affect interoperability
  - IHEWSP202 should not be here as the WSDL is defined per actor/profile, please refer to the Document Registry sample WSDL in Appendix W - XDS.b Supplement
  - Change section 3.18.4.1.4.1 to refer to Appendix W of the XDS.b supplement
  - Please note that the assertions IHEWSPxxxx should be unique across TF volumes. In Stored Query they are repeated.

3. **A029:** Apply CPs
   - No CP changes have been applied to the supplement:
   - Apply CP 28 “Proposed Error Codes” to all the transactions in defined in the Volume 2 supplement. ftp://ftp.ihe.net/IT_Infrastructure/TF_Maintenance-2006-2007/CPs/Assigned/xds_028_06.doc. CP21 needs to be updated to the new Chapter 4 structure. It is worth considering adding the error codes in a new section in Chapter 4.
   - Apply CP 246 “Move XDS Metadata sections to separate chapter and reference from multiple transactions” to section 4.1 that will move out of this document to the final ITI TF Volume 2 text. ftp://ftp.ihe.net/IT_Infrastructure/TF_Maintenance-2006-2007/CPs/Assigned/CP-ITI-246-02.doc

4. **A030:** Impact on XDM

- **Proposed Resolution:** Update XDM to ebRIM 3.0 document metadata format and hold moving to final text for another year

5. **A031:** HL7 V3 Schemas from the May 2007 ballot for Patient Identity Feed HL7v3 are not valid.
   - The following schemas are missing and are not in the May 2007 254MB zip file: COCT_MT900000UV.xsd, MCAI_MT900001UV01.xsd, COCT_MT180000UV04.xsd, COCT_MT510000UV.xsd
   - Also, for the schemas that are there, there are a number of types defined with spaces in their names, which is a violation of XML Schema Definition.
6. **A032:** replace sample OID used in 4.1.7 Document Definition Metadata, Table 4.1-5 Document Metadata Attribute Definition of this supplement with an OID from the IHE root.
7. **A033:** should the Document Registry validate the content of the repositoryUniqueId in the document metadata for the Register Document Set-b transaction?

1.4 Closed Issues

1. **A001:** Need to harmonize the namespace selection and eventually issue a cross committee recommendation on IHE namespace usage.
   - The IHE namespace is temporarily defined in this profile as "http://www.ihe.net/2007/XDS" pending a final decision from IHE IT Tech. The reason for defining an IHE namespace is because this contract is defined by the IHE organization. This is contrast with the current IHE Stored Query WSDL that is defined in the ebXML Reg/Rep namespace.
   - Proposed naming schema:

     http://www.ihe.net/<domain>/<year>/<profile name>/<other>

     for XDS this becomes: http://www.ihe.net/iti/2007/xds
   - **Resolution:** See resolution for **A028** for updated convention
2. **A002:** Define a WSDL for PIX/PDQ v3
   - The current proposed PIX/PDQ v3 profile does not define a WSDL or a web services binding. The WSDL will have to be defined either as part of the PIX/PDQ profile or as part of this one.
   - **Resolution:** new version of PIX/PDQ v3 will harmonize with XDS.b and provide WSDL and new versions of HL7 schemas. WSDL are defined per actor per profile. XDS.b will include Patient Identity Feed HL7v3 transactions in the XDS.b Document Registry WSDL in Appendix W.
3. **A003:** Update PIX/PDQ v3 to reflect latest HL7 Version 3 Normative Edition

- The current proposed PIX/PDQ v3 profile uses an outdated version of HL7 v3 Patient Administration domain as well as an old version of the XML ITS. The profile will have to be updated to the last HL7 Version 3 Normative Edition.
- **Resolution:** second trial implementation version of PIX/PDQ v3 will harmonize with XDS.b and provide WSDL and new versions of HL7 schemas. See resolution of **A002**

4. **A004:** Walk through IHEXDS.XSD and WSDL contracts
   - Agree on nomenclature and cardinality of elements and types
   - **Resolution:** schema and WSDL files reviewed in March 2007 f2f meeting.
5. **A005:** reference W3C MTOM Serialization Policy Assertion (WS-MTOMPolicy) [MTOMPOL] submission as an example of how to configure MTOM serialization.
   - Note for implementers on how MTOM is configured to always deal with binary data instead of base64.
   - **Resolution:** will be added to the XDS.b implementation notes on the IHE Wiki
6. **A006:** who is responsible for resolving the repositoryUniqueId to a Document Repository? The Registry or the Document Consumer?
   - **Resolution:** Resolution of the repositoryUniqueId is responsibility of the document consumer. Document Consumers shall maintain a "configurable" association between the repositoryUniqueId and the service URI in order to allow for positive resolution of repositoryUniqueId to the web service endpoint. If the repository supports Retrieve Document Set forwarding, the document consumer can use that option. The mechanism for maintaining the association is out of scope [possibly addressed in a future profile?]. Suggested wording that allows for changes in the future -- if the document repository cannot use the repository unique id [cannot resolve/forward/figure it out] it shall return an error to the document consumer.
7. **A007:** how to obtain patient id for auditing from repository for retrieve
   - **Resolution:** closed as there is no good way of doing this (final wording for resolution from Bill Majurski)
8. **A008:** striking expires/contentType/contentLanguage/lastModified could affect the operation of XDS bridges
   - **Resolution:** XDS bridge will do a best-effort conversion and provide those values where appropriate
9. **A009:** consolidate response codes across web services (start with reg/rep)
   - **Resolution:** responseCode is a constrained value set and will be defined across IHE Web Services specs. Semantically the code will include the ones define for HTTP Retrieve. Response codes are defined in CP28

10. **A010:** Investigate support for both SOAP 1.1 and 1.2 or exclusive SOAP 1.2
    - WS-Security supports both SOAP 1.1 and SOAP 1.2. We need to decide if we want to bind to a single protocol or allow for both.
    - **Resolution:** require SOAP 1.2 and optionally support SOAP 1.1
11. **A011:** add samples for service location (repositoryUniqueId → repository service location) to the Wiki (UDDI?)
    - **Resolution:** see resolution of A006
12. **A012:** Decide option for XSD.b (new profile, existing profile with different options…)
    - **Resolution:** create a new profile.
13. **A013:** Should patient id be V3 only (see your questions in original emails).
    - Get format requirements/design from Innovazione Italia
    - **Resolution:** keep an eye on the project and provide some feedback from the IHE perspective. Eventually engage Italian representatives to provide feedback directly to IHE.
14. **A014:** Are there any changes to the offline transactions, how does this affect the offline P&R transaction
    - **Resolution:** No offline mode for XDS.b, address as a coexistence/migration scenario. If implementer wants to implement "off-line" it has to implement XDS.a according to IHE rules
15. **A015:** Agree to names for the new transactions
    - **Resolution:** XDS.a is the existing XDS, XDS.b is the new web services version. These are two profiles in the existing Volume 1 XDS chapter.
    - Highlight bridging scenarios where repositories and registries support both XDS.a and XDS.b
    - New transactions will have a "-b" suffix added to them with the exception of the current HTTP Document Retrieve which becomes "Retrieve Document Set"
16. **A016:** Are there any changes needed to support use of the Retrieve Document Set transaction by the Cross Community Access (XCA) profile. Specifically it may be useful to specify a "home" attribute as an optional part of the retrieve document request
    - Discussion postponed until XCA decision, seems like an option affinityDomainUniqueId attribute would solve the problem.
    - **Resolution:** added optional homeCommunityId element in the Retrieve Document Set request and response. The homeCommunityId corresponds to the home attribute of the Identifiable class in regrep RIM (regrep-rim-3.0-os.pdf, page 20).
17. **A017:** Attribute size

- **Resolution:** Limit for repositoryUniqueId is 256 (limit for a value within a slot) according to ebRIM standard

18. **A018:** Include full ebRS/ebRIM 2.1 and 3.0 metadata sample
    - **Resolution:** included sample in Appendix W and referenced from 3.42 and 3.41
19. **A020:** Allow for either v2 or v3 format for Patient Identity Feed
    - **Resolution:** Allow XDS.b to support either Patient Identity Feed (HL7v2) or Patient Identity Feed HL7v3 or both. Support for XDS.a is unchanged and requires Patient Identity Feed HL7v2 and optionally Patient Identity Feed HL7v3.
20. **A021:** should we keep multiple document submission as an option?
    - **Resolution:** We will leave this option there for compatibility reasons with XDS.a
21. **A022:** there is a reference to CDA R1. It seems like it is only used in the root/extension definition. Can we update this to CDA R2?
    - Probably safe to drop, Rob Horn will have a look
    - **Resolution:** dropped references to CDA R1 (or R2) in the XDS.b transactions as not needed.
22. **A023:** should we add affinityDomainUniqueId for XCA? Not needed if repositoryUniqueId is unique across multiple XDS Affinity Domains.
    - Postponed until XCA discussion. See **A016**.
    - **Resolution:** see resolution of **A016**
23. **A024:** add repositoryUniqueId to the Document Retrieve transaction to allow for additional scenarios: repository resolving other's repositories addresses and getting the documents on behalf of the document consumer
    - **Resolution:** add the element to Retrieve Document Set transaction
24. **A025:** metadata tables in current retrieve transactions should go into an appendix
    - **Resolution:** Metadata tables will go into new Chapter 4, section 4.1. XDS.b will refer that section, but still add a repositoryUniqueId attribute
25. **A027:** Review for XDS.b for XCA compatibility
    - Work with Karen Witting
    - **Resolution:** changes included in the Public Comment version of the XDS.b supplement
26. **A028:** Align Appendix V: namespace issues when composing multiple transactions with different namespaces
    - **Resolution:** Define one WSDL per actor per profile, namespace of the WSDL follows the IHE rule **urn:ihe:<cmtee>:<profile>:<year>**. The transaction soapActions follow the rule **urn:ihe:<cmtee>:<year>:<transaction name>** so that they do not depend on the profile (like it is in IHE).

- For HL7v3 based actors, follow the HL7 rules.

1.5 Profile Abstract

355 This supplement provides a new implementation choice for the Cross-Enterprise Document Sharing (XDS) Integration Profile based on a use of the Web Services and ebXML Reg/Rep standards that is consistent with the current developments and best practices in the industry. This new implementation choice is the form of the new Integration Profile XDS.b.

Volume I – Integration Profiles

<This section describes the changes required in Volume I of the Technical Framework that result from including this Integration Profile.>

10 Cross-Enterprise Document Sharing

Add after the introductory text.

As of year 2007-2008, IHE introduces a new Integration Profile for XDS in parallel with the previous one that is renamed to XDS.a.

The new integration profile XDS.b is based on a use of the Web Services and ebXML Reg/Reg standards that is consistent with the current developments and best practices in the industry.

The changes in XDS.b can be summarized as:

- Change in the XDS metadata format from ebXML Reg/Rep RIM 2.1 to version 3.0
- A new repositoryUniqueId attribute added to the XDS metadata
- Definition of a new transaction "Retrieve Document Set" as a new binding for the XDS.a Retrieve Document [ITI-17] transaction
- Definition of updated bindings for existing transactions to reflect changes in the web services specifications

In the rest of the ITI Technical Framework the term XDS refers generically to both XDS.a and XDS.b.

10.1 Actors/ Transactions

Rename current "Figure 10.1-1 Cross-Enterprise Document Sharing Diagram" to "Figure 10.1-1a Cross-Enterprise Document Sharing (XDS.a) Diagram"

Rename current "Table 10.1-1 XDS - Actors and Transactions" to "Table 10.1-1a XDS.a - Actors and Transactions"

At the end of section 10.1 add the following:

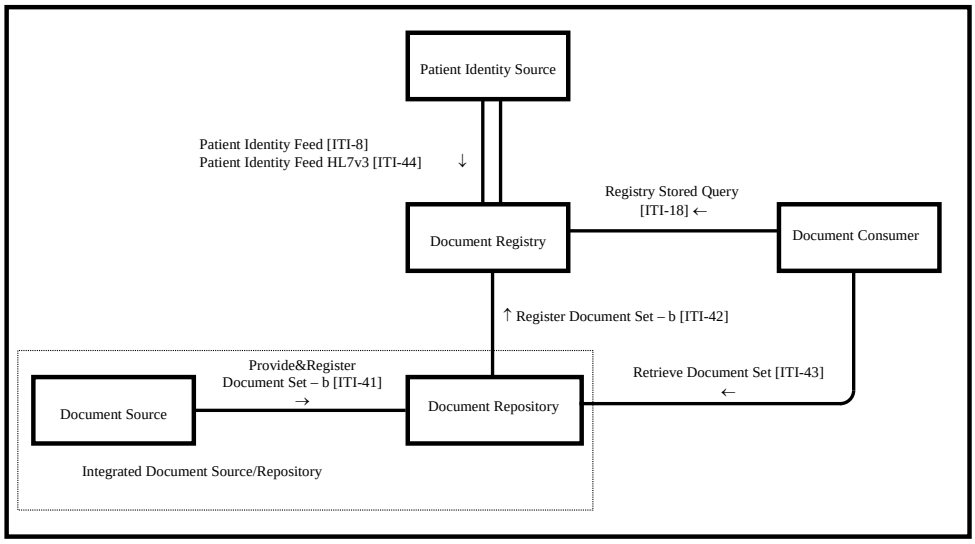

Figure 10.1-1b Cross-Enterprise Document Sharing – b (XDS.b) Diagram

Table 10.1-1b XDS.b - Actors and 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

Note 1: If Assigning Authority of Patient ID presents in the Patient Identity Feed or Patient Identity Feed HL7v3 transaction, the Patient Identity Source is required to use an OID to identify the Assigning Authority. For technical details of the assigning authority information, see Transaction [ITI-8] in Technical Framework, Volume 2.

Note 2: Document Registry and Patient Identify Source shall implement at least one of Patient Identity Feed or Patient Identity Feed HL7v3.

10.1.2.3 Query Registry

Add as the first sentence of the section:

The Query Registry Transaction is not supported in XDS.b.

10.1.2.4 Retrieve Document

Add as the first sentence of the section:

The Retrieve Document Transaction is not supported in XDS.b.

10.1.2.5 Patient Identity Feed

Replace text with the following updated text:

The Patient Identity Feed Transaction conveys the patient identifier and corroborating demographic data, captured when a patient's identity is established, modified or merged or in cases where the key corroborating demographic data has been modified. Its purpose in the XDS Integration Profile is to populate the registry with patient identifiers that have been registered for the XDS Affinity Domains.

The Patient Identify Feed Transaction defined in ITI TF-2:3.8 for HL7v2 and in ITI TF-2:3.44 for HL7v3 uses standard HL7 encoding of Patient Identifiers. This is standard encoding for HL7 applications; receiving applications are expected to extract the required data for their use.

When combined with the other XDS transactions, Document Registry actors and other actors that receive HL7 data with Patient Identifiers are required to map the data received in the HL7 message to the format specified in those other XDS transactions. In those transactions, the Patient ID is treated using ebXML encoding rules and not HL7 encoding rules. Specifically, the Patient ID will be treated as a string, and extra components entered in that string shall cause those transactions to fail. XDS actors are required to use the specified encoding for Patient ID values in other transactions and not merely copy the value received in an HL7 transaction.

XDS.a implementations shall support Patient Identity Feed (ITI TF-2:3.8).

XDS.b implementations shall support either Patient Identity Feed (ITI TF-2:3.8) or Patient Identity Feed HL7v3 (ITI TF-2:3.44) or both. It is important to note that the version of HL7 implemented by XDS.b and Patient Identity Feed in a single domain or community need to match in order to allow interoperability. In the case of mixed scenarios, translation between Patient Identity Feed (ITI TF-2:3.8) and Patient Identity Feed HL7v3 (ITI TF-2:3.44) will be required via a bridge or interface engine.

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10.1.2.7 Retrieve Document Set

Add the following:

The Retrieve Document Set transaction (ITI TF-2:3.43) is not supported in XDS.a.

A Document Consumer Actor initiates the Retrieve Document Set transaction. The Document
430 Repository shall return the document set that was specified by the Document Consumer.

10.2 Integration Profile Options

Rename current table 10.2-1 to "Table 10.2-1a XDS.a - Actors and Options"

Add the following table for XDS.b options:

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

Actor	Options	Vol & Section
Document Source	Document Replacement	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-1:10.2.4
	Basic Patient Privacy Enforcement	ITI TF-2: 3.15.4.1.3.1
Document Repository	No options defined	
Document Registry (Note 2)	Patient Identity Feed (Note 1)	ITI TF-2:3.8
	Patient Identity Feed HL7v3 (Note 1)	ITI TF-2:3.44
Integrated Document Source / Repository	Document Replacement	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-1:10.2.4
Document Consumer	Basic Patient Privacy Enforcement	ITI TF-2:3.18.4.1.3.5 ITI TF-2:3.17.4.1.3.1
	Basic Patient Privacy Proof	ITI TF-2:3.18.4.1.3.6
Patient Identity Source	Patient Identity Feed (Note 1)	ITI TF-2:3.8
	Patient Identity Feed HL7v3 (Note 1)	ITI TF-2:3.44

Note 1: Document Registry and Patient Identify Source shall implement at least one of Patient Identity Feed or Patient Identity Feed HL7v3.

Note 2: A XDS Document Registry has always been required to validate that documents that are registered do contain a confidentialityCode from an XDS Affinity Domain vocabulary. The BPPC profile is giving some structure to this
440 XDS Affinity Domain defined vocabulary.

10.4.12 Transport Modes

Replace text in this section with the following:

The XDS Integration Profile defines an on-line mode of transport for both XDS.a and XDS.b transactions. In addition to that, XDS also defines an off-line mode option for the XDS.a Provide and Register Document Set transaction for both for the Document Source and the Document Repository. In the "on-line mode" the transaction between two actors (computer applications) requires their simultaneous presence (e.g. an HTTP GET). In the "off-line mode" the transaction between the two actors (computer applications) does not require their simultaneous presence (e.g. a store and forward e-mail exchange).

1. A Web Services- or HTTP-based protocol shall be used for on-line operation.
2. The SMTP protocol shall be used for off-line operation.

10.6 Patient Identifier Communication Requirements

Add the following text after the text in section 10.6:

XDS.a implementations shall support Patient Identity Feed (ITI TF-2:3.8).

XDS.b implementations shall support either Patient Identity Feed (ITI TF-2:3.8) or Patient Identity Feed HL7v3 (ITI TF-2:3.44) or both. It is important to note that the version of HL7 implemented by XDS.b and Patient Identity Feed in a single domain or community need to match in order to allow interoperability. In the case of mixed scenarios, translation between Patient Identity Feed (ITI TF-2:3.8) and Patient Identity Feed HL7v3 (ITI TF-2:3.44) will be required via a bridge or interface engine.

Add the following new section:

10.7 Migration and Coexistence Scenarios

The XDS.a and XDS.b Integration Profiles are equivalent in terms of functionality. In addition, the definition of the XDS.b transactions are as semantically aligned with those in XDS.a as is technically feasible. This can facilitate migration from XDS.a to XDS.b, if desired, as well as coexistence of implementations supporting the two Integration Profiles in the same environment. The objective of this section is to provide an example of a possible migration and coexistence scenarios and highlight the implications for decision makers and implementers.

There are additional migration and coexistence scenarios and strategies besides those stated below. These will be discussed in more detail in the XDS.b implementation notes available on the IHE Wiki at http://wiki.ihe.net/index.php?title=XDS.b.

10.7.1 Example of Migration from XDS.a to XDS.b Interfaces

An XDS.a environment (Document Sources and Consumers, Document Registries and Repositories all support XDS.a transactions) wants to support new Document Sources and

Consumers that only support XDS.b transactions. In this case a possible coexistence strategy would encompass the following steps:

- **Upgrade the Document Repositories** to support the XDS.b transactions and maintain support for the XDS.a transactions. The Document Repository will have an assigned repositoryUniqueId. Since the Document Repository still supports XDS.a transactions, it shall populate the document URI attribute in accordance with the rules for XDS.a in the Register Document Set transaction. This allows existing XDS.a Document Consumers to continue retrieve documents using the Retrieve Document transaction.
- **Upgrade the Document Registry** to support the XDS.b transactions and maintain support for the XDS.a transactions. The upgrade process will have to go though the existing registered documents and add the repositoryUniqueId metadata attribute based on the document URI value and a configuration table that would allow it to positively resolve the Document Repository associated with that URI. This environment now supports XDS.b Document Consumers in addition to XDS.b Document Sources.

The resulting environment has a Document Registry and Document Repositories that support both XDS.a and XDS.b transactions. This allows for coexistence of both XDS.a and XDS.b Document Sources and Consumers. Eventually the remaining XDS.a actors could be phased out and support for XDS.a transactions dropped from the Document Registry and Repositories.

XDS.b does not support XDS.a "off-line" mode; therefore if that kind of support is needed for XDS.a Document Sources, the Document Repository shall continue to support that part of XDS.a as well.

10.7.2 Example of Coexistence among XDS.a and XDS.b Interfaces

Instead of having the Document Repository and Document Registry support both the XDS.a and XDS.b interfaces, one could build a message translation technology component that bridges between Document Source and Document Consumer actors in one mode (XDS.a or XDS.b) with the Document Repository and Document Registry in the other mode, where discrepant modes exist.

An XDS.a/XDS.b message translation technology component may be designed to support:

- Translating a Provide and Register Document Set transaction (XDS.a) into a Provide and Register Document Set-b transaction (XDS.b).
- Translating a Provide and Register Document Set-b transaction (XDS.b) into a Provide and Register Document Set transaction (XDS.a).
- Translating a Retrieve Document transaction (XDS.a) into a Retrieve Document Set (XDS.b). This case requires mapping from a document URI to a repository ID and document ID.
- Translating a Retrieve Document Set transaction (XDS.b) into a Retrieve Document transaction (XDS.a). This case requires mapping from repository ID and document ID to a document URI.

The Registry Stored Query Transaction does not need translation as it is identical for both XDS.a and XDS.b.

10.7.3 Requirements When Choosing to Support Both XDS.a and XDS.b

An implementation of XDS may choose to support both XDS.a and XDS.b transactions. If this choice is made, the following requirements shall be met:

- The Actor shall implement and support all its required transactions according to the XDS.a and XDS.b specifications.
- Document Registry and Document Repository actors shall support these transactions simultaneously and shall not require reconfiguration nor disrupt their availability in any way in order to switch between XDS.a and XDS.b operation modes.

Appendix B: Transaction Description

Add new transactions for XDS.b:

Register Document Set-b: A Document Repository actor initiates the Register Document Set-b transaction. This transaction allows a Document Repository Actor to register one or more documents in a Document Registry, by supplying metadata about each document to be registered. This document metadata will be used to create XDS Submission Set, XDS Document, and potentially XDS Folder Entries in the registry. The Document Registry actor ensures that document metadata is valid before allowing documents to be registered. If one or more documents fail the metadata validation, the Register Document Set-b transaction fails as a whole.

Provide and Register Document Set-b: A Document Source actor initiates the Provide and Register Document Set-b transaction. For each document in the submitted set, the Document Source actor provides both the documents as an opaque octet stream and the corresponding metadata to the Document Repository. The Document Repository is responsible to persistently store these documents, and to register them in the Document Registry using the Register Document Set-b transaction by forwarding the document metadata received from the Document Source actor.

Retrieve Document Set: A Document Consumer actor initiates the Retrieve Document Set transaction. The Document Repository will return the set of documents that was specified by the Document Consumer.

Appendix E: Cross Profile Consideration

Replace E.2 with the following:

The RID Retrieve Document for Display transaction [ITI-12] is compatible with the XDS.a Retrieve Document transaction [ITI-17]. Thus, an RID Information Source implementing the Retrieve Document for Display transaction can be used to implement the XDS.a Retrieve Document transaction. In this instance, the RID Information Source must be a Secure Node [see ATNA].

RID is not compatible with XDS.b Retrieve Document Set transaction.

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3 IHE Transactions

Make the following changes to TF Rev. 5.0 Final Text (adding the second bulleted text to existing text)

3.15.4.1 Provide and Register Document Set Message

A Document Source sends documents and associated metadata to a Document Repository that has an associated Document Registry. This message corresponds to an ebRS SubmitObjectsRequest with associated documents.

The Document Repository shall, upon receipt of a Provide and Register Document Set [ITI-15] transaction send a corresponding Register Document Set [ITI-14] transaction to the Document Registry actor.

- The Document Repository actor shall create and insert the XDSDocumentEntry.URI, XDSDocumentEntry.size, and XDSDocumentEntry.hash attributes for each document received from the Provide and Register Document Set [ITI-15] transaction into the Register Document Set [ITI-14] transaction metadata. If any of these attributes are present in the Provide and Register Document Set [ITI-15] transaction they shall be replaced. The XDSDocumentEntry.URI attribute value shall later be accepted in a Retrieve Document transaction [ITI-17] for that document and the document shall be returned.
- **The Document Repository actor shall also create and insert the XDSDocumentEntry.repositoryUniqueId attribute if it will support retrieval of that document via the Retrieve Document Set transaction [ITI-43]. If ITI-43 is not supported then this attribute shall not be present in ITI-14 metadata (removed by the Document Repository actor if necessary).**

3.41 Provide and Register Document Set-b

This section corresponds to Transaction [ITI-41] of the IHE Technical Framework. Provide and Register Document Set-b is used by the Document Source to provide a set of documents to the Document Repository, and to request that the Document Repository store these documents and then register them with the Document Registry.

Integration Profiles using this Transaction
Cross-Enterprise Document Sharing-b (XDS.b)

The Provide and Register Document Set-b transaction describes only the interaction between the Document Source and Document Repository actors. The interaction between the Document Repository and the Document Registry is described separately in the Register Document Set-b Transaction [ITI-42].

This transaction aligns with the Registry Services standard (ebRS) for the format of the document metadata as defined in Chapter 4.1. The ebRS standard covers the interaction with a service that includes a registry with integrated repository. From the point of view of the Document Source, the separate nature of the Document Registry and Document Repository actors is not relevant.

By specifying separate Document Registry and Document Repository actors, XDS offers additional flexibility of having a single Document Registry index content for multiple Document Repositories. The ebRIM portion of the registry standard supports this possibility though the ExternalLink object type.

The documents and metadata go to the Document Repository actor and then the metadata is forwarded on to the Document Registry actor. They move in this direction for several reasons:

- Allows best reuse of ebXML Registry specified metadata and web services protocols
- Document Source only needs to know the identity of the Document Repository. Document Repository knows the identity of the Document Registry. If Provide and Register Document Set-b transaction were sent to the Document Registry then routing decisions for documents would be more complex.
- Resulting protocols are simpler
- Simplifies the common case where the Document Source and the Document Repository are grouped.

3.41.1 Scope

The Provide and Register Document Set-b transaction passes a Repository Submission Request (see ITI TF-2: 4.1.3.1) from a Document Source to a Document Registry.

A Provide and Register Document Set-b transaction shall carry:

- Metadata describing zero or more documents
- Within metadata, one XDSDocumentEntry object per document
- XDS Submission Set definition along with the linkage to new documents and references to existing documents
- Zero or more XDS Folder definitions along with linkage to new or existing documents
- Zero or more documents

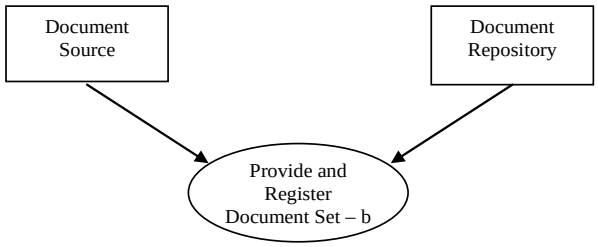


Figure 3.41.2 Use Case Roles

Actor: Document Source

Role: A system that submits documents and associated metadata to a Document Repository. Detailed requirements for this actor are discussed in section 3.41.6.1.

Actor: Document Repository

Role: A document storage system that receives documents and associated metadata and:

- Stores the documents
- Enhances submitted metadata with repository information to enable later retrieval of documents
- Forwards the enhanced metadata to the Document Registry.

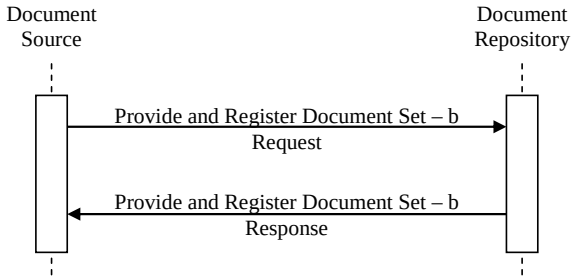
Detailed requirements for this actor are discussed in section 3.41.6.2.

3.41.3 Referenced Standards

Implementors of this transaction shall comply with all requirements described in ITI TF-2: ITI TF-2:Appendix V: Web Services for IHE Transactions.

ebRIM	OASIS/ebXML Registry Information Model v3.0
ebRS	OASIS/ebXML Registry Services Specifications v3.0
Appendix V	ITI TF-2:Appendix V Web Services for IHE Transactions Contains references to all Web Services standards and requirements of use
MTOM	SOAP Message Transmission Optimization Mechanism http://www.w3.org/TR/soap12-mtom/
XOP	XML-binary Optimized Packaging http://www.w3.org/TR/2005/REC-xop10-20050125/

3.41.4 Interaction Diagram



3.41.4.1 Provide and Register Document Set-b Request

A Document Source sends documents and associated metadata to a Document Repository that has an associated Document Registry.

The Document Repository shall, upon receipt of a Provide and Register Document Set-b [ITI-41] transaction send a corresponding Register Document Set-b [ITI-42] transaction to the Document Registry actor.

- The Document Repository actor shall create and insert the XDSDocumentEntry.repositoryUniqueId, XDSDocumentEntry.size, and XDSDocumentEntry.hash attributes for each document received from the Provide and Register Document Set-b [ITI-41] transaction into the resulting Register Document Set-b [ITI-42] transaction metadata. The combination of XDSDocumentEntry.uniqueId and XDSDocumentEntry.repositoryUniqueId attributes value shall later be accepted in a Retrieve Document Set transaction [ITI-43] for that document and the document shall be returned.
- The Document Repository actor shall also create and insert the XDSDocumentEntry.URI attribute for each document received from the Provide and Register Document Set-b [ITI-41] transaction into the Register Document Set-b [ITI-42] transaction metadata if it will support retrieval of that document via the Retrieve Document [ITI-17] transaction. If this attribute is present in the Provide and Register Document Set-b [ITI-41] transaction it shall be replaced. If the Retrieve Document [ITI-17] transaction is not supported then this attribute shall not be present in Register Document Set-b [ITI-42] transaction metadata (removed by the Document Repository actor if necessary).

3.41.4.1.1 Trigger Events

The Document Source, based on a human decision or the application of a certain rule of automatic operation, wants to submit

- A set of zero or more documents to the Document Repository and
- The associated metadata to the Document Registry.

3.41.4.1.2 Message Semantics

The sections in Chapter 4.1 specify the mapping of XDS concepts to ebRS and ebRIM semantics and document metadata. A full example of document metadata submission can be found in Appendix W.

3.41.4.1.3 Expected Actions

The Provide and Register Document Set-b message shall include the metadata attributes (as defined in section 4.1.7 Document Definition Metadata) that will be forwarded by the Document Repository to the Document Registry using the Register Document Set-b transaction [ITI-42].

The Document Repository receives this message. Each document within the message shall be stored into the Document Repository as an octet stream with an associated MIME type. A detected failure shall result in an error message being returned to the Document Source thus terminating this transaction.

The Document Source shall supply all necessary document metadata attributes with the exception of the ones below. The Document Repository shall modify the received document metadata before initiating the Register Document Set-b transaction to the Document Registry by adding/replacing:

- The repositoryUniqueId for this Document Repository to allow for the Document Consumer to correctly identify the proper Document Repository for each document (XDSDocumentEntry.repositoryUniqueId).
- A hash value (XDSDocumentEntry.hash)
- A size (XDSDocumentEntry.size).
- Optionally a URI identifier (XDSDocumentEntry.URI) that can be used by a Document Consumer to reference the document. This is only required if the repository is an XDS.a Document Repository therefore supporting the Retrieve Document [ITI-17] transaction.

A Register Document Set-b transaction with this modified metadata shall be issued to the Document Registry.

The Document Repository shall ensure that when any Retrieve Document Set transaction is received requesting a specific document(s), it shall be provided to the Document Consumer unchanged from the octet stream that was submitted (full fidelity repository) and shall match the size and hash attributes of the XDSDocumentEntry object.

3.41.4.1.3.1 Basic Patient Privacy Enforcement Option

If the Basic Patient Privacy Enforcement Option is implemented:

1. The Document Source actor shall populate the confidentialityCode in the document metadata with the list of OID values that identify the Patient Privacy Consent Policies that apply to the associated document. The confidentiality codes for different documents in the same submission may be different.

2. The Document Source actor shall be able to be configured with the Patient Privacy Consent Policies, Patient Privacy Consent Policy Identifiers (OIDs) and associated information necessary to understand and enforce the XDS Affinity Domain Policy. The details of this are product specific and not specified by IHE.
3. The Document Source actor may have user interface or business rule capabilities to determine the appropriate confidentiality codes for each document. The details of this are product specific and not specified by IHE. However, the information about how confidentiality codes are assigned must be part of the published policy for the XDS Affinity Domain. Note: For example, when publishing a document, the Document Source, might show a list of checkboxes where a user can select which of the available consents a document is to be published.
4. The Document Recipient actor shall be able to be configured with the Patient Privacy Consent Policies, Patient Privacy Consent Policy Identifiers (OIDs) and associated information necessary to understand and enforce the policies. The meanings of the codes on the media must be provided out of band, e.g., by telephone, fax, or email. The detail of how this is done is product specific and not specified by IHE. If the documents are transferred internally within the organization or to other members of the recipient's affinity domain, appropriate internal confidentiality codes shall be applied.
5. The Document Recipient actor shall have the ability to coerce the confidentiality code in the metadata associated with the document from the codes used by the Document Source to the codes used by the Document Recipient.
6. The Document Recipient actor shall abide by the XDS Affinity Domain Policies represented by the confidentialityCode in the metadata associated with the document. The Document Recipient actor likely will have user access controls or business rule capabilities to determine the details of how confidentiality codes apply to query results. The details of this are product specific and not specified by IHE. These rules shall reduce the query results to only those that are appropriate to the current situation for that actor and user.

3.41.4.2 Provide and Register Document Set-b Response

The Document Repository sends a Provide and Register Document Set-b Response when the processing of a Provide and Register Document Set-b Request is complete.

The Provide and Register Document Set-b Response message shall carry the status of the requested operation and an error message if the requested operation failed. The conditions of failure and possible error messages are given in the ebRS standard and detailed in **4.1.13 Error Reporting**.

3.41.4.2.1 Trigger Events

The following events can trigger this message:

- Documents stored to repository successfully and metadata stored to registry successfully (The registry part is carried out as part of a Register Document Set-b transaction)
- Documents stored to repository successfully but an error occurred in storing the metadata to the registry
- Documents were not successfully stored to the repository

3.41.4.2.2 Message Semantics

The Provide and Register Document Set-b Response message shall carry the status of the requested operation and an error message if the requested operation failed. The conditions of failure and possible error messages are given in the ebRS standard and detailed in **4.1.13 Error Reporting**.

3.41.4.2.3 Expected Actions

The Document Source now knows that the transaction succeeded/failed and can continue. The metadata added to the registry as a result of this transaction is now available for discovery via Registry Stored Query transactions. The document(s) added to the repository are now available for retrieval.

3.41.5 Protocol Requirements

Implementors of this transaction shall comply with all requirements described in ITI TF-2:Appendix V: Web Services for IHE Transactions.

The Provide and Register Document Set-b transaction shall use SOAP12 and MTOM with XOP encoding (labeled MTOM/XOP in this specification). See Appendix V for details.

WSDL Namespace Definitions

ihe	urn:ihe:iti:xds-b:2007
rs	urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0
lcm	urn:oasis:names:tc:ebxml-regrep:xsd:lcm:3.0
query	urn:oasis:names:tc:ebxml-regrep:xsd:query:3.0

These are the requirements for the Provide and Register Document Set-b transaction presented in the order in which they would appear in the WSDL definition:

- The following types shall be imported (xsd:import) in the /definitions/types section:
  - namespace="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0", schema="rs.xsd"
  - namespace="urn:ihe:iti:xds-b:2007", schemaLocation="IHEXDS.xsd"
- The /definitions/message/part/@element attribute of the Provide and Register Document Set-b Request message shall be defined as “ihe:ProvideAndRegisterDocumentSetRequest”
- The /definitions/message/part/@element attribute of the Provide and Register Document Set-b Response message shall be defined as “rs:RegistryResponse”

- The /definitions/portType/operation/input/@wsaw:Action attribute for the Provide and Register Document Set-b Request message shall be defined as "urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-b"
- The /definitions/portType/operation/output/@wsaw:Action attribute for the Provide and Register Document Set-b Response message shall be defined as "urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-bResponse"
- The /definitions/binding/operation/soap12:operation/@soapAction attribute shall be defined as "urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-b"

These are the requirements that affect the wire format of the SOAP message. The other WSDL properties are only used within the WSDL definition and do not affect interoperability. Full sample request and response messages are in section **3.41.5.1 Sample SOAP Messages**.

For informative WSDL for the Document Repository actor see Appendix W.

The <ihe:ProvideAndRegisterDocumentSetRequest/> element is defined as:

- One <lcm:SubmitObjectsRequest/> element that contains the submission set metadata
- Zero or more <ihe:Document/> elements that contain the base64encoded data for the documents being submitted to the Document Repository. The <ihe:Document/> element also includes the document id attribute (ihe:Document/@id) of type xsd:anyURI to match the document ExtrinsicObject id in the metadata and providing the necessary linkage

The use of MTOM/XOP is governed by the following rules:

- The Document Repository shall accept documents in a Provide and Register Document Set-b transaction in MTOM/XOP format. The response message shall use MTOM/XOP format.
- The Document Source shall generate Provide and Registery Document Set-b transactions in MTOM/XOP format. It shall accept the response message in MTOM/XOP format.

A full XML Schema Document for the XDS.b types is available online on the IHE FTP site, see Appendix W.

3.41.5.1 Sample SOAP Messages

The samples in the following two sections show a typical SOAP request and its relative SOAP response. The sample messages also show the WS-Addressing headers <Action/>, <MessageID/>, <ReplyTo/>…; these WS-Addressing headers are populated according to the IHE Appendix V: Web Services for IHE Transactions. The body of the SOAP message is omitted for brevity; in a real scenario the empty element will be populated with the appropriate metadata.

Samples presented in this section are also available online on the IHE FTP site, see Appendix W.

3.41.5.1.1 Sample Provide and Register Document Set-b SOAP Request

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

```
POST /axis2/services/repository HTTP/1.1
Content-Type: multipart/related; boundary=MIMEBoundaryurn_uuid_76A2C3D9BCD3AECFF31217932910180;
type="application/xop+xml"; start="<0.urn:uuid76A2C3D9BCD3AECFF31217932910181@apache.org>";
start-info="application/soap+xml"; action="urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-b"
User-Agent: Axis2
Host: localhost:4040
Content-Length: 4567

--MIMEBoundaryurn_uuid_76A2C3D9BCD3AECFF31217932910180
Content-Type: application/xop+xml; charset=UTF-8; type="application/soap+xml"
Content-Transfer-Encoding: binary
Content-ID: <0.urn:uuid:76A2C3D9BCD3AECFF31217932910181@apache.org>

<?xml version='1.0' encoding='UTF-8'?>
<soapenv:Envelope xmlns:soapenv="http://www.w3.org/2003/05/soap-envelope"
xmlns:wsa="http://www.w3.org/2005/08/addressing">
    <soapenv:Header>
        <wsa:To>http://localhost:4040/axis2/services/test11966a</wsa:To>
        <wsa:MessageID>urn:uuid:76A2C3D9BCD3AECFF31217932910053</wsa:MessageID>
        <wsa:Action soapenv:mustUnderstand="1">urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-
b</wsa:Action>
    </soapenv:Header>
    <soapenv:Body>
        <xdsb:ProvideAndRegisterDocumentSetRequest xmlns:xdsb="urn:ihe:iti:xds-b:2007">
            <lcm:SubmitObjectsRequest xmlns:lcm="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:3.0">
                <rim:RegistryObjectList xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:3.0">

                 <!-- Registry Metadata goes here -->

                </rim:RegistryObjectList>
            </lcm:SubmitObjectsRequest>
            <xdsb:Document id="Document01">
                <xop:Include href="cid:1.urn:uuid:76A2C3D9BCD3AECFF3121793290229@apache.org"
                    xmlns:xop="http://www.w3.org/2004/08/xop/include"/>
            </xdsb:Document>
        </xdsb:ProvideAndRegisterDocumentSetRequest>
    </soapenv:Body>
</soapenv:Envelope>

--MIMEBoundaryurn_uuid_76A2C3D9BCD3AECFF31217932910180
Content-Type: text/plain
Content-Transfer-Encoding: binary
Content-ID: <1.urn:uuid:76A2C3D9BCD3AECFF31217932910229@apache.org>

This is my document.

It is great!


--MIMEBoundaryurn_uuid_76A2C3D9BCD3AECFF31217932910180--
```

Formatted: French (France)

Formatted: French (France)

3.41.5.1.2 Sample Provide and Register Document Set-b SOAP Response

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

```
<s:Envelope
                xmlns:s="http://www.w3.org/2003/05/soap-envelope"
                xmlns:a="http://www.w3.org/2005/08/addressing">
        <s:Header>
                <a:Action s:mustUnderstand="1">
                        urn:ihe:iti:2007:ProvideAndRegisterDocumentSet-bResponse
                </a:Action>
                <a:RelatesTo>urn:uuid:6d296e90-e5dc-43d0-b455-7c1f3eb35d83</a:RelatesTo>
        </s:Header>
        <s:Body>
                <rs:RegistryResponse
                        status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success"
                        xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0" />
        </s:Body>
</s:Envelope>
```

3.41.6 Actor Requirements

This section summarizes the responsibilities of the actors relevant to this transaction.

3.41.6.1 Document Source

An implementation of the Document Source actor shall be capable of the following operations:

- Submit one or more documents. Whether a submission contains a single or multiple documents depends on workflows, policies, and other external factors which are outside of the scope of this profile.
- Submit a document as a replacement for another document already in the registry/repository

An implementation of the Document Source actor may support one or more of the following XDS.b options:

- **Document Replace Option:** In this option the Document Source offers the ability to submit a document as a replacement for another document already in the registry/repository.
- **Document Addendum Option** In this option the Document Source shall offer the ability to submit a document as an addendum to another document already in the registry/repository.
- **Document Transformation Option** In this option the Document Source shall offer the ability to submit a document as a transformation of another document already in the registry/repository.

Note: In order to support document replacement/addendum/transformation grouping with the Document Consumer may be necessary in order to Query the registry (e.g. for UUIDs of existing document entries)

- **Folder Management Option.** In this option the Document Source offers the ability to perform the following operation:
  - Create a folder
  - Add one or more documents to a folder

Note: In order to support document addition to an existing folder, grouping with the Document Consumer may be necessary in order to Query the registry (e.g. for UUIDs of existing folder).

These operations are discussed in section **4.1.3.4 Other Properties of Submission Requests**.

3.41.6.2 Document Repository

A Document Repository shall be capable of accepting submissions containing multiple documents.

Note: The Document Source may submit single documents or multiple documents depending on its needs.

A Document Repository shall validate the following metadata elements received as part of a Provide and Register transaction:

- **XDSDocumentEntry.uniqueId** – a submission shall be rejected if not unique within the repository and the hashes of the two documents do not match. If the hashes of the documents match, the Document Repository shall accept the duplicate document.
- **XDSSubmissionSet.sourceId** – a Document Repository may choose to accept submissions only from certain sources and use this field to perform the filtering.

Note: the document URI attribute is optional for XDS.b implementations. If the XDSDocumentEntry.URI attribute is present, then the Document Repository shall support the Retrieve Document transaction (ITI TF-2:3.17). More details on this scenario are described in section **10.7.2 Example of Coexistence among XDS.a and XDS.b Interfaces.**

If the attributes “hash” and “size” are received in a Provide and Register Document Set-b [ITI-41] transaction, they shall be ignored.

3.41.7 Security Considerations

Relevant XDS Affinity Domain security considerations are discussed in the Register Document Set transaction (see ITI TF-2: 3.14.5.1).

3.41.7.1 Audit Record Considerations

The Provide and Register Document Set-b Transaction is PHI-Export event, as defined in table 3.20.6-1. The Actors involved in the transaction shall create audit data in conformance with DICOM (Supp 95) “Data Export”/”Data Import”, with the following exceptions.

3.41.7.1.1 Document Source audit message:

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110106, DCM, "Export")
	EventActionCode	M	"R" (Read)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("ITI-41", "IHE Transactions", "Provide and Register Document Set-b")
Source (Document Source) (1)			
Human Requestor (0..n)			
Destination (Document Repository) (1)			
Audit Source (Document Source) (1)			
Patient (1)			
SubmissionSet (1)			

Where:

Source AuditMessage/ ActiveParticipant	UserID	C	When WS-Addressing is used: <ReplyTo/>
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	M	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.
Human Requestor (if known) AuditMessage/ ActiveParticipant	UserID	M	Identity of the human that initiated the transaction.
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	U	Access Control role(s) the user holds that allows this transaction.
	NetworkAccessPointTypeCode	*NA*	
	NetworkAccessPointID	*NA*	

Destination AuditMessage/ ActiveParticipant	UserID	M	SOAP endpoint URI.
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"false"
	RoleIDCode	M	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Audit Source AuditMessage/ AuditSourceIdentification	*AuditSourceID*	*U*	*Not specialized.*
	AuditEnterpriseSiteID	*U*	*not specialized*

	AuditSourceTypeCode	*U*	*not specialized*

Patient (AudittMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	M	"1" (Person)
	ParticipantObjectTypeCodeRole	M	"1" (Patient)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(2, RFC-3881, "Patient Number")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*
Submission Set (AudittMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	M	"2" (System)
	ParticipantObjectTypeCodeRole	M	"20" (job)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV("urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd", "IHE XDS Metadata", "submission set classificationNode")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The submissionSet unique ID
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

3.41.7.1.2 Document Repository audit message:

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110107, DCM, "Import")
	EventActionCode	M	"C" (Create)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("ITI-41", "IHE Transactions", "Provide & Register Document Set-b")
Source (Document Source) (1)			
Destination (Document Repository) (1)			
Audit Source (Document Repository) (1)			
Patient (1)			
SubmissionSet (1)			

940 Where:

Source AuditMessage/ ActiveParticipant	UserID	C	When WS-Addressing is used: <ReplyTo/>
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	M	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Destination **AuditMessage/ ActiveParticipant**	UserID	M	SOAP endpoint URI
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"false"
	RoleIDCode	M	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Audit Source **AuditMessage/ AuditSourceIdentification**	*AuditSourceID*	*U*	*Not specialized.*
	AuditEnterpriseSiteID	*U*	*not specialized*
	AuditSourceTypeCode	*U*	*not specialized*

Patient **(AuditMessage/ ParticipantObjectIdentification)**	ParticipantObjectTypeCode	M	"1" (Person)
	ParticipantObjectTypeCodeRole	M	"1" (Patient)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(2, RFC-3881, "Patient Number")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*
Submission Set **(AuditMessage/ ParticipantObjectIdentification)**	ParticipantObjectTypeCode	M	"2" (System)
	ParticipantObjectTypeCodeRole	M	"20" (job)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV("urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd", "IHE XDS Metadata", "submission set classificationNode")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The submissionSet unique ID
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

3.42 Register Document Set-b

945 This section corresponds to transaction [ITI-42] of the IHE IT Infrastructure Technical Framework. Transaction [ITI-42] is used by the Document Repository Actor to register a set of documents with the Document Registry in XDS.b.

Integration Profiles using this Transaction
Cross-Enterprise Document Sharing-b (XDS.b)

3.42.1 Scope

The Register Document Set-b transaction passes a Submission Request from a Document Repository actor to a Document Registry actor.

A Register Document Set-b transaction shall carry:

- Metadata describing zero or more documents
- XDS Submission Set definition along with the linkage to new documents and references to existing documents
- An optional XDS Folder definitions along with linkage to new or existing documents

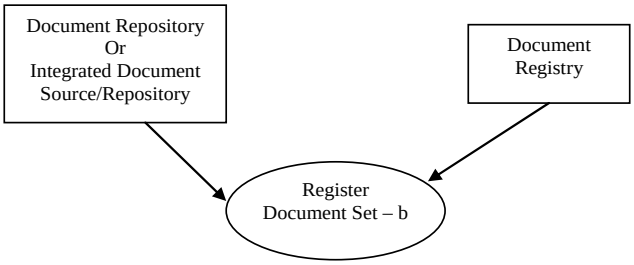


Figure 3.42.2: Use Case Roles

Actor: Document Repository or Integrated Document Source/Repository

Role: A document storage system that submits document metadata to a Document Registry.

Actor: Document Registry

Role: A document indexing system that receives and stores document metadata.

Note: Within this transaction, the Document Repository and Integrated Document Source/Repository actors can be used interchangeably

3.42.3 Referenced Standards

Implementors of this transaction shall comply with all requirements described in Appendix V: Web Services for IHE Transactions.

ebRIM	OASIS/ebXML Registry Information Model v3.0
ebRS	OASIS/ebXML Registry Services Specifications v3.0
HL7V2	HL7 Version 2.5
Appendix V	ITI TF-2:Appendix V Web Services for IHE Transactions Contains references to all Web Services standards and requirements of use

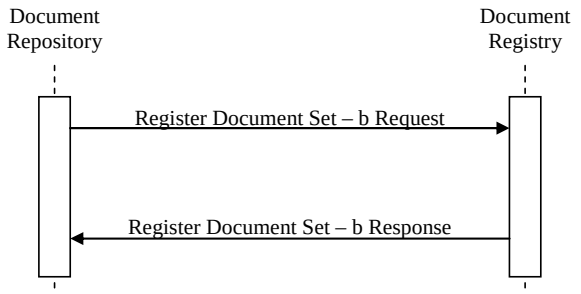


Figure 3.42.4: Interaction Diagram

3.42.4.1 Register Document Set-b Request

The Document Repository sends metadata for a set of documents to the Document Registry.

3.42.4.1.1 Trigger Events

The Register Document Set-b Request message is triggered when:

- A Document Repository wants to register metadata for a set of documents it holds. These documents may have been stored in the Document Repository by a Document Consumer (using the Provide and Register Document Set-b transaction [ITI-41]) or generated internally by an Integrated Document Source/Repository.

3.42.4.1.2 Message Semantics

The sections in Chapter 4.1 specify the mapping of XDS concepts to ebRS and ebRIM semantics and document metadata. A full example of document metadata submission can be found in Appendix W.

The Registry actor shall store and later include in metadata returned in a query response the XDSDocumentEntry.repositoryUniqueId attribute along with other metadata attributes received in the Register Document Set-b [ITI-42] transaction as determined by profile and transaction requirements. If the XDSDocumentEntry.URI attribute is received by the Registry actor in the Register Document Set-b [ITI-42] transaction then it shall be returned in query responses.

3.42.4.1.4 Expected Actions

Upon receipt of a Register Document Set-b Request message, the Document Registry with the aid of the Registry Adaptor shall do the following:

- Accept all valid SubmitObjectsRequests.
- Perform metadata validations
- Update the registry with the contained metadata
- Return a RegistryResponse message given the status of the operation.

If the registry rejects the metadata, then, the following shall occur:

- An error is returned
- The error status includes an error message
- The request is rolled back

3.42.4.1.5 Protocol Requirements

The Register Document Set-b transaction shall use SOAP12. Furthermore:

- The Document Registry actor shall accept the Register Document Set-b Request formatted as a SIMPLE SOAP message and respond with the Register Document Set-b Response formatted as a SIMPLE SOAP message.
- The Document Repository actor shall generate the Register Document Set-b Request formatted as a SIMPLE SOAP message and accept the Register Document Set-b Response formatted as a SIMPLE SOAP message.

See Appendix V for details.

3.42.4.2 Register Document Set-b Response

3.42.4.2.1 Trigger Events

The Document Registry finishes processing a Register Document Set-b Request Message and shall respond with:

- Register Document Set-b Response

3.42.4.2.2 Message Semantics

The Register Document Set-b Response message shall carry the status of the requested operation and an error message if the requested operation failed. The conditions of failure and possible error messages are given in the ebRS standard and detailed in **4.1.13 Error Reporting**.

3.42.4.2.3 Expected Actions

The Document Repository now knows that the transaction succeeded/failed and can continue. The metadata added to the registry as a result of this transaction is now available for discovery.

3.42.5 Protocol Requirements

Implementors of this transaction shall comply with all requirements described in ITI TF-2:Appendix V: Web Services for IHE Transactions.

WSDL Namespace Definitions

ihe	urn:ihe:iti:xds-b:2007
rs	urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0
lcm	urn:oasis:names:tc:ebxml-regrep:xsd:lcm:3.0
query	urn:oasis:names:tc:ebxml-regrep:xsd:query:3.0

These are the requirements for the Register Document Set-b transaction presented in the order in which they would appear in the WSDL definition:

- The following types shall be imported (xsd:import) in the /definitions/types section:
  - namespace="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0", schema=" rs.xsd"
  - namespace="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:3.0", schema=" lcm.xsd"
- The /definitions/message/part/@element attribute of the Register Document Set-b Request message shall be defined as “lcm:SubmitObjectsRequest”
- The /definitions/message/part/@element attribute of the Register Document Set-b Response message shall be defined as “rs:RegistryResponse”
- The /definitions/portType/operation/input/@wsaw:Action attribute for the Register Document Set-b Request message shall be defined as “urn:ihe:iti:2007:RegisterDocumentSet-b”
- The /definitions/portType/operation/output/@wsaw:Action attribute for the Register Document Set-b Response message shall be defined as “urn:ihe:iti:2007:RegisterDocumentSet-bResponse”
- The /definitions/binding/operation/soap12:operation/@soapAction attribute shall be defined as “urn:ihe:iti:2007:RegisterDocumentSet-b”

These are the requirements that affect the wire format of the SOAP message. The other WSDL properties are only used within the WSDL definition and do not affect interoperability. Full sample request and response messages are in section **3.42.5.1 Sample SOAP Messages**.

For informative WSDL for the Document Registry actor see Appendix W.

3.42.5.1 Sample SOAP Messages

The samples in the following two sections show a typical SOAP request and its relative SOAP response. The sample messages also show the WS-Addressing headers <Action/>, <MessageID/>, <ReplyTo/>…; these WS-Addressing headers are populated according to the IHE Appendix V: Web Services for IHE Transactions. The body of the SOAP message is omitted for brevity; in a real scenario the empty element will be populated with the appropriate metadata.

Samples presented in this section are also available online on the IHE FTP site, see Appendix W.

3.42.5.1.1 Sample Register Document Set-b SOAP Request

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
	<s:Header>
		<a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RegisterDocumentSet-b</a:Action>
		<a:MessageID>urn:uuid:1ec52e14-4aad-4ba1-b7d3-fc9812a21340</a:MessageID>
		<a:ReplyTo>
			<a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
		</a:ReplyTo s:mustUnderstand="1">
		<a:To >http://localhost:2647/XdsService/IHEXDSRegistry.svc</a:To>
	</s:Header>
	<s:Body>
		<lcm:SubmitObjectsRequest
				xmlns:lcm="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:3.0"
				xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:3.0"
				xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">

			<!—Rest of SubmitObjectsRequest message goes here -->

		</lcm:SubmitObjectsRequest>
	</s:Body>
</s:Envelope>
```

3.42.5.1.2 Sample Register Document Set-b SOAP Response

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

```
<s:Envelope
		xmlns:s="http://www.w3.org/2003/05/soap-envelope"
		xmlns:a="http://www.w3.org/2005/08/addressing">
	<s:Header>
		<a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RegisterDocumentSet-
bResponse</a:Action>
		<a:RelatesTo>urn:uuid:1ec52e14-4aad-4ba1-b7d3-fc9812a21340</a:RelatesTo>
	</s:Header>
	<s:Body>
		<rs:RegistryResponse
		status="urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success"
		xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0"/>
	</s:Body>
</s:Envelope>
```

3.42.6 Actor Requirements

The Document Repository actor shall:

- Make (all) the new document(s) included in the XDS Submission Set available for retrieval via the Retrieve Document Set transaction before it initiates the Register Document Set-b Request message with the Registry actor.

This is necessary because:

- The Document Registry actor may choose to validate the successful storage of the document(s) before acknowledging the Register Document Set-b Request transaction.

- The Document Consumer actor may retrieve the document(s) before the Register Document Set-b Response is received by the Document Repository actor.

3.42.7 Security Considerations

Relevant XDS Affinity Domain Security background is discussed in the Register Document transaction (see ITI TF-2: 3.14.5.1).

3.42.7.1 Audit Record Considerations

The Register Document Set-b Transaction is PHI-Export event, as defined in table 3.20.6-1. The Actors involved in the transaction shall create audit data in conformance with DICOM (Supp 95) "Data Export", with the following exceptions.

3.42.7.1.1 Document Repository or Integrated Document Source/Repository audit message:

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110106, DCM, "Export")
	EventActionCode	M	"R" (Read)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("ITI-42", "IHE Transactions", "Register Document Set-b")
Source (Document Repository or Integrated Document Source/Repository) (1)			
Human Requestor (0..n)			
Destination (Document Registry) (1)			
Audit Source (Document Repository or Integrated Document Source/Repository) (1)			
Patient (1)			
SubmissionSet (1)			

Where:

Source AuditMessage/ ActiveParticipant	UserID	U	*When WS-Addressing is used: <ReplyTo/>*
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	M	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.
Human Requestor (if known) AuditMessage/ ActiveParticipant	UserID	M	Identity of the human that initiated the transaction.
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	U	Access Control role(s) the user holds that allows this transaction.
	NetworkAccessPointTypeCode	*NA*	

	NetworkAccessPointID	*NA*	

Destination **AuditMessage/ ActiveParticipant**	UserID	M	SOAP endpoint URI.
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"false"
	RoleIDCode	M	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Audit Source **AuditMessage/ AuditSourceIdentification**	*AuditSourceID*	*U*	*Not specialized.*
	AuditEnterpriseSiteID	*U*	*not specialized*
	AuditSourceTypeCode	*U*	*not specialized*

Patient **(AudittMessage/ ParticipantObjectIdentification)**	ParticipantObjectTypeCode	M	"1" (person)
	ParticipantObjectTypeCodeRole	M	"1" (patient)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(2, RFC-3881, "Patient Number")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	the patient ID in HL7 CX format..
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*
Submission Set **(AudittMessage/ ParticipantObjectIdentification)**	ParticipantObjectTypeCode	M	"2" (System)
	ParticipantObjectTypeCodeRole	M	"20" (job)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV("urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd", "IHE XDS Metadata", "submission set classificationNode")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The submissionSet unique ID
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

3.42.7.1.2 Document Registry audit message:

	Field Name	Opt	Value Constraints
Event **AuditMessage/ EventIdentification**	EventID	M	EV(110107, DCM, "Import")
	EventActionCode	M	"C" (Create)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("ITI-42", "IHE Transactions", "Register Document Set-b")
Source (Document Repository or Integrated Document Source/Repository) (1)			

Destination (Document Registry) (1)
Audit Source (Document Registry) (1)
Patient (1)
SubmissionSet (1)

Where:

Source **AuditMessage/ ActiveParticipant**	UserID	*U*	*When WS-Addressing is used: <ReplyTo/>*
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	M	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Destination **AuditMessage/ ActiveParticipant**	UserID	M	SOAP endpoint URI
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"false"
	RoleIDCode	M	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Audit Source **AuditMessage/ AuditSourceIdentification**	*AuditSourceID*	*U*	*Not specialized.*
	AuditEnterpriseSiteID	*U*	*not specialized*
	AuditSourceTypeCode	*U*	*not specialized*

Patient **(AuditMessage/ ParticipantObjectIdentification)**	ParticipantObjectTypeCode	M	"1" (person)
	ParticipantObjectTypeCodeRole	M	"1" (patient)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(2, RFC-3881, "Patient Number")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	the patient ID in HL7 CX format..
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*
	ParticipantObjectTypeCode	M	"2" (System)
	ParticipantObjectTypeCodeRole	M	"20" (job)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV("urn:uuid:a54d6aa5-d40d-43f9-88c5-b4633d873bdd", "IHE XDS Metadata", "submission set classificationNode")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The submissionSet unique ID

	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

3.43 Retrieve Document Set

This section corresponds to Transaction ITI-43 of the IHE Technical Framework. The Document Consumer, Document Repository actors use transaction ITI-43.

Integration Profiles using this Transaction
Cross-Enterprise Document Sharing-b (XDS.b)

3.43.1 Scope

This transaction is used by the Document Consumer to retrieve a set of documents from the Document Repository. The Document Consumer has already obtained the XDSDocumentEntry uniqueId and the Document Repository repositoryUniqueId from the Document Registry by means of the Registry Stored Query transaction.

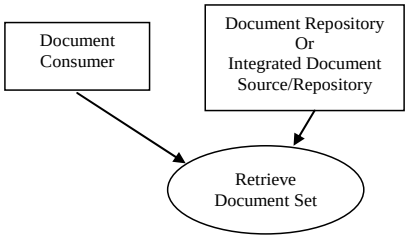


Figure 3.43.2: Use Case Roles

XDS Actors:

Actor: Document Consumer

Role: Obtains document.

Actor: Document Repository or Integrated Document Source/Repository

Role: Provides documents.

Note: Within this transaction, the Document Repository and Integrated Document Source/Repository actors can be used interchangeably.

3.43.3 Referenced Standard

Implementors of this transaction shall comply with all requirements described in ITI TF-2:Appendix V: Web Services for IHE Transactions.

ebRIM	OASIS/ebXML Registry Information Model v3.0
ebRS	OASIS/ebXML Registry Services Specifications v3.0
Appendix V	ITI TF-2:Appendix V Web Services for IHE Transactions Contains references to all Web Services standards and requirements of use
MTOM	SOAP Message Transmission Optimization Mechanism http://www.w3.org/TR/soap12-mtom/
XOP	XML-binary Optimized Packaging http://www.w3.org/TR/2005/REC-xop10-20050125/

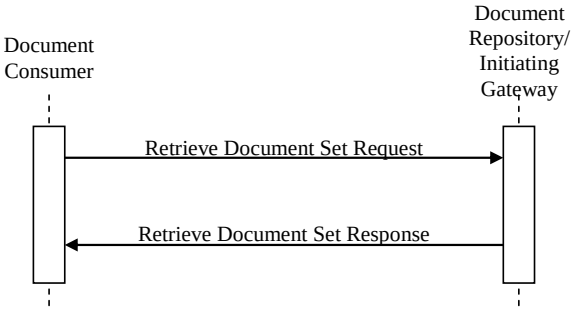


Figure 3.43.4: Interaction Diagram

3.43.4.1 Retrieve Document Set Request

3.43.4.1.1Trigger Events

The Document Consumer obtains document(s) uniqueId via the Registry Stored Query transaction. If the Registry Stored Query was sent to the Initiating Gateway the Document Consumer shall address the Retrieve Document Set to the Initiating Gateway. In this case no resolution of repositoryUniqueId is needed by the Document Consumer. The Document Consumer shall specify the homeCommunityId element in the Retrieve Document Set transaction if it was found in the entry containing the uniqueId of the document being retrieved. For more information regarding the homeCommunityId see XCA supplement section 3.38.4.1.2.

Once the document(s) uniqueId have been obtained, the Document Consumer will start the Retrieve Document Set Request with the Document Repository.

3.43.4.1.2 Message Semantics

The Retrieve Document Set Request shall carry the following information:

- A required repositoryUniqueId that identifies the repository from which the document is to be retrieved. This value corresponds to XDSDocumentEntry.repositoryUniqueId.
- A required documentUniqueId that identifies the document within the repository. This value corresponds to the XDSDocumentEntry.uniqueId.

- If available, the homeCommunityId element that identifies the community holding the document. The homeCommunityId element shall be specified if the XDSDocumentEntry containing the uniqueId of the document contains the homeCommunityId attribute. See section 3.18.4.1.2 for details.

The repositoryUniqueId associated to each document requested can be different therefore allowing a single request to identify multiple repositories.

3.43.4.1.3 Expected Actions

When receiving a Retrieve Document Set Request, a Document Repository or an Initiating Gateway shall generate a Retrieve Document Set Response containing the requested documents or error codes if the documents could not be retrieved.

3.43.4.1.3.1 Basic Patient Privacy Enforcement Option

If the Basic Patient Privacy Enforcement Option is implemented:

1. The Document Consumer actor shall abide by the XDS Affinity Domain Policies represented by the confidentialityCode in the metadata associated with the document. The Document Consumer actor likely will have user access controls or business rule capabilities to determine the details of how confidentiality codes apply to query results. The details of this are product specific and not specified by IHE. These rules shall reduce the query results to only those that are appropriate to the current situation for that actor and user.
2. The Document Consumer actor shall be able to be configured with Patient Privacy Consent Policies, Patient Privacy Consent Policy Identifiers (OIDs) and associated information necessary to understand and enforce the XDS Affinity Domain Policy. The details of this are product specific and not specified by IHE.

3.43.4.2 Retrieve Document Set Response

3.43.4.2.1 Trigger Events

This message will be triggered by a Retrieve Document Set Request Message

3.43.4.2.2 Message Semantics

The Retrieve Document Set Response Message shall carry the following information:

- For each of the returned documents:
- A homeCommunityId. This value shall be the same as the homeCommunityId value in the Retrieve Document Set Request Message. If the homeCommunityId value is not present in the Retrieve Document Set Request Message, this shall not be present.
- A required repositoryUniqueId that identifies the repository from which the document is to be retrieved. This value shall be the same as the value of the repositoryUniqueId

in the original Retrieve Document Set Request Message. This value corresponds to XDSDocumentEntry.repositoryUniqueId.

- A required documentUniqueId that identifies the document within the repository. This value shall be the same as the documentUniqueId in the original Retrieve Document Set Request Message. This value corresponds to the XDSDocumentEntry.uniqueId.
- The retrieved document in base64binary encoded format
- The MIME type of the retrieved document
- Errors or warnings in case the document(s) could not be retrieved successfully

3.43.4.2.3 Expected Actions

A Document Repository shall retrieve the document(s) indicated in the request.

The Document Repository shall return the document or an error code in case the document could not be retrieved. The conditions of failure and possible error messages are given in the ebRS standard and detailed in **4.1.13 Error Reporting**.

3.43.5 Protocol Requirements

Implementors of this transaction shall comply with all requirements described in ITI TF-2:Appendix V: Web Services for IHE Transactions.

The Retrieve Document Set transaction shall use SOAP12 and MTOM with XOP encoding (labeled MTOM/XOP in this specification). See Appendix V for details. The Document Repository shall:

- Accept the Retrieve Document Set Request message in MTOM/XOP format.
- Generate the Retrieve Document Set Response message in MTOM/XOP format

The Document Consumer shall:

- Generate the Retrieve Document Set Request message in MTOM/XOP format.
- Accept the Retrieve Document Set Response message in MTOM/XOP format.

WSDL Namespace Definitions

ihe	urn:ihe:iti:xds-b:2007
rs	urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0
lcm	urn:oasis:names:tc:ebxml-regrep:xsd:lcm:3.0
query	urn:oasis:names:tc:ebxml-regrep:xsd:query:3.0

These are the requirements for the Retrieve Document Set transaction presented in the order in which they would appear in the WSDL definition:

- The following types shall be imported (xsd:import) in the /definitions/types section:
  - namespace="urn:ihe:iti:xds-b:2007", schema="IHEXDS.xsd"

- The /definitions/message/part/@element attribute of the Retrieve Document Set Request message shall be defined as “ihe:RetrieveDocumentSetRequest”
- The /definitions/message/part/@element attribute of the Retrieve Document Set Response message shall be defined as “ihe:RetrieveDocumentSetResponse”
- The /definitions/portType/operation/input/@wsaw:Action attribute for the Retrieve Document Set Request message shall be defined as “urn:ihe:iti:2007:RetrieveDocumentSet”
- The /definitions/portType/operation/output/@wsaw:Action attribute for the Retrieve Document Set Response message shall be defined as “urn:ihe:iti:2007:RetrieveDocumentSetResponse”
- The /definitions/binding/operation/soap12:operation/@soapAction attribute shall be defined as “urn:ihe:iti:2007:RetrieveDocumentSet”

These are the requirements that affect the wire format of the SOAP message. The other WSDL properties are only used within the WSDL definition and do not affect interoperability. Full sample request and response messages are in section **3.43.5.1 Sample SOAP Messages**.

For informative WSDL for the Document Repository actor see in Appendix W.

The <ihe:RetrieveDocumentSetRequest/> element is defined as:

- One or more <ihe:DocumentRequest/> elements, each one representing an individual document that the Document Consumer wants to retrieve from the Document Repository. Each <ihe:DocumentRequest/> element contains:
  - A required <ihe:RepositoryUniqueId/> element that identifies the repository from which the document is to be retrieved. This value corresponds to XDSDocumentEntry.repositoryUniqueId.
  - A required <ihe:DocumentUniqueId/> that identifies the document within the repository. This value corresponds to the XDSDocumentEntry.uniqueId.
  - An optional <ihe:HomeCommunityId/> element that corresponds to the home attribute of the Identifiable class in ebRIM.

This allows the Document Consumer to specify one or more documents to retrieve from the Document Repository. The main difference with the existing XDS.a Retrieve Document transaction is that a series of IDs for the document are specified instead of a document URI.

The <ihe:RetrieveDocumentResponse/> element is defined as:

- A required /ihe:RetrieveDocumentSetResponse/rs:RegistryResponse element
- An optional sequence of <ihe:DocumentResponse/> elements containing
  - A <ihe:HomeCommunityId/> element. The value of this element shall be the same as the value of the /RetrieveDocumentSetRequest/DocumentRequest/HomeCommunityId element in the Retrieve Document Set Request Message. If the <ihe:HomeCommunityId/>

element is not present in the Retrieve Document Set Request Message, this value shall not be present.

- A required <ihe:RepositoryUniqueId/> that identifies the repository from which the document is to be retrieved. The value of this element shall be the same as the value of the /RetrieveDocumentSetRequest/DocumentRequest/RepositoryUniqueId element in the original Retrieve Document Set Request Message. This value corresponds to XDSDocumentEntry.repositoryUniqueId.
- A required <ihe:DocumentUniqueId/> that identifies the document within the repository. The value of this element shall be the same as the value of the /RetrieveDocumentSetRequest/DocumentRequest/DocumentUniqueId element in the original Retrieve Document Set Request Message. This value corresponds to XDSDocumentEntry.uniqueId.
- A required <ihe:Document/> element that contains the retrieved document in base64binary encoded format
- A required <ihe:mimeType/> element that indicates the MIME type of the retrieved document

The /RetrieveDocumentSetResponse/rs:RegistryResponse/@status attributes provides the overall status of the request: It shall contain one of the following values:

```
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success

urn:ihe:iti:2007:ResponseStatusType:PartialSuccess

urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure
```

See section 4.1.13 Error Reporting for the interpretation of these values.

For each document requested in a /RetrieveDocumentSetRequest/DocumentRequest element:

- If a warning is reported when retrieving the document, then a /RetrieveDocumentSetResponse/rs:RegistryResponse/rs:RegistryErrorList/ rs:RegistryError element shall be returned with:
  - @severity is urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Warning
  - @errorCode is specified
  - @codeContext contains the warning message
  - @location contains the DocumentUniqueId of the document requested
- The document shall be returned in an instance of /RetrieveDocumentSetResponse/DocumentResponse/Document as base64binary encoded data. The returned document and warning are correlated via the DocumentUniqueId.

- If an error is reported when retrieving a document, then a /RetrieveDocumentSetResponse/rs:RegistryResponse/rs:RegistryErrorList/ rs:RegistryError element shall be returned with:
  - @severity is urn:oasis:names:tc:ebxml-regrep:ErrorSeverityType:Error
  - @errorCode is specified
  - @codeContext contains the error message
  - @location contains the DocumentUniqueId of the document requested
- No corresponding RetrieveDocumentSetResponse/DocumentResponse element shall be returned
- If the document is successfully retrieved (without warning) then no /RetrieveDocumentSetResponse/rs:RegistryResponse/rs:RegistryErrorList/ rs:RegistryError element shall be present and a /RetrieveDocumentSetResponse/DocumentResponse/Document element shall be returned containing the document as base64binary encoded data.

The /RetrieveDocumentSetResponse/rs:RegistryResponse/rs:ResponseSlotList element is not used in this transaction.

The /RetrieveDocumentSetResponse/rs:RegistryResponse/@requestId attribute is not used in this transaction.

A full XML Schema Document for the XDS.b types is available online on the IHE FTP site, see Appendix W.

3.43.5.1 Sample SOAP Messages

The samples in the following two sections show a typical SOAP request and its relative SOAP response. The sample messages also show the WS-Addressing headers <Action/>, <MessageID/>, <ReplyTo/>…; these WS-Addressing headers are populated according to the IHE Appendix V: Web Services for IHE Transactions. The body of the SOAP message is omitted for brevity; in a real scenario the empty element will be populated with the appropriate metadata.

Samples presented in this section are also available online on the IHE FTP site, see Appendix W.

3.43.5.1.1 Sample Retrieve Document Set SOAP Request

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

```
<s:Envelope
              xmlns:s="http://www.w3.org/2003/05/soap-envelope"
              xmlns:a="http://www.w3.org/2005/08/addressing">
       <s:Header>
              <a:Action s:mustUnderstand="1">urn:ihe:iti:2007:RetrieveDocumentSet</a:Action>
              <a:MessageID>urn:uuid:0fbfdced-6c01-4d09-a110-2201afedaa02</a:MessageID>
              <a:ReplyTo s:mustUnderstand="1">
                     <a:Address>http://www.w3.org/2005/08/addressing/anonymous</a:Address>
```

```
                </a:ReplyTo>
                <a:To >http://localhost:2647/XdsService/IHEXDSRepository.svc</a:To>
        </s:Header>
        <s:Body>
                <RetrieveDocumentSetRequest xmlns="urn:ihe:iti:xds-b:2007">
                        <DocumentRequest>
                                <RepositoryUniqueId>1.3.6.1.4...1000</RepositoryUniqueId>
                                <DocumentUniqueId>1.3.6.1.4...2300</DocumentUniqueId>
                        </DocumentRequest>
                        <DocumentRequest>
                                <RepositoryUniqueId>1.3.6.1.4...1000</RepositoryUniqueId>
                                <DocumentUniqueId>1.3.6.1.4...2301</DocumentUniqueId>
                        </DocumentRequest>
                </RetrieveDocumentSetRequest>
        </s:Body>
</s:Envelope>
```

3.43.5.1.2 Sample Retrieve Document Set SOAP Response

Note to the editor: please keep the following format for the sample text – courier new, 8pt, no spacing before and after the paragraph, tab stops every 1/8 of an inch for the first inch.

```
<s:Envelope xmlns:s="http://www.w3.org/2003/05/soap-envelope"
xmlns:a="http://www.w3.org/2005/08/addressing">
        <s:Header>
                <a:Action
s:mustUnderstand="1">urn:ihe:iti:2007:RetrieveDocumentSetResponse</a:Action>
                <a:RelatesTo>urn:uuid:0fbfdced-6c01-4d09-a110-2201afedaa02</a:RelatesTo>
        </s:Header>
        <s:Body>
                <RetrieveDocumentSetResponse
                        xmlns="urn:ihe:iti:xds-b:2007"
                        xmlns:lcm="urn:oasis:names:tc:ebxml-regrep:xsd:lcm:3.0"
                        xmlns:query="urn:oasis:names:tc:ebxml-regrep:xsd:query:3.0"
                        xmlns:rim="urn:oasis:names:tc:ebxml-regrep:xsd:rim:3.0"
                        xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
                        <rs:RegistryResponse status="urn:oasis:names:tc:ebxml-
regrep:ResponseStatusType:Success"/>
                        <DocumentResponse>
                                <RepositoryUniqueId>1.3.6.1.4...1000</RepositoryUniqueId>
                                <DocumentUniqueId>1.3.6.1.4...2300</DocumentUniqueId>
                                <mimeType>text/xml</mimeType>

        <Document>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</Document>
                        </DocumentResponse>
                        <DocumentResponse>
                                <RepositoryUniqueId>1.3.6.1.4...1000</RepositoryUniqueId>
                                <DocumentUniqueId>1.3.6.1.4...2300</DocumentUniqueId>
                                <mimeType>text/xml</mimeType>

        <Document>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUXhEUzhi</Document>
                        </DocumentResponse>
                </RetrieveDocumentSetResponse>
        </s:Body>
</s:Envelope>
```

3.43.6 Security Considerations

Relevant XDS Affinity Domain Security background is discussed in the Register Document transaction (see ITI TF-2: 3.14.5.1).

3.43.6.1 Audit Record Considerations

The Retrieve Document Set Transaction is PHI-Export event, as defined in table 3.20.6-1. The Actors involved in the transaction shall create audit data in conformance with DICOM (Supp 95) "Data Export"/"Data Import", with the following exceptions.

The Repository Actor shall generate an "Export" event. This may be an event for each Retrieve Document Transaction, or multiple transactions for the same patient may be heuristically combined. The heuristics for this combination are not specified by IHE. It is intended to reduce the volume of audit records. Combination is permitted when the active participants and patient are the same, and the time difference is considered insignificant.

The Document Consumer Actor shall generate an "Import" event. This may be one event per transaction, or multiple transactions may be reported as a single event using a heuristic for combining transactions. Combination is permitted when the active participants and patient are the same, and the time difference is considered insignificant.

3.43.6.1.1 Document Consumer audit message:

	Field Name	Opt	Value Constraints
Event AuditMessage/ EventIdentification	EventID	M	EV(110107, DCM, "Import")
	EventActionCode	M	"C" (Create)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("ITI-43", "IHE Transactions", "Retrieve Document Set")
Source (Document Repository) (1)			
Destination (Document Consumer) (1)			
Human Requestor (0..n)			
Audit Source (Document Consumer) (1)			
Patient (0..1)			
Document (1..n) *(see combining rules above)*			

Where:

Source AuditMessage/ ActiveParticipant	UserID	M	The value of <ihe:RepositoryUniqueId/>
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"false"
	RoleIDCode	M	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Destination AuditMessage/ ActiveParticipant	UserID	C	When WS-Addressing is used: <ReplyTo/>
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	*U*	*not specialized*

	UserIsRequestor	M	"true"
	RoleIDCode	M	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.
Human Requestor (if known) AuditMessage/ ActiveParticipant	UserID	M	Identity of the human that initiated the transaction.
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	U	Access Control role(s) the user holds that allows this transaction.
	NetworkAccessPointTypeCode	*NA*	
	NetworkAccessPointID	*NA*	

Audit Source AuditMessage/ AuditSourceIdentification	*AuditSourceID*	*U*	*Not specialized.*
	AuditEnterpriseSiteID	*U*	*not specialized*
	AuditSourceTypeCode	*U*	*not specialized*

Patient (if-known) (AudittMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	M	"1" (Person)
	ParticipantObjectTypeCodeRole	M	"1" (Patient)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(2, RFC-3881, "Patient Number")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The patient ID in HL7 CX format.
	ParticipantObjectName	*U*	*not specialized*
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*
Document (AudittMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	M	"2" (System)
	ParticipantObjectTypeCodeRole	M	"3" (report)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(9, RFC-3881, "Report Number")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The value of <ihe:DocumentUniqueId/>
	ParticipantObjectName	C	If known the value of <ihe:HomeCommunityId/>
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

3.43.6.1.2 Document Repository audit message:

	Field Name	Opt	Value Constraints
	EventID	M	EV(110106, DCM, "Export")

	EventActionCode	M	"R" (Read)
	EventDateTime	*M*	*not specialized*
	EventOutcomeIndicator	*M*	*not specialized*
	EventTypeCode	M	EV("ITI-43", "IHE Transactions", "Retrieve Document Set")
Source (Document Repository) (1)			
Destination (Document Consumer) (1)			
Audit Source (Document Repository) (1)			
Document (1..n) *(see combining rules above)*			

Where:

Source AuditMessage/ ActiveParticipant	UserID	M	The value of <ihe:RepositoryUniqueId/>
	AlternativeUserID	M	the process ID as used within the local operating system in the local system logs.
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"false"
	RoleIDCode	M	EV(110153, DCM, "Source")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Destination AuditMessage/ ActiveParticipant	UserID	C	When WS-Addressing is used: <ReplyTo/>
	AlternativeUserID	*U*	*not specialized*
	UserName	*U*	*not specialized*
	UserIsRequestor	M	"true"
	RoleIDCode	M	EV(110152, DCM, "Destination")
	NetworkAccessPointTypeCode	M	"1" for machine (DNS) name, "2" for IP address
	NetworkAccessPointID	M	The machine name or IP address, as specified in RFC 3881.

Audit Source AuditMessage/ AuditSourceIdentification	*AuditSourceID*	*U*	*Not specialized.*
	AuditEnterpriseSiteID	*U*	*not specialized*
	AuditSourceTypeCode	*U*	*not specialized*

Document URI (AudittMessage/ ParticipantObjectIdentification)	ParticipantObjectTypeCode	M	"2" (System)
	ParticipantObjectTypeCodeRole	M	"3" (report)
	ParticipantObjectDataLifeCycle	*U*	*not specialized*
	ParticipantObjectIDTypeCode	M	EV(9, RFC-3881, "Report Number")
	ParticipantObjectSensitivity	*U*	*not specialized*
	ParticipantObjectID	M	The value of <ihe:DocumentUniqueId/>
	ParticipantObjectName	C	If known the value of <ihe:HomeCommunityId/>
	ParticipantObjectQuery	*U*	*not specialized*
	ParticipantObjectDetail	*U*	*not specialized*

4 Cross-Transaction Specifications

4.1 XDS Metadata

Add the following three new lines to the table:

Transaction that Reference this Chapter	
Register Document Set – b	ITI-42
Provide and Register Document Set – b	ITI-41
Retrieve Document Set	ITI-43

4.1.3.1 XDS Registry Submission Request

Section 4.1.3.1, last paragraph should read:

This request is part of the Register Document Set (ITI-14) and Register Document Set-b (ITI-42) transactions.

4.1.3.2 XDS Repository Submission Request

Section 4.1.3.2, paragraph after the bulleted list should read:

This request is part of the Provide and Register Document Set (ITI-15) and Provide and Register Document Set-b (ITI-41) transactions.

4.1.6.1 Document Relationships from HL7

Section 4.1.6.1, paragraph after table 4.1-2 should read:

A Document Relationship refers to any of the relationships listed in Table 4.1-2 Document Relationships above.

4.1.7 Document Definition Metadata

Add to the end of the definition of the URI attribute of XDSDocumentEntry in Table 4.1-5 the following text:

Note: the document URI attribute is optional for XDS.b implementations. If the XDSDocumentEntry.URI attribute is present, then the Document Repository shall support the Retrieve Document transaction (ITI TF-2:3.17). More details on this scenario are described in section **10.7.2 Example of Coexistence among XDS.a and XDS.b Interfaces.**

Update the last column of the URI row to include sections 3.41.4.1 and 3.42.4.1.2 in the list after "See sections 3.14.4.1.2 3.15.4.1".

Update the last column of the size row to include sections 3.41.4.1 in the list after "See sections 3.15.4.1".

Update the last column of the hash row to include sections 3.41.4.1 in the list after "See sections 3.15.4.1".

Add the following row after the practiceSettingCode attribute row definition in table 4.1-5:

Table 4.1-5 Document Metadata Attribute Definition

XDSDocumentEntry Attribute	Definition	Source / Query	Data Type

repositoryUniqueId	The globally unique identifier of the repository where the document is stored, assigned by the Document Repository. This unique identifier for the Document Repository may be used to identify and connect to the specific Document Repository where the document is stored once its metadata has been retrieved from a Document Registry.
	This repositoryUniqueId is intended to respond to the following types of usage:
	• The means to reference the Document Repository where this XDS document is stored. The repositoryUniqueId represents an immutable id for the Document Repository.
	• The means to ensure that a XDS Document is retrieved from the appropriate Document Repository.
	Shall have a single value.
	`<rim:Slot name="repositoryUniqueId">`
	`  <rim:ValueList>`
	`  <rim:Value>1.3.6.1.4…</rim:Value>`
	`  </rim:ValueList>`
	`</rim:Slot>`
		Cp/P	See sections 3.15.4.1
			3.41.4.1
			3.14.4.1.2
			3.42.4.1.2

In the row for attribute "hash" replace the text "If this attribute is received in a Provide and Register Document Set transaction…" with the following:

If this attribute is received in a Provide and Register Document Set [ITI-15] or Provide and Register Document Set-b [ITI-41] transactions it shall be ignored.

In the row for attribute "size" replace the text "If this attribute is received in a Provide and Register Document Set transaction…" with the following:

If this attribute is received in a Provide and Register Document Set [ITI-15] or Provide and Register Document Set-b [ITI-41] transactions it shall be ignored.

4.1.7.3 XDSDocumentEntry.repositoryUniqueId

This is a new section

To better match the Web Services messaging architecture and provide a MTOM/XOP binding for the Retrieve Document Set and the Provide and Register Document Set-b transactions, it is necessary to further specify the location of the document to identify the actual Document Repository that contains it before the Document Repository can be queried to retrieve the actual document.

The Document Repository shall populate the following attribute in the XDSDocumentEntry class:

- **repositoryUniqueId:** this single-valued attribute of type OID represents the unique id of the Document Repository that stores the document. The attribute is populated by the Document Repository as part of the Provide and Register Document Set-b transaction. The Document Repository id is considered immutable throughout the lifetime of the Document Repository to which it is associated. In other words, once an id has been associated to a Document Repository it can never change. The repositoryUniqueId attributes are defined in a community and assigned to Document Repository actors.

The Document Repository shall populate this attribute before registering documents in the Document Registry. This allows for positive identification of the web service endopoint of the Document Repository for the purposes of retrieving a document or set of documents.The mechanism by which the service endpoints are discovered and associated to the appropriate actors and how that configuration is maintained is out of scope for this transaction.

4.1.13 Error Reporting

*Replace third column header of **Table 4.1-11 – Error Codes** with the following text:*

Transaction

P = Provide and Register, Provide and Register-b

R = Register, Register-b

Q= Query

SQ=Stored Query

RS=Retrieve Document Set

*Replace the corresponding rows in **Table 4.1-11 – Error Codes** with the following rows:*

XDSRegistryError XDSRepositoryError	Internal Registry/Repository Error.	P,R,Q,SQ P,RS

XDSRegistryBusy XDSRepositoryBusy	Too much activity	P,R,Q,SQ P,RS
XDSRegistryOutOfResources XDSRepositoryOutOfResources	Resources are low.	P,R,Q,SQ P,RS
XDSUnknownRepositoryId	The repositoryUniqueId value could not be resolved to a valid document repository or the value does not match the repositoryUniqueId of the Document Repository	RS
XDSRepositoryWrongRepositoryUniqueId	Retrieve Document Set transaction sent to Repository Actor which references a repositoryUniqueId which is not the id of this repository.	RS

Replace the heading of Table 4.1-12 – Provide & Register Document Set Responses with the following:

Table 4.1-12 – Provide & Register Document Set and Provide and Register Document Set-b Responses

Replace the heading of Table 4.1-13 – Register Document Set and Responses with the following:

Table 4.1-13 – Register Document Set and Register Document Set-b Responses

Add the following table and text:

Table 4.1-16 – Retrieve Document Set Responses

Registry Response status	RegistryErrorList element	Result
Success	May be present. If present will contain one or more RegistryError elements with warning severity, none with error severity	All documents were successfully retrieved
PartialSuccess	Present, contains one or more RegistryError elements. At least one has error severity, others may have warning severity.	Some documents were successfully retrieved
Failure	Present, contains one or more RegistryError elements. At least one has error severity, others may have warning severity.	No documents were successfully retrieved

Complete details on how these elements shall be populated in available at **3.43.5 Protocol Requirements**

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