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**IHE Radiology
Technical Framework Supplement**

**Cross-Enterprise Document Sharing for
Imaging
(XDS-I.b)**

10

Trial Implementation

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Foreword

25 This is a supplement to the IHE Radiology Technical Framework V10.0. Each supplement undergoes a process of public comment and trial implementation before being incorporated into the volumes of the Technical Frameworks.

This supplement is submitted for Trial Implementation as of February 18, 2011 and will be available for testing at subsequent IHE Connectathons. The supplement may be amended based on the results of testing. Following successful testing it will be incorporated into the Radiology Technical Framework. Comments are invited and may be submitted on the IHE forums at 30 <http://forums.rsna.org/forumdisplay.php?f=12> or by email to radiology@ihe.net.

This supplement describes changes to the existing technical framework documents and where indicated amends text by addition (**bold underline**) or removal (~~**bold strikethrough**~~), as well as addition of large new sections introduced by editor's instructions to "add new text" or similar, which for readability are not bolded or underlined.

35 "Boxed" instructions like the sample below indicate to the Volume Editor how to integrate the relevant section(s) into the relevant Technical Framework volume:

<i>Replace Section X.X by the following:</i>
--

40 General information about IHE can be found at: www.ihe.net

Information about the IHE Radiology can be found at: <http://www.ihe.net/Domains/index.cfm>

Information about the structure of IHE Technical Frameworks and Supplements can be found at: <http://www.ihe.net/About/process.cfm> and <http://www.ihe.net/profiles/index.cfm>

45 The current version of the IHE Technical Framework can be found at: http://www.ihe.net/Technical_Framework/index.cfm

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80 **Introduction**

XDS-I depends on XDS (XDS.a), primarily for registering and locating documents (or document manifests).

Further, the XDS-I Imaging Document Source is currently required to support the Provide & Register Imaging Document Set [RAD-54] that is based on the Provide & Register Document Set [ITI-15] from the XDS Profile in the ITI Technical Framework.

IHE ITI has renamed XDS to XDS.a and introduced XDS.b which replicates the functionality with different protocols, and is intended to completely replace XDS.a in the near future.

Some vendors would like to combine XDS-I with XDS.b. The current RAD framework does not tell them how. Furthermore there is a strong push to better align the DICOM protocol-based IHE image sharing transactions with web service equivalents.

This supplement documents one approach that can be taken to extend the current XDS-I so that imaging content (images and reports) can be shared using the XDS.b infrastructure. The supplement deprecates the previous “XDS.a-based” mechanisms and replaces them with XDS.b-based mechanisms.

This supplement also requires that Imaging Document Source Actors support an additional type of document retrieve transaction based on web services technology (Retrieve Imaging Document Set). Note that work is underway in DICOM WG-27 to extend the web-based method for retrieving DICOM objects (WADO). This new work may extend the capabilities currently defined in this supplement.

100 **Profile Abstract**

The Cross-Enterprise Document Sharing for Imaging (XDS-I.b) Integration Profile specifies actors and transactions that allow users to share imaging information across enterprises. This profile depends on the IHE IT Infrastructure Cross-Enterprise Document Sharing (XDS.b) profile. Cross-Enterprise Document Sharing for Imaging (XDS-I.b) defines the information to be shared such as sets of DICOM instances (including images, evidence documents, and presentation states), and diagnostic imaging reports provided in a ready-for-display format.

Since the XDS-I.b Profile depends on and extends the IT Infrastructure XDS.b Profile including the use of terms defined in XDS (e.g., XDS Affinity Domain, submission set, etc.) the reader of XDS-I.b is expected to have read and understood the XDS Profile.

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Open Issues and Questions

#	Issue/ (Answer)
18	<p>How long should Document Consumers wait for “Retrieve Imaging Document Set” response?</p> <p>The newly added, web services-based “Retrieve Imaging Document Set” Transaction (RAD-69) is a synchronous transaction whose response is expected to carry a significant sized payload (e.g., 10’s or 100’s of MB). In addition, the images being retrieved may not be immediately available from the Imaging Document Source (e.g., they may be in nearline or offline storage). It may be necessary to mitigate these issues in the future, by allowing the Imaging Document Consumer to specify what availability level (ONLINE, NEARLINE or OFFLINE) it is willing to wait for and/or adapting the XDS.b Async Option to XDS-I.b.</p> <p>Feedback from Trial Implementers on the degree to which this is a problem along with alternatives for mitigation is encouraged.</p>

Closed Issues

#	Issue/ (Answer)
1	<p>Need to reach consensus on which approach to take based on the pros and cons of each approach (see “Alternative Approaches” section below). The Use Case section of the original Detailed Profile Proposal makes the case for focusing efforts on a single technology and the resulting simplification. Can we commit to removing XDS.a from XDS-I and adding XDS.b to achieve this?</p> <p><i>Answer: Consensus of the Technical Committee was to keep a single version of the XDS-I profile and replace the XDS.a transport mechanisms with XDS.b mechanisms.</i></p>
3	<p>The workitem is currently using the “Supplement” format. Is there a compelling reason to change this?</p> <p><i>Answer: No compelling reason to change the current draft. The Supplement format will be used</i></p>
4	<p>Is the scope of the work item limited to pairing XDS-I with XDS.b, or will it also address XCA, XDR, XDM, etc.?</p> <p><i>Answer: The current proposal indeed limits the scope to pairing XDS-I with the XDS.b transport mechanisms. The current choice of approach may not require any special specification to enable XCA capabilities for imaging.</i></p>

#	Issue/ (Answer)
7	<p>At some point there will likely be a need/desire to address Web services-based transfer protocols for images in coordination with DICOM WG10 and ITI. Are there benefits of upgrading XDS-I to use current XDS.b transport mechanisms without replacing the DICOM object retrievals with their to-be-developed web services counterparts?</p> <p><i>Answer: The current version of the supplement includes an approach for a web services based DICOM image retrieval. This new transaction is required to be supported by the Imaging Document Source Actor.</i></p>
8	<p>Are the added profile dependency on ATNA/ Radiology Option and the corresponding update made to RAD TF-1: 18.6 adequate specifications for the security requirements (beyond what is already listed in and RAD TF-1: Appendix H)?</p> <p><i>Answer: The current specification is believed to be adequate</i></p>
9	<p>What is the most effective way to reference ITI’s XDS (XDS.a/ XDS.b) profiles, especially considering that XDS.b has not yet been folded in the ITI TF (e.g., §4.54.4.1)?</p> <p><i>Answer: The current Final Text ITI TF makes appropriate references to the XDS.b TI Supplement, thus referring to XDS (or XDS.b) via the main ITI TF and its corresponding sections is appropriate and adequate.</i></p>
10	<p>Should the ‘Referenced Standards’ section of the Provide and Register Imaging Document Set transaction (4.54.3) include actual references, or instead just refer to ITI TF-2:3.41.3 - the References section for the ITI-41 transaction. That way if ITI makes changes, the RAD transaction just inherits them.</p> <p><i>Answer: A reference is made to the XDS.b Referenced Standards section and only the radiology-specific standards are explicitly listed.</i></p>
11	<p>The Provide and Register Imaging Document Set transaction (RAD-54) includes copies of the metadata tables included in the ITI Framework with updates / overrides to a subset of the attributes (mostly in the source/ value of the attribute). In some cases, it is the Document Repository’s responsibility to fill/ populate the attribute, but the Document Repository is not strictly part of the XDS-I profile. In addition, the expected actions describe some required behaviors of the Document Repository. Is there a better way to document this information without losing too much contextual information?</p> <p><i>Answer: The RAD-54 transaction is being retired and replaced by a new RAD-68 transaction based on XDS.b’s Provide and Register Document Set-b. The new RAD-68 transaction is written to specify only “delta requirements” and makes liberal use of references to the baseline ITI transaction. The new transaction (RAD-68) is named: “Provide and Register Imaging Document Set – b”.</i></p>

#	Issue/ (Answer)
12	<p>This supplement retires XDS-I (on XDS.a) and replaces it by a functionally equivalent profile using XDS.b transport mechanisms. The replacement profile has been given a different name: XIDS. Is this OK? Or should we reuse the XDS-I name for XDS-I.b? The rationale for renaming the profile rather than to simply change the underlying transport is to minimize confusion. Does renaming the profile really accomplish this? Should the profile name be more “drastically” different?</p> <p><i>Answer: The new profile name remains the same, but the abbreviation is changed to be: XDS-I.b</i></p>
13	<p>The Radiology Technical Committee believes it would be useful to write a CP to the ITI TF to include a (backward) pointer from the ITI-42 (Provide and Register Document Set) transaction to the new RAD-68 transaction (the new Provide and Register Imaging Document Set) as a reminder that there is a dependant transaction.</p> <p><i>Answer: Tentative agreement was reached in a joint RAD, ITI call to give future consideration to refactoring of the RAD Technical Frameworks to distinguish content profiles and integration profiles. Given this, no CP will be written..</i></p>
14	<p>The current version of the XDS-I.b supplement adds a new transaction that is web service equivalent of the DICOM retrieve transactions between the Imaging Document Consumer and Imaging Document Source. Is this acceptable or should this supplement wait until next year’s cycle when it is expected that DICOM WG-27 is expected to have completed specifying an “official” DICOM mechanism to do this?</p> <p><i>Answer: This is the approach that will be taken this cycle. Subject to prototyping and testing, etc. IHE may need to go back to WG-27 to ask for their assistance. The initial publication of this supplement is not dependent on the timing of this activity.</i></p>
15	<p>Retrieval of a display-ready image (via WADO) cannot be secured in the same fashion as the image retrieval via web services (as introduced in this supplement). It will require work in DICOM WG-27 to create a web services equivalent to the current WADO.</p> <p><i>Answer: This request was made to WG-27 during a recent joint IHE/ WG-27 tcon. It was agreed to have members of the Radiology and ITI Technical Committees and WG-27 participate in a risk analysis activity to confirm the need for user authentication for the WADO transaction. If needed, a mechanism will need to be agreed to and then developed by WG-27. The publication of this supplement is not dependent on the timing of this joint activity.</i></p>
16	<p>The Radiology Technical Committee has submitted a DICOM CP requesting the addition of a “Retrieve Location UID” to be used in both the Provide & Register Imaging Document Set transaction and the Retrieve Imaging Document Set transaction. The</p>

#	Issue/ (Answer)
	<p>supplement is written assuming this CP will be accepted. If not the text will have to be reworked slightly to reflect using only Retrieve AE Title instead of the proposed “Retrieve Location UID” attribute.</p> <p><i>Answer: DICOM CP 958 was accepted and is being worked on by DICOM.</i></p>
17	<p>The supplement specifies implicit little-endian as the only pixel data encoding allowed to be used for DICOM images sent in the response to a Retrieve Document Set Transaction. The Technical Committee is soliciting feedback on this approach.</p> <p><i>Answer: An optional transfer syntax list element/ attribute will be added to retrieve document set XDS schema and will be specialized (i.e., required) by the Radiology transaction.</i></p>

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Volume 1 – Integration Profiles

Add the following entry to the GLOSSARY section in Volume 1

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XDS Imaging Document: An XDS Imaging Document is the smallest unit of imaging related information that may be provided to a Document Repository and registered in a Document Registry. An XDS Imaging Document may contain a manifest of images (e.g., DICOM Key Object Selection document) or a radiology report provided either as a PDF document or as structured and vocabulary coded clinical information (e.g., CDA Release 2).

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Make the following GLOBAL substitutions/ changes in Volume 1 (according to the table below). These replacements have already been made in the specific sections updated in the remainder of this supplement.

Original Text	Replacement Text
XDS-I	XDS-I.b

Find all references in Volume 1 to RAD TF-3: 4.54.zz and replace with RAD TF-3: 4.68.zz)

130

1.7 History of Annual Changes

Add the following bullet to the end of the bullet list in section 1.7

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- **The 2004 version of the Cross-enterprise Document Sharing for Imaging (XDS-I) Profile was updated and extended with newer web-based transport mechanisms that handle:**
 - **the submission and queries based on the corresponding transactions from the ITI XDS.b Profile,**
 - **the retrieval of DICOM objects based on the ITI Retrieve Document Set Transaction.**

2 Integration Profiles

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Change the XDS-I row in Table 2-1 (within RAD TF-1:2) as follows

XDS for Imaging (<u>XDS-I.b</u>)	<u>XDS/ XDS.b</u> (ITI)	Document Consumer, Document Registry, and Document Repository actors from ITI <u>XDS.b</u> are required for needed to support the transactions and workflows defined by XDS-I.b	Document content types and metadata are specialized.
	<u>ATNA, incl. Radiology Audit Trail Option and ATNA Encryption Option</u>	<u>Each XDS-I.b Actor shall be grouped with the Secure Node or Secure Application Actor.</u>	<u>- Required to manage audit trail of exported PHI, node authentication and transport encryption.</u>

Edit the following bullet in Section 2.5:

- The Imaging Document Consumer shall be grouped with an ITI XDS.b Document Consumer, thereby supporting the Document Consumer’s transactions for querying an XDS Document Registry and retrieving from a Document Repository as defined in ITI XDS.b.

Modify the XDS-I profile overview subsection (TF-1: 2.1.16) as follows:

150 **2.1.16 Cross-eEnterprise Document Sharing for Imaging (XDS-I) - DEPRECATED**

155 ~~The Cross-enterprise Document Sharing for Imaging (XDS-I) Integration Profile specifies actors and transactions that allow users to share imaging information across enterprises. This profile depends on the IHE IT Infrastructure Cross-Enterprise Document Sharing (XDS) profile. XDS for Imaging (XDS-I) defines the information to be shared such as sets of DICOM instances (including images, evidence documents, and presentation states), diagnostic imaging reports provided in a ready-for-display.~~

160 ~~Since the XDS for Imaging Profile depends on and extends the IT Infrastructure XDS Profile including the use of terms defined in XDS (e.g., affinity domain, submission set, etc.) the reader of XDS-I is expected to have read and understands the XDS Profile (See ITI TF-1: 10).~~

This profile has been superseded by the Cross-Enterprise Document Sharing for Imaging (XDS-I.b) Integration Profile. See sections 2.1.nn and 18 for details on the replacement Profile.

165 *Add the following new XDS-I.b profile overview subsection (TF-1: 2.1.nn) as follows:*

2.1.nn Cross-Enterprise Document Sharing for Imaging (XDS-I.b)

170 **The Cross-Enterprise Document Sharing for Imaging (XDS-I.b) Integration Profile specifies actors and transactions that allow users to share imaging information across enterprises. This profile depends on the IHE IT Infrastructure Cross-Enterprise Document Sharing (XDS.b) profile. Cross-Enterprise Document Sharing for Imaging (XDS-I.b) defines the information to be shared such as sets of DICOM instances (including images, evidence documents, and presentation states), diagnostic imaging reports provided in a ready-for-display format.**

175 **Since the XDS-I.b Profile depends on and extends the IT Infrastructure XDS.b Profile including the use of terms defined in XDS (e.g., XDS Affinity Domain, submission set, etc.) the reader of XDS-I.b is expected to have read and understood the XDS Profile.**

Make the following changes to the transaction descriptions in section 2.4 (adding the new transaction descriptions at the end of the list in the section).

180 54. **Provide and Register Imaging Document Set [DEPRECATED] - This transaction has been deprecated and is superseded by the Provide and Register Imaging Document Set – MTOM/XOP Transaction (RAD TF-3: 4.68) as part of the Cross-Enterprise Document Sharing for Imaging (XDS-I.b) Profile. Imaging Document Source actor initiates the Provide and Register Imaging Document Set transaction. For each document in the Submission Set, the Imaging Document Source actor provides both the documents as an opaque octet stream and the corresponding meta-data 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 Documents transaction by forwarding the document meta-data received from the Imaging Document Source Actor. [RAD-54, derived from ITI-15].**

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55. ...

195 68. **Provide and Register Imaging Document Set–MTOM/XOP – An Imaging Document Source Actor uses the Provide and Register Imaging Document Set Transaction to submit documents with associated metadata to a Document Repository. [RAD-68 specializes ITI-41].**

200

- 69. Retrieve Imaging Document Set – An Imaging Document Consumer Actor uses this Transaction to issue a web service request to retrieve a set of DICOM instances. [RAD-69 specializes ITI-43].**

Make the following changes to the Integration Profiles Transaction table (2.4-1) in section 2.4

<u>Integration Profile Transaction</u>	<u>SWF</u>	<u>PIR</u>	<u>PWF</u>	<u>RWF</u>	<u>CHG</u>	<u>CPI</u>	<u>PGP</u>	<u>KIN</u>	<u>ED</u>	<u>NM</u>	<u>SINR</u>	<u>PDI</u>	<u>ARI</u>	<u>XDS-I.b</u>	<u>MAMMO</u>	<u>IRWF</u>	<u>TCE</u>
...																	
<u>Provide and Register Imaging Document Set [RAD-54]</u>														<u>X</u>			
...																	
<u>Provide and Register Imaging Document Set – MTOM/XOP [RAD-68]</u>														<u>X</u>			
<u>Retrieve Imaging Document Set [RAD-69]</u>														<u>X</u>			

Modify RAD TF-1:18 as follows

18 Cross-Enterprise Document Sharing for Imaging (XDS-I.b) Integration Profile

210 **IMPORTANT: The Cross-Enterprise Document Sharing for Imaging (XDS-I) Integration Profile (originally found here) has been deprecated and is replaced by a functionally equivalent profile called Cross-Enterprise Document Sharing for Imaging (XDS-I.b), which is described in the remainder of this section.**

215 The Cross-Enterprise Document Sharing (XDS) Profiles in the IHE IT Infrastructure Domain provides a solution for sharing (publishing, finding and retrieving) documents across a group of affiliated enterprises. The XDS for Imaging (**XDS-I.b**) Profile, defined here, extends and specializes **the mechanisms defined by XDS.b** to support imaging “documents”, specifically including the following:

- 220 • Imaging studies that include images acquired on a broad range of different modalities, as well as evidence documents (e.g., post-processing measurements/analysis outcome), and presentation states.
- Diagnostic reports resulting from the interpretation of one or more related imaging studies provided in a ready-for-display form
- A selection of diagnostically significant images associated with the report content.

225 These document types along with the actor capabilities required to share them are defined by this profile.

230 Since the XDS for Imaging (**XDS-I.b**) Profile depends on and extends the IT Infrastructure XDS.b Profile including the use of terms defined in XDS (e.g., **XDS aAffinity dDomain**, submission set, etc.) the reader of XDS-I.b is expected to have read and **understands understood** the XDS Profiles (See ITI TF-1: 10). The XDS-I.b specification does not repeat requirements and text for the XDS-defined Actors Document Repository, Document Registry, and Document Consumer, **and does not place any new requirements on these actors.**

235 Both the XDS.b and XDS for Imaging (**XDS-I.b**) Profiles are not intended to address all cross-enterprise EHR communication needs. Many scenarios may require the use of other IHE Integration profiles, such as Patient Identifier Cross-Referencing (PIX), Audit Trail and Node Authentication (ATNA), Enterprise User Authentication (EUA), Cross-Enterprise User Authentication (XUA) and Retrieve Information for Display (RID). Other scenarios may be only partially supported, while still others may require future IHE Integration profiles, which will be defined by IHE as soon as the necessary base standards are available. Specifically:

- 240 1. The operation of any ~~XDS-I Clinical~~ **XDS Affinity Domain** will require that a proper security model be put in place. It is expected that a range of security models should be

possible. Although the XDS-I.b Integration Profile is not intended to include nor require any specific security model, it is **required expected** that XDS-I.b implementers **shall will** group XDS-I.b Actors with actors from the IHE Audit Trail and Node Authentication and will need an Access Control capability that operates in such a cross-enterprise environment. New IHE Integration Profiles have been identified as candidates (e.g., Public Key Infrastructure, Access Control, etc.). There is a discussion of XDS-I.b security considerations in RAD TF-1: Appendix H.

~~2. The establishment of independent but consistently XDS-based Affinity Domains will call for their federation, as patients expect their records to follow them as they move from region to region, or country to country. IHE foresees a need for transferring information from one Clinical Affinity Domain to another, or to allow access from one Affinity Domain to documents managed in other Affinity Domains. XDS/ XDS-I has been designed with this extension in mind. An XDS/ XDS-I Domains Federation Integration Profile that complements XDS may be anticipated in the future.~~

3. XDS and XDS-I.b do not address transactions for the management or configuration of ~~an clinical XDS aAffinity dDomain~~. For example, the configuration of network addresses or the definition of what type of clinical information is to be shared is specifically left up to the policies established by the ~~clinical XDS aAffinity dDomain~~.

4. XDS and XDS-I.b do not specifically address the patient information reconciliation process necessary between the ~~Clinical XDS~~ Affinity Domain and any other local patient identity domains that Document Sources and Document Consumers may be members of. For a discussion of some of these issues see RAD TF-1: Appendix G.

5. XDS and XDS-I.b do not directly address the rendering and display of the documents retrieved by the Document and Imaging Document Consumers. Users wishing to achieve a well defined level of display/ rendering capability simply need to request systems that combine the XDS-I.b Imaging Document Consumer Actor with an Image Display Actor from the appropriate Profile (e.g., Mammography Image, NM Image, Basic Image Review, etc).

Update RAD TF-1:18.1 as described below, including replacement of Figure 18.1-1 with the diagram shown below

18.1 Actors/ Transactions

Figure 18.1-1 shows the actors directly involved in this profile and the transactions between actors. The shaded **XDS** actors are NOT actually included in this profile but are included to show the other endpoint of transactions that ARE part of the profile (e.g., **the Document Repository**

280

Actor that is the endpoint for the Provide and Register Imaging Document Set – MTOM/XOP Transaction). As a result, the shaded actors are not listed in Table 18.1-1. **The XDS-I.b Profile does not place any additional requirements on any of these actors above and beyond what it required of them by the ITI XDS.b Profile.**

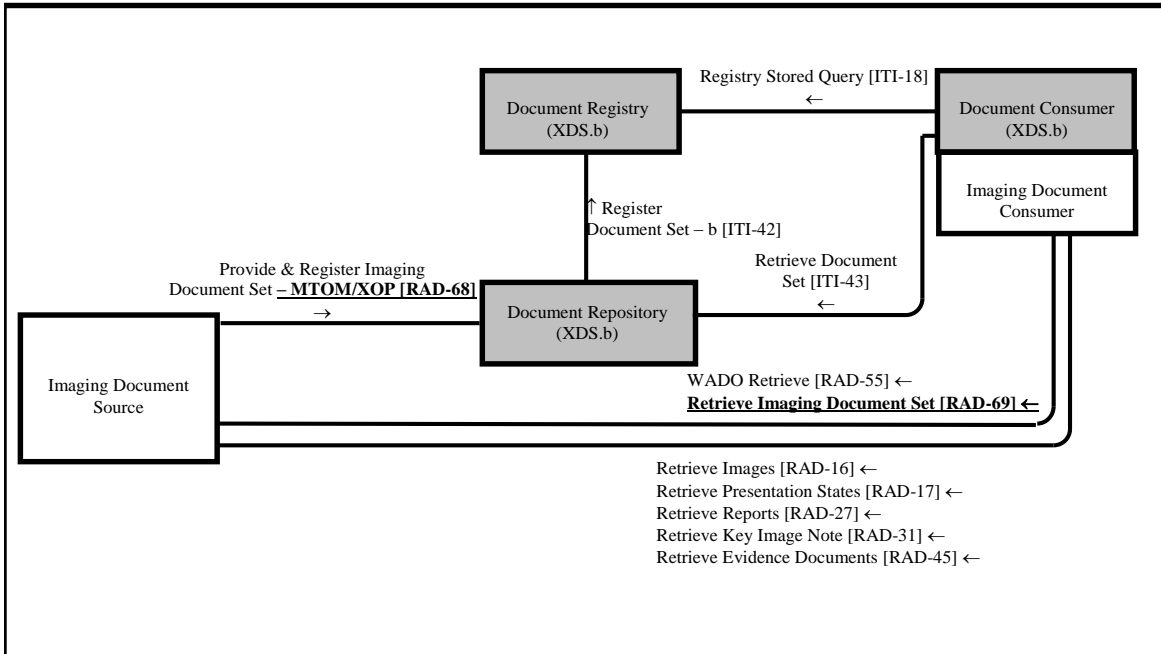


Figure 18.1-1. Cross-Enterprise Document Sharing for Imaging Diagram

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Table 18.1-1 lists the transactions for each actor directly involved in the Cross-Enterprise Document Sharing for Imaging (XDS-I.b) Profile. In order to claim support of this Integration Profile, an implementation shall perform the required transactions (labeled “R”). Transactions labeled “O” are optional. A complete list of options defined by this Integration Profile is listed in RAD TF-1: 18.2. Note the grouping of actors described in RAD TF-1: 2.4.

290 **Table 18.1-1 Cross-Enterprise Document Sharing for Imaging Integration Profile - Actors and Transactions**

Actors	Transactions	Optionality	Section in Vol. 2/ 3
Imaging Document Consumer	Retrieve Images [RAD-16]	O (note 1)	4.16
	Retrieve Presentation States [RAD-17]	O	4.17
	Retrieve Reports [RAD-27]	O (note 1)	4.27
	Retrieve Key Image Note [RAD-31]	O	4.31
	Retrieve Evidence Documents [RAD-45]	O (note 1)	4.45
	WADO Retrieve [RAD-55]	O (note 1)	4.55
	<u>Retrieve Imaging Document Set [RAD-69]</u>	<u>O (note 1)</u>	<u>4.69</u>
Imaging Document Source	Provide and Register Imaging Document Set – <u>MTOM/XOP [RAD-54-68]</u>	R (note 2)	<u>4.54 68</u>
	Retrieve Images [RAD-16]	R	4.16
	Retrieve Presentation States [RAD-17]	R	4.17
	Retrieve Reports [RAD-27]	R	4.27
	Retrieve Key Image Note [RAD-31],	R	4.31
	Retrieve Evidence Documents [RAD-45]	R	4.45
	WADO Retrieve [RAD-55]	R	4.55
	<u>Retrieve Imaging Document Set [RAD-69]</u>	<u>R</u>	<u>4.69</u>

Note 1: At least one of the optional retrieve transactions is required to be supported. Refer to section 18.4 for additional requirements on the Imaging Document Consumer.

Note 2: Support of at least one of the three document types described by the options in section 18.2 is required.

295

Modify RAD TF-1:18.6 as follows

18.6 Security Considerations

All XDS-I.b actors shall be grouped with either a Secure Node or Secure Application actor from the ATNA Profile. These actors shall also support the Radiology Audit Trail Option for ATNA and the ATNA Encryption Option.

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This grouping is required to provide the capability for security auditing, for establishing a trust relationship between systems exchanging information, and to enable secure data exchange. Some care sites may use alternate mechanisms for providing equivalent security.

Other security ~~These~~ considerations can be found in appendix H.

305

Volume 3 – Transactions

Make the following GLOBAL substitutions/ changes in Volume 3 (according to the table below):

Original Text	Replacement Text
XDS-I	XDS-I.b

310

Replace all the text currently in section 4.54 with the following: (and search for all other references to 4.54.zz and replace with 4.68.zz)

4.54 Provide and Register Imaging Document Set - DEPRECATED

This transaction has been deprecated and is superseded by the Provide and Register Imaging Document Set – MTOM/XOP (RAD TF-3: 4.68) as part of the Cross-Enterprise Document Sharing for Imaging (XDS-I.b) Profile.

315

Add brand new transaction definition section 4.68 (and subsections) as follows (bolding and underline convention is not used to improve readability)

4.68 Provide and Register Imaging Document Set – MTOM/XOP

320

This section corresponds to Transaction RAD-68 of the IHE Technical Framework. “Provide and Register Imaging Document Set – MTOM/XOP” is used by the Imaging Document Source to provide a set of XDS imaging documents to the Document Repository, and to request that the repository store these documents and then register them with the Document Registry. This transaction is derived from the Transaction ITI-41 of the IHE IT Infrastructure Technical Framework. It adds new document content types as well as additional semantics and constraints on the metadata defined in Transaction ITI-41.

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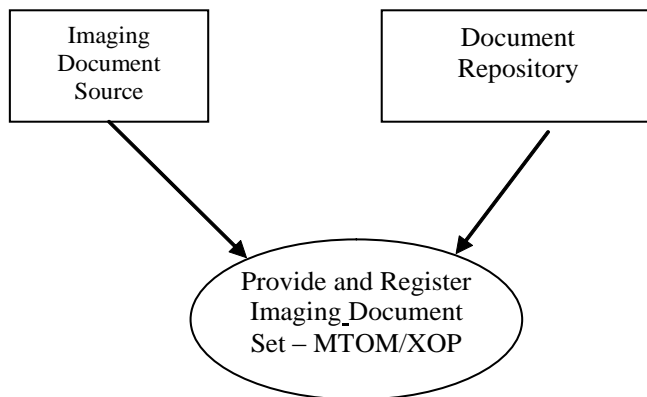
4.68.1 Scope

The Provide and Register Imaging Document Set – MTOM/XOP transaction passes a Repository Submission Request from an Imaging Document Source to a Document Repository.

A Provider and Register Document Set – MTOM/XOP transaction carries:

- 330
- Metadata describing zero or more new documents (e.g., metadata describing zero documents may be used to describe folders containing references to documents that were previously submitted)
 - Within metadata, one XDSDocumentEntry object per document
- 335
- 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

4.68.2 Use Case Roles



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Actor: Imaging Document Source

Role: Submits document(s) with associated metadata to a Document Repository.

Actor: Document Repository

Role: receives documents and associated metadata and:

- 345
- Stores the documents
 - Augments submitted metadata with repository information to enable later retrieval of documents
 - Forwards the enhanced metadata to the Document Registry.

4.68.3 Referenced Standards

350 For a list of the standards inherited from the underlying ITI-41 Provide and Register Document Set-b, see ITI TF-2: 3.41.3.

In addition, the following standards are used to define the radiology-specific content:

DICOM PS 3.3: Key Object Selection Document (KOS)

DICOM PS 3.16: Content Mapping Resource

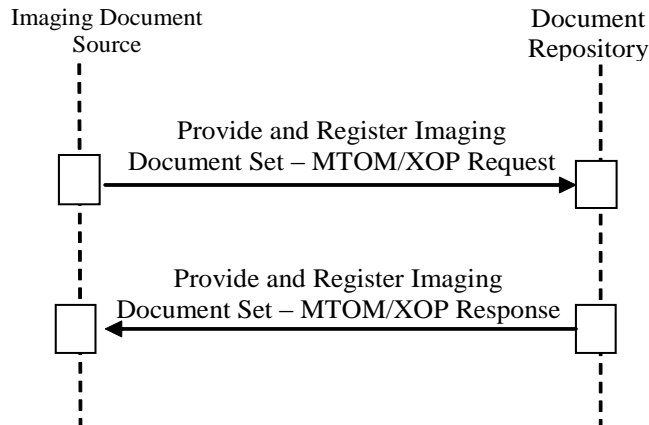
355 DICOM PS 3.18: Web Access to DICOM Persistent Objects (WADO)

PDF/A ISO 19005-1. Document management - Electronic document file format for long-term preservation - Part 1: Use of PDF (PDF/A)

HL7 CDA Release 2.0 (denoted HL7 CDA R2, or just CDA, in subsequent text)

4.68.4 Interaction Diagram

360



4.68.4.1 Provide and Register Imaging Document Set – MTOM/XOP Request message

365 An Imaging Document Source Actor sends documents and associated metadata to a Document Repository Actor. This message is an extension of the Provide and Register Document Set-b transaction as defined in ITI TF-2: 3.41.

4.68.4.1.1 Trigger Events

The triggers for this transaction are:

- 370 • The Imaging Document Source Actor is instructed to submit a set of one or more new imaging documents for sharing, or
- A previously submitted document or the contents of a previously submitted manifest changes, requiring the Imaging Document Source to submit an update.

4.68.4.1.2 Message Semantics

375 This transaction extends the message semantics of the ITI-41 Provide and Register Document Set-b by specifying additional document content types, to allow the sharing of the following types of documents:

1. Sets of DICOM SOP instances
2. Imaging diagnostic reports

380 To support these content types and their usage, additional requirements and constraints on the XDS document metadata are specified.

The Provide and Register Imaging Document Set – MTOM/XOP Request message semantics are specified in the following subsections:

1. Sharing of Persistent DICOM Instances via a Manifest document
2. Sharing of radiology diagnostic report in PDF or Text formats
- 385 3. XDS-I.b document metadata specification
4. Use of XDS Submission Set concept in sharing of radiology imaging information.

The wsdl definition for this Provide-and-Register transaction sent by the Imaging Document Source is no different than the Provide-and-Register transaction sent by the XDS.b Document Source in ITI-41. The wsdl definition for the Provide-and-Register transaction can be found on the IHE FTP server at:

ftp://ftp.ihe.net/TF_Implementation_Material/ITI/wsdl/XDS.b_DocumentRepository.wsdl

4.68.4.1.2.1 Sharing of Set of DICOM Instances

395 The Imaging Document Source creates a manifest that describes and collects references to DICOM SOP instances that are intended for sharing. The manifest, a Key Object Selection (KOS) Document Instance, is the actual document provided to the Document Repository and registered at the Document Registry.

400 As specified in IHE ITI XDS.b Integration Profile, the structure of the message between the Document Source and the Document Repository is an MTOM/ XOP formatted message. In this transaction, the source actor is the Imaging Document Source, but the above requirement still applies. The KOS Document Instance is encoded in the message as a DICOM Part 10 File format having a MIME type of “application/dicom”.

405 The Imaging Document Source shall ensure that the DICOM SOP Instances referenced from within the manifest are available to be retrieved. If the Imaging Document Source makes one or more SOP Instances unavailable that are referenced in a published manifest, then it shall submit a new manifest as a replacement for the published manifest already in the Document Repository

410 and Document Registry (IHE ITI TF Vol 3 Section 4.1.6). The new manifest shall have the updated list of DICOM SOP Instances with the unavailable instances removed. If the Imaging Document Source makes all referenced DICOM SOP Instances unavailable in a published manifest, then it shall deprecate the published manifest without any replacement (IHE ITI XDS Metadata Update Supplement).

4.68.4.1.2.1.1 Manifest KOS Document

The references to the DICOM SOP Instances shall be included in the Current Requested Procedure Evidence Sequence (0040,A375) attribute of the KOS Manifest Document.

415 The Imaging Document Source shall support a number of attributes in Current Requested Procedure Evidence Sequence (0040,A375), which are represented in the Hierarchical SOP Instance Reference Macro, as described in the following table:

Table 4.68.4.1.2.1-1. Attributes of Hierarchical SOP Instance Reference Macro in KOS Manifest Document

Attribute Name	Tag	Imaging Document Source
Study Instance UID	(0020,000D)	R
Referenced Series Sequence	(0008,1115)	R
> Series Instance UID	(0020,000E)	R
> Retrieve AE Title	(0008,0054)	R+
> Retrieve Location UID	(0040,E011)	R+
> Storage Media File-Set ID	(0088,0130)	O
> Storage Media File-Set UID	(0088,0140)	O
> Referenced SOP Sequence	(0008,1199)	R
>> Referenced SOP Class UID	(0008,1150)	R
>> Referenced SOP Instance UID	(0008,1155)	R

420 Some of these requirements build on attributes which are Type 2 or Type 3 in DICOM (such attributes are indicated with R+). Specifically, the Imaging Document Source shall include its own identification in the Retrieve AE Title (0008,0054) and Retrieve Location UID (0040,E011) attributes. These attributes will enable subsequent retrieval of the DICOM objects referenced within the KOS manifest.

4.68.4.1.2.2 Sharing of Report

Since text reports address many of the weaknesses of PDF reports and vice versa, it is required that the Imaging Document Source shall support shared reports in at least one of the following 2 different formats:

- 430
- CDA wrapped Text, or
 - PDF

To maximize interoperability of the chosen formats, the following restrictions shall be required:

- 435
- For PDF documents:
 - We are not requiring a particular PDF version but we recommend the use of the PDF/A (ISO 19005-1)
 - For CDA wrapped Text Documents:
 - Text shall be encoded with UTF-8 UNICODE format. Refer to section 4.68.4.1.2.3.5 for constraints on the CDA wrapper. To the extent possible, the specification for the CDA wrapper for the report text has been made consistent with the CDA metadata specified in the ITI XDS Scanned Documents (XDS-SD) Profile (see also ITI TF-2: 5.2.3).
- 440

A report (no matter what document format is chosen) can be shared with or without image reference(s).

445 If a shared report includes image reference(s), it can embed selected images in its PDF format or it can include fully resolved hyperlinks that point to the selected images; these hyperlinks can be interactively clickable (e.g., PDF) or can be processed or copied (e.g., text).

The Imaging Document Source that provides and registers the shared report is responsible for formatting the hyperlink to reference relevant images. The referenced images within a shared imaging report are meant to be accessed without the need for specialized (e.g., DICOM) viewing applications.

450

The hyperlink that references the selected image shall be formatted as a DICOM WADO URI. Since the sharing environment is inherently cross-enterprise, the secured version of HTTP (i.e., HTTPS) shall be used when formatting the hyperlink.

The Imaging Document Source is required to ensure that image references are valid links.

455 Even though significant images can be shared as non-DICOM format (embedded picture in PDF report or hyperlinks in PDF or Text report), it is required that sharing of a large set of DICOM images be achieved by sharing a set of DICOM SOP instances by providing and registering a manifest document. This is to avoid registration of a large number of individual documents in the XDS Document Registry.

460 **4.68.4.1.2.3 Metadata**

The Provide and Register Imaging Document Set – MTOM/XOP Request message shall include the metadata attributes that will be forwarded by the XDS Document Repository Actor to the XDS Registry Actor using the Register Document Set-b Transaction (ITI-42).

465 The Imaging Document Source supplies all necessary registry object attributes of an XDSDocumentEntry.

4.68.4.1.2.3.1 Metadata Attributes: Author Information and Document Creation Time

470 In XDS, a registered document directly contains the clinical information of interest for sharing. Therefore, its metadata for registration can be populated directly from the document content. For example, a discharge letter is submitted to the Document Repository, so its author and creation information is populated into the XDS Document metadata.

475 In XDS-I.b, the Manifest document submitted to the Document Repository usually does not directly constitute clinical information of interest for sharing, but rather is a set of references to such clinical information. Thus, the metadata of the Manifest document shall be related to the referenced source content or its creation process, to reflect the clinical nature of the shared information. This affects the metadata attributes including, but not limited to, authorSpecialty, authorInstitution, authorPerson, authorRole, creationTime, and title.

480 If the manifest references source data from multiple authors, then one primary author, source data creation time and document title shall be chosen. Note that this metadata shall be populated from the part of the source data that most closely represents the main content for sharing in order to best support a user query to the Registry for finding this data. For example, a manifest referencing a current report, a current study as well as a prior report and study, will register metadata populated from the current report (which is the clinical content of interest for sharing).

485 In cases where the data to be shared is transformed from its original format (e.g., DICOM) to another format (e.g., PDF) in advance of sending it to the Repository, the metadata of such newly generated shared information shall be populated from the original source data (e.g., DICOM data)

490 In summary, XDS-I.b metadata always reflects the main clinical content of a shared document, which may be described directly in the document, or in the source data referenced within the document, or in the source data from which the document is transformed.

4.68.4.1.2.3.2 XDSDocumentEntry Metadata

495 Table 4.68.4.1.2.3-1 lists XDS document metadata elements that are either further constrained by XDS-I.b, or have XDS-I.b specific instructions for how the Imaging Document Source is expected to populate them. Unless otherwise specified, the “optionality” of the attributes listed in the table below is the same as what is required by XDS for the source actor.

For a full description of all the metadata attributes associated with an XDS document, see Table 4.1-5 in ITI TF-2: 4.1.7.

500

Table 4.68.4.1.2.3-1. XDS-I.b-specific Metadata Requirements

XDSDocumentEntry Attribute	XDS-I.b-specific Requirements
creationTime	<p>This attribute value shall be populated by the Imaging Document Source actor to record the date and time at which the clinical content conveyed in the shared document is created.</p> <p>If the published document is a DICOM object or is transformed from a DICOM information object, this attribute value should be taken from the tags Instance Creation Date (0008,0012) and Instance Creation Time (0008,0013) of the DICOM object.</p>
eventCodeList	<p>This attribute is required to be included in the metadata if known by the Imaging Document Source. In other words, it is “promoted” from an optional (O) attribute in XDS to a “required if known” (R2) attribute in XDS-I.b.</p> <p>This attribute shall be populated by the Imaging Document Source from code(s) in DCMR Context Group CID 29 for Acquisition Modality and from code(s) in DCMR Context Group CID 4 for Anatomic Region. See DICOM PS 3.16 for DICOM Context Group definitions.</p> <p>This attribute can contain multiple codes and there is not any specific ordering assumed in these codes.</p>
eventCodeDisplayNameList	<p>This attribute is required to be included in the metadata if the eventCodeList attribute is present.</p> <p>This attribute contains the Code Meaning text(s) of the code(s) for Acquisition Modality and for Anatomic Region valued in eventCodeList, from DCMR Context Group CID 29 and from DCMR Context Group CID 4, respectively. See DICOM PS 3.16 for DICOM Context Group definitions.</p> <p>Note that the ordering of the Code Meaning texts populated in this attribute shall be sorted in the same order of the corresponding codes in eventCodeList.</p>
formatCode	<p>This attribute shall be populated by the Imaging Document Source from one of the following values:</p> <p>“1.2.840.10008.5.1.4.1.1.88.59” (DICOM KOS SOP Class UID) as the Format Code Value and “1.2.840.10008.2.6.1” (DICOM UID Registry UID) as the Format Coding Scheme OID for a DICOM Manifest document.</p> <p>“urn:ihe:rad:TEXT” for a TEXT report wrapped into a CDA document</p> <p>“urn:ihe:rad:PDF” for a PDF report document</p>
mimeType	<p>This attribute shall be populated by the Imaging Document Source from one of the following values:</p> <p>“application/dicom” for a DICOM Manifest document</p> <p>“text/xml” for a TEXT report wrapped into a CDA document.</p> <p>“application/pdf” for a PDF report</p>
practiceSettingCode	<p>This attribute shall be populated by the Imaging Document Source by taking a fixed code defined by the XDS Affinity Domain to designate “Radiology”</p>
serviceStartTime	<p>This attribute shall be populated by the Imaging Document Source for a date and time that indicates the imaging service start time.</p>

XDSDocumentEntry Attribute	XDS-I.b-specific Requirements
	As an example, the Imaging Document Source could take the value of Study Date (0008,0020) and Study Time (0008,0030) from the associated DICOM study
sourcePatientInfo	<p>This attribute shall represent the Patient demographics information used in the Imaging Document Source actor system to identify the patient.</p> <p>This attribute allows multiple values for different pieces of patient demographics, see metadata specification of the IHE ITI XDS Integration Profile (Table 4.1-5 in ITI TF-2:4.1.7).</p> <p>As an example, this information can be transformed from DICOM Patient’s Name (0010,0010), Patient’s Birth Date (0010,0030), and Patient’s Sex (0010,0040).</p>
typeCode	<p>This attribute shall be populated by the source actor from a coding system of the Requested Procedure Code of the Requested Procedure, to which the document is associated. In certain special cases previously defined in other IHE Profiles some sort of user intervention will be necessary to select the single Procedure Code used to populate this attribute. For example, handling the “Group Case” as defined in Scheduled Workflow will require the user to select a single, pre-coordinated procedure code that represents the multiple Requested Procedures that were acquired as a single study.</p> <p>The coding system of the Radiology Imaging Requested Procedure Code will be designated by the XDS_Affinity Domain and shared by all Imaging Document Sources in the XDS Affinity Domain.</p>
typeCodeDisplayName	This attribute shall be filled by the source actor using the code meaning text of the corresponding Requested Procedure Code valued in typeCode.
uniqueId	<p>This attribute shall contain the Document unique ID generated by the source actor. It shall be an ISO OID.</p> <p>For a DICOM Manifest document, this attribute value shall be the same as the SOP Instance UID of the corresponding DICOM KOS object. In the event that any information in the manifest changes and it needs to be resubmitted from the Imaging Document Source to the Document Repository, the Imaging Document Source shall generate a new SOP Instance UID for the DICOM KOS object to ensure that its submission to the Repository will succeed.</p> <p>For a CDA wrapped text report, this value shall be formulated from the HL7 CDA R2 header as follows:</p> <p>ClinicalDocument/id@root.ClinicalDocument/id@extension</p>

4.68.4.1.2.3.3 Transformation of DICOM VR to XDS Document Metadata Data Types

505 A number of XDS document metadata attributes use HL7 data types for value representation. Some of the metadata attributes may be transformed from data elements of the corresponding DICOM SOP Instance. In this section, transformations of DICOM VR (Value Representation) to the HL7 data types used in XDS metadata are described.

Note that term HL7 Data Type in the following transformations refers to their specified usage in XDS document metadata as defined in IHE ITI XDS Integration Profile.

510 **4.68.4.1.2.3.3.1 CX – Extended Composite ID**

Table 4.68.4.1.2.3-2 describes the transformation of data element of DICOM VR to CX data type as specified in IHE XDS Integration Profile:

Table 4.68.4.1.2.3-2. CX Data type mapping

CX Data Component	Component Name	DICOM VR	Comment
1	ID Number	LO	This attribute represent the value of Patient ID issued by an Assigning Authority as indicated in component 3. In DICOM, it is data element (0010,0020).
4.2	Assigning Authority – Universal ID		Assigning Authority information is not required in DICOM instance. The Imaging Document Source must use its local configuration to populate this subcomponent, to indicate the Patient ID Domain, from which the Patient ID value in component 1 has been issued. This must be an ISO OID
4.3	Assigning Authority – Universal ID Type		This must be “ISO”
5	Identifier Type		Patient ID Type information is not required in DICOM instance. The Imaging Document Source can use its local configuration to populate this component, to indicate the type of the Patient ID value in component 1.

515 HL7 CX data components not listed in the table are not used in XDS document metadata and shall be left empty.

4.68.4.1.2.3.3.2 DTM – Date / Time

HL7 DTM Data Type can be represented in the following regular expression:

YYYY[MM[DD[HH[MM[SS]]]]]

520 This can be transformed from DICOM elements of VR DA (format: YYYYMMDD) and TM (format: HHMMSS.fraction).

4.68.4.1.2.3.3.3 XCN – Extended Composite ID Number and Name for Person

Table 4.68.4.1.2.3-3 describes the transformation of DICOM VR to XCN data type as specified in IHE XDS Integration Profile:

Table 4.68.4.1.2.3-3. XCN Data type mapping

XCN Data Component	Component Name	DICOM Data Element	Comment
1	ID Number		This attribute component is not required in DICOM. The Imaging Document Source must use its local configuration or personnel directory service to populate this component.
2	Family Name	1st Component of PN	A data element of VR PN, like (0010,0010) for Patient Name
3	Given Name	2nd Component of PN	
4	Second or Further Given Names or Initials thereof	3rd Component of PN	
5	Suffix	5th Component of PN	
6	Prefix	4th Component of PN	
7	Degree		This attribute component is not included in DICOM.

525 HL7 XCN data components not listed in the table are not used in XDS document metadata and shall be left empty.

4.68.4.1.2.3.3.4 XON – Extended Composite Name and Identification Number for Organization

530 Table 4.68.4.1.2.3-4 describes the transformation of DICOM VR to XON data type as specified in IHE XDS Integration Profile:

Table 4.68.4.1.2.3-4. XON Data type mapping

XON Data Component	Component Name	DICOM Data Element	Comment
1	Organization Name	LO	A data element of VR LO, like (0008,0080) for institution name

HL7 XON data components not listed in the table are not used in XDS document metadata and shall be left empty.

4.68.4.1.2.3.4 XDS/XDS-I.b Metadata Values represented as HL7 v2.5 Data Types

535

XDS/ XDS-I.b Metadata that is represented as an HL7 v2.5 data type will require transformation from its corresponding HL7 CDA R2 header component. The following table (4.68.4.1.2.3-5) guides this transformation and indirectly imposes requirements on the configuration of and/or user interaction with implementations supporting this transaction. Additionally, this table further

540 restricts the HL7 CDA R2 specification. IDs in metadata that correspond to IDs in the CDA header (as II types) are required to have both a root and an extension attribute.

Table 4.68.4.1.2.3-5. HL7 v2.5 and CDA Data type mapping

XDS/ XDS-I.b Metadata			HL7 CDA Header	
HL7 v2.5 Data Type	Subcomponent index	Subcomponent name	HL7 CDA R2 Data element	HL7 CDA R2 Sub-element or attribute
CX (SEE NOTE 1)			II	
	1	Id number	II	@extension
	4.1	AssigningAuthority.namespace	II	@assigningAuthorityName
	4.2	AssigningAuthority.uid	II	@root
DTM	1 (only)	Date/Time	TS or IVL_TS	@value (NOTE: format is compatible with DTM)
XCN			II and PN	
	1	Id number	II	@extension
	2.1	FamilyName.surnName	PN	Family
	3	Given Name	PN	Given
	4	Second (middle) Name	PN	Given
	5	Suffix	PN	Suffix
	6	Prefix	PN	Prefix
	9.1	AssigningAuthority.namespace	II	@assigningAuthorityName
	9.2	AssigningAuthority.uid	II	@root
XON			II and ON	
	1	Organization Name		
	3	Id number	II	@extension
	5.1	AssigningAuthority.namespace	II	@assigningAuthorityName
	5.2	AssigningAuthority.uid	II	@root

NOTE 1: XDS restricts the formatting of the CX datatype. See ITI TF-2: Appendix E.

545 **4.68.4.1.2.3.5 CDA Wrapper – Text Report [CDA] Option**

This section outlines the content of the HL7 CDA R2 wrapper for the text content. We note here that requirements specified below are to ensure the presence of a minimum amount of wrapper data in order to enhance description and facilitate sharing of the document. It should be noted that the "nullFlavor" value expresses missing values in the CDA, e.g., it may be appropriate if
550 such information cannot be derived from DICOM objects.

Implementers of the “Text Report [CDA]” Profile Option can and should make use of additional annotation within the CDA header to provide richer context. The examples in the following sections contain the minimal amount of wrapper data, as specified, and in many cases do make use of additional CDA header elements for enriched context.

555 To the extent possible, the specification for the CDA wrapper for the report text has been made consistent with the CDA metadata specified in the ITI XDS Scanned Documents (XDS-SD) Profile (see ITI TF:2 5.2.3) and has been replicated here for the readers’ convenience.

Elements and attributes that apply to the XDS-SD use case(s) but not to the use case of sharing an electronically transmitted radiology report have been omitted, where allowed by the CDA R2
560 specification. Descriptions for how to populate certain elements and attributes consistent with the “sharing a text-based radiology report” use case have been included.

4.68.4.1.2.3.5.1 Wrapper Format – HL7 CDA R2

The CDA metadata wrapper for plain text reports is the same as defined in the ITI XDS-SD
565 Profile (see the metadata specification table in ITI TF-2: 5.2.3) with the exceptions described below and in the following subsections:

- The ClinicalDocument/dataEnterer element, as it is defined in XDS-SD, does not apply to the report sharing use case and thus may be omitted.

4.68.4.1.2.3.5.1.1 ClinicalDocument Child-less Elements

570 The requirements for the ClinicalDocument Child-less elements for CDA-wrapped plain text reports is the same as defined in the ITI XDS-SD Profile (see ITI TF-2: 5.2.3.1), with the following exceptions/ clarifications:

- The ClinicalDocument/templateId element shall be 1.3.6.1.4.1.19376.1.2.21
- The ClinicalDocument/code element shall be set with the following attribute values:
575
 - code=“11528-7”

- codeSystem="2.16.840.1.113883.6.1"
 - codeSystemName="LOINC"
 - displayName="Radiology Report"/>
- 580 • The ClinicalDocument/effectiveTime shall denote the time at which the CDA text document was recorded. At a minimum, the time shall be precise to the day and shall include the time zone offset from GMT.

Example:

```
<ClinicalDocument xmlns="urn:hl7-org:v3">
  <typeId extension="POCD_HD000040" root="2.16.840.1.113883.1.3"/>
  <templateId root="1.3.6.1.4.1.19376.1.2.21">
  <id root="1.3.6.4.1.4.1.2835.2.7777"/>
  <code code="11528-7" codeSystem="2.16.840.1.113883.6.1"
    codeSystemName="LOINC" displayName="Radiology Report"/>
  <title>Chest X-Ray</title>
  <effectiveTime value="20050329224411+0500"/>
  <confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25"/>
  <languageCode code="en-US"/>
</ClinicalDocument>
```

585 4.68.4.1.2.3.5.1.2 ClinicalDocument/recordTarget

The requirements and example for the ClinicalDocument/recordTarget element for CDA-wrapped plain text reports is the same as defined in the ITI XDS-SD Profile (see ITI TF-2: 5.2.3.2).

4.68.4.1.2.3.5.1.3 ClinicalDocument/author (original)

590 The requirements and example for the ClinicalDocument/author element (that represents the original author of the report) for CDA-wrapped plain text reports is the same as defined in the ITI XDS-SD Profile (see ITI TF-2: 5.2.3.3).

4.68.4.1.2.3.5.1.4 ClinicalDocument/author (reporting system)

595 The requirements for the ClinicalDocument/author element (that represents the reporting system and software used to produce the report content) for CDA-wrapped plain text reports is the same as defined in the ITI XDS-SD Profile (see ITI TF-2: 5.2.3.4), with the following exceptions/clarifications:

- When reading the XDS-SD specification, references to scanned, scanning, scanned content etc. refer to reporting, report content etc. in this context.
- 600 • When reading the XDS-SD specification concerning the ClinicalDocument/author/assignedAuthor/assignedAuthoringDevice/code element references to CDA-wrapped PDF can be ignored since they do not apply to the radiology report sharing use case.

Example:

```
<author>
  <time value="20050329224411+0500"/>
  <assignedAuthor>
    <templateId root="1.3.6.1.4.1.19376.1.2.20.2"/>
    <id root="1.3.6.4.1.4.1.2835.2.1234"/>
    <assignedAuthoringDevice>
      <code code="WSD" displayName="Workstation" codeSystem="
1.2.840.10008.2.16.4" />
      <manufacturerModelName>SOME REPORTING NAME AND MODEL
      </manufacturerModelName>
      <softwareName> REPORTING SOFTWARE NAME v0.0</softwareName>
    </assignedAuthoringDevice>
    <representedOrganization>
      <id root="1.3.6.4.1.4.1.2835.2"/>
      <name>SOME REPORTING Facility</name>
      <addr>
        <streetAddressLine>21 North Ave</streetAddressLine>
        <city>Burlington</city>
        <state>MA</state>
        <postalCode>01803</postalCode>
        <country>USA</country>
      </addr>
    </representedOrganization>
  </assignedAuthor>
</author>
```

605

4.68.4.1.2.3.5.1.5 ClinicalDocument/custodian

The requirements and example for the ClinicalDocument/custodian element for CDA-wrapped plain text reports are the same as defined in the ITI XDS-SD Profile (see ITI TF-2: 5.2.3.6). Its context is left up to the reporting facility to define in accordance with local policies and to reflect the entity responsible for the report content. In most cases this will be the reporting facility.

610

4.68.4.1.2.4 Use of XDS Submission Set

4.68.4.1.2.4.1 Linking Report to Set of DICOM Instances

635 Figure 4.68.4.1.2.4-1 shows examples of three Submission Sets:

- Submission Set 1 includes a report and a Manifest that are stored in the Document Repository. The manifest references DICOM instances that are archived in the IM/IA.
- Submission Set 2 includes one single manifest.

640

- Submission Set 3 includes a report and references the manifest from Submission Set 2 since it was generated by interpreting the images referenced by that manifest. Submission Set 3 also references the report and the manifest from Submission Set 1 since that report and images that are referenced by that manifest were used for the interpretation.

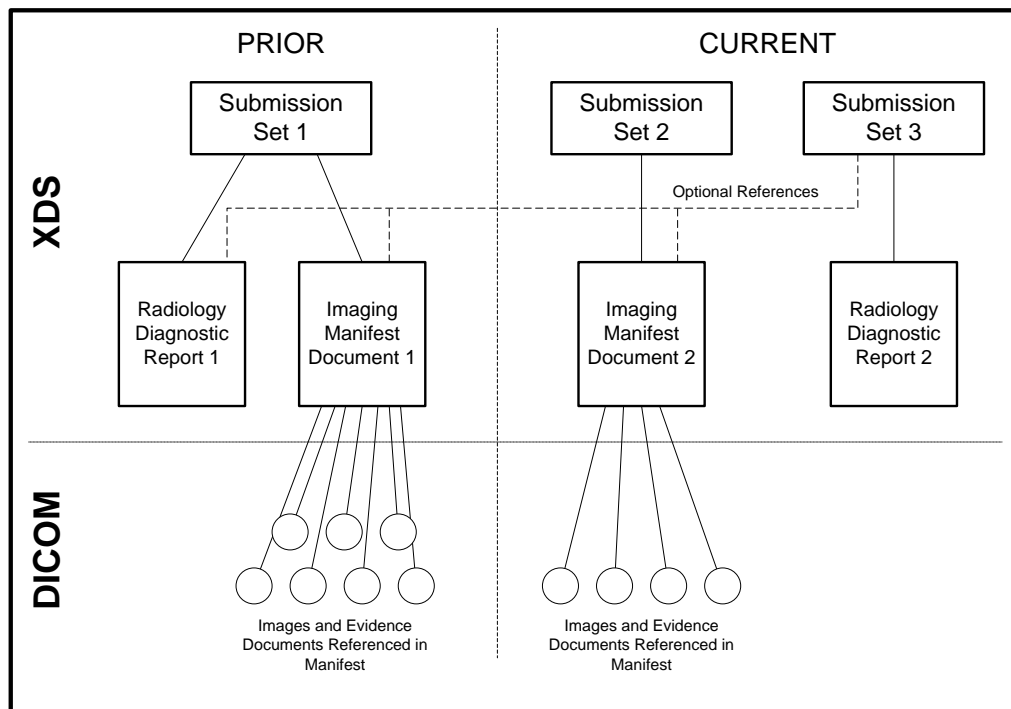


Figure 4.68.4.1.2.4-1 Imaging Information Sharing Submission Set

645

4.68.4.1.2.4.2 Linking Report to prior report

The Report Submission Set can reference the manifest for a set of prior images published if the prior images were used in creating the interpretation. Likewise the report submission set can reference a report from a previous submission.

4.68.4.1.3 Expected Actions

650 The Document Repository Actor will receive this message and will process it according to the requirements specified in ITI TF-2: 3.41.4.1.3.

4.68.4.2 Provide and Register Imaging Document Set – MTOM/XOP Response message

655 The Document Repository sends a Provide and Register Imaging Document Set – MTOM/XOP Response message when the processing of a Provide and Register Imaging Document Set – MTOM/XOP Request message is complete. The specification of the trigger events, message semantics and expected actions are the same as those specified in ITI TF-2: 3.41.4.2.

660 The conditions of failure and possible error messages are given in the ebRS standard. The Imaging Document Source shall handle all error messages detailed for the Provide and Register transaction in ITI TF-2: 4.1.13 “Error Reporting”.

End of added transaction 4.68

Add brand new transaction definition section 4.69 (and subsections) as follows (bolding and underline convention is not used to improve readability)

665 **4.69 Retrieve Imaging Document Set**

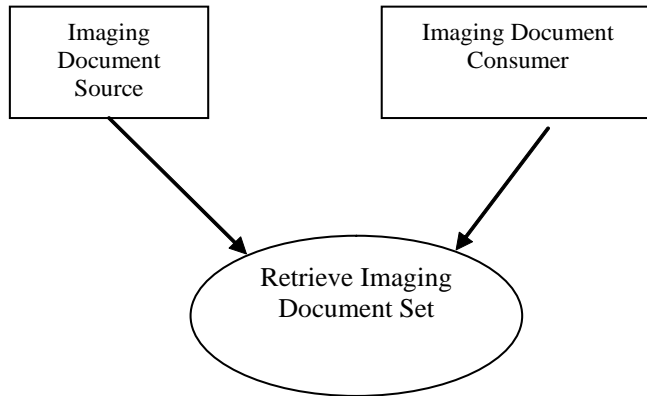
This section corresponds to Transaction RAD-69 of the IHE Technical Framework. “Retrieve Imaging Document Set” is used by the Imaging Document Consumer to retrieve DICOM objects from an Imaging Document Source. The objects retrieved are those that are referenced within an XDS-I.b manifest document as described in RAD TF-3: 4.68. This transaction is derived from, and is nearly identical to, the “Retrieve Document Set” Transaction (ITI-43) of the IHE IT Infrastructure Technical Framework. It adds minor additional semantics and constraints on the requirements defined in Transaction ITI-43.

4.69.1 Scope

675 This transaction is used by the Imaging Document Consumer to retrieve a set of DICOM objects from the Imaging Document Source. The Imaging Document Consumer gains access to the manifest object (KOS) previously retrieved from the Document Repository by the grouped Document Consumer Actor via the Retrieve Document Set transaction. The Imaging Document Consumer extracts the XDSDocumentEntry.uniqueId and a repositoryUniqueId associated with the Imaging Document Source from the manifest (KOS) object for use in creating the retrieval request.

680

4.69.2 Use Case Roles



Actor: Imaging Document Consumer

Role: Issues a web service request to retrieve a set of DICOM instances.

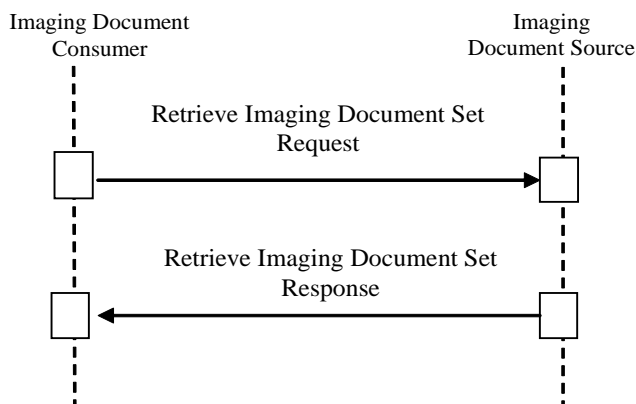
685 **Actor:** Imaging Document Source

Role: Receives a web service request for retrieval of a set of DICOM instances and generates the web service response with the appropriate content.

4.69.3 Referenced Standards

690 For a list of the standards inherited from the underlying ITI-43 Retrieve Document Set, see ITI TF-2: 3.43.3.

4.69.4 Interaction Diagram



4.69.4.1 Retrieve Imaging Document Set Request message

695 An Imaging Document Consumer sends a request to an Imaging Document Source to retrieve the set of images referenced within a manifest object. This message is an extension of the Retrieve Document Set transaction as defined in ITI TF-2: 3.43.

4.69.4.1.1 Trigger Events

700 The Imaging Document Consumer wishes to retrieve a set of DICOM instances that are referenced within a DICOM Manifest that was previously retrieved by the grouped Document Consumer Actor. The Imaging Document Consumer obtains the documents' uniqueIds (i.e., the SOP Instance UIDs referenced within the DICOM manifest) along with the associated study and series instance UIDs. The Imaging Document Consumer will either compute the repositoryUniqueId(s) from the Retrieve AE Title attribute(s) within the DICOM manifest or
705 populate the repositoryUniqueId(s) using the Retrieve Location UID attribute(s) within the DICOM manifest. The Imaging Document Consumer also maps the repositoryUniqueId(s) to web services endpoint(s) which are the targets of the message.

Once the documents' uniqueIds and repositoryUniqueId(s) have been obtained, the Imaging Document Consumer will send the Retrieve Imaging Document Set Request to the Imaging Document Source.

710 4.69.4.1.2 Message Semantics

The Retrieve Imaging Document Set Request shall carry the following information:

- 715 • A required repositoryUniqueId that identifies the Imaging Document Source from which the DICOM instance is to be retrieved. This value shall either be “computed” based on the Retrieve AE Title (0008, 0054) attribute(s) present in the DICOM manifest or be populated from the Retrieve Location UID (0040,E011) attribute(s) that is present in the DICOM manifest. For a description of how this “computation” can be achieved, see IHE RAD TF-3: Appendix G.3.
- 720 • A required list of one or more documentUniqueIds that identify the documents within the Imaging Document Source. These values correspond to the SOP Instance UIDs referenced within the DICOM manifest.
- 725 • A required list of one or more DICOM transfer syntax UIDs that the Imaging Document Consumer is capable of processing.

- A required Study Instance UID value that identifies the study containing the DICOM images/ objects to be retrieved. The Study Instance UID is extracted from the KOS manifest.
- 730 • A required Series Instance UID value that identifies the series containing the DICOM images/ objects to be retrieved. The Series Instance UID is extracted from the KOS manifest.

The message shall be structured as described in section 4.69.5 Protocol Requirements.

4.69.4.1.3 Expected Actions

735 When receiving a Retrieve Imaging Document Set Request, an Imaging Document Source shall generate a Retrieve Document Set Response.

4.69.4.2 Retrieve Imaging Document Set Response message

4.69.4.2.1 Trigger Events

This message will be triggered by receipt of a Retrieve Imaging Document Set Request Message.

4.69.4.2.2 Message Semantics

740 The semantics of the Retrieve Imaging Document Set Response Message are identical to those inherited from the ITI-43 transaction and are specified in ITI TF-2: 3.43.4.2.2.

4.69.4.2.3 Expected Actions

745 An Imaging Document Source shall provide the document(s) indicated in the request. The Imaging Document Source shall return the document(s) or an error code in case the document could not be returned. The pixel data shall be encoded using one of the DICOM transfer syntaxes included in the Retrieve Imaging Document Set Request Message. If the Imaging Document Source cannot encode the pixel data using any of the provided transfer syntaxes then an error status shall be returned.

750 If the Imaging Document Consumer specifies a transfer syntax field of 1.2.840.10008.1.2.4.94 (DICOM JPIP Referenced Transfer Syntax) or 1.2.840.10008.1.2.4.95 (DICOM JPIP Referenced Deflate Transfer Syntax), the following behavior is expected:

- If the DICOM Image Object(s) have a transfer syntax(es) that match the requested transfer syntax, the Retrieve Imaging Document Set Response shall include the DICOM Image Objects unchanged.
- 755 • If the DICOM Image Object(s) have a transfer syntax that differs from that of the request, the Retrieve Imaging Document Set Response shall include the DICOM

- 760 image with the transfer syntax changed to the requested transfer syntax. In addition, the pixel data Attribute (7FE0,0010 tag) will have been removed and replaced with a Pixel Data Provider URL (0028,7FE0 tag). The URL represents the JPIP request and will include the specific target information.
- Upon receipt of this Retrieve Imaging Document Set Response, the Imaging Document Consumer may request the pixel data from the pixel data provider using the supplied URL. Additional parameters required by the application may be appended to the URL when accessing the pixel data provider.
- 765
- For example, a JPIP request for a 200 by 200 pixel rendition of the entire image can be constructed from the Pixel Data Provider URL as follows:
 - Pixel Data Provider URL (0028,7FE0) = <https://server.xxx/jpipserver.cgi?target=imgxyz.jp2>,
 - URL Generated by the application = <https://server.xxx/jpipserver.cgi?target=imgxyz.jp2&fsiz=200,200>
- 770

The conditions of failure and possible error messages are given in the ebRS standard and detailed in ITI TF-2: 4.1.13 “Error Reporting”.

4.69.5 Protocol Requirements

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

The Retrieve Imaging Document Set transaction shall use SOAP12 and MTOM with XOP encoding (labeled MTOM/XOP in this specification). See ITI TF-2: Appendix V for details. The Imaging Document Source shall:

- 780
- Accept the Retrieve Document Set Request message in MTOM/XOP format.
 - Generate the Retrieve Document Set Response message in MTOM/XOP format

The Imaging 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.
- 785

WSDL Namespace Definitions

iherad	urn:ihe:rad:xdsi-b:2009
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 Imaging Document Set transaction presented in the order in which they would appear in the WSDL definition:

- 790 • The following types shall be imported (xsd:import) in the /definitions/types section:
 - namespace="urn:ihe:rad:xdsi-b:2009", schema="XDSI.b_ImagingDocumentSource.xsd"
 - The baseline XDS.b schema (namespace="urn:ihe:iti:xds-b:2007", schema="XDS.b_DocumentRepository.xsd")
- 795 • The /definitions/message/part/@element attribute of the Retrieve Imaging Document Set Request message shall be defined as "iherad:RetrieveImagingDocumentSetRequest"
- The /definitions/message/part/@element attribute of the Retrieve Imaging Document Set Response message shall be defined as "ihe:RetrieveDocumentSetResponse"
- 800 • The /definitions/portType/operation/input/@wsaw:Action attribute for the Retrieve Imaging Document Set Request message shall be defined as "urn:ihe:rad:2009:RetrieveImagingDocumentSet"
- The /definitions/portType/operation/output/@wsaw:Action attribute for the Retrieve Imaging Document Set Response message shall be defined as "urn:ihe:iti:2007:RetrieveDocumentSetResponse"
- 805 • The /definitions/binding/operation/soap12:operation/@soapAction attribute shall be defined as "urn:ihe:rad:2009:RetrieveImagingDocumentSet"

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 4.69.5.1 Sample SOAP Messages.

810 For informative WSDL for the Imaging Document Source actor see example on the IHE FTP server at: ftp://ftp.ihe.net/TF_Implementation_Material/RAD.

The <iherad:RetrieveImagingDocumentSetRequest/> element for use with the Retrieve Imaging Document Set Request Message is defined as:

- 815 • One or more <iherad:StudyRequest/> elements each of which includes a "studyInstanceUID" attribute identifying the study associated with the DICOM images/ objects being retrieved. Each <iherad:StudyRequest/> element shall contain:
 - One or more <iherad:SeriesRequest/> elements each of which includes a "seriesInstanceUID" attribute identifying the series associated with the DICOM images/ objects being retrieved. Each <iherad:SeriesRequest/> element shall
- 820 contain:

- One or more <ihe:DocumentRequest/> elements, each one representing an individual document that the Imaging Document Consumer wants to retrieve from the Imaging Document Source. Each <ihe:DocumentRequest/> element contains:
 - 825 • A required <ihe:RepositoryUniqueId/> element that identifies the Imaging Document Source from which the document is to be retrieved. This value corresponds to XSDSDocumentEntry.repositoryUniqueId.
 - 830 • A required <ihe:DocumentUniqueId/> element that identifies the document within the Imaging Document Source. This value corresponds to the SOP Instance UID referenced within the DICOM manifest.
 - An optional <ihe:HomeCommunityId/> element that corresponds to the home attribute of the Identifiable class in eBRIM.
- 835 • A required <iherad:TransferSyntaxUIDList/> element which contains a list of one or more <ihe:TransferSyntaxUID> elements. Each of the <iherad:TransferSyntaxUID> elements represent one of the transfer syntax encodings that the Imaging Document Consumer is capable of processing.

This allows the Imaging Document Consumer to specify one or more documents to retrieve from the Document Repository.

840 The <ihe:RetrieveDocumentResponse/> element for use with the Retrieve Imaging Document Set Response Message is defined as::

- A required /ihe:RetrieveDocumentSetResponse/rs:RegistryResponse element
- An optional sequence of <ihe:DocumentResponse/> elements containing
 - 845 • A <ihe:HomeCommunityId/> element. The value of this element shall be the same as the value of the /RetrieveImagingDocumentSetRequest/StudyRequest/SeriesRequest/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.
 - 850 • A required <ihe:RepositoryUniqueId/> that identifies the Imaging Document Source from which the document is to be retrieved. The value of this element shall be the same as the value of the /RetrieveImagingDocumentSetRequest/StudyRequest/SeriesRequest/DocumentRequest/RepositoryUniqueId element in the original Retrieve Imaging Document Set Request Message. This value corresponds to
855 XSDSDocumentEntry.repositoryUniqueId.
 - A required <ihe:DocumentUniqueId/> that identifies the document within the Imaging Document Source. The value of this element shall be the same as the

- 860 value of the
/RetrieveImagingDocumentSetRequest/StudyRequest/SeriesRequest/DocumentRequest/DocumentUniqueId element in the original Retrieve Imaging Document Set Request Message. This value corresponds to the SOP Instance UID referenced within the DICOM manifest.
- A required <ihe:Document/> element that contains the retrieved document in base64binary encoded format
 - 865 • 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:

- 870 urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Success
urn:ihe:iti:2007:ResponseStatusType:PartialSuccess
urn:oasis:names:tc:ebxml-regrep:ResponseStatusType:Failure

See ITI TF-2: 4.1.13 Error Reporting for the interpretation of these values.

For each document requested in a

/RetrieveImagingDocumentSetRequest/StudyRequest/SeriesRequest/DocumentRequest element:

- 875
- 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
 - 880 • @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.
 - 885
 - 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
 - 890 • @errorCode is specified
 - @codeContext contains the error message
 - @location contains the DocumentUniqueId of the document requested

- No corresponding RetrieveDocumentSetResponse/DocumentResponse element shall be returned
- 895 • 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.

900 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.

905 A full XML Schema Document for the XDS.b and XDS-I.b types is available online on the IHE FTP site at: ftp://ftp.ihe.net/TF_Implementation_Material/RAD (for XDS-I.b) and ftp://ftp.ihe.net/TF_Implementation_Material/ITI (for XDS.b).

4.69.5.1 Sample SOAP Messages

910 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 ITI TF-2: 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.

915 Samples presented in this section are also available online on the IHE FTP site, see ftp://ftp.ihe.net/TF_Implementation_Material/RAD.

4.69.5.1.1 Sample Retrieve Imaging Document Set SOAP Request

920 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.

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.

925

```
<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:rad:2009:RetrieveImagingDocumentSet </a:Action>
```

```
930     <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/IHEXDSIDocSource.svc</a:To>
   </s:Header>
935   <s:Body>
     <RetrieveImagingDocumentSetRequest xmlns:iherad="urn:ihe:rad:xdsi-b:2009"
     xmlns:ihe="urn:ihe:iti:xds-b:2007">
       <StudyRequest studyInstanceUID="1.3.6.1.4...101">
         <SeriesRequest seriesInstanceUID="1.3.6.1.4...201">
940           <ihe:DocumentRequest>
             <ihe:RepositoryUniqueId>1.3.6.1.4...1000</ihe:RepositoryUniqueId>
             <ihe:DocumentUniqueId>1.3.6.1.4...2300</ihe:DocumentUniqueId>
           </ihe:DocumentRequest>
945           <ihe:DocumentRequest>
             <ihe:RepositoryUniqueId>1.3.6.1.4...1000</ihe:RepositoryUniqueId>
             <ihe:DocumentUniqueId>1.3.6.1.4...2301</ihe:DocumentUniqueId>
           </ihe:DocumentRequest>
         </SeriesRequest>
       </StudyRequest>
950     <TransferSyntaxUIDList>
       <TransferSyntaxUID> 1.2.840.10008.1.2.1</TransferSyntaxUID>
       <TransferSyntaxUID> 1.2.840.10008.1.2.4.57</TransferSyntaxUID>
       <TransferSyntaxUID> 1.2.840.10008.1.2.4.70</TransferSyntaxUID>
     </TransferSyntaxUIDList>
955   </RetrieveImagingDocumentSetRequest>
 </s:Body>
</s:Envelope>
```

4.69.5.1.2 Sample Retrieve Document Set SOAP Response

960 *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"
965   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>
970    <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:rims="urn:oasis:names:tc:ebxml-regrep:xsd:rims:3.0"
      xmlns:rs="urn:oasis:names:tc:ebxml-regrep:xsd:rs:3.0">
975      <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>
980      <mimeType>application/dicom</mimeType>
        <Document>UjBsR09EbGhjZ0dTRUxNQUFBUUNBRU1tQ1p0dGUXhEUzhi</Document>
      </DocumentResponse>
      <DocumentResponse>
        <RepositoryUniqueId>1.3.6.1.4...1000</RepositoryUniqueId>
```

```

985     <DocumentUniqueId>1.3.6.1.4...2301</DocumentUniqueId>
        <mimeType>application/dicom</mimeType>
        <Document>UjBsR09EbGhjZ0dTQUxNQUFBUUNBRU1tQ1p0dU1GUCx4hu</Document>
    </DocumentResponse>
990 </RetrieveDocumentSetResponse>
    </s:Body>
</s:Envelope>
    
```

End of added transaction 4.69

Modify Table 5.1-2 in RAD TF-3: 5.1.1 as follows:

995

IHE Radiology Transaction	ATNA Trigger Event(s)	Actor(s) that shall be able to record audit event
...
Provide and Register Imaging Document Set [RAD-54]	PHI-export	Imaging Document Source
WADO Retrieve [RAD-55]	Instances-Stored	Imaging Document Source
	Study-used	Imaging Document Consumer
...
Patient Demographics Query [ITI-21]	Query Information	Patient Demographics Supplier shall audit
Provide and Register Imaging Document Set – MTOM/XOP [RAD-68]	PHI-export	Imaging Document Source
Retrieve Imaging Document Set [RAD-69]	Instances-Stored	Imaging Document Source
	Study-used	Imaging Document Consumer

Add the following new subsection (G.3) to RAD TF-3: Appendix G, and reword Appendix G title as shown.

1000 **Appendix G: Configuration for Accessing DICOM, WADO and WADO Web Services Retrieve Services**

G.3: Mapping DICOM AE Title to Web Services Address

1005 **To use the Retrieve Imaging Document Set transaction (RAD-69) to retrieve DICOM instances referenced within a manifest document, an Imaging Document Consumer must pass a repositoryUniqueId attribute in the Retrieve Imaging Document Set Request.**

1010 **The Imaging Document Consumer needs to maintain a list that associates the web service addresses of all Imaging Document Sources in the XDS Affinity Domain and their Retrieve AE Titles and/or Retrieve Location UIDs. Using this mapping, the Retrieve AE Title of a referenced SOP instance in the manifest can be translated to a repositoryUniqueId, which is then passed in the Retrieve Imaging Document Set Request together with a documentUniqueId (SOP instance identification information). Alternatively, a Retrieve Location UID can be used directly as the repositoryUniqueId in the Retrieve Imaging Document Set Request.**

1015 **To achieve an unambiguous, automated mapping from Retrieve AE Title to a web service address, some policy needs to be in place to ensure unique Retrieve AE Titles of Imaging Document Sources within the entire XDS Affinity Domain.**