Integrating the Healthcare Enterprise

IHE Radiology
Technical Framework Supplement

Cross-Enterprise Document Reliable Interchange of Images (XDR-I)

Trial Implementation

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Foreword

This is a supplement to the IHE Radiology Technical Framework 12.0. Each supplement undergoes a process of public comment and trial implementation before being incorporated into the volumes of the Technical Frameworks.

This supplement is published on September 06, 2013 for trial implementation and may 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 at http://www.ihe.net/Radiology_Public_Comments.

This supplement describes changes to the existing technical framework documents.

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

Amend section X.X by the following:

Where the amendment adds text, make the added text **bold underline**. Where the amendment removes text, make the removed text ~~**bold strikethrough**~~. When entire new sections are added, introduce with editor's instructions to "add new text" or similar, which for readability are not bolded or underlined.

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

Information about the IHE Radiology domain can be found at: http://www.ihe.net/IHE_Domains.

Information about the organization of IHE Technical Frameworks and Supplements and the process used to create them can be found at: http://www.ihe.net/IHE_Process and http://www.ihe.net/Profiles.

The current version of the IHE Radiology Technical Framework can be found at: http://www.ihe.net/Technical_Frameworks.

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Introduction to this Supplement

Cross-Enterprise Document Reliable Interchange of Images (XDR-I) is a content profile for Imaging Document Object transmission using a point-to-point reliable messaging system specified Cross-Enterprise Document Reliable Interchange (XDR). This permits the direct interchange between image-capable healthcare systems.

This supplement proposes changes to both Volume 1 and 3 of the IHE Radiology Technical Framework.

Closed Issues

#	Issue/ (Answer)
1.	To what extent should XDR address reconciliation/consistency between the message metadata and the objects metadata? The message metadata attributes and the object metadata attributes must be semantically equivalent, but not necessarily identical. A typical example is the Patient Identifier. The creator and recipient would agree on the Patient ID assigning authority to be used in the message metadata. In the object the Patient ID could be assigned by an assigning authority by the creator's institution.
2.	Should a manifest be used for images when spanning multiple submission sets? The manifest is not specified for use with XDR-I. The manifest is not needed for retrieval of the image set as in XDS-I.b.
3.	Are there special considerations for large image sets? For example, what if the image set size exceeds the buffer size? No special considerations were made outside of what is specified by the ITI XDR profile. It is expected that the implementer will address large image sets in the design and architecture of their application.
4.	Should PDI include content to support XDM for a possible XDM-I? Out of scope for this profile.
5.	Is it sufficient for a TCE Receiver to be grouped with an Imaging Document Recipient or would the required normal metadata always be present in a teaching or clinical trial scenario and a TCE receiver be capable of handling all three document types? The Imaging Document Recipient is specified with 3 Options based on document type. The Imaging Document Recipient may choose which Document type to support. The metadata imposes no challenges for a TCE Receiver.
6.	Should this profile be developed as a content profile or as a new workflow profile? The Technical Committee has decided to develop as a content profile.

#	Issue/ (Answer)
7.	Should the Basic Patient Privacy Enforcement Option remain as an option or included as the baseline requirements? The BPPE Option is currently specified as an option for XDR. It is fully compatible with XDR-I content. It may be selected as an option by the implementer as an option to XDR.
8.	Should there be separate options for DICOM SOP Instance, PDF Reports and CDA Reports? XDR-I includes separate named options for the Imaging Document Source and the Imaging Document Recipient to implement at least one of either DICOM SOP Instance, PDF Reports and CDA Reports as a document type. The primary reason for the recipient to include separate options is to allow for the grouping of this actor with other actors which only support a specific document type.
9.	Should a manifest be used for images when spanning multiple submission sets? The manifest is not specified for use with XDR-I. XDR and XDR-I have no requirement for persistence of the information object once transferred. This is out of scope.
10.	Is there a mismatch between "XDR-I" and "Content Profile"? The Committee voted that there wasn't. If we hear otherwise from the XD* experts we'll reconsider. Match Case: We should stick with the pattern of XDS-I and XCA-I and make it XDR-I except for making it a content profile instead of an integration profile. Then deal with the three different types of content (DICOM, PDF Rpt, Text Rpt) as three different content options in the content profile. Presumably these would then be intermingled with the behavior oriented options in existing content profiles. Mismatch Case: We should make one or more Content Profiles oriented around each type of content. A DICOM Objects XD Content Profile would describe bundling DICOM instances and metadata as XD* payloads. An Imaging Reports XD Content Profile would describe bundling PDF and Text-CDA (or could be two profiles if appropriate) These two or three profiles would be equally applicable to XDM, XCA, XDS, etc. (e.g. it describes sending a couple key images for storage in the Repository) Arguably, the PDF Rpt and Text Rpt are already addressed by XDS/XCA/XDR/XDM and one Content Profile to describe bundling DICOM Object payloads is all we need. This would avoid naming our new profile after a transport mechanism but only defining content. This would follow the existing content profile pattern of making separate profiles for different flavors of content (and instead using options for optional document receipt behaviors by the consumer) The next step could even be to extract the payload material out of RAD-68 and into the Content Module in this profile then XDS-I could reference this and mostly stick to defining the extra transactions and manifest mechanics (i.e., separate content from transport).

Volume 1 – Profiles

2.1 Integration Profiles Overview

Add the following to the IHE Technical Frameworks Integration Profiles Overview section:

2.1.31 Cross-Enterprise Document Reliable Interchange of Images (XDR-I)

Cross-Enterprise Document Reliable Interchange of Images (XDR-I) provides DICOM SOP Instances and image reports using a reliable messaging system. This permits direct imaging document interchange between an Imaging Document Source and other healthcare IT imaging document-capable systems.

This profile depends on the IHE IT Infrastructure Cross-Enterprise Document Reliable Interchange (XDR) profile for the reliable messaging. XDR for Imaging (XDR-I) defines the content to be shared. Content includes sets of DICOM instances (including images, evidence documents, and presentation states) and diagnostic imaging reports provided in a ready-for-display format.

2.3 Actor Descriptions

Add the following Actors description to the list of this section:

Imaging Document Source –sends DICOM SOP Instances and image reports.

Imaging Document Recipient – receives DICOM SOP Instances and image reports.

Modify table 2.3-1 by adding the Integration profile column XDR-I, adding an Imaging Document Source and Imaging Document Recipient as Actors and specifying that the Imaging Document Source and Imaging Document Recipient are Actors for the XDR-I Profile.

31 Cross-Enterprise Document Reliable Interchange of Images (XDR-I) Profile

Add this section to Volume 1

Cross-Enterprise Document Reliable Interchange of Images (XDR-I) is a content profile for interchange of images, image reports and other DICOM instances using the ITI Cross-Enterprise Document Reliable Interchange (XDR) Integration Profile. This permits direct image interchange between healthcare systems exchanging DICOM instances and image reports.

XDR-I depends on XDR and uses the ITI-41 Provide and Register Document Set transaction, with MTOM/XOP as transport. Transfer is direct from source to recipient. The XDS Metadata, with emphasis on patient identification, document identification, description, and relationships, is leveraged by this profile.

XDR-I is intended to support images and documents, specifically including the following:

- Images acquired on various modalities, as well as evidence documents (e.g., post-processing measurements/analysis outcomes), and presentation states.
- Diagnostic reports, resulting from the interpretation of one or more imaging studies, provided in a ready-for-display form
- Diagnostically significant images associated with the report content.

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

31.1 XDR-I Actors, Transactions, and Content Modules

Figure 31.1-1 shows the actors directly involved in the XDR-I Profile and the relevant transactions between them. XDR-I is a content profile for XDR.

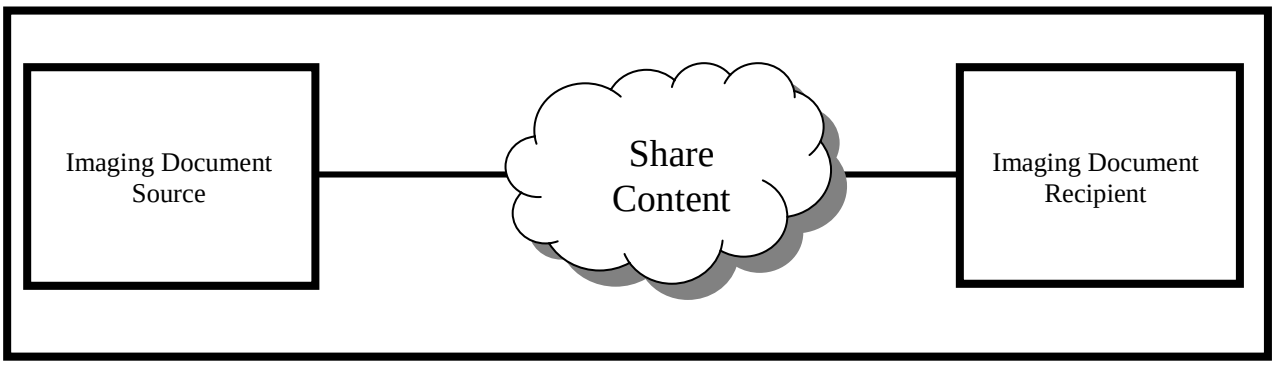


Figure 31.1-1: XDR-I Actor Diagram

The two actors in the XDR-I profile are Imaging Document Source and Imaging Document Recipient. An Imaging Document Source Actor is the source for images, reports or other related DICOM objects. An Imaging Document Recipient Actor receives images, reports or other related DICOM objects. The sharing or transmission of the content from one actor to another is addressed by the appropriate use of the XDR profile described in the section on Content Bindings for XDR-I in RAD TF-3: 6.1.3.

31.2 XDR-I Actor Options

Options that may be selected for this profile are listed in the table 31.2-1 along with the actors to which they apply. Dependencies between options, when applicable, are specified in notes.

Table 31.2-1: XDR-I - Actors and Options

Actor	Options	Volume & Section
Imaging Document Source	Sharing of DICOM SOP Instance (Note 1)	RAD TF-3: 6.1.5.1
	Sharing of PDF Report (Note 1)	RAD TF-3: 6.1.5.3
	Sharing of CDA Wrapped Text Report (Note 1)	RAD TF-3: 6.1.5.2
	Sharing of CDA Imaging Report with Structured Headings (Note 1)	RAD TF-3: 6.1.5.4
Imaging Document Recipient	Sharing of DICOM SOP Instance (Note 1)	RAD TF-3: 6.1.5.1
	Sharing of PDF Report (Note 1)	RAD TF-3: 6.1.5.3
	Sharing of CDA Wrapped Text Report (Note 1)	RAD TF-3: 6.1.5.2
	Sharing of CDA Imaging Report with Structured Headings (Note 1)	RAD TF-3: 6.1.5.4

Note 1: The Options are document types. At least one of the four document types described in the Content Specifications RAD TF-3:6.1.5 is required for each actor.

31.2.1 Sharing of DICOM SOP Instance Option

This option requires the Imaging Document Source to share DICOM SOP Instances with an Imaging Document Recipient using the ITI Cross Enterprise Document Reliable Interchange (XDR) Integration Profile. For the content specification details of the Sharing of DICOM SOP Instances, refer to RAD TF-3: 6.1.5.1.

31.2.2 Sharing of PDF Report Option

This option requires the Imaging Document Source to share an Imaging Report in a PDF format with an Imaging Document Recipient. The published report may contain embedded images that reference images in a non-DICOM format. For the content specification details of the Sharing of PDF Reports, refer to RAD TF-3: 6.1.5.2.

31.2.3 Sharing of CDA Wrapped Text Report Option

This option requires the Imaging Document Source to share with an Imaging Document Recipient a CDA R2 Document containing a Text Report. For details, refer to RAD TF-3: 6.1.5.2.

31.2.4 Sharing of CDA Imaging Report with Structured Headings Option

This option requires the Imaging Document Source to share with an Imaging Document Recipient a CDA R2 document containing an Imaging Report with Structured Headings. For details, refer to RAD TF-3: 6.1.5.4.

31.3 XDR-I Actor Required Groupings

Actor(s) which are required to be grouped with another actor(s) are listed in this section. The grouped actor may be from this profile or a different domain/profile. These required groupings, plus further descriptions if necessary, are given in the table below.

An actor from this profile (column 1) must implement all of the required transactions in this profile in addition to all of the required transactions for the grouped profile/actor listed (column 2).

Section 31.7 describes some optional groupings that may be of interest to implementers.

Table 31.3-1: XDR-I – Required Actor Groupings

XDR-I Actor	Actor to be Grouped With	Technical Framework Volume and Section	Note
Imaging Document Source	Document Source (ITI XDR)	ITI TF-1: 15.1	See Note
Imaging Document Recipient	Document Recipient (ITI XDR)	ITI TF-1: 15.1	See Note

Note: The content of this profile is intended for use by XDR. The grouping is required to provide the capability for point-to-point reliable messaging.

31.4 XDR-I Document Content Module

Three types of content are transported as XDR-I Imaging Document Objects:

- Images acquired on various modalities, as well as evidence documents (e.g., post-processing measurements/analysis outcomes), and presentation states.
- Diagnostic reports, resulting from the interpretation of images and evidence documents, provided in a ready-for-display form
- Diagnostically significant images associated with the report content.

Document Types

The XDR-I Document types permitted by this profile are listed in Table 31.4-1. See the referenced Volume & Section for a specification of each document type.

Table 31.4-1: XDR-I – Document Types

Imaging Document Type	Volume & Section
DICOM SOP Instance	RAD TF-3: 6.1.5.1
CDA Wrapped Text Report	RAD TF-3: 6.1.5.2
PDF Report	RAD TF-3: 6.1.5.3
CDA Imaging Report with Structured Headings	RAD TF-3: 6.1.5.4

31.5 XDR-I Overview

XDR-I describes the exchange of a set of a patient's imaging documents between healthcare providers, such as: radiologists, physicians, hospitals, special care networks, or other healthcare professionals. The XDR-I profile uses web services for the point-to-point transfer of DICOM SOP Instances and image reports.

31.5.1 Concepts

XDS-I.b vs. XDR-I

XDS-I.b uses an Image Manifest for sharing a set of DICOM Objects. The Image Manifest is stored as a persistent object in an XDS Repository and registered in an XDS Registry. The actual DICOM Objects are retained at the XDS-I Imaging Document Source. This Manifest references a set of persistent DICOM SOP Instances and their location. The Image Manifest is provided to an XDS Repository/XDS Registry. An image consumer will query the XDS registry to discover the Image Manifest. The Image Manifest in turn provides information on where to retrieve the DICOM Objects.

The Image Manifest is not part of the architectural model for XDR-I. XDR-I shares a set of DICOM Objects by directly sending the DICOM Objects to the recipient. There is no notion of persistently stored DICOM Objects. There is no query specified for a recipient to discover DICOM Objects available at the Image Document Source.

31.5.2 Use Case Point-to-Point Exchange

31.5.2.1 Point-to-Point Exchange Use Case Description

Two healthcare providers need to exchange Imaging Document Objects in a secure and reliable method. XDS-I Imaging Document Source/Registry/Repositories are not implemented or available for the exchange of imaging information with these two healthcare providers.

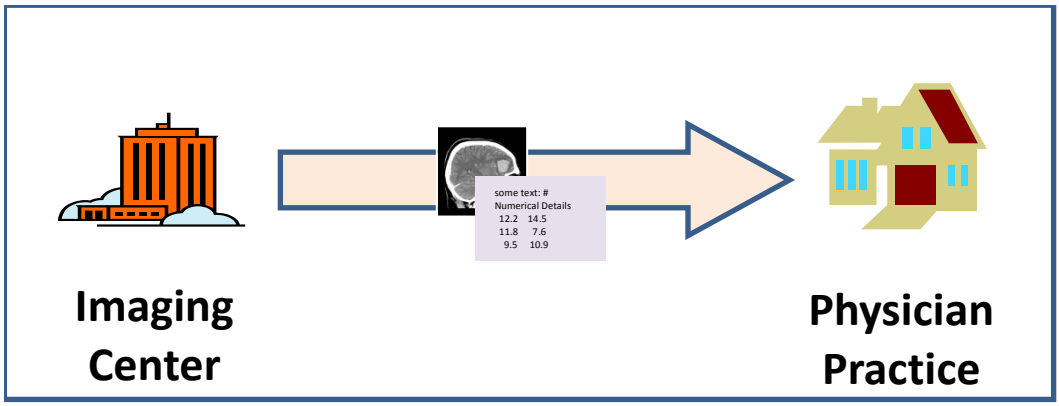


Figure 31.5.2.1-1: Point-to-Point Exchange Use Case Diagram

In this example, an Imaging Center provides diagnostic images and reports to a referring physician practice without the use of CD or other physical media. A Hospital might use a similar method to provide diagnostic images for interpretation by a specialist outside of the facility's secure network.

The XDR-I metadata allows for the seamless routing and management of DICOM SOP Instances and image reports. It includes metadata describing the Imaging Document Objects, the patient, and the associative relationship of the Imaging Document Objects provided.

31.5.2.2 "Point-to-Point Exchange" Process Flow

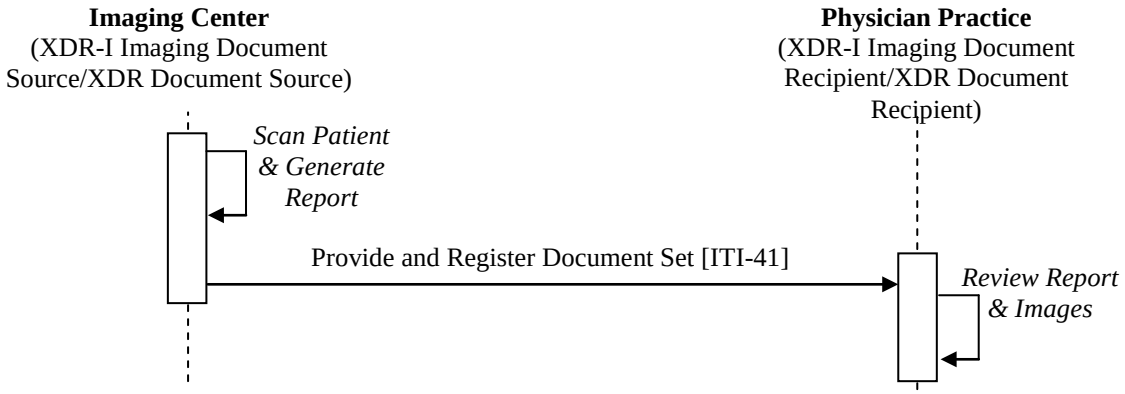


Figure 31.5.2.2-1: Point-to-Point Exchange Process Flow

31.6 XDR-I Security Considerations

The profile assumes that the health organizations using the Imaging Document Source and Imaging Document Recipient have an agreement defining when they can interchange PHI. This may require an explicit patient consent (depending on the regulation) and an agreement on how

to manage the potential inconsistency between the security policies. The main aspects that should be covered by this agreement are similar to XDS – see ITI TF-2x: Appendix K.

Other security considerations can be found in Appendix H.

31.7 XDR-I Cross Profile Considerations

This section defines additional considerations when using XDR-I with other profiles.

31.7.1 XDS-I

An XDS Affinity Domain may have a system providing a centralized XDS-I.b Imaging Document Source for image distribution in the affinity domain. Systems in the affinity domain will need to provide images to the XDS-I.b Imaging Document Source using a secure and reliable transport method. XDR-I is a secure and reliable method to provide those images

In this case, a system sending the DICOM Objects will act as the XDR-I Image Document Source. The DICOM Objects and the provided metadata are expected to comply with the governance rules set by the affinity domain.

The receiving system will act as an XDR-I Imaging Document Recipient grouped with the XDS-I.b Imaging Document Source. The grouped actor is expected to persist and store DICOM SOP Instances and reports received from an XDR-I Imaging Document Source. The DICOM Objects and metadata provided by the XDR-I Imaging Document Source is expected to be sufficient for the XDS-I.b Imaging Document Source to create an Image Manifest and perform a successful XDS-I.b Provide and Register transaction with an XDS Repository/XDS Registry with the Image Manifest.

Within the XDS Affinity Domain, a system acting as an XDS-I.b Imaging Document Consumer may query the XDS Registry and retrieve the Image Manifest. With the Image Manifest, the XDS-I.b Imaging Document Consumer may retrieve DICOM Objects (which were originally provided by the XDR-I Imaging Document Source) from the grouped XDR-I Imaging Document Recipient/XDS-I.b Imaging Document Source.

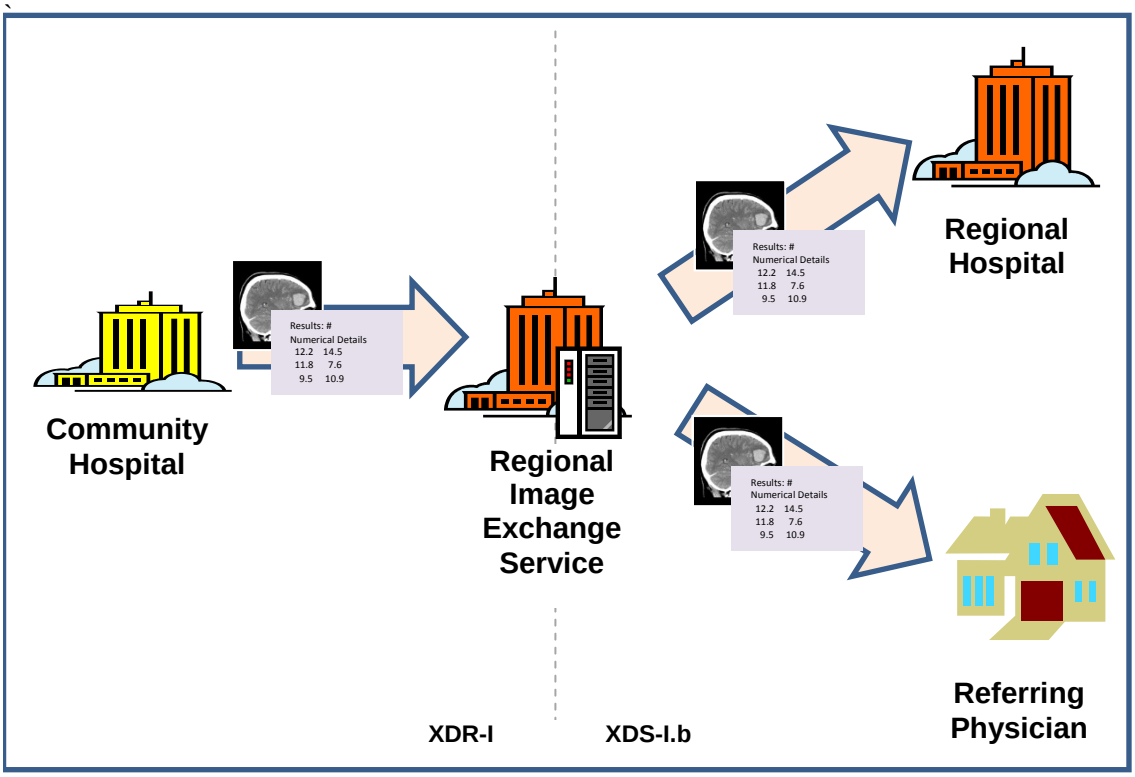


Figure 31.7.1-1: Cross-Enterprise Distribution Example

Figure 31.7.1-1 is an example of Cross-Enterprise Distribution using grouped actors with XDS-I and XDR-I. In this example, the imaging department within a Community Hospital creates and sends Imaging Document Objects as an XDR-I Imaging Document Source to a Regional Image Exchange Service acting as an XDR-I Imaging Document Recipient grouped with an XDS-I.b Imaging Document Source. The Regional Image Exchange Service includes the XDS Registry and Repository. The patient's referring physician and other healthcare specialists may retrieve the Imaging Document Objects as an XDS-I Imaging Document Consumer from the services provided by the Regional Image Exchange Service.

Community Hospital in this case is part of the Regional Image Exchange Service's Affinity Domain. The Regional Image Exchange Service is based on an XDS-I.b Imaging Document Source, XDS Repository and XDS Registry. It accepts imaging documents using XDR-I Imaging Document Recipient grouped with an XDS-I.b Imaging Document Source.

Figure 31.7.1-2 shows the detailed process flow of this grouping. The process flow shows retrieval of the DICOM instances using RAD-69. Alternatively, RAD-55 could be used to retrieve instances or rendered JPEGs using WADO.

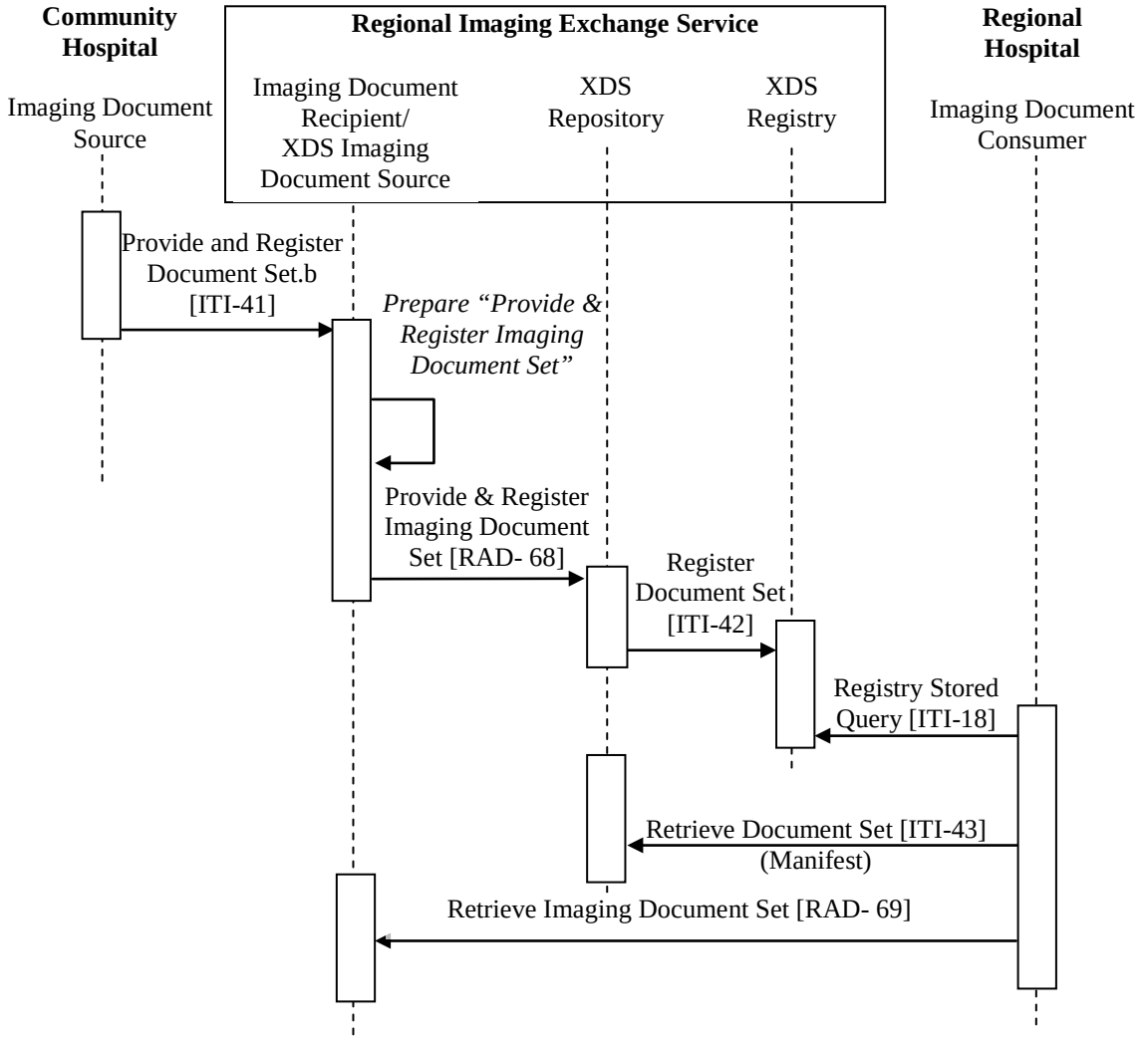


Figure 31.7.1-2: Cross-Enterprise Distribution Process Flow

285 The XDR-I Actors must be in same XDS Affinity Domain as the XDS-I.b Actors. The XDS Affinity domain rules policies (including metadata rules) apply to the XDR-I Imaging Document Source Actor.

31.7.2 REM

XDR-I may be used as a secure and reliable web service transport for the DICOM object transfer
290 in the IHE REM profile.

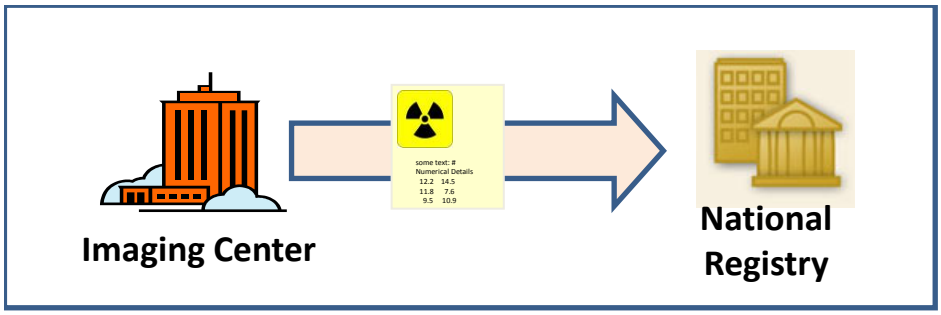


Figure 31.7.2-1: Providing Dose Reports and Images to a National Registry

In Figure 31.7.2-1, an Imaging Center sends images and dose reports to a National Registry. To protect the privacy of the patient, the metadata is anonymized or pseudo-anonymized.

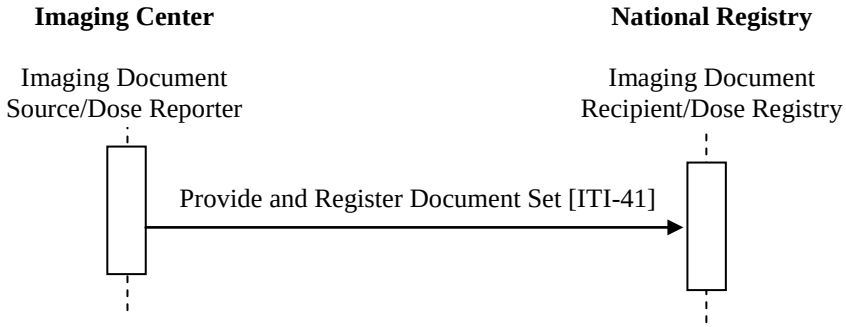


Figure 31.7.2-2: XDR-I Registry Image Data Process Flow

An XDR-I Imaging Document Source may be grouped with a REM Dose Information Reporter to submit Dose Information described in RAD-63 Submit Dose Information.

The PHI content contained in the Imaging Document object and the metadata must be semantically consistent.

The Patient ID Assigning Authority may be specific to the Dose Registry pseudo-anonymous namespace.

31.7.3 TCE

XDR-I may be used as a secure and reliable web service transport for the DICOM object transfer in the TCE profile.

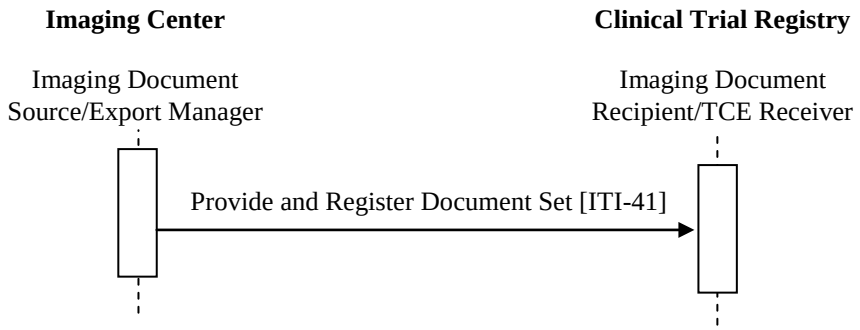


Figure 31.7.3-1: XDR-I with TCE Process Flow

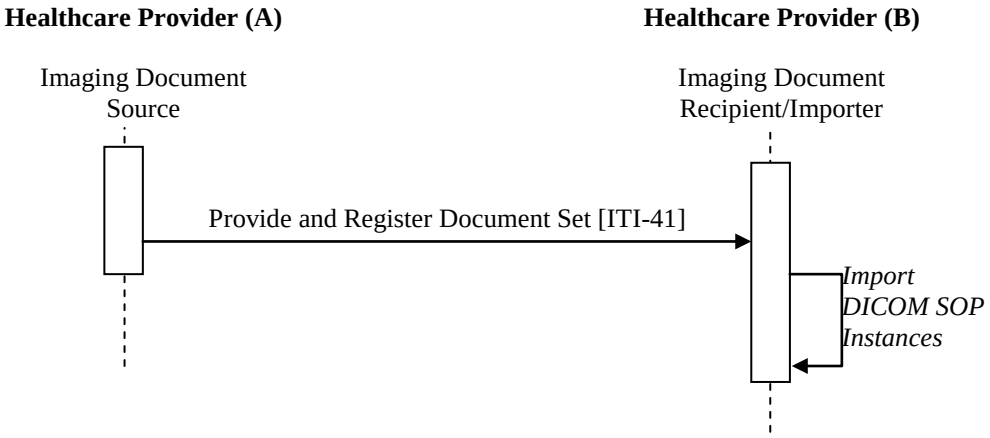
An XDR-I Imaging Document Source may be grouped with a TCE Export Manager to push the exported instances described in the RAD-53 Export Instances transaction to a "remote" TCE Receiver.

An XDR-I Imaging Document Recipient is then grouped with a TCE Receiver.

The Patient ID Assigning Authority may be specific to the clinical trial pseudo-anonymous namespace.

31.7.4 IRWF

An XDR-I Imaging Document Recipient may be grouped with the IRWF Importer Actor to receive DICOM SOP Instances for import to an Image Manager. The XDR-I metadata is semantically equivalent to the corresponding DICOM SOP Instance attributes; however, the values may not be identical. The IRWF Importer Actor may use either the XDR-I Metadata or the DICOM SOP Instance attributes to update the DICOM SOP Instances on import. Usage of common Metadata between multiple Image Document Source and Image Document Recipient actors has an advantage where a single metadata specification may be used for import from multiple disparate Imaging Document Source actors in a cross-enterprise scenario.



End of added Volume 1: section 31

Volume 3 – Transactions

330

Add section 6 as shown:

6 IHE Radiology Content Specifications

This section describes the IHE Content Specifications for Radiology.

6.1 XDR-I Imaging Document Set

6.1.1 Scope

The XDR-I Imaging Document Set is an IHE Radiology Content Specification for the sharing of Imaging Document Objects using the ITI Integration Profile, Cross Document Reliable Interchange (XDR). The Imaging Document Set is a set of XDR-I Imaging Documents Objects related to a single patient. This may include imaging reports performed for the requested procedure as well as relevant priors used for an interpretation.

An XDR-I Imaging Document Object is defined as one of the four document types:

- DICOM SOP Instance
- PDF Report
- CDA Wrapped Text Report
- CDA Imaging Report with Structured Headings

The Imaging Document Set is submitted as part of a Submission Set using the XDR transport. Refer to ITI TF-3: 4.1.1 for the definition of a Submission Set.

6.1.2 Referenced Standards

DICOM PS 3.3 Information Object Definitions

DICOM PS 3.10 Media Storage and File Format for Media Interchange

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)

HL7 Standard for CDA® Release 2: Imaging Integration; Basic Imaging Reports in CDA and DICOM, Release 1, March 2009.

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

6.1.3 Imaging Document Set Bindings to XDR

Actors from the ITI XDR profile embody the Image Document Source and Image Document Recipient sharing function of this Content Specification. The Image Document Source and Image Document Recipient shall be grouped with the appropriate actor from the XDR profile to exchange the content described here. The metadata sent in the document sharing or interchange messages has specific relationships or dependencies (which we call bindings) to the content of the clinical document described in the content profile.

The Radiology Technical Framework defines the bindings to use when grouping the Image Document Source of this IHE Radiology Content Specification with the Document Source actor from the IHE ITI XDR Integration Profiles.

An XDR-I Image Document Source is grouped with an XDR Document Source for the purpose of sending the Imaging Document Set to an XDR-I Imaging Document Recipient grouped with an XDR Document Recipient. This binding defines the transformation that generates metadata for the XDSDocumentEntry element of the ITI-41 Provide and Register Document Set-b transaction. The Provide and Register Document Set-b transaction is defined in ITI TF-2b: 3.41.

The metadata binding is derived from sources including the XDR-I Imaging Document Object. The content semantics types are specified in the subsections referenced in the following table 6.1.4-1 below:

Table 6.1.3-1: Imaging Submission Set Content

Content	Paragraph
Sharing of DICOM SOP Instance	6.1.5.1
Sharing of CDA Wrapped Text Report	6.1.5.2
Sharing of PDF Report	6.1.5.3
Sharing of CDA Imaging Report with Structured Headings	6.1.5.4

6.1.4 XDS Metadata

The Imaging Document Source shall include the metadata attribute requirements as defined in ITI TF-3: 4.3.1 “Requirements on Submission Type transactions” unless otherwise specified below. For a full description of all the metadata attributes associated with an XDS document, see ITI TF-3: Table 4.2.3.2-1 “DocumentEntry Metadata Attribute Definition”.

6.1.4.1 XDSDocumentEntry Metadata

Specific XDR-I XDSDocumentEntry Metadata Requirements are provided in Table 6.1.4-2. The XDR-I constraints include the mapping requirements from the content to the metadata attribute. Note that the Optionality specified in this table supersedes the Optionality specified in ITI TF-3: Table 4.3.2.1-3 “Metadata Attribute Optionality” for the XDS Document Registry actor where there are differences.

Table 6.1.4.1-1: Specific XDR-I- Metadata Requirements

Metadata Element	Metadata Attribute	Optionality	XDR-I Constraints
DocumentEntry	author: authorPerson	R	RAD TF-3: 4.68.4.1.2.3.1

Metadata Element	Metadata Attribute	Optionality	XDR-I Constraints
DocumentEntry	author: authorInstitution	O	RAD TF-3: 4.68.4.1.2.3.1
DocumentEntry	author: authorRole	O	RAD TF -3: 4.68.4.1.2.3.1
DocumentEntry	author: authorSpecialty	O	RAD TF -3: 4.68.4.1.2.3.1
DocumentEntry	creationTime	R	RAD TF -3: 4.68.4.1.2.3.1 RAD TF -3: 4.68.4.1.2.3.2
DocumentEntry	eventCodeList	R	RAD TF -3: 4.68.4.1.2.3.2
DocumentEntry	eventCodeListDisplayName	R	RAD TF-3: 4.68.4.1.2.3.2
DocumentEntry	formatCode	R	RAD TF-3: 6.1.4.1.1
DocumentEntry	mimeType	R	RAD TF-3: 6.1.4.1.2
DocumentEntry	practiceSettingCode	R	RAD TF-3: 4.68.4.1.2.3.2
DocumentEntry	serviceStartTime	R2	RAD TF-3: 4.68.4.1.2.3.2
DocumentEntry	sourcePatientInfo	O	RAD TF-3: 4.68.4.1.2.3.2
DocumentEntry	typeCode	R	RAD TF-3: 4.68.4.1.2.3.2
DocumentEntry	typeCodeDisplayName	R	RAD TF-3: 4.68.4.1.2.3.2
DocumentEntry	uniqueId	R	RAD TF-3: 6.1.4.1.3
DocumentEntry	urn:rad:accessionNumberList	R2	RAD TF-3: 6.1.4.1.4

6.1.4.1.1 XDSDocumentEntry.formatCode

This attribute shall be populated by the Imaging Document Source from one of the following values, depending on the document type:

- For the Sharing of DICOM SOP Instance, this attribute value shall be the DICOM 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 the Sharing of PDF report, this attribute value shall be as specified in RAD TF-3: 4.68.4.1.2.3.2 for formatCode, PDF Report.
- For the Sharing of CDA Wrapped Text Report, this attribute value shall be as specified in RAD TF-3: 4.68.4.1.2.3.2 for formatCode, CDA Wrapped Text Report.

- For the Sharing of CDA Imaging Report with Structured Report Headings, this attribute value shall be as specified in RAD TF-3: 4.68.4.1.2.3.2 for formatCode, CDA Imaging Report with Structured ReportHeadings.

6.1.4.1.2 XDSDocumentEntry.mimeType

This attribute shall be populated by the Imaging Document Source with one of the following values, depending on the document type:

- For the Sharing of DICOM SOP Instance, this attribute value shall be "application/dicom"
- For the Sharing of PDF report, this attribute value shall be as specified in RAD TF-3: 4.68.4.1.2.3.2 for mimeType, PDF Report.
- For the Sharing of CDA Wrapped Text Report, this attribute shall be as specified in RAD TF-3: 4.68.4.1.2.3.2 for mimeType, CDA Wrapped Text Report.
- For the Sharing of CDA Imaging Report with Structured Headings, this attribute value shall be as specified in RAD TF-3: 4.68.4.1.2.3.2 for mimeType, CDA Imaging Report with Structured Headings.

6.1.4.1.3 XDSDocumentEntry.uniqueId

This attribute shall be populated by the Imaging Document Source actor from one of the following values, depending on the document type:

- For a DICOM SOP Instance, this attribute value shall be the same as the SOP Instance UID of the corresponding DICOM object.
- For a PDF report, this attribute value shall be as specified in RAD TF-3: 4.68.4.1.2.3.2 for uniqueId, PDF Report.
- For a CDA Wrapped Text Report, this value shall be as specified in RAD TF-3: 4.68.4.1.2.3.2 for uniqueId, CDA Wrapped Text Report.
- For the Sharing of a CDA Imaging Report with Structured Report Headings, this attribute value shall be as specified in RAD TF-3: 4.68.4.1.2.3.2 for uniqueID, CDA Imaging Report with Structured Report Headings.

6.1.4.1.4 XDSDocumentEntry.urn:rad:accessionNumberList

This attribute shall be populated by the Imaging Document Source with the Accession Number and assigning authority of the Order Filler for each Order associated with the XDR-I Imaging Document Object.

The urn:rad:accessionNumberList shall include a list of values with the following sub-attributes:

- accessionNumber
- accessionNumberIssuer

The urn:rad:accessionNumberList identifies the Imaging Service Request of the Originating HL7 Imaging Order Message (OMI) Imaging Procedure Control (IPC) Segment, Sequence 1 for

Accession Identifier. The content may also be found in the DICOM SOP Instance tags, (0008,0050) and (0008,0051) when the instances have a single Accession Identifier. The format shall conform to the HL7 OMI IPC-1 specification for the Accession Identifier. The accessionNumberList may include multiple Accession Identifier values for a single XDSDocumentEntry.

An example of urn:rad:accessionNumberList containing two values for the Accession Number is as follows:

```
<rim:Slot name="urn:rad:accessionNumberList">
   <rim:ValueList>
     <rim:Value> 12345678^^ 1.234.5.6.78^ISO</rim:Value>
     <rim:Value> 12345679^^ 1.234.5.6.78^ISO</rim:Value>
   </rim:ValueList>
</rim:Slot>
```

6.1.4.2 Use of XDS Submission Set

In XDR-I, the Imaging Document Source shall use the XDS Submission Sets to maintain a logical grouping of multiple XDR-I Imaging Document Objects for a Requested Procedure of a Patient.

The Association type to be used when an XDR-I Imaging Document Object is included in the XDS Submission is HasMember as defined in ITI TF-3: 4.2.2 “Association Types”.

If the Submission Set includes a CDA Imaging Report with Structured Report Headings, a CDA Wrapped Text Report or PDF Report and the associated DICOM SOP Instances, the Report Object and the associated DICOM SOP Instances shall include the associated Accession Identifiers in the accessionNumberList.

The Submission Set may include the DICOM SOP Instances and Report Objects for prior images and reports if the prior images were used in creating the interpretation. Note that the accession number of the Prior Images and Reports will not match the accession Number for the current Imaging Document Objects.

6.1.5 Content Specifications

6.1.5.1 Sharing of DICOM SOP Instance

Each DICOM SOP Instance shall be encoded in the message as a DICOM Part 10 File

DICOM SOP Instances shall not be zipped.

6.1.5.2 Sharing of CDA Wrapped Text Report

Each CDA Wrapped Text Report shall be encoded in the message as specified in RAD TF-3: 4.68.4.1.2.2.

6.1.5.3 Sharing of PDF Report

Each PDF Report shall be encoded in the message as specified in RAD TF-3: 4.68.4.1.2.2.

6.1.5.4 Sharing of CDA Imaging Report with Structured Report Headings

Each CDA Imaging Report with Structured Report Headings shall be encoded in the message as specified in RAD TF-3: 4.68.4.1.2.2.

End of added section 6