IHE Change Proposal

Tracking information:

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Change Proposal ID:	CP-RAD-460
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Person assigned:	Lynn Felhofer

Change Proposal Summary information:

XCA-I Clarify IIG and RIG behavior with local community and remote communit	
Submitter's Name(s) and e-mail address(es):	Lynn Felhofer
Submission Date:	20 Jan 2021
Integration Profile(s) affected:	XCA-I
Actor(s) affected:	Initiating Imaging Gateway Remote Imaging Gateway, Imaging Document Source
IHE Technical Framework or Supplement modified:	RAD TF Rev 20, Mar 2022
Volume(s) and Section(s) affected:	Several sections in Vol 1 and 2

Rationale for Change:

There are several items that are not clear in the existing XCA-I specification. The changes in this CP address these items; no normative changes are intended:

- It is not clear whether an IIG is required to be able to retrieve from its local Imaging Doc Source; this is specified in text but the Actor/Transaction diagram is missing the source actor. This CP updates the actor/transaction diagram to add the Imaging Doc Source to the local community.
- How an XCA-I Initiating Imaging Gateway interacts with Responding Imaging Gateway(s) is not clearly specified. A vendor doing IIG conformance testing was not clear about whether it was required to be able to contact multiple RIGs and consolidate results. This CP removes some unclear 'hints' in the text that an Imaging Doc Consumer would request images from multiple communities in a single request and then an IIG would need to consolidate those results to return them to the Consumer.
- This CP updates RAD-69 and RAD-75 for clarity: to use consistent terminology, remove redundant content, and move some content to the proper section.
- This CP adds new TF template conventions to improve actor/transaction table and mandatory groupings..

Note that line numbers are included in the CP to facilitate ballot review.

Sep 3, 2021 post-ballot notes:

- This CP was balloted in May 2021. The ballot had 3 voting members participate, which did not meet quorum. At the Sep 2 2021 CP review call, RAD Tech decided to re-ballot this CP to attempt to get quorum. That ballot did receive these comments that were reviewed by RAD Tech. Considerations shared by RAD Tech members in response to the comments include:
    - In the original ballot version of this CP, the consolidation requirements added XCA-I IIG in RAD-75 mirrored XCA requirements for retrieving documents in ITI-39. Whether this is used or not in real world is a different consideration. If this is over-specified by this CP, that feedback would have to come from the vendor community as a whole, not just a particular vendor or project, because the specification is used internationally.

Didi Davis (Sequoia) subsequently shared that no implementations they have seen have a Imaging Doc Comsumer requesting retrieve from multiple communities in one request. Thus, IIGs have not needed to do consolidation 'in the real world.' *The Final Text version of this CP, updated based on the ballot comments, does not include consolidation requirements for the IIG.*

- Note that vendor IIG implementations have historically tested consolidation requirements at Connectathons and using the XCA-I Imaging Tools (based on NIST XDS Toolkit). In fact, that was the original source of this CP.

Editor: *Update Vol 1 Sec 29:*

29 Cross-Community Access for Imaging (XCA-I)

The Cross-Community Access for Imaging (XCA-I) Integration Profile specifies actors and transactions to query and retrieve ~~**patient-relevant**~~ **a patient's** medical imaging data being held by other communities.

Within a community, a group of facilities/enterprises shares clinical information via an established mechanism such as XDS-I (in which case the community can be referred to as an XDS Affinity Domain). This profile addresses sharing between such communities.

The XCA-I Profile extends the IT Infrastructure **Cross Community Access (XCA)** ~~**XCA**~~ Profile. XCA provides access to ~~**D**~~**d**iagnostic reports and Imaging Manifests. XCA-I provides access to the imaging objects referenced in the Manifests. The reader of XCA-I is expected to have read and understood the XCA Profile, including the meaning of terms such as Community, homeCommunityId, etc.

litor: *Update Section 29.1 and update Figure 29.1-1 to add Imaging Document Source and missing ITI-18, ITI-43, and RAD-69 transactions to the Initiating Community.*

29.1 Actors/ Transactions

Figure 29.1-1 shows the actors defined in the Cross-Community Access for Imaging (XCA-I) Profile and the transactions between them.

The shaded actors are NOT included in this profile but are shown to illustrate the full set of actors that play a role **in the full XCA-I interactions (see Section 3.3.2).** ~~**other endpoint of transactions that ARE part of the profile (e.g., the Document Registry is an endpoint for the Registry Stored Query [ITI-18] transaction)**~~. As a result, the shaded actors are not listed in Table 29.1-1. **XCA-I actors which have a required grouping are shown in conjoined boxes (see Section 29.3.3).**

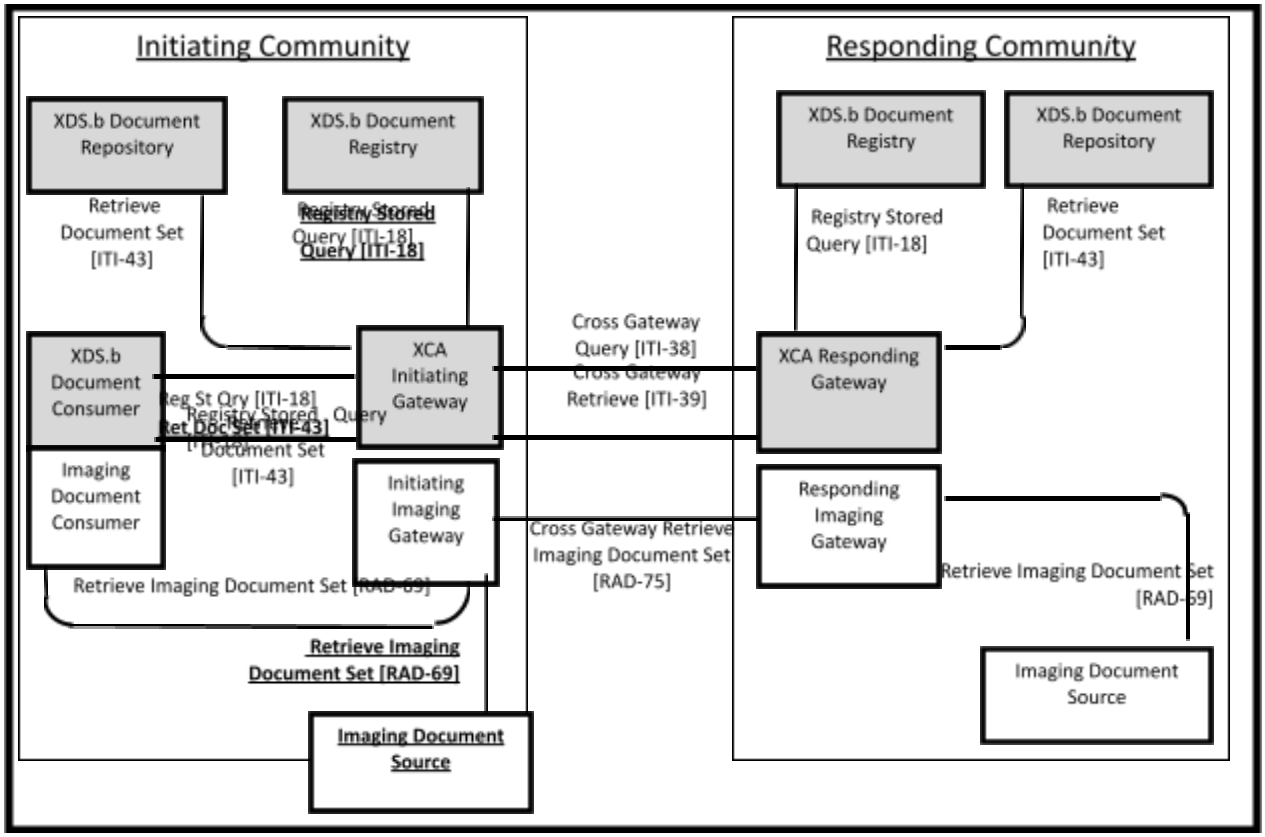

Figure 29.1-1: Cross-Community Access for Imaging Actor Diagram

…

Editor: *Update Table 29.1-1 as follows.****Note for CP Ballot reviewers:*** *This change clarifies that an IIG can be an Initiator of RAD-69, to retrieve from an Img Doc Source in its local community in addition to retrieving from RIGs. Adding the column for "Initiator or Responder" is just a newer, clearer documentation convention.)*

Table 29.1-1: Cross-Community Access for Imaging Integration Profile - Actors and Transactions

Actors	Transactions	Initiator or Responder	Optionality	TF Reference
Imaging Document Consumer	Retrieve Imaging Document Set [RAD-69]	**Initiator**	R	RAD TF-2: 4.69
Imaging Document Source	Retrieve Imaging Document Set [RAD-69]	**Responder**	R	RAD TF-2: 4.69
Initiating Imaging Gateway	Retrieve Imaging Document Set [RAD-69]	**Initiator and Responder**	R	RAD TF-2: 4.69
	Cross Gateway Retrieve Imaging Document Set [RAD-75]	**Initiator**	R	RAD TF-2: 4.75
Responding Imaging Gateway	Cross Gateway Retrieve Imaging Document Set [RAD-75]	**Responder**	R	RAD TF-2: 4.75
	Retrieve Imaging Document Set [RAD-69]	**Initiator**	R	RAD TF-2: 4.69

Editor: *Update RAD TF Vol 1 Sec 29.1.1, including adding new subsection headings*

29.1.1 Actor Descriptions and Actor Profile Requirements

Most requirements are documented in RAD TF-2 Transactions. This section documents any additional requirements on profile's actors.

29.1.1.1 Initiating Imaging Gateway

The Initiating Imaging Gateway shall be part of a community that supports XDS-I.b.

The Initiating Imaging Gateway is required to support the use of …

29.1.1.2 Responding Imaging Gateway

The Responding Imaging Gateway shall be part of a community that supports XDS-I.b.

The Responding Imaging Gateway shall support the use of Asynchronous…

Note for CP Ballot reviewers: *The figure below with a* ***red*** *border is in the current TF. There are* ***no changes****; it is included for the purpose of CP review.*

1. 29.3.2 Detailed Interactions

~~**The following diagram**~~ **Figure 29.3.2-1** presents a high level view of the interactions between actors when both initiating and responding communities are XDS-I.b Affinity Domains. Details on each interaction follow the **figure** ~~**diagram**~~.

Figure 29.3.2-1: XCA-I Detailed Interactions

Editor: *Update the text under Figure 29.3.2-1 as follows.*
Note for CP Ballot reviewers: *The proposed changes in the text beneath Figure 29.3.2-1 are extensive. For ease of review, the edits below are done using Word change tracking rather than traditional CP markup.*
Bullets have been added in this section to enhance readability.

Query across Local Community A and Remote Community: Document Consumer *initiates a Registry Stored Query request by patient id* – the Document Consumer initiates the initial transaction by formatting a Registry Stored Query request by patient identifier. The consumer uses PDQ, PIX or some other means to identify the Local Affinity Domain patient id, formats that information plus any other query parameters into a Registry Stored Query request and sends this request to an Initiating Gateway. Initiating Gateway *processes Registry Stored Query by patient id request –*

-
- **Responding Gateway** *processes Cross Gateway Query by patient id* – The Responding Gateway processes the Cross Gateway Query by initiatin a Registry Stored Query to the local Document Registry. The Responding Gateway updates the response from the Document Registry to ensure that the homeCommunityId is specified on every applicable element. This updated response is sent as the response to the Cross Gateway Query.
- **Initiating Gateway** *processes Cross Gateway Query by patient id responses* – The Initiating Gateway collects the responses from all Responding Gateways it contacted. For each response it verifies that the homeCommunityId is present in each appropriate element. Once all responses are received the Initiating Gateway consolidates all updated response data into one response to the Document Consumer. The Initiating Gateway returns to the Document Consumer the same homeCommunityId attribute values that it received from Responding Gateway(s).
- **Document Consumer** *receives Registry Stored Query by patient id response* – The Document Consumer receives the results of the query from the Initiating Gateway and must account for three unique aspects of the response; namely that
    a) the homeCommunityId attribute will be specified,
    b) the Document Consumer may not be able to map the repositoryUniqueId value directly to a Document Repository located in a remote community,
    c) the Document Consumer may not be able to understand the terminology used in the response. For example, if the initiating and responding community have common Requested Procedure vocabularies, then the Initiating Gateway will respond to the Document Consumer's request using the common coding/vocabulary scheme.

a) The Document Consumer retains the values of the homeCommunityId attribute for future interaction with the Initiating Gateway.

Retrieve *Image Manifest and Reports* from local Community A & Remote Community B:

- **Document Consumer** *initiates a Retrieve Document Set* – If the Document Consumer issued a Registry Stored Query, the response to the Registry Stored Query by patient id includes a) the document uniqueId b) the repositoryUniqueId, and c) the homeCommunityId attribute. The Document Consumer shall specify these three parameters in its Retrieve Document Set transaction to the Initiating Gateway
- **Initiating Gateway** *processes Retrieve Document Set* – The Initiating Gateway determines which Responding Gateway(s) to contact by using the homeCommunityId to obtain the Web Services endpoint of the Responding Gateway(s). If the homeCommunityId represents the local community, the Initiating Gateway will initiate a Retrieve Document Set to the indicated local Document Repository. The Retrieve Document Set may contain more than one unique homeCommunityId so the Initiating Gateway may have to initiate requests to more than one Responding Gateway, and consolidate the results. The Initiating Gateway specifies the homeCommunityId in the Cross Gateway Retrieve transaction. The homeCommunityId identifies the community associated with the Responding Gateway.

Responding Gateway *processes Cross Gateway Retrieve*–
The Responding Gateway within an XDS Affinity Domain processes the Cross Gateway Retrieve initiating a Retrieve Document Set transaction to the Document Repository identified by the repositoryUniqueId within the request. If the Cross Gateway Retrieve requests multiple documents with different repositoryUniqueIds, the Responding Gateway will contact multiple Document Repositories and consolidate the responses. **Retrieve Image Set from Remote Community B**

- **Imaging Document Consumer** *initiates a Retrieve Imaging Document Set*. The request includes values from the retrieved Imag Manifests:
  a) the repositoryUniqueId identifying the Imaging Document Source,
  b) the documentUniqueIds identifying the imaging documents (DICOM SOP Instance UIDs) within the Imaging Document Source
  c) list of one or more DICOM transfer syntax UIDs,
  d) Study Instance UID,
  e) Series Instance UIDthe homeCommunityId . The Imaging Document Consumer specifies these parameters in its Retrieve Imaging Document Set transaction to the Initiating Imaging Gateway.

- **Initiating Imaging Gateway** *processes Retrieve Imaging Document Set* – The Initiating Imaging Gateway determine which Responding Imaging Gateways to contact by using the homeCommunityId to obtain the Web Services endpoint of the Responding Imaging Gateway. The Retrieve Imaging Document Set may contain more than one unique homeCommunityId so the Initiating Imaging Gateway may have to initiate or aninitiate requests ~~more~~ anthan one Responding Imaging Gateway, and consolidate the results. The Initiating Imaging Gateway specifies the homeCommunityId in the Cross

Gateway Retrieve Imaging Document Set transaction. The homeCommunityId identifies the community associated with the Responding Imaging Gateway.

- **Responding Imaging Gateway** *processes Cross Gateway Retrieve Imaging Document Set* – The Responding Imaging Gateway within an XDS Affinity Domain processes the Cross Gateway Retrieve Imaging Document Set request by initiating a Retrieve Imaging Document Set transaction to the Imaging Document Source identified by the repositoryUniqueId within the request. If the Cross Gateway Retrieve Imaging Document Set requests multiple documents with different repositoryUniqueIds, the Responding Imaging Gateway will contact multiple Imaging Document Sources and consolidate the responses.

***Editor**: Update Vol 1 Sec 29.3.3 to accurately describe groupings, using new template conventions.*

29.3.3 XCA-I Required Actor Groupings ~~Actor Grouping Considerations~~

An actor from this profile (Column 1) shall implement all of the required transactions and/or content modules in this profile *in addition to all* of the requirements for the grouped actor (Column 2).

Table 29.3.3-1: XCA-I - Required Actor Groupings

XCA-I Actor	Actor(s) to be grouped with	Reference
Imaging Document Consumer	ITI XDS.b / Document Consumer	ITI TF-1: 10.1
	ITI ATNA / Secure Node or Secure Application	ITI TF-1: 9.1
Imaging Document Source	ITI ATNA / Secure Node or Secure Application	ITI TF-1: 9.1
Initiating Imaging Gateway	ITI ATNA / Secure Node or Secure Application	ITI TF-1: 9.1
Responding Imaging Gateway	ITI ATNA / Secure Node or Secure Application	ITI TF-1: 9.1

***Editor**: Insert new section heading 29.3.4 and clarify the text by re-arranging it as follows:*

29.3.4 Cross-Profile Considerations

The XCA-I Profile requires that the Initiating and Responding Imaging Gateways are used in conjunction with the XCA Initiating and Responding Gateways and will be part of communities that support XDS-I.b.

XCA-I ~~**presumes the**~~ **initiating and responding communities use** ~~**community uses**~~ the XDS-I.b and XDS.b integration profiles for enabling Imaging Document Set behavior. ~~**XCA-I defines no required grouping with any actor.**~~

Note: The XCA-I Profile does not explicitly group the XCA-I Initiating Imaging Gateway and XCA Initiating Gateway pair and the XCA-I Responding Imaging Gateway and XCA Responding Gateway pair.

The implementer may **also** consider grouping actors as needed. For example, an Image Document Source may choose to group with an IRWF Importer for importing images.

~~**The XCA-I Profile does not explicitly group the XCA-I Initiating Imaging Gateway and XCA Initiating Gateway pair and the XCA-I Responding Imaging Gateway and XCA Responding Gateway pair.**~~
~~**The XCA-I Profile requires that the Initiating and Responding Imaging Gateways are used in conjunction with the XCA Initiating and Responding Gateways and will be part of XDS communities that support XDS.b.**~~
…

Editor: *Fix typo in Vo1 1 Sec 29.4.2*

29.4.2 Requirements/Recommendations

The following mitigations shall be implemented by all XCA-I actors. These mitigations moderate all high impact risks.

…
M2: An Imaging Document Source shall include a SHA1 hash of the image document content in the Document metadata of the **[RAD-69]** ~~**[RAD-68]**~~ response. The Imaging Document Consumer shall have the ability to verify the SHA1 hash of the image document with the SHA1 hash in the metadata.
…

Editor: *Update Vol 1, Sec 2.1 because we now have the grouping requirements in Sec 29.3.3*

2.1 Required Actor Groupings (Dependencies)

…
Note: In early versions of IHE Technical Framework documents, required actor groupings were referred to as "Profile Dependencies". Table 2.1-1 defines the required dependencies between these profiles. In newer profiles, these "dependencies" are specified in a "Required Actor Groupings" section within each profile in Volume 1, and are not repeated in Table 2.1-1.

Table 2.1-1: IHE Radiology Integration Profiles Dependencies

Integration Profile	Depends on	Dependency Type	Comments
Consistent Presentation of Images	*None*	*None*	-
…			
~~**Cross-Community Access for Imaging (XCA-I)**~~	~~**XDS.b (ITI)**~~	~~**Required for access of documents.**~~	
	~~**XCA (ITI)**~~	~~**Required for cross community access of documents.**~~	
	~~**Audit Trail and Node Authentication, incl. Radiology Audit Trail Option**~~	~~**Each XCA-I Actor shall be grouped with Secure Node or Secure Application.**~~	~~**Required to manage audit trail of exported PHI, node authentication and**~~

			~~transport encryption.~~
	~~Consistent Time (ITI)~~	~~Each XCA-I Actor shall be grouped with the Time Client.~~	~~To ensure consistency among document and submission set dates.~~
…			

Editor: *Update Vol 2, Sec 4.69 and subsections:*

4.69 Retrieve Imaging Document Set [RAD-69]

4.69.1 Scope

This transaction is used to retrieve ~~a set of DICOM objects~~ **DICOM instances that are referenced within an XDS-I.b DICOM manifest.**

- ~~an XDS-I.b Imaging Document Consumer retrieves from an Imaging Document Source~~
- ~~an XCA-I Imaging Document Consumer retrieves from an Initiating Imaging Gatewy~~
- ~~an XCA-I Responding Imaging Gateway to retrieve from an Imaging Document Source in its own community.~~

~~The objects retrieved are those that are referenced within an XDS-I.b manifest document (KOS) as described in Section 4.68.~~

~~This transaction is derived from, and is nearly identical to, the Retrieve Document Set [ITI-43] transaction of the IHE IT Infrastructure Technical Framework. It adds minor additional semantics and constraints on the requirements defined in [ITI-43].~~

4.69.2 Actor Roles

Actor: Imaging Document Consumer

Role: ~~Issues a web service request to retrieve~~ **requests** a set of DICOM instances from an Imaging Document Source or from **a remote community** ~~remote communities~~ through an Initiating Imaging Gateway.

Actor: Responding Imaging Gateway

Role: ~~Issues a web service request to retrieve~~ **requests** a set of DICOM instances from ~~an~~ Imaging Document Source**(s) in its own community**.

Actor: Imaging Document Source

Role: **returns requested DICOM instances**. ~~Receives a web service request from an Imaging Document Consumer or Responding Imaging Gateway for retrieval of a set of DICOM instances and generates the web service response with the appropriate content.~~

Actor: Initiating Imaging Gateway

Role: **routes a request for DICOM instances to local Imaging Document Source(s) or a remote Responding Imaging Gateway~~(s) and returns the consolidated results~~. ~~Receives a web service request from an Imaging Document Consumer for retrieval of a set of DICOM instances and generates the web service response with the appropriate content.~~**

4.69.4.1 Retrieve Imaging Document Set Request message

This message is an extension of the Retrieve Document Set transaction as defined in ITI TF-2: 3.43.

- ~~**In XDS-I.b, an Imaging Document Consumer sends a request to an Imaging Document Source to retrieve the set of images referenced within a manifest object.**~~
- ~~**In XCA-I, an Imaging Document Consumer sends a request to an Initiating Imaging Gateway to retrieve the set of images referenced within a manifest object.**~~
- ~~**In XCA-I, a Responding Imaging Gateway sends a request to an Imaging Document Source) in the responding community to retrieve the set of images referenced within a manifest object.**~~

4.69.4.1.1 Trigger Events

~~**The**~~ **An** Imaging Document Consumer wishes to retrieve a set of DICOM instances that are referenced within ~~**a**~~ **one or more** DICOM Manifest**; see Section 4.68.4.1.2.1 "Sharing a Set of DICOM instances".**.

~~**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 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.**~~

~~**The Imaging Document Consumer obtains the homeCommunityID for the Imaging Document Source from the Registry Stored Query response.**~~

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

An Initiating Imaging Gateway receives a Retrieve Imaging Document Set [RAD-69] request, and forwards it to one or more Imaging Document Source(s) in its community.

~~**In response to the Cross Gateway Retrieve Imaging Document Set [RAD-75], the**~~ **A** Responding Imaging Gateway **receives a Cross Gateway Retrieve Imaging Document Set [RAD-75] request and** initiates a Retrieve Imaging Document Set request to the Imaging Document Source**(s)** in **its** ~~**the responding**~~ community.

4.69.4.1.2 Message Semantics

The Retrieve Imaging Document Set messages is a SOAP 12 message in MTOM/XOP format; see Section 4.69.5 "Protocol Requirements".

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

- A required repositoryUniqueId that identifies the ~~**XDS-I**~~ 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 RAD TF-2x: Appendix G.3.

- 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.
- 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 **instances** ~~**images/ objects**~~ to be retrieved. The Study Instance UID is extracted from the **DICOM** ~~**KOS**~~ manifest.
- A required Series Instance UID value that identifies the series containing the DICOM **instances** ~~**images/ objects**~~ to be retrieved. The Series Instance UID is extracted from the **DICOM** ~~**KOS**~~ manifest.
- A homeCommunityId **that identifies the community holding the DICOM instances**, required if
    - the Retrieve Imaging Document Set request is **from an XCA-I Imaging Document Consumer** to an XCA-I Initiating Imaging Gateway, or
    - the Retrieve Imaging Document Set request is from an XCA-I Responding Imaging Gateway to an ~~**XDS-I**~~ Imaging Document Source **in its community**.

The repositoryUniqueId and homeCommunityId associated with the requested DICOM instances can be different, allowing a single request to identify multiple Imaging Document Sources.

~~**The message shall be structured as described in Section 4.69.5 Protocol Requirements.**~~

4.69.4.1.3 Expected Actions

~~**When receiving a Retrieve Imaging Document Set Request, an Imaging Document Source or Initiating Imaging Gateway shall generate a Retrieve Imaging Document Set Response.**~~ **An Imaging Document Source shall generate a Retrieve Imaging Document Set Response message; see Section 4.69.4.2.**

The Initiating Imaging Gateway:

- **shall determine which local Imaging Document Source(s) hold the DICOM instances requested and initiate a [RAD-69] transaction to those Imaging Document Sources**
- **shall determine which remote communities hold the requested DICOM instances and initiate a [RAD-75] transaction to the community's Responding Imaging Gateway**
- ~~**shall consolidate the results from the multiple sources into one response to the Imaging Document Consumer.**~~
- **shall generate a Retrieve Imaging Document Set Response message; see Section 4.69.4.2.**

~~In XCA-I, an Initiating Imaging Gateway initiates a Cross Gateway Retrieve Imaging Document request to all Responding Imaging Gateways that can satisfy the request, to obtain the information from responding communities in order to construct the Retrieve Imaging Document Set Response.~~

4.69.4.2 Retrieve Imaging Document Set Response message

4.69.4.2.1 Trigger Events

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

4.69.4.2.2 Message Semantics

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

~~An Imaging Document Source or Initiating Imaging Gateway shall provide the Imaging Document Set(s) indicated in the request.~~
~~The Initiating Imaging Gateway shall consolidate results from all Responding Imaging Gateways and local Imaging Document Sources.~~

The Imaging Document Source or Initiating Imaging Gateway shall return the **requested DICOM instances and a status code.** ~~imaging document(s~~) or an error code ~~in case the document could not be returned~~.
The status codes, conditions of failure and possible error messages are given in the ebRS standard and detailed in ITI TF-3: Table 4.2.4.2-4 "[ITI-43] Retrieve Document Set and [ITI-39] Cross Gateway Retrieve Responses".

Note: A Responding Imaging Gateway may have suppressed failures resulting in the Initiating Imaging Gateway reporting a success.

The Imaging Document Source shall encode the pixel data ~~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 requested transfer syntaxes then an error status shall be returned.

~~If the Imaging Document Consumer or Responding Imaging Gateway specifies~~ **If the request contains** 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), and the Imaging Document Source supports the requested transfer syntax, the following behavior is expected:

- If the DICOM Image Object(s) already have the same JPIP transfer syntax as the one indicated in the request, the Retrieve Imaging Document Set Response shall include the DICOM Image Objects unchanged.
- 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 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.
- 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

~~**The conditions of failure and possible error messages are given in the ebRS standard and detailed in ITI TF-3: Table 4.2.4.2-4 "[ITI-43] Retrieve Document Set and [ITI-39] Cross Gateway Retrieve Responses".**~~

In XCA-I, the Initiating Imaging Gateway can act as a JPIP proxy and accept the JPIP request from the Imaging Document Consumer and make the corresponding request to the Imaging Document Source. If a direct route is available from the Imaging Document Consumer to the Imaging Document Source, the Imaging Document Consumer is allowed to make a direct JPIP request to the Imaging Document Source, assuming security considerations are observed.

…

Editor: *Update Vol 2 Section 4.75 and sub-sections as follows:*

4.75 Cross Gateway Retrieve Imaging Document Set [RAD-75]

4.75.1 Scope

This transaction is used to retrieve DICOM **instances** ~~**objects**~~ **a remote community** ~~**from remote communities**~~.

~~**The scope of the Cross Gateway Retrieve Imaging Document Set transaction is semantically the same as the Retrieve Imaging Document Set [RAD-69] transaction. Differences from the Retrieve Imaging Document Set transaction are:**~~

- ~~**The Cross Gateway Retrieve Imaging Document Set is between an Initiating Imaging Gateway and a Responding Imaging Gateway.**~~
- ~~**The 'homeCommunityId' parameter is required. This means that the homeCommunityId parameter which is conditionally required on the Retrieve Imaging Document Set transaction is required by this transaction.**~~
- ~~**The Responding Imaging Gateway is required to support Asynchronous Web Services Exchange on the Cross Gateway Retrieve Imaging Document Set.**~~

4.75.2 Actor Roles

Actor: Initiating Imaging Gateway
Role: To **request DICOM instances from a remote community** ~~**formulate a Cross Gateway Retrieve Imaging Document Set request**~~
Actor: Responding Imaging Gateway
Role: To return the **DICOM instances** ~~**Imaging Document Set(s)**~~ requested.
…

4.75.4.1.2 Message Semantics

The message semantics for Cross Gateway Retrieve Imaging Document Set are the same as Retrieve Imaging Document Set [RAD-69] **Request message. See Section 4.69.4.1.2.**
~~**The Initiating Imaging Gateway shall specify the homeCommunityId parameter within the Cross Gateway Retrieve Imaging Document Set. The homeCommunityId shall contain the value that identifies the community associated with the Responding Imaging Gateway(s).**~~

4.75.4.1.3 Expected Actions

~~**Actors supporting this transaction shall support the Expected Actions described in [RAD-69]. See Section 4.69.4.1.3.**~~

The Responding Imaging Gateway shall determine the Imaging Document Source(s) which hold the **DICOM instances** ~~**imaging documents**~~ requested and initiate a [RAD-69] transaction to those Imaging Document Sources.
If more than one Imaging Document Source is contacted, the Responding Imaging Gateway shall consolidate the results from the multiple sources into one response to the Initiating Imaging Gateway.
If both successes and failures are received, the Responding Imaging Gateway may choose to use PartialSuccess status to reflect both failure and success. The Responding Imaging Gateway may alternatively choose to suppress the failures and report only successes.
Every RegistryError element returned in the response shall have the location attribute set to the homeCommunityId of the Responding Imaging Gateway.
The Responding Imaging Gateway shall return consolidated responses according to the message semantics for the Retrieve Imaging Document Set Response message in Section 4.69.4.2.2.
~~**The Initiating Imaging Gateway shall consolidate results from all Responding Imaging Gateways. This includes reflecting in the consolidated results returned to the originating Retrieve Imaging Document Set [RAD-69] all successes and failures received from Responding Imaging Gateways. If one of more responses with a status of failure or partial successes are received from Responding Imaging Gateways, the Initiating Imaging Gateway shall respond to the original [RAD-69] request from the Imaging Document Consumer with both DocumentResponse and RegistryErrorList elements in one response and specify PartialSuccess status.**~~

~~**Note: The Responding Imaging Gateway may have suppressed failures resulting in the Initiating Imaging Gateway reporting a success.**~~