DICOM Correction Proposal

STATUS	Letter Ballot
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Correction Number	CP-1352
Log Summary: Add Series- and Instance-level metadata retrieval to WADO-RS.	
Name of Standard PS 3 2011, Sup 161 (FT)	
Rationale for Correction: All DICOM instances that allow other Instances to be referenced along with one or more retrieval methods reference either a Series or a set of Instances. If a WADO-RS URL is included as a retrieval method it would be logical for it to be either a Series URL or a set of Instance URLs. In either case, a client should be able to use that URL to retrieve metadata without having to parse the URL to determine the Study URL and retrieve metadata for the entire Study. Additionally, it is useful to be able to include a reference to a DICOM KOS or SR instance in an external system such as FHIR. Since those instances will typically only include metadata it is not possible to retrieve them in an XML format at present unless the entire set of Study metadata is retrieved.	
Correction Wording:	

Update PS 3.18 Section 6.1 INTERACTION as indicated.

6.1 Interaction

The interaction shall be as shown in Figure 6-1.

Multiple communications modes are possible:

— URI based mechanism using HTTP Get: WADO-URI Type request

— Web Services (WS*) using HTTP Post: WADO-WS, either:

a. DICOM Requester (Retrieve Imaging Document Set)

b. Rendered Requester (Retrieve Rendered Imaging Document Set)

c. Metadata Requester (Retrieve Imaging Document Set Metadata)

— RESTful Services (RS) using HTTP Get: WADO-RS, either:

a. DICOM Requester (Retrieve Study, Series, or Instance DICOM Objects)

b.   Pixel Data Requester (Retrieve Instance Frame Pixel Data)

c.   Bulk Data Requester (Retrieve Study, Series, Instance bulk data)

d.   Metadata Requester (Retrieve Study**, Series, Instance** Metadata)

—   RESTful Services (RS) using HTTP Get: QIDO-RS:

a.   Query Requester (Search for Study, Series or Instance DICOM Objects)

—   RESTful Services (RS) using HTTP POST: STOW-RS, either:

a.   DICOM Creator (Store Instances)

b.   Metadata and Bulk Data Creator (Store Instances)

Update PS 3.18 Section 6.5 RS REQUEST/RESPONSE as indicated.

6.5 RS Request/RESPONSE

The DICOM RESTful Service defines several action types. An implementation shall support all the following six action types:

1. RetrieveStudy

This action retrieves the set of DICOM instances associated with a given study unique identifier (UID). The response can be DICOM or bulk data depending on the "Accept" type, and is encapsulated in a multipart MIME response.

2. RetrieveSeries

This action retrieves the set of DICOM instances associated with a given study and series UID. The response can be DICOM or bulk data depending on the "Accept" type, and is encapsulated in a multipart MIME response.

3. RetrieveInstance

This action retrieves the DICOM instance associated with the given study, series, and SOP Instance UID. The response can be DICOM or bulk data depending on the "Accept" type, and is encapsulated in a multipart MIME response.

4. RetrieveFrames

This action retrieves the DICOM frames for a given study, series, SOP Instance UID, and frame numbers. The response is pixel data, and encapsulated in a multipart MIME response.

5. RetrieveBulkdata

This action retrieves the bulk data for a given bulk data URL. The response is a single bulk data item.

6. RetrieveMetadata

This action retrieves the DICOM instances presented as the ~~full~~ study**, series, or instance** metadata with the bulk data removed. The response is XML encoded metadata for the DICOM attributes as defined in PS 3.19.

Update PS 3.18 Section 6.5.2.2 Response as indicated.

6.5.2.2 Response

The Server shall provide the document(s) indicated in the request. In order to parse the bulk data items it is necessary to retrieve the XML metadata for the **specified** Study, **Series, or Instance**.

Update PS 3.18 Section 6.5.3.2 Response as indicated.

6.5.3.2 Response

The Server shall provide either a single DICOM PS3.10 object for the SOP Instance or one or more bulk data items. In order to parse the bulk data items it is necessary to also retrieve the XML **corresponding** metadata for the **specified** Study**, Series, or Instance**.

Update PS 3.18 Section 6.5.4.2 Response as indicated.

6.5.4.2 Response

The Server shall provide the document(s) indicated in the request. In order to parse the bulk data items it is necessary to also retrieve the XML **corresponding** metadata for the **specified** Study**, Series, or Instance**.

Update PS 3.18 Section 6.5.5.2 Response as indicated.

6.5.4.2 Response

The Server shall provide the document(s) indicated in the request. In order to parse the bulk data items it is necessary to also retrieve the XML **corresponding** metadata for the **specified** Study**, Series or Instance.**

Update PS 3.18 Section 6.5.6 RS – RetrieveMetadata as indicated.

6.5.6 RS – RetrieveMetadata

This action retrieves the DICOM instances presented as the full study**, series or instance** metadata with the bulk data removed. The response is XML encoded metadata for the DICOM attributes as defined in PS 3.19.

The study**, series, or instance** metadata includes all DICOM attributes under a certain size threshold which is determined by the server. Some DICOM instances, such as SR documents, may be entirely described in the metadata.

6.5.6.1 Request

The specific Services resource**s** to be used for the RetrieveMetadata action shall be as follows:

- Resource**s**
    - {SERVICE}/studies/{StudyInstanceUID}/metadata, where
    - **{SERVICE}/studies/{StudyInstanceUID}/series/{SeriesInstanceUID}/metadata**
    - **{SERVICE}/studies/{StudyInstanceUID}/series/{SeriesInstanceUID}/instances/{SOPInstanceUID}/metadata**

where

- {SERVICE} is the base URL for the service. This may be a combination of protocol (either http or https), host, port, and application.

- {StudyInstanceUID} is the study instance UID for a single study.

- **{SeriesInstanceUID} is the series instance UID for a single series.**

- **{SOPInstanceUID} is the SOP Instance UID for a single SOP Instance.**

- Method

  - GET

- Headers

  - Accept

    - multipart/related; type=application/dicom+xml

Specifies that the response should be WADO XML.

6.5.6.2 Response

The Server shall provide the document(s) indicated in the request. The Server shall return the document(s) or an error code when the document(s) could not be returned.

The response format has a content type of application/dicom+xml as described in the Native DICOM Model defined in PS3.19 and must include the URL attribute for each BulkData element.

6.5.6.2.1   Metadata Response

- Content-Type:

  - multipart/related; type=application/dicom+xml

- The entire multipart response contains all XML metadata for the specified Study**, Series, or Instance**.

- Each item in the response is the XML encoded metadata for an Instance with the following http headers: