DICOM Correction Proposal

STATUS	Final Text
Date of Last Update	2019/11/10
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Correction Number CP-1907
Log Summary: UPS-RS Support for Query Only
Name of Standard PS 3.2, PS3.4, PS3.6, PS3.18 2019d
Rationale for Correction: EBIW has a use case for UPS-RS where the only service being used is the UPS-RS Search. The Profile would not prohibit actually creating and updating procedure step instances, but it is certainly not required for the Use Case and would be burdensome for the Origin Server to implement. UPS-RS is based on DIMSE UPS so corresponding changes are made to Part 4. This could conceivably be used as a RESTful alternative to the MWL Service.
Correction Wording:

Modify PS 3.2 to add new SOP Class UID 1.2.840.10008.5.1.4.34.6.5 (UPS Query SOP Class)

Modify PS 3.6 to add new SOP Class UID 1.2.840.10008.5.1.4.34.6.5 (UPS Query SOP Class)

Modify PS 3.18 11.2 as shown

11 Worklist Service and Resources

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11.2 CONFORMANCE

An origin server shall support ~~**all**~~ **sets of** transactions of this service **that correspond to one or more UPS SOP Classes (DIMSE Service Groups). See Section CC.2 in PS3.4**. Additional requirements for an origin server that is also a Unified Worklist and Procedure Step SCP are described in Section CC.1 in PS3.4.

A user agent or origin server implementing the Worklist Service shall comply with all requirements placed on the SCU or SCP, respectively, for the corresponding services in Annex CC "Unified Procedure Step Service and SOP Classes (Normative)" in PS3.4 including Conformance Statement requirements.

An implementation supporting the Worklist Service shall describe its support in its Conformance Statement and in its response to the Retrieve Capabilities transaction, and whether it plays the role of origin server, user agent, or both.

Modify PS 3.4 CC.1 as shown

CC.1 OVERVIEW

This Annex defines the Service and SOP Classes associated with a Unified Worklist and Procedure Step.

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The Unified Worklist and Procedure Step Service Class includes ~~four~~ **five** SOP Classes associated with UPS instances. The SOP Class UID for any UPS Instance always specifies the UPS Push SOP Class. The separate SOP Classes facilitate better negotiation and logical implementation groups of functionality.

The UPS Push SOP Class allows an SCU to instruct the SCP to create a new UPS instance, effectively letting a system push a new work item onto the SCP's worklist. It is important to note that the SCP could be a Worklist Manager that maintains the worklist for other systems that will perform the work, or the SCP could be a performing system itself that manages an internal worklist.

The UPS Pull SOP Class allows an SCU to query a Worklist Manager (the SCP) for matching UPS instances, and instruct the SCP to update the status and contents of selected items (UPS instances). The SCU effectively pulls work instructions from the worklist. As work progresses, the SCU records details of the activities performed and the results created in the UPS instance.

The UPS Query SOP Class allows an SCU to query a Worklist Manager (the SCP), but does not otherwise interact with the UPS instances.

The UPS Watch SOP Class allows an SCU to subscribe for status update events and retrieve the details of work items (UPS instances) managed by the SCP.

The UPS Event SOP Class allows an SCP to provide the actual status update events for work items it manages to relevant (i.e., subscribed) SCUs.

Each of these services has an equivalent HTTP operation defined by the UPS-RS Worklist Service (see Section 6.9 “UPS-RS Worklist Service” in PS3.18).

Modify PS 3.4 CC.2 as shown

CC.2 DIMSE SERVICE GROUPS

The DIMSE Services shown in Table CC.2-1, Table CC.2-2, Table CC.2-3**,** ~~**and**~~ Table CC.2-4 **and Table CC.2-5** are applicable to the Unified Procedure Step (UPS) IOD under the UPS Push, UPS Pull, UPS Watch**,** ~~**and**~~ UPS Event **and UPS Query** SOP Classes respectively.

Table CC.2-1. DIMSE Service Group Applicable to UPS Push

DICOM Message Service Element	Usage SCU/SCP
N-CREATE	M/M
N-ACTION - Request UPS Cancel	U/M
N-GET	U/M

Table CC.2-2. DIMSE Service Group Applicable to UPS Pull

DICOM Message Service Element	Usage SCU/SCP
C-FIND	M/M
N-GET	M/M
N-SET	M/M
N-ACTION - Change UPS State	M/M

Table CC.2-3. DIMSE Service Group Applicable to UPS Watch

DICOM Message Service Element	SCU/SCP
N-ACTION - Un/Subscribe	M/M
N-GET	M/M
C-FIND	U/M
N-ACTION - Request UPS Cancel	U/M

Table CC.2-4. DIMSE Service Group Applicable to UPS Event

DICOM Message Service Element	Usage SCU/SCP
N-EVENT-REPORT	M/M

Table CC.2-5. DIMSE Service Group Applicable to UPS Query

DICOM Message Service Element	Usage SCU/SCP
C-FIND	**M/M**

Modify PS 3.4 CC.2.8.1.2 as shown

CC.2.8.1.2 C-FIND Service Parameters

CC.2.8.1.2.1 SOP Class UID

The Affected SOP Class UID of the C-FIND DIMSE request shall always be the UPS SOP Class negotiated for the Presentation Context under which the service is requested. This will always be ~~either~~ the UPS Pull SOP Class**,** ~~or~~ the UPS Watch SOP Class**, or the UPS Query SOP Class**. See Section CC.3.1 for further details.

~~For both the UPS Pull SOP Class and the UPS Watch SOP Class, t~~**T**he C-FIND is performed against the Unified Procedure Step Information Model shown in Figure CC.2.8-1.

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Modify PS 3.4 CC.2.8.3 as shown

CC.2.8.3 Service Class Provider Behavior

All C-FIND SCPs shall be capable of processing queries that meet the requirements of the "Worklist" Search (see Section CC.2.8.3.1). This does not imply that an SCP that supports the UPS Watch SOP Class **or the UPS Query SOP Class** must also be an SCP of the UPS Pull SOP Class.

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Modify PS 3.4 CC.3 as shown

CC.3 UPS SOP Classes

There are ~~four~~**five** UPS SOP Classes associated with the Unified Procedure Step IOD. Each SOP Class supports different interactions with a UPS Instance (also referred to as a worklist item).

The UPS Push SOP Class allows SCU systems to:

- create (push) a new worklist item (i.e., instance) onto a worklist
- submit a cancellation request for a worklist item

The UPS Pull SOP Class allows SCU systems to:

- query a worklist for matching items
- take responsibility for performing a worklist item
- add/modify progress/status/result details for the worklist item
- finalize a controlled worklist item as Completed or Canceled.

The UPS Watch SOP Class allows SCU systems to:

- query for worklist items of interest
- subscribe/unsubscribe for event notifications of changes to a given worklist item
- subscribe/unsubscribe for event notifications of all worklist items
- get details for a given worklist item
- submit a cancellation request for a given worklist item

The UPS Event SOP Class allows SCU systems to:

- receive event notifications of changes to a worklist item

The UPS Query SOP Class allows SCU systems to:

- **query a worklist for matching items**

The DICOM AEs that claim conformance to one or more of these SOP Classes shall support all services listed as "M" in the corresponding Table CC.2-1, Table CC.2-2, Table CC.2-3**,** ~~**and**~~ Table CC.2-4 **and Table CC.2-5**.

CC.3.1 Service Class and SOP Class UIDs

All UPS Instances shall be created with the value of SOP Class UID set to "1.2.840.10008.5.1.4.34.6.1" (i.e., that of the UPS Push SOP Class).

Note

UPS Instances are all based on the Unified Procedure Step IOD and are all created either internally by the SCP, or in response to an N-CREATE issued as part of the UPS Push SOP Class.

Once created, UPS instances may be operated on by DIMSE services from any of the four UPS SOP Classes defined in the Unified Worklist and Procedure Step Service Class.

During association negotiation, the Abstract Syntax UID shall be the implemented SOP Class as shown in the following list:

- 1.2.840.10008.5.1.4.34.6.1 (UPS Push SOP Class)
- 1.2.840.10008.5.1.4.34.6.2 (UPS Watch SOP Class)
- 1.2.840.10008.5.1.4.34.6.3 (UPS Pull SOP Class)
- 1.2.840.10008.5.1.4.34.6.4 (UPS Event SOP Class)
- **1.2.840.10008.5.1.4.34.6.5 (UPS Query SOP Class)**

CC.3.1.1 DIMSE Implications for UPS (Informative)

A SOP Instance may be created with one SOP Class UID (UPS Push) and later DIMSE Services may refer to it over an association negotiated for a different SOP Class UID. Further details on this can be found in Chapter 10 in PS3.7.

For DIMSE-N Services, the Affected SOP Class UID (0000,0002) or Requested SOP Class UID (0000,0003), when present, will be the UID of the UPS Push SOP Class regardless of the negotiated Abstract Syntax UID. The SCU and SCP will not reject DIMSE-N messages on the basis of the Affected/Requested SOP Class UID being that of the UPS Push SOP Class, rather than one of the other ~~**three**~~**four** SOP Class UIDs as listed in the Abstract Syntax UID during association negotiation. The SCU and SCP may reject the DIMSE-N messages if the instance is not a UPS Push SOP Class Instance.

For DIMSE-C Services (C-FIND), the Affected SOP Class UID will always match the negotiated Abstract Syntax UID for the Presentation Context under which the request is made. This will be ~~**either**~~ UPS Watch**,** ~~**or**~~ UPS Pull**, or UPS Query**. ~~**Both**~~**All** of these SOP Classes represent the UPS Information Model described in Section CC.2.8.1.

For example, in a typical "Pull Workflow" message exchange, the C-FIND query from a "performing SCU" would use the UPS Pull SOP Class UID for both the negotiated Abstract Syntax UID and the Affected SOP Class UID (0000,0002), however the SOP Class UID (0008,0016) of the C-FIND responses themselves will be set to the UPS Push SOP Class UID by the SCP. All the subsequent N-ACTION, N-SET, and N-GET messages, would then use the UPS Pull SOP Class UID for the negotiated Abstract Syntax UID, and the UPS Push SOP Class UID for the Affected SOP Class UID (0000,0002).

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Modify PS 3.4 CC.4 as shown

CC.4 Conformance Requirements

Implementations providing conformance to any of the UPS SOP Classes (UPS Pull, UPS Push, UPS Watch**,** ~~**and**~~ UPS Event**, and UPS Query**) shall be conformant as described in the following sections and shall include within their Conformance Statement information as described below.

An implementation may conform to any of the UPS SOP Classes as an SCU or as an SCP. The Conformance Statement shall be in the format defined in Annex A “DICOM Conformance Statement Template (Normative)” in PS3.2.

CC.4.1 SCU Conformance

An implementation, which is conformant to any of the UPS SOP Classes as an SCU, shall meet conformance requirements for the operations that it invokes.

CC.4.1.1 Operations

The SCU Conformance Statement shall be formatted as defined in Annex A “DICOM Conformance Statement Template (Normative)” in PS3.2.

An implementation, that conforms to any of the UPS Push, UPS Pull or UPS Watch SOP Classes as an SCU, shall specify under which conditions it will request the modification of the value of the Procedure Step State (0074,1000) Attribute to "IN PROGRESS", "COMPLETED", and "CANCELED".

An implementation that conforms to the UPS Pull**, or** UPS Watch**, or UPS Query** SOP Classes as an SCU shall state in its Conformance Statement

- Whether it requests matching on Optional Matching Key Attributes for C-FIND.

• Whether it requests Type 3 Return Key Attributes. If it requests Type 3 Return Key Attributes, then it shall list these Optional Return Key Attributes.

• Whether or not it supports extended negotiation of fuzzy semantic matching of person names for C-FIND.

• How it makes use of Specific Character Set (0008,0005) and Timezone Offset From UTC (0008,0201) when encoding queries and interpreting responses for C-FIND.

• What access mechanisms the SCP is capable of using for retrieving input data and/or making output data available. (see Table 10-3b “Referenced Instances and Access Macro Attributes” in PS3.3 for details on the different Retrieval Sequences).

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