Supplement 246 – DICOMweb Modality Procedure Step Services
WG27
Final Text

September 2025

WORK ITEM 2023-10-C – DICOMWEB MODALITY SERVICES

Introduction

The DICOM Standard defines several services. Two of these are targeted towards modalities, namely the Modality Worklist service (see PS3.4, Annex K, more specifically K.6.1) and the Modality Performed Procedure Step service (see PS3.4, Annex F, more specifically F.7-F.9). Currently, these services are defined using DIMSE.

Limitations of Current Standard

Both the Modality Worklist service and the Modality Performed Procedure Step service are not yet available in DICOMweb. This limits a) the uptake of DICOMweb for modalities and b) the support of workflow services for modalities that are (intended to be) part of a web-based ecosystem.

Description of Proposal

Add the Modality Worklist and the Modality Performed Procedure Step services to DICOMweb, in principle based on the existing DICOMweb Worklist service (UPS-RS; see PS3.18, section 11). This would boil down to creating an informative annex and any normative changes needed if gaps are discovered.

OVERVIEW OF SERVICES

Supplement 246 – DICOMweb Modality Procedure Step Services contains two new services:

- **Modality Scheduled Procedure Step Service**, mimicking DIMSE's Basic Worklist Management Service (PS3.4, Annex K).

- **Modality Performed Procedure Step Service**, mimicking DIMSE's Procedure Step SOP Classes (PS3.4, Annex F), where the DIMSE notifications are not covered.

  - To achieve notification-like behavior, it is recommended to mimic the approach taken in IHE's Scheduled Workflow integration profile, where the Actor Modality Performed Procedure Step Manager forwards the creation and updating of Modality Performed Procedure Steps to other Actors that are interested in progress.

The principle of basing the Modality Performed Procedure Step Services on the existing DICOMweb Worklist Service (UPS-RS) has been relaxed to more closely mirror the DIMSE services.

MODALITY SCHEDULED PROCEDURE STEP SERVICE
RESOURCES AND TRANSACTIONS

Resource	URI Template	Description
Modality Scheduled Procedure Steps	/modality-scheduled-procedure-steps	The collection of Modality Scheduled Procedure Steps managed by the origin server.

Transaction Name	Method	Payload		Description
		Request	Success Response	
Search	GET	none	dataset according to PS3.4, Table K.6-1	Searches for Modality Scheduled Procedure Steps

MODALITY SCHEDULED PROCEDURE STEP SERVICE
DIMSE RELATION AND SYNTAX

Transaction	Operation	Reference	DIMSE Service
Search	Query Worklist	PS3.4, K.4	C-FIND

Transaction	Request Syntax
Search	GET SP /modality-scheduled-procedure-steps?{&match*}{&includefield}{&fuzzymatching}{&offset}{&limit} SP version CRLF Accept: 1#media-type CRLF *(header-field CRLF) CRLF

MODALITY PERFORMED PROCEDURE STEP SERVICE
RESOURCES AND TRANSACTIONS

Resource	URI Template	Description
Modality Performed Procedure Step	/modality-performed-procedure-steps/{mppsUID}	A Modality Performed Procedure Step.

Transaction Name	Method	Payload		Description
		Request	**Success Response**	
Create	POST	dataset according to PS3.4, Table F.7.2-1 (N-CREATE)	none	Creates a new Modality Performed Procedure Step
Update	POST	dataset according to PS3.4, Table F.7.2-1 (N-SET)	none	Updates the target Modality Performed Procedure Step
Retrieve	GET	none	dataset according to PS3.4, Table F.8.2-1	Retrieves the target Modality Performed Procedure Step

MODALITY PERFORMED PROCEDURE STEP SERVICE
DIMSE RELATION

Transaction	Operation	Reference	DIMSE Service
Create	Create MPPS Instance	PS3.4, F.7.2.1	N-CREATE
Update	Set MPPS Information	PS3.4, F.7.2.2	N-SET
Retrieve	Get MPPS Information	PS3.4, F.8.2.1	N-GET

MODALITY PERFORMED PROCEDURE STEP SERVICE
SYNTAX

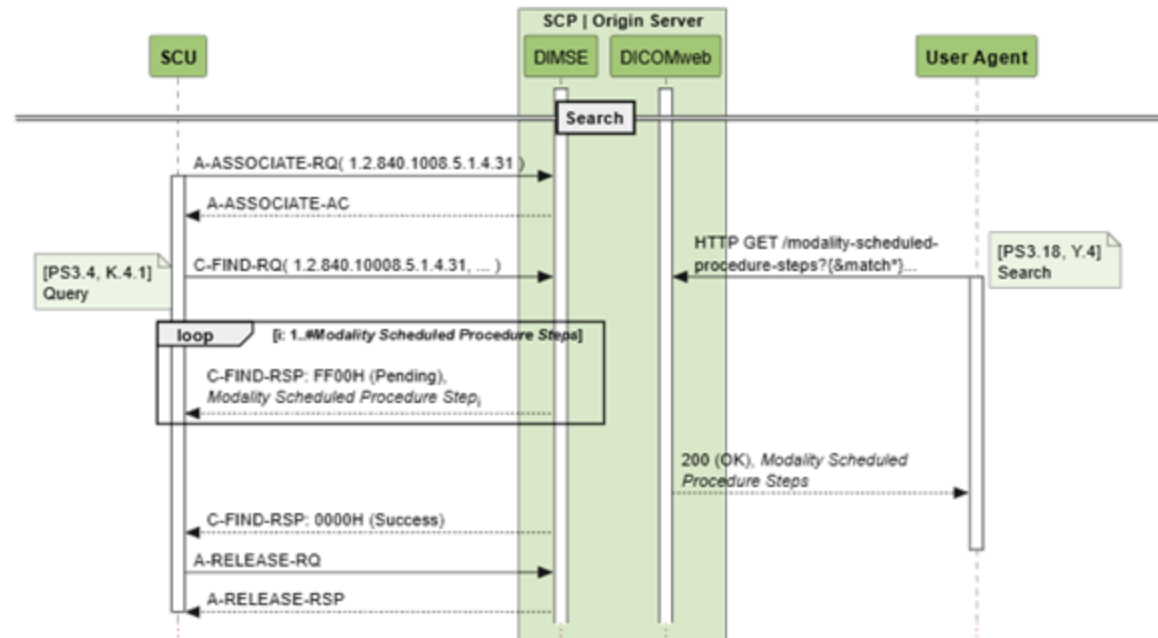| Transaction	Request Syntax
Create	POST SP /modality-performed-procedure-steps/{mppsUID} SP version CRLF Accept: 1#media-type CRLF *(header-field CRLF) CRLF Payload
Update	POST SP /modality-performed-procedure-steps/{mppsUID}/update SP version CRLF Accept: 1#media-type CRLF *(header-field CRLF) CRLF payload
Retrieve	GET SP /modality-performed-procedure-steps/{mppsUID}{?includefield*} SP version CRLF Accept: 1#media-type CRLF *(header-field CRLF) CRLF

MODALITY PROCEDURE STEP SERVICES
SUPPORT OF TRANSACTIONS

Service	Transaction	Support
N.A.	Retrieve Capabilities	Required
Modality Scheduled Procedure Step Service	Search	Required
Modality Performed Procedure Step Service	Create	Required
	Update	Required
	Retrieve	Optional

EXAMPLE OF A DUAL-HEADED SERVER IN MIXED ECO-SYSTEM
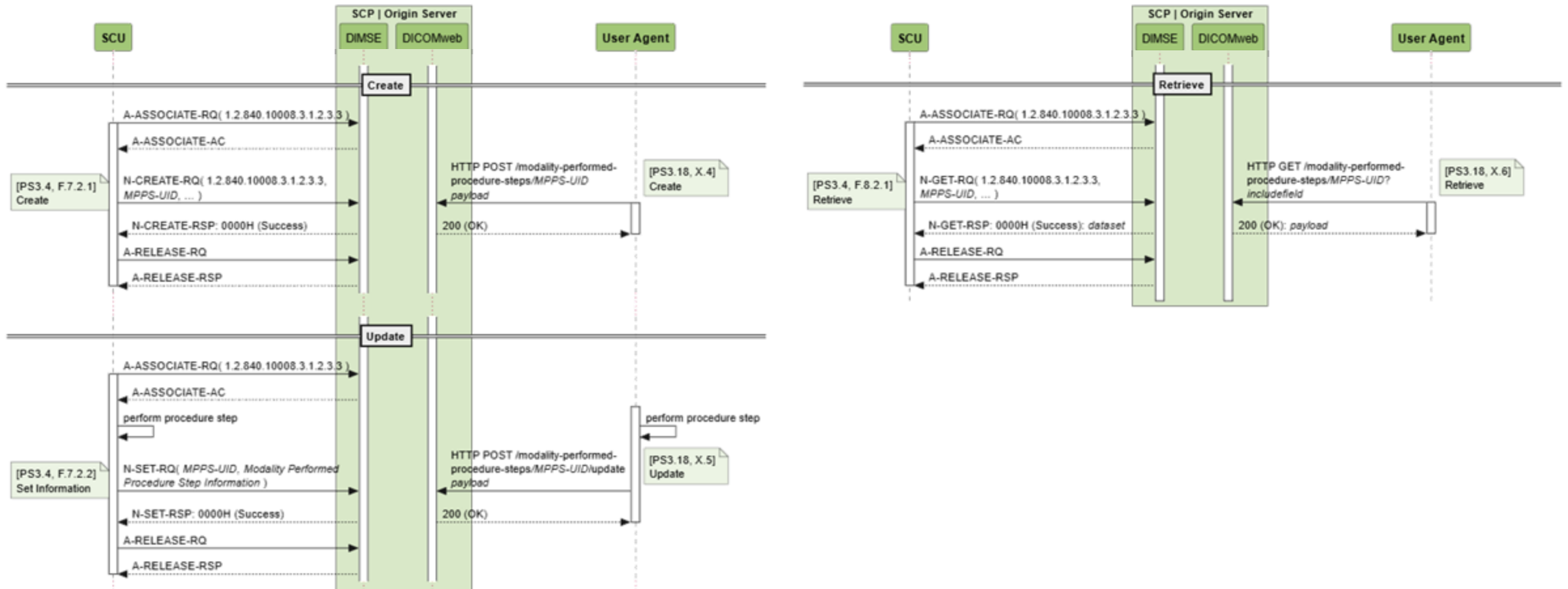## BASIC WORKLIST SERVICE / MODALITY SCHEDULED PROCEDURE STEP SERVICE

A PACS might implement both DIMSE and DICOMweb interfaces to the same procedure step resources.

Note that although some messages are drawn next to each other, this does not mean they need to happen at the same time. It is only done to indicate semantic equivalence.

EXAMPLE OF A DUAL-HEADED SERVER IN MIXED ECO-SYSTEM
MODALITY PERFORMED PROCEDURE STEP SERVICE

REFERENCES

This presentation, the supplement, and the examples (and much more) can be found at

- https://github.com/krotz-dieter/dicomweb-dmwl-mpps