

DICOM Correction Proposal

STATUS	Letter Ballot
Date of Last Update	2024/11/11
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Correction Number	CP-2423
Log Summary: Add missing abbreviation "MPPS" to various Parts	
Name of Standard	PS3.2, PS3.3, PS3.4, PS3.15, PS3.16, PS3.17
Rationale for Correction:	The abbreviation "MPPS" is used in various Parts of the DICOM Standard but not listed in the respective section for "Symbols and Abbreviations". It is proposed to close this gap by adding "MPPS" to the list or replacing it by its long version "Modality Performed Procedure Step" or avoiding the abbreviation in some other way.
Correction Wording:	

Change PS3.2 Chapter 4: add a new entry

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part.

[...]

MPPS **Modality Performed Procedure Step**

[...]

For reference, PS3.2 Section 6.2.2 (unchanged)

6.2.2 Supported DIMSE Services

- Provides a more detailed specification of each SOP Classes supported within the various services (Worklist, **MPPS**, Storage, Query/Retrieve, Print, etc.)
- Provides for each SOP Class related to an Abstract Syntax, a list of any SOP options supported;
- Provides a description of any extensions, specializations, and publicly disclosed privatizations in this implementation;
- Provides a description of any implementation details that may be related to DICOM conformance or interoperability;
- Provides a description of which codes and controlled terminology mechanisms are used.

Change PS3.3 Chapter 4: add a new entry

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the Standard.

[...]

MPPS **Modality Performed Procedure Step**

[...]

Change PS3.3 Section 7.3.1.9

7.3.1.9 Modality Performed Procedure Step

A Performed Procedure Step is an arbitrarily defined unit of service that has actually been performed (not just scheduled). Logically it corresponds to a Scheduled Procedure Step, but real-world conditions may dictate that what is actually performed does not correspond exactly with what was requested or scheduled.

Note

For example, two or more Scheduled Procedure Steps, Requested Procedures or Imaging Service Requests may have been generated by different Referring Physicians but may be satisfied by a single Performed Procedure Step at the discretion of a Performing Physician or Operator. Alternatively, a single Scheduled Procedure Step may need to be satisfied by multiple Performed Procedure Steps on different types or instances of equipment, due to clinical need or failure conditions, or over extended periods of time.

It contains information describing the type of procedure actually performed. This information is represented by the Performed Protocol that may be defined by one or more Protocol Codes.

A Requested Procedure results in the creation of zero or more Performed Procedure Steps.

A Scheduled Procedure Step results in the creation of zero or more Performed Procedure Steps.

The Performed Procedure Step contains information about its state (e.g., in progress, discontinued or completed).

A Modality Performed Procedure Step (**MPPS**) is a Performed Procedure Step that results from activity (such as the acquisition of images from a Patient or other Imaging Subject) on a Modality.

It contains information describing the performance of a step of an imaging procedure, including data about the performance of the procedure itself, and data for billing and material management.

The Modality Performed Procedure Step contains references to zero or more Series of Images and other Composite SOP Instances that may be created as part of the procedure step. A particular Series is part of only one Modality Performed Procedure Step.

The purpose of the Modality Performed Procedure Step is to report what was performed; it does not imply any storage semantics. While the **MPPS** represents a unit of service within a workflow, the specification of the workflow itself is beyond the scope of the Standard, and the MPPS does not identify or control any subsequent activities to be performed.

Note

1. For example, a modality may create both "for processing" images for automated analysis and "for presentation" images for human review from the same acquisition. The Standard does not specify whether the production of these is a single unit of service, or two. A single Modality Performed Procedure Step Instance could list both the "for processing" images and the "for presentation" images, regardless of whether or not both sets of images were stored to the same or different AEs, or indeed were stored at all, since the MPPS is independent of the storage semantics. Alternatively, the modality may treat these two sets of images as two separate units of service, and send two separate MPPS Instances.

A Radiation Dose SR from the irradiation events of an acquisition could be referenced in the same MPPS Instance as that of the acquired images, again irrespective of where such a Radiation Dose Structured Report might be transmitted, if at all. Alternatively, the modality may treat the production of the Radiation Dose SR as a separate unit of service, and report it in a distinct MPPS.

Another example is the case of thin and thick slice CT images acquired from the same acquisition (raw) data. When the reconstruction of both sets of images is prospectively defined and automatically initiated

by the protocol selection, then both sets might be referenced from a single MPPS Instance. However, if the reconstruction of one or the other set is performed retrospectively by manual intervention some time after the acquisition MPPS had been completed, the subsequent Instances will necessarily be referenced in a new MPPS Instance, since the acquisition MPPS cannot be modified once completed.

2. The completion of an MPPS may be a significant event that triggers or enables downstream activity, but it is not the intent to require the modality to be configured to "manage" such activity. The "units of service" that the modality describes in an MPPS, and how the modality relates those Performed Procedure Steps to Scheduled Procedure Steps, are implementation decisions beyond the scope of the Standard. The IHE Radiology Scheduled Workflow Profile [IHE RAD TF-1] provides additional guidance for implementation.
3. An MPPS may describe Instances that were acquired but that have not been, nor may ever be, stored. For example, a modality may be capable of storing a CT acquisition as multiple single-frame CT Image Storage SOP Instances, as a single multi-frame Enhanced CT Image Storage SOP Instance, or as several Enhanced CT Image Storage SOP Instances that together comprise a Concatenation. An MPPS may describe all three possibilities, even though only one choice may ultimately be stored, perhaps depending on the negotiated capabilities of the storage recipient. Alternatively, separate MPPS Instances could be used for different storage SOP Classes.
4. The MPPS contains only the Instances that the modality created, not Instances converted and created subsequently in response to a query (e.g., during legacy conversion).
5. The MPPS is not a substitute for, nor is equivalent to, a Storage Commitment request, nor an Instance Availability Notification.

Change PS3.4 Section F.7.2.1.1

F.7.2.1.1 Modality Performed Procedure Step Subset Specification

[...]

Note

1. The requirement for the final state is that which applies at the time that the Performed Procedure Step Status (0040,0252) is N-SET to a value of COMPLETED or DISCONTINUED, as described in Section F.7.2.2.2. It is only described if it is different from the SCP requirement for the N-CREATE.
2. The Performed Series Sequence (0040,0340) may not be empty (zero length) at the time that the Performed Procedure Step Status (0040,0252) is N-SET to a value of COMPLETED or DISCONTINUED. In other words a Series must exist for every Performed Procedure Step, though it may contain no Images or Non-Image Composite objects, if none were created, as described in Section F.7.2.2.2.
3. Attributes (0040,1006) Placer Order Number/Procedure and (0040,1007) Filler Order Number/Procedure were previously defined in DICOM. They are now retired (see PS3.3-1998).
4. Attributes (0040,2006) and (0040,2007) were previously defined in DICOM. They are now retired (see PS3.3-1998).
5. Only Attributes that are specified in a SOP Instance at N-CREATE may later be updated through the N-SET. If an SCU wishes to use the PPS Discontinuation Reason Code Sequence (0040,0281), it must create that Attribute (zero-length) during **MPPS-N-CREATE**.
6. The Radiation Dose Module was previously defined in DICOM. This is now retired (see PS3.3-2017c).

Change PS3.4 Section F.7.4.1.1

F.7.4.1.1 Operations

Any Attributes for which Attribute Values may be provided (using the N-CREATE Service) by the SCU shall be enumerated in the Conformance Statement.

Any Attributes for which Attribute Values may be provided (using the N-SET Service) by the SCU shall be enumerated in the Conformance Statement.

An implementation that conforms to this SOP Class as an SCU shall specify under which conditions during the performance of the real-world Performed Procedure Step it will create the SOP Class Instance and under which conditions it will set the status value to COMPLETED and DISCONTINUED.

An implementation that conforms to this SOP Class as an SCU shall specify what strategy it applies to group Storage SOP Class Instances referenced in a Performed Procedure Step.

Note

For example, whether or not Radiation Dose SR instances are sent within the same Performed Procedure Step as the images to which it applies, or a different Performed Procedure Step. See the discussion of the Modality Performed Procedure Step in the DICOM ~~r~~Real-~~w~~World ~~m~~Model in PS3.3.

Change PS3.15 Chapter 4: add a new entry

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the Standard.

[...]

MPPS **Modality Performed Procedure Step**

[...]

For reference, PS3.15 Section A.5.3.15 (unchanged)

A.5.3.15 Procedure Record

This message describes the event of a procedure record being created, accessed, modified, accessed, or deleted. This message may only include information about a single patient.

Note

1. DICOM applications often manipulate procedure records, e.g., with **MPPS** update. Modality Worklist query events are described by the Query event message.
2. The same accession number may appear with several order numbers. The Study participant fields or the entire message may be repeated to capture such many to many relationships.

[...]

Change PS3.16 Chapter 4: add a new entry

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the Standard.

[...]

MPPS **Modality Performed Procedure Step**

[...]

For reference, PS3.16 CID 10020 (unchanged)

CID 10020 Source of Projection X-Ray Dose Information

Resources: [HTML](#) | [FHIR JSON](#) | [FHIR XML](#) | [IHE SVS XML](#)

Keyword: SourceOfProjectionXRayDoseInformation
FHIR Keyword: dicom-cid-10020-SourceOfProjectionXRayDoseInformation
Type: Extensible
Version: 20120406
UID: 1.2.840.10008.6.1.1054

Table CID 10020. Source of Projection X-Ray Dose Information

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
DCM	113856	Automated Data Collection		
DCM	113857	Manual Entry		
DCM	113858	MPPS Content		
SCT	15869005	Dosimeter	A-2C090	C0180488
DCM	113866	Copied From Image Attributes		
DCM	113867	Computed From Image Attributes		
DCM	113868	Derived From Human-Readable Reports		
DCM	113940	System Calculated		

Change PS3.17 Chapter 4

4 Symbols and Abbreviations

The following symbols and abbreviations are used in this Part of the Standard.

FHIR HL7 Fast Healthcare Interoperability Resources (draft standard)

MPPS Modality Performed Procedure Step

Change PS3.17 Annex W

W Digital Signatures in Structured Reports Use Cases (Informative)

The scenarios in which Digital Signatures would be used in DICOM Structured Reports include, but are not limited to the following.

Case 1: Human Signed Report and Automatically Signed Evidence.

- a. The archive, after receiving an MPPS complete and determining that it has the complete set of objects created during an acquisition procedure step, creates a signed Key Object Selection Document Instance with secure references to all of the DICOM composite objects that constitute the exam. The Document would include a Digital Signature according to the Basic SR Digital Signatures Secure Use Profile with the Digital Signature Purpose Code Sequence (0400,0401) of (14,_ASTM-sigpurpose, "Source Signature"). It would set the Key Object Selection Document Title of that Instance to (113035, DCM, "Signed Complete Acquisition Content"). Note that the objects that are referenced in the MPPS may or may not have Digital Signatures. By creating the Key Object Selection Document Instance, the archive can in effect add the equivalent of Digital Signatures to the set of objects.

[...]