

DICOM Correction Item

Correction Number		CP-599
Log Summary: Add MPPS information to MWL for Study Date and Time		
Type of Modification	Name of Standard	
Addition	PS 3.3, 3.4 2006	
<p>Rationale for Correction</p> <p>When two modalities use the same MSPS to perform a multi-modality study, neither modality knows how to fill in the common Study level attributes that are not supplied in the MWL, such as Study Date and Time.</p> <p>This forces the receiver (RIS/PACS) of the instances to have to accept that the Study level values encoded in different instances from different modalities have different values when they shouldn't, leading to database update and instance coercion issues.</p> <p>If MPPS is supported, then any MPPS information known to the MWL SCP could be fed back in the SPS, so that the second and subsequent modalities involved would have values to use rather than making up their own, as only the first modality should rightly do.</p> <p>Grouped case (more than one MSPS per MPPS) use-cases can be handled by adding the MPPS information to all relevant MSPS.</p>		
<p>Sections of documents affected</p> <p>PS 3.3 C.4.11, C.4.14, C.4.19, C.4.21</p> <p>PS 3.4 F.7.2.1.3, F.11.2.1.3, K.6.1.2.2, K.6.2.2.2</p>		
Correction Wording:		

PS 3.3 Add Study attributes to the Requested Procedure Module:

C.4.11 Requested Procedure Module

**Table C.4-11
 REQUESTED PROCEDURE MODULE ATTRIBUTES**

Attribute Name	Tag	Attribute Description
...
Study Instance UID	(0020,000D)	Unique identifier to be used to identify the Study
<u>Study Date</u>	<u>(0008,0020)</u>	<u>Date the Study started, if any previous procedure steps within the same study have already been performed.</u>
<u>Study Time</u>	<u>(0008,0030)</u>	<u>Time the Study started, if any previous procedure steps within the same study have already been performed.</u>
...

PS 3.3 Amend the Performed Procedure Step Information Module:

C.4.14 Performed Procedure Step Information

...

**Table C.4-14
 PERFORMED PROCEDURE STEP INFORMATION MODULE ATTRIBUTES**

Attribute Name	Tag	Attribute Description
Performed Station AE Title	(0040,0241)	AE title of the modality on which the Performed Procedure Step was performed.
Performed Station Name	(0040,0242)	An institution defined name for the modality on which the Performed Procedure Step was performed.
Performed Location	(0040,0243)	Description of the location at which the Performed Procedure Step was performed.
Performed Procedure Step Start Date	(0040,0244)	Date on which the Performed Procedure Step started. Note: This value may be used to determine the earliest date to use as the Study Date (0008,0020) in composite instances and in updated Modality Scheduled Procedure Steps in order to allow Study level attributes to have consistent values if additional Procedure Steps are performed.
Performed Procedure Step Start Time	(0040,0245)	Time at which the Performed Procedure Step started. Note: This value may be used to determine the earliest time to use as the Study Time (0008,0030) in composite instances and in updated Modality Scheduled Procedure Steps in order to allow Study level attributes to have consistent values if additional Procedure Steps are performed.
Performed Procedure Step ID	(0040,0253)	User or equipment generated identifier of that part of a Procedure that has been carried out within this step.
Performed Procedure Step End Date	(0040,0250)	Date on which the Performed Procedure Step ended.
Performed Procedure Step End Time	(0040,0251)	Time at which the Performed Procedure Step ended.
Performed Procedure Step Status	(0040,0252)	Contains the state of the Performed Procedure Step. Enumerated Values: IN PROGRESS = Started but not complete DISCONTINUED = Canceled or unsuccessfully terminated COMPLETED = Successfully completed
Performed Procedure Step Description	(0040,0254)	Institution-generated description or classification of the Procedure Step that was performed.
Comments on the Performed Procedure Step	(0040,0280)	User-defined comments on the Performed Procedure Step.

Performed Procedure Type Description	(0040,0255)	A description of the type of procedure performed.
Procedure Code Sequence	(0008,1032)	A sequence that conveys the (single) type of procedure performed.
>Include 'Code Sequence Macro' Table 8.8-1		No Baseline Context ID is defined.
Performed Procedure Step Discontinuation Reason Code Sequence	(0040,0281)	The reason the Performed Procedure Step Status (0040,0252) was set to DISCONTINUED.
>Include 'Code Sequence Macro' Table 8.8-1		Defined Context ID is 9300.

PS 3.3 Amend the General Purpose Results Module:

C.4.19 General Purpose Scheduled Procedure Step Information Module

**Table C.4-19
 GENERAL PURPOSE SCHEDULED PROCEDURE STEP INFORMATION MODULE
 ATTRIBUTES**

Attribute Name	Tag	Attribute Description
...
Study Instance UID	(0020,000D)	Unique Study identification that shall be used for the created Composite SOP Instances resulting from this General Purpose Scheduled Procedure Step. Note: In most cases this will be the same Study Instance UID as for the images instances in the Input Information Sequence (0040,4021).
<u>Study Date</u>	<u>(0008,0020)</u>	<u>Date the Study started, if any previous procedure steps within the same study have already been performed.</u> Note: <u>This value should be the same as that in the instances in the Input Information Sequence (0040,4021).</u>
<u>Study Time</u>	<u>(0008,0030)</u>	<u>Time the Study started, if any previous procedure steps within the same study have already been performed.</u> Note: <u>This value should be the same as that in the instances in the Input Information Sequence (0040,4021).</u>
Multiple Copies Flag	(0040,4006)	This flag indicates that multiple copies have to be made of a Composite SOP Instance that supports the notion of multiple copies. This includes the SR SOP Class. If set the Study Instance UIDs in the Referenced Request Sequence (0040,A370) shall be used for the created multiple copies.

		Enumerated Values: Y = Yes N = No
...

PS 3.3 Amend the General Purpose Results Module:

C.4.21 General Purpose Performed Procedure Step Information Module

**Table C.4.21-1
 GENERAL PURPOSE PERFORMED PROCEDURE STEP INFORMATION MODULE
 ATTRIBUTES**

Attribute Name	Tag	Attribute Description
...
Performed Procedure Step Start Date	(0040,0244)	Date on which the General Purpose Performed Procedure Step started. Note: This value may be used to determine the earliest date to use as the Study Date (0008,0020) in composite instances and in updated General Purpose Scheduled Procedure Steps in order to allow Study level attributes to have consistent values if additional Procedure Steps are performed.
Performed Procedure Step Start Time	(0040,0245)	Time at which the General Purpose Performed Procedure Step started. Note: This value may be used to determine the earliest time to use as the Study Time (0008,0030) in composite instances and in updated General Purpose Scheduled Procedure Steps in order to allow Study level attributes to have consistent values if additional Procedure Steps are performed.
Performed Procedure Step ID	(0040,0253)	User or equipment generated identifier of that part of a Procedure that has been carried out within this procedure step.
Performed Procedure Step End Date	(0040,0250)	Date on which the General Purpose Performed Procedure Step ended.
Performed Procedure Step End Time	(0040,0251)	Time at which the General Purpose Performed Procedure Step ended.
General Purpose Performed Procedure Step Status	(0040,4002)	Contains the state of the Performed Procedure Step. Enumerated Values: IN PROGRESS = Started but not complete DISCONTINUED = Canceled or unsuccessfully terminated COMPLETED = Successfully completed
Performed Procedure Step	(0040,0254)	Institution-generated description or classification of

Description		the Procedure Step that was performed.
Comments on the Performed Procedure Step	(0040,0280)	User-defined comments on the Performed Procedure Step. This attribute shall not be used as a substitute for the code meaning in the Performed Workitem Code Sequence (0040,4019).
Performed Workitem Code Sequence	(0040,4019)	A sequence that conveys the (single) type of procedure performed. Only a single Item shall be permitted in this sequence.
>Include Code Sequence Macro Table 8.8-1		Baseline Context ID is CID 9231.

PS 3.4 Amend the MPPS SCP behavior:

F.7.2.1.3 Service Class Provider

The N-CREATE operation allows the SCU to provide to the SCP selected Attribute values for a specific Modality Performed Procedure Step SOP Instance. This operation shall be invoked through the use of the DIMSE N-CREATE Service used in conjunction with the appropriate Modality Performed Procedure Step SOP Instance.

The SCP shall return, via the N-CREATE response primitive, the N-CREATE Response Status Code applicable to the associated request.

The SCP shall accept N-CREATE request primitives only if the value of the attribute “Performed Procedure Step Status” (0040,0252) is “IN PROGRESS”. If the Performed Procedure Step Status attribute has another value, the SCP shall set the failure status code “Invalid attribute value” (Code: 0106H) with an Attribute List.

Note: The SCP may update ~~the Referenced Performed Procedure Step Sequence Attributes in the referenced Study Management SOP Instance, if it exists, and~~ the scheduling information on which the Modality Worklist is based, including the values of Study Date (0008,0020) and Study Time (0008,0030) using the earliest corresponding values of Performed Procedure Step Date (0040,0244) and Performed Procedure Step Time (0040,0245), in order to achieve consistency of Study level attributes when multiple procedure steps are performed on different devices.

PS 3.4 Amend the GP-PPS SCP behavior:

F.11.2.1.3 Service Class Provider

The N-CREATE operation allows the SCU to provide to the SCP selected Attribute values for a specific General Purpose Performed Procedure Step SOP Instance. This operation shall be invoked through the use of the DIMSE N-CREATE Service used in conjunction with the appropriate General Purpose Performed Procedure Step SOP Instance.

The SCP shall return, via the N-CREATE response primitive, the N-CREATE Response Status Code applicable to the associated request.

The SCP shall accept N-CREATE request primitives only if the value of the Attribute “General Purpose Performed Procedure Step Status” (0040,4002) is “IN PROGRESS”. If the General Purpose Performed Procedure Step Status attribute has another value, the SCP shall set the failure status code “Invalid attribute value” (Code: 0106H) with an Attribute List.

If the General Purpose Performed Procedure Step SOP Instance is related to a general Purpose Scheduled Procedure Step SOP Instance, then the SCP shall accept N-CREATE request primitives only if the value of the Attribute “General Purpose Scheduled Procedure Step Status” (0040,4001) has the value “IN PROGRESS”. If the General Purpose Scheduled Procedure Step Status attribute has another value, the SCP shall send the failure status code as specified in Section F.11.2.1.4.

If a Referenced General Purpose Scheduled Procedure Step Sequence (0040,4016) item is present in the N-CREATE request, then the Referenced General Purpose Scheduled Procedure Step Transaction UID (0040,4023) contained therein shall be the same as the Transaction UID (0008,1195) that identifies the transaction of the General Purpose Scheduled Procedure Step Status (0040,4001) to “IN PROGRESS”. If the Transaction UIDs do not match, the SCP shall send the failure status code as specified in Section F.11.2.1.4.

Note: In the unscheduled case no related General Purpose Scheduled Procedure Step exists, so the rules for the Transaction UID do not apply.

If a Referenced General Purpose Scheduled Procedure Step Sequence (0040,4016) item is present in the N-CREATE request, the SCP shall update the Attribute Resulting General Purpose Performed Procedure Steps Sequence (0040,4015) in the identified General Purpose Scheduled Procedure Step SOP Instance.

Note: The SCP may update the scheduling information on which the General Purpose Worklist is based, including the values of Study Date (0008,0020) and Study Time (0008,0030) using the earliest corresponding values of Performed Procedure Step Date (0040,0244) and Performed Procedure Step Time (0040,0245), in order to achieve consistency of Study level attributes when multiple procedure steps are performed on different devices.

PS 3.4 Amend the MWL attributes:

K.6.1.2.2 Modality Worklist Attributes

Table K.6-1 defines the Attributes of the Modality Worklist Information Model:

**Table K.6-1
 ATTRIBUTES FOR THE MODALITY WORKLIST INFORMATION MODEL**

Description / Module	Tag	Match- ing Key Type	Return Key Type	Remark/Matching Type
...
Requested Procedure				
Requested Procedure ID	(0040,1001)	O	1	
Requested Procedure Description	(0032,1060)	O	1C	The Requested Procedure Description (0032,1060) or the Requested Procedure Code Sequence (0032,1064) or both shall be supported by the SCP.
Requested Procedure Code Sequence	(0032,1064)	O	1C	The Requested Procedure Description (0032,1060) or the Requested Procedure Code

				Sequence (0032,1064) or both shall be supported by the SCP. The Requested Procedure Code Sequence shall contain only a single Item.
>Code Value	(0008,0100)	O	1C	Required if a Sequence Item is present.
>Coding Scheme Designator	(0008,0102)	O	1C	Required if a Sequence Item is present.
>Coding Scheme Version	(0008,0103)	O	3	
>Code Meaning	(0008,0104)	O	3	
Study Instance UID	(0020,000D)	O	1	
Study Date	(0008,0020)	O	3	See note 5.
Study Time	(0008,0030)	O	3	See note 5.
Referenced Study Sequence	(0008,1110)	O	2	
>Referenced SOP Class UID	(0008,1150)	O	1C	Required if a Sequence Item is present.
>Referenced SOP Instance UID	(0008,1155)	O	1C	Required if a Sequence Item is present.
Requested Procedure Priority	(0040,1003)	O	2	
Patient Transport Arrangements	(0040,1004)	O	2	
All other Attributes from the Requested Procedure Module		O	3	
Imaging Service Request				
...

- Notes:
1. Just like Series and Image Entities specified in the Query/Retrieve Service Class either an SCU or an SCP may support optional Matching Key Attributes and/or Type 3 Return Key Attributes which are not included in the Worklist Information Model (i.e. standard or private attributes). This is considered a Standard Extended SOP Class (see PS 3.2).
 2. Each Module contains a Comment Attribute. This may be used to transmit non-structured information, which may be displayed to the operator of the Modality.
 3. The reason for this exclusion is to assure that the attributes that may be present in multiple modules are included only once with the meaning pertaining to only one module (for example, Referenced Study Sequence (0008,1110) shall be included once with the meaning as defined in the Requested Procedure Module).
 4. The use of Specific Character Set is discussed in section K.4.1.1.3.1 and K.4.1.1.3.2.
- 5. The values of Study Date (0008,0020) and Study Time (0008,0030) may be provided in order to achieve consistency of Study level attributes in composite instances generated in multiple performed procedure steps on different devices, and the worklist values may be updated by the SCP based on information received from Modality Performed Procedure Steps or by examining the composite instances generated.**

K.6.2.2.2 General Purpose Worklist Attributes

Table K.6-2 defines the Attributes of the General Purpose Worklist Information Model:

Table K.6-2 Attributes for the General Purpose Worklist Information Model

Description / Module	Tag	Match- ing Key Type	Return Key Type	Remark / Matching Type
...
General Purpose Scheduled Procedure Step Information				
...
Study Instance UID	(0020,000D)	O	1	This is the Study Instance UID that shall be used to identify the Composite SOP Instances resulting from this worklist item.
Study Date	(0008,0020)	O	3	See note 3.
Study Time	(0008,0030)	O	3	See note 3.
Multiple Copies Flag	(0040,4006)	O	1	This Attribute shall be used to determine if multiple copies of Composite SOP Instances have to be created.
All other Attributes from the General Purpose Scheduled Procedure Step Information Module		O	3	
General Purpose Scheduled Procedure Step Relationship				
...

- Notes:
1. The reason for this exclusion is to assure that the attributes that may be present in multiple modules are included only once with the meaning pertaining to only one module (for example, Referenced Study Sequence (0008,1110) shall be included once with the meaning as defined in the Requested Procedure Module).
 2. The use of Specific Character Set is discussed in section K.4.1.1.3.1 and K.4.1.1.3.2.
 3. **The values of Study Date (0008,0020) and Study Time (0008,0030) may be provided in order to achieve consistency of Study level attributes in composite instances generated in multiple performed procedure steps on different devices, and the worklist values may be updated by the SCP based on information received from General Purpose Performed Procedure Steps or by examining the composite instances generated. In the absence of these attributes, the values in the composite instances in the Input Information Sequence (0040,4021) may be used.**