

DICOM Correction Proposal

STATUS	Final Text
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Correction Number	CP-1539																			
Log Summary:	Add Equivalent Scope Code																			
Name of Standard	PS3.3, PS3.6, PS3.19 2016b																			
Rationale for Correction:	<p>There is an increasing need to convey standardized identification of items identified by codes for various specific contexts in addition to the coding used primarily by the user. The Code Sequence Macro has the facility of carrying such additional codes in the Equivalent Code Sequence (0008,0121), introduced by CP1031.</p> <p>Also, define what "equivalence" means.</p> <p>This proposal adds a mechanism to identify the specific context (scope) of equivalent codes when they are introduced for a specific purpose. Any relevant Context IDs defined by clinical trial or other organizations may be used in this coding the purpose.</p> <p>In addition, the description of the each Context Group and each Mapping Resource is factored out into the SOP Common Module, in the same manner as the Coding Scheme Identification Sequence may be used to describe each Coding Scheme used.</p> <p>For example, an anatomic structure representing the Bladder of a patient, coded in the Clinic as (T-74000, SRT, "Urinary bladder structure"), is equivalently identified as (15900, FMA, "Urinary bladder") as required in the scope Clinical Trial Protocol CT1234, administered by Trial Institution ABC.</p>																			
	<table border="1"> <tr> <td><i>Content of Table 8.8-1a. Basic Code Sequence Macro</i></td> <td></td> <td>(T-74000, SRT, "Urinary bladder structure")</td> </tr> <tr> <td>Equivalent Code Sequence</td> <td>(0008,0121)</td> <td></td> </tr> <tr> <td><i>>Content of Table 8.8-1a. Basic Code Sequence Macro</i></td> <td></td> <td>(15900, FMA, "Urinary bladder")</td> </tr> <tr> <td><i>>Context Identifier</i></td> <td>(0008,010F)</td> <td>CT1234</td> </tr> <tr> <td><i>>Mapping Resource</i></td> <td>(0008,0105)</td> <td>99_ABC_INST</td> </tr> <tr> <td><i>>Context Group Version</i></td> <td>(0008,0106)</td> <td>20160316</td> </tr> </table>	<i>Content of Table 8.8-1a. Basic Code Sequence Macro</i>		(T-74000, SRT, "Urinary bladder structure")	Equivalent Code Sequence	(0008,0121)		<i>>Content of Table 8.8-1a. Basic Code Sequence Macro</i>		(15900, FMA, "Urinary bladder")	<i>>Context Identifier</i>	(0008,010F)	CT1234	<i>>Mapping Resource</i>	(0008,0105)	99_ABC_INST	<i>>Context Group Version</i>	(0008,0106)	20160316	
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<i>>Mapping Resource</i>	(0008,0105)	99_ABC_INST																		
<i>>Context Group Version</i>	(0008,0106)	20160316																		

Correction Wording:

In PS3.3, amend Section 8 as follows:

8.4 Mapping Resource

The value of Mapping Resource (0008,0105) denotes the message/terminology Mapping Resource that specifies the Context Group that specifies the Value Set. The Defined Terms for the value of Mapping Resource (0008,0105) shall be:

Defined Terms:

DCMR DICOM Content Mapping Resource

SDM SNOMED DICOM Microglossary (Retired)

PS3.16 specifies the DICOM Content Mapping Resource (DCMR).

Note

Unless otherwise specified, the DCMR is the source of all Context Groups and Templates specified in this Standard.

Mapping Resources may be uniquely identified by Mapping Resource UID (0008,0118).

Private Mapping Resources (those not listed amongst the Defined Terms in this section), may be identified by the prefix "99".

Mapping Resource Name (0008,0122) may contain the name of the Mapping Resource. The value may e.g., denote the Institution or organization that has specified the Value Set.

8.5 Context Group Version

Context Group Version (0008,0106) conveys the version of the Context Group identified by Context Identifier (0008,010F). This Attribute uses VR DT, but for Context Groups defined in PS3.16 the precision of Context Group Version is limited to the day, and the time zone offset is not used.

8.6 Context Identifier and Context UID

The value of Context Identifier (0008,010F) identifies the Context Group defined by Mapping Resource (0008,0105) from which the values of Code Value (0008,0100) (or Long Code Value (0008,0119) or URN Code Value (0008,0120)) and Code Meaning (0008,0104) were selected, or to which Code Value (0008,0100) (or Long Code Value (0008,0119) or URN Code Value (0008,0120)) and Code Meaning (0008,0104) have been added as a private Context Group extension (see Section 8.7). The Context Identifier Attribute uses VR CS, and for Context Groups defined in PS3.16 the value shall be the Context Group Identifier as a string of digits without leading zeros, and does not include the string "CID".

The value of Context UID (0008,0117) uniquely identifies the Context Group. See PS3.6.

Note

Privately defined Context Groups may be identified by Context Identifier and Mapping Resource.

8.7 Context Group Extensions

Context Group Extension Flag (0008,010B) may be used to designate a pair of Code Value (0008,0100) (or Long Code Value (0008,0119) or URN Code Value (0008,0120)) and Code Meaning (0008,0104) as a selection from a private extension of a Context Group. If the Context Group Extension Flag is present, and has a value of "Y", Context Group Extension Creator UID (0008,010D) shall be used to identify the person or organization who created the extension to the Context Group. Context Group Local Version (0008,0107) conveys an implementation-specific private version DateTime of a Context Group that contains private extensions

Note

1. These Attributes provide the means for implementations to extend code sets conveniently, while preserving referential integrity with respect to the original Context Group Version.
2. The locally-defined (private) value of Context Group Local Version (0008,0107) typically would be a more recent date than the standard value of Context Group Version (0008,0106) specified in the standard message/terminology Mapping Resource that defines the Context Group.

8.8 Standard Attribute Sets for Code Sequence Attributes

Table 8.8-1 specifies the default set of Attributes encapsulated in the Items of Code Sequence Attributes. These Attributes comprise the Code Sequence Macro.

Note

The instruction "*Include Table 8.8-1 "Code Sequence Macro Attributes"*" may be used in an Information Object Definition as a concise way to indicate that the attributes of Table 8.8-1 are included in the specification of the Attribute Set of a Sequence of items. Additional constraints on the Code Sequence Data Element (such as a Context Group that defines the value set) may be appended to the "*Include Table 8.8-1 "Code Sequence Macro Attributes"*" instruction.

The default specifications of this Section are overridden within the scope of a Sequence Item or Code Sequence Attribute or IOD by corresponding specifications defined within the scope of that Sequence Item or Code Sequence Attribute or IOD. Additional Attributes may also be specified by the instantiation of the macro.

The Basic Coded Entry Attributes fully define a Coded Entry. If it is desired to convey the list from which a code has been chosen, then the optional Enhanced Encoding Mode Attributes may also be sent.

Table 8.8-1a. Basic Code Sequence Macro Attributes

Attribute Name	Tag	Type	Attribute Description
<i>BASIC CODED ENTRY ATTRIBUTES</i>			
Code Value	(0008,0100)	1C	<u>The identifier of the Coded Entry.</u> See Section 8.1. Shall be present if the code value length is 16 characters or less, and the code value is not a URN or URL.
Coding Scheme Designator	(0008,0102)	1C	<u>The identifier of the coding scheme in which the Coded Entry is defined.</u> See Section 8.2. Shall be present if Code Value (0008,0100) or Long Code Value (0008,0119) is present. May be present otherwise.
Coding Scheme Version	(0008,0103)	1C	<u>An identifier of the version of the coding scheme if necessary to resolve ambiguity.</u> See Section 8.2. Required if the value of Coding Scheme Designator (0008,0102) is present and is not sufficient to identify the Code Value (0008,0100) or Long Code Value (0008,0119) or URN Code Value (0008,0120) unambiguously. May be present otherwise.
Code Meaning	(0008,0104)	1	<u>Text that conveys the meaning of the Coded Entry.</u> See Section 8.3.
Long Code Value	(0008,0119)	1C	<u>The identifier of the Coded Entry.</u> See Section 8.1. Shall be present if Code Value (0008,0100) is not present and the Code Value is not a URN or URL.
URN Code Value	(0008,0120)	1C	<u>The identifier of the Coded Entry.</u> See Section 8.1. Shall be present if Code Value (0008,0100) is not present and the Code Value is a URN or URL.

Table 8.8-1b. Enhanced Code Sequence Macro Attributes

Attribute Name	Tag	Type	Attribute Description
<u>Context Identifier</u>	<u>(0008,010F)</u>	<u>3</u>	<u>The identifier of the Context Group from which the Coded Entry was selected.</u>

			See Section 8.6.
<u>Context UID</u>	(0008,0117)	3	The unique identifier of the Context Group from which the Coded Entry was selected. See Section 8.6.
<u>Mapping Resource</u>	(0008,0105)	1C	The identifier of the Mapping Resource that defines the Context Group from which Coded Entry was selected. See Section 8.4. Required if Context Identifier (0008,010F) is present.
<u>Mapping Resource UID</u>	(0008,0118)	3	The unique identifier of the Mapping Resource that defines the Context Group from which Coded Entry was selected. Uniquely identifies the Mapping Resource that defines the Context Group. Note The unique identifier for the DICOM Content Mapping Resource "DCMR" is defined in PS3.6.
<u>Mapping Resource Name</u>	(0008,0122)	3	The name of the Mapping Resource that defines the Context Group from which Coded Entry was selected. See Section 8.4.
<u>Context Group Version</u>	(0008,0106)	1C	The identifier of the version of the Context Group from which the Coded Entry was selected. See Section 8.5. Required if Context Identifier (0008,010F) is present.
<u>Context Group Extension Flag</u>	(0008,010B)	3	Indicates whether the triplet of Code Value (0008,0100) (or Long Code Value (0008,0119) or URN Code Value (0008,0120))/Coding Scheme Designator (0008,0102)/Code Meaning (0008,0104) is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7. Enumerated Values: Y _____ N _____
<u>Context Group Local Version</u>	(0008,0107)	1C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is "Y".
<u>Context Group Extension Creator UID</u>	(0008,010D)	1C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is "Y".

Table 8.8-1. Code Sequence Macro Attributes

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Attribute Name	Tag	Type	Attribute Description
<i>BASIC CODED ENTRY ATTRIBUTES</i>			
<i>Include Table 8.8-1a</i>			
Equivalent Code Sequence	(0008,0121)	3	Codes that are considered equivalent by the creating system. One or more Items are permitted in this Sequence. See Section 8.9.
<i>>Include Table 8.8-1a</i>			
<i>>Include Table 8.8-1b</i>			

Attribute Name	Tag	Type	Attribute Description
<i>ENHANCED ENCODING MODE</i>			
<i>Include Table 8.8-1b</i>			
Context Identifier	(0008,010F)	3	See Section 8.6.
Context UID	(0008,0117)	3	See Section 8.6.
Mapping Resource	(0008,0105)	4C	See Section 8.4. Required if Context Identifier (0008,010F) is present.
Mapping Resource UID	(0008,0118)	3	Uniquely identifies the Mapping Resource that defines the Context Group. Note The unique identifier for the DICOM Content Mapping Resource "DCMR" is defined in PS3.6.
Context Group Version	(0008,0106)	4C	See Section 8.5. Required if Context Identifier (0008,010F) is present.
Context Group Extension Flag	(0008,010B)	3	Indicates whether the triplet of Code Value (0008,0100) (or Long Code Value (0008,0119) or URN Code Value (0008,0120))/Coding Scheme Designator (0008,0102)/Code Meaning (0008,0104) is selected from a private extension of the Context Group identified in Context Identifier (0008,010F). See Section 8.7. Enumerated Values: Y_____ N_____
Context Group Local Version	(0008,0107)	4C	See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is "Y".
Context Group Extension Creator UID	(0008,010D)	4C	Identifies the person or organization who created an extension to the Context Group. See Section 8.7. Required if the value of Context Group Extension Flag (0008,010B) is "Y".

8.9 Equivalent Code Sequence

The Equivalent Code Sequence (0008,0121) attribute may optionally be used to convey different codes for the same concept.

Equivalence is defined as having the same or similar meaning, and requires that equivalent concepts do not include different aspects, properties, features, characteristics, or parameters.

Note: E.g., the SNOMED and FMA codes for a structure of the breast, (T-04000, SRT, "Breast") and (57983, FMA, "Breast") would be considered equivalent. Neither would be equivalent to concepts that pre-coordinated other aspects such as laterality, e.g., (T-04030, SRT, "Left breast"), or entire body organ, e.g., (T-04009, SRT, "Entire breast").

Some scenarios in which ~~it~~ **is** helpful for the creating system to send equivalent codes include:

- when different representations of the same concept are present in a standard coding scheme, such as the SNOMED-CT and SNOMED-RT and CTV3 style identifiers,
- when the same concept is present in different standard coding schemes, but considered by the creating system to be synonymous, such as anatomical concepts from SNOMED and FMA, and
- when the same concept is present in a local as well as a standard coding scheme, but considered by the creating system to be synonymous, such as a local private procedure code and the same concept in LOINC or SNOMED or RADLEX.

The Attributes of the Enhanced Encoding Mode Macro (Table 8.8-1b) may be used to identify a Context Group from which the codes were selected, such as for a particular cross-institutional, cross-application context for trials, research and knowledge-based applications.

In PS3.3, Section C.12.1 Standard Attribute Sets for Code Sequence Attributes, add the following attributes and text:

C.12.1 SOP Common Module

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Table C.12-1. SOP Common Module Attributes

Attribute Name	Tag	Type	Attribute Description
...
Coding Scheme Identification Sequence	(0008,0110)	3	Sequence of items that map values of Coding Scheme Designator (0008,0102) to an external coding system registration, or to a private or local coding scheme. One or more Items are permitted in this Sequence.
>Coding Scheme Designator	(0008,0102)	1	The value of a Coding Scheme Designator, used in this SOP Instance, which is being mapped.
>Coding Scheme Registry	(0008,0112)	1C	The name of the external registry where further definition of the identified coding scheme may be obtained. Required if coding scheme is registered. Defined Terms: HL7
>Coding Scheme UID	(0008,010C)	1C	The coding scheme UID identifier. Required if coding scheme is identified by an ISO 8824 object identifier compatible with the UI VR.
>Coding Scheme External ID	(0008,0114)	2C	The coding scheme identifier as defined in an external registry. Required if coding scheme is registered and Coding Scheme UID (0008,010C) is not present.
>Coding Scheme Name	(0008,0115)	3	The coding scheme full common name
>Coding Scheme Version	(0008,0103)	3	The coding scheme version associated with the Coding Scheme Designator (0008,0102).
>Coding Scheme Responsible Organization	(0008,0116)	3	Name of the organization responsible for the Coding Scheme. May include organizational contact information.
Context Group Identification Sequence	(0008,0123)	3	Sequence of items that map values of Context Identifier (0008,010F) to an external, private or local

Attribute Name	Tag	Type	Attribute Description
			<u>Context Group.</u> <u>One or more Items are permitted in this Sequence.</u>
<u>>Context Identifier</u>	<u>(0008,010F)</u>	<u>1</u>	<u>The identifier of the Context Group.</u> <u>See Section 8.6.</u>
<u>>Context UID</u>	<u>(0008,0117)</u>	<u>3</u>	<u>The unique identifier of the Context Group .</u> <u>See Section 8.6.</u>
<u>>Mapping Resource</u>	<u>(0008,0105)</u>	<u>1</u>	<u>The identifier of the Mapping Resource that defines the Context Group.</u> <u>See Section 8.4.</u>
<u>>Context Group Version</u>	<u>(0008,0106)</u>	<u>1</u>	<u>The identifier of the version of the Context Group.</u> <u>See Section 8.5.</u>
<u>Mapping Resource Identification Sequence</u>	<u>(0008,0124)</u>	<u>3</u>	<u>Sequence of items that map values of Mapping Resource (0008,0105) to an external, private or local Mapping Resource.</u> <u>One or more Items are permitted in this Sequence.</u>
<u>>Mapping Resource</u>	<u>(0008,0105)</u>	<u>1</u>	<u>The identifier of the Mapping Resource.</u> <u>See Section 8.4.</u>
<u>>Mapping Resource UID</u>	<u>(0008,0118)</u>	<u>3</u>	<u>The unique identifier of the Mapping Resource.</u>
<u>>Mapping Resource Name</u>	<u>(0008,0122)</u>	<u>3</u>	<u>The name of the Mapping Resource.</u> <u>See Section 8.4.</u>

In PS3.6, add the following attributes

<u>(0008,0122)</u>	<u>Mapping Resource Name</u>	<u>MappingResourceName</u>	<u>LO</u>	<u>1</u>
<u>(0008,0123)</u>	<u>Context Group Identification Sequence</u>	<u>ContextGroupIdentificationSe quence</u>	<u>SQ</u>	<u>1</u>
<u>(0008,0124)</u>	<u>Mapping Resource Identification Sequence</u>	<u>MappingResourceIdentificati onSequence</u>	<u>SQ</u>	<u>1</u>

In PS3.19, factor out the same pattern as used in PS3.3, and account for the use of XML elements of the native model in the Name column, as opposed to DICOM keywords for the DICOM Attributes used:

10.1 Coded Terminology

...

Table 10.1-1a. Basic Coded Terminology Macro

<u>Name</u>	<u>Optionality</u>	<u>Cardinality</u>	<u>Description</u>
<u>CodeValue</u>	<u>R</u>	<u>1</u>	<p>The particular code value identifying the referenced term or concept. See Section 8.1 in PS3.3.</p> <p>The same XML Element CodeValue is used regardless of the length or encoding of the code value. I.e., separate XML elements are not used when the value is obtained from Long Code Value (0008,0119) or URN Code Value (0008,0120) rather than Code Value (0008,0100).</p>
<u>CodingSchemeDesignator</u>	<u>R</u>	<u>1</u>	Designates the coding scheme in which the CodeValue is defined. See Section 8.2 in PS3.3.
<u>CodingSchemeVersion</u>	<u>C</u>	<u>1</u>	See Section 8.2 in PS3.3. Required if the CodingSchemeDesignator is not sufficient to identify the CodeValue unambiguously. May be present otherwise.
<u>CodeMeaning</u>	<u>O</u>	<u>0-1</u>	A brief human readable description of what the coded value means. See Section 8.3 in PS3.3.

Table 10.1-1b. Enhanced Coded Terminology Macro

<u>Name</u>	<u>Optionality</u>	<u>Cardinality</u>	<u>Description</u>
<u>ContextIdentifier</u>	<u>O</u>	<u>0-1</u>	Identifies a Context Group defined within a Mapping Resource from which the values of CodeValue and CodeMeaning were selected or have been added as a Private Context Group extension. See Section 8.6 in PS3.3 and Section 8.7 in PS3.3.
<u>ContextUID</u>	<u>O</u>	<u>0-1</u>	Uniquely identifies the Context Group. See Section 8.6 in PS3.3.
<u>MappingResource</u>	<u>C</u>	<u>1</u>	See Section 8.4 in PS3.3. Required if ContextIdentifier is present.
<u>MappingResourceUID</u>	<u>O</u>	<u>0-1</u>	Uniquely identifies the Mapping Resource that defines the Context Group.
<u>MappingResourceName</u>	<u>O</u>	<u>0-1</u>	Name of Mapping Resource like name of an Institution or Organization.
<u>ContextGroupVersion</u>	<u>C</u>	<u>1</u>	See Section 8.5 in PS3.3. Required if ContextIdentifier is present.

<u>Name</u>	<u>Optionality</u>	<u>Cardinality</u>	<u>Description</u>
<u>ContextGroupExtensionFlag</u>	<u>O</u>	<u>0-1</u>	Indicates whether the Coded Term is selected from a private extension of the Context Group identified in the <u>ContextIdentifier</u> . See Section 8.7 in PS3.3. <u>Enumerated Values:</u> <u>"Y"</u> <u>"N"</u>
<u>ContextGroupLocalVersion</u>	<u>C</u>	<u>1</u>	See Section 8.7 in PS3.3. Required if the value of <u>ContextGroupExtensionFlag</u> is "Y".
<u>ContextGroupExtensionCreatorUID</u>	<u>C</u>	<u>1</u>	Identifies the person or organization who created an extension to the Context Group. See Section 8.7 in PS3.3. Required if the value of <u>contextGroupExtensionFlag</u> is "Y".

Table 10.1-1. Coded Terminology Macro

<u>Name</u>	<u>Optionality</u>	<u>Cardinality</u>	<u>Description</u>
<i>BASIC CODED ENTRY ATTRIBUTES</i>			
<u>CodeValue</u>	<u>R</u>	<u>1</u>	The particular code value identifying the referenced term or concept. See Section 8.1 in PS3.3. The same XML Element <u>CodeValue</u> is used regardless of the length or encoding of the code value. I.e., separate XML elements are not used when the value is obtained from Long Code Value (0008,0119) or URN Code Value (0008,0120) rather than Code Value (0008,0100).
<u>CodingSchemeDesignator</u>	<u>R</u>	<u>1</u>	Designates the coding scheme in which the CodeValue is defined. See Section 8.2 in PS3.3.
<u>CodingSchemeVersion</u>	<u>C</u>	<u>1</u>	See Section 8.2 in PS3.3. Required if the <u>CodingSchemeDesignator</u> is not sufficient to identify the <u>CodeValue</u> unambiguously. May be present otherwise.
<u>CodeMeaning</u>	<u>O</u>	<u>0-1</u>	A brief human readable description of what the coded value means. See Section 8.3 in PS3.3.

Name	Optionality	Cardinality	Description
<i><u>Include Table 10.1-1a</u></i>			
<u>DicomAttribute that encodes EquivalentCodeSequence</u>	<u>O</u>	<u>0-1 with 1-n Item</u>	<u>Codes that are considered equivalent by the creating system. See Section 8.9 in PS3.3.</u>
<i>>Include Table 10.1-1a</i>			
<i>>Include Table 10.1-1b</i>			
<i>ENHANCED ENCODING MODE</i>			
<i><u>Include Table 10.1-1b</u></i>			
ContextIdentifier	<u>O</u>	<u>0-1</u>	<u>Identifies a Context Group defined within a Mapping Resource from which the values of CodeValue and CodeMeaning were selected or have been added as a Private Context Group extension. See Section 8.6 in PS3.3 and Section 8.7 in PS3.3.</u>
ContextUID	<u>O</u>	<u>0-1</u>	<u>Uniquely identifies the Context Group. See Section 8.6 in PS3.3.</u>
MappingResource	<u>C</u>	<u>1</u>	<u>See Section 8.4 in PS3.3. Required if ContextIdentifier is present.</u>
MappingResourceUID	<u>O</u>	<u>0-1</u>	<u>Uniquely identifies the Mapping Resource that defines the Context Group.</u>
ContextGroupVersion	<u>C</u>	<u>1</u>	<u>See Section 8.5 in PS3.3. Required if ContextIdentifier is present.</u>
ContextGroupExtensionFlag	<u>O</u>	<u>0-1</u>	<u>Indicates whether the Coded Term is selected from a private extension of the Context Group identified in the ContextIdentifier. See Section 8.7 in PS3.3.</u> <u>Enumerated Values:</u> <u>"Y"</u> <u>"N"</u>
ContextGroupLocalVersion	<u>C</u>	<u>1</u>	<u>See Section 8.7 in PS3.3. Required if the value of ContextGroupExtensionFlag is "Y".</u>
ContextGroupExtensionCreatorUID	<u>C</u>	<u>1</u>	<u>Identifies the person or organization who created an extension to the Context Group. See Section 8.7 in PS3.3.</u>

Name	Optionality	Cardinality	Description
			Required if the value of contextGroupExtensionFlag is "Y".