DICOM Correction Proposal

STATUS	Draft Final Text
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Correction Number	CP-1503
Log Summary: Extension of the Selector Attribute Macro	
Name of Standard PS3.6 2015c	
Rationale for Correction: 1) The existing definition of the Selector Attribute Macro allows an attribute with a VR of SQ to be selected as the Selector Attribute. However, the selection of a specific item in a sequence was not defined. Some applications need to select a specific item of such a sequence, but the Selector Value Number is intended to identify a value in a multi-valued attribute, not an item in a multi-item sequence. So the behavior is basically undefined. To support those use cases the change proposal uses the existing method of pointing at items through the Selector Sequence Pointer and the Selector Sequence Pointer Items. That means the Selector Attribute is empty since we are not selecting an attribute, but we are selecting an item in a sequence. The addition of a condition to the existing Selector Attribute and other attributes does not affect the installed base (if indeed there is any) since selecting attributes of VR SQ (as distinct from non-sequence attributes within items of a sequence) was not defined prior to this CP (i.e., it was possible but behavior with respect to which item was selected was undefined). An alternative would be to introduce a separate attribute to identify an item by number rather than reuse the value number selector is preferable since items and values are not synonymous and the pattern using Selector Sequence Pointer Items has already been established. 2) The use of the value 'zero' as a Value Number was not well defined ('any'). The ability to select all items in a sequence was not spelled out. The Change Proposal clarifies these issues.	
Correction Wording:	

Add to PS 3, chapter 10.17 Selector Attribute Macro

10.17 SELECTOR ATTRIBUTE MACRO

Table 10-20 specifies the Attributes that identify the context for a Data Element Tag that is used as a Selector Attribute (0072,0026) **or the Item(s) of a sequence being selected**. The attribute **or item** may be ~~an attribute~~ nested within one or more Sequences, and/or a Private Attribute. **Any additional semantics regarding the selection is outside the scope of the definition. E.g. a distinction whether a certain statement on the selected content applies to every value or any value out of a multi-value attribute selecting "all" values has to be defined at the place of invocation of the Selector Attribute Macro.**

Table 10-20
SELECTOR ATTRIBUTE MACRO ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
Selector Attribute	(0072,0026)	1**C**	Data Element Tag of the attribute to be referenced. **Required, if the selected content is a single attribute of any VR other than SQ.**
Selector Value Number	(0072,0028)	1**C**	~~Positive~~**Non-negative** integer identifying which value of a multi-valued attribute identified by Selector Attribute (0072,0026) is to be referenced. The value 1 identifies the first value. The value ~~zero~~ **0** identifies ~~any~~ **all** values. **When the Value Multiplicity of the Selector Attribute (0072,0026) is 1 then the value of this attribute shall be 1.** **Required, if the selected content is a single attribute of any VR other than SQ .**
Selector Sequence Pointer	(0072,0052)	1C	Contains the Data Element Tags of the path to the Sequence that contains the Attribute that is identified by Selector Attribute (0072,0026) **or to the Item(s) to be selected in Selector Sequence Pointer Items (0074,1057)**. This attribute shall have the same number of ~~items~~ **values** as the level of nesting of Selector Attribute (0072,0026) **or the selected Item(s)**. Required if Selector Attribute (0072,0026) is nested in one or more Sequences **or is absent**. See Section 10.17.1.1.
Selector Sequence Pointer Private Creator	(0072,0054)	1C	Identification of the creator of a group of private data elements used to encode attributes in the Selector Sequence Pointer (0072,0052). This attribute shall have the same number of ~~items~~**values** as the ~~level of nesting of Selector Sequence Pointer (0072,0052)~~**Attribute (0072,0026)**. For values of the Selector Sequence Pointer (0072,0052) that are not the Data Element Tag of a Private Attribute, the corresponding value in Selector Sequence Pointer Private Creator (0072,0054) shall be empty. Required if Selector Sequence Pointer (0072,0052) is present and one or more of the values of Selector Sequence Pointer (0072,0052) is the Data Element Tag of a Private Attribute. See Section 10.17.1.2.

Attribute Name	Tag	Type	Attribute Description
Selector Sequence Pointer Items	(0074,1057)	1C	Identification of the Item indices in the Selector Sequence Pointer (0072,0052). This attribute shall have the same number of **values** as the ~~level of nesting of Selector Sequence Pointer (0072,0052)~~**Attribute (0072,0026)**. **The value 1 identifies the first Item. The value 0 identifies all Items.** Required if Selector Sequence Pointer (0072,0052) is present. See Section 10.17.1.1.
Selector Attribute Private Creator	(0072,0056)	1C	Identification of the creator of a group of private data elements. Required if the Selector Attribute (0072,0026) value is the Data Element Tag of a Private Attribute. See Section 10.17.1.2.

10.17.1 Selector Attribute Macro Attribute Descriptions

10.17.1.1 Referencing Nested Elements

Examples of use are shown in Table 10-21. **Those examples show the selection of a top level attribute, a nested attribute, one item in a top level sequence, all items in a nested sequence or a specific item in all items of a parent sequence.**

Table 10-21. Selector Attribute Macro Example

Example	Selector Attribute (0072,0026)	Selector Value Number (0072,0028)	Selector Sequence Pointer (0072,0052)	Selector Sequence Pointer Items (0074,1057)
~~Entire~~ Patient's Name **(0010,0010)**	(0010,0010)	~~0~~**1**	absent	absent
Second value (e.g., PRIMARY or SECONDARY) in Image Type Attribute **(0008,0008)**	(0008,0008)	2	absent	absent
~~Entire RT Beam Limiting Device Sequence attribute for the third Beam in an RT Plan~~	~~(300A,00B6)~~	~~0~~	~~(300A,00B0)~~	~~3~~
RT Beam Limiting Device Type **(300A,00B8)** attribute for the second jaw **in Beam Limiting Device Sequence (300A,00B6)** specified for the first Beam in **the Beam Sequence (300A,00B0) of** an RT Plan	(300A,00B8)	~~0~~**1**	(300A,00B0)~~,~~**** (300A,00B6)	1\2

Code value attribute **(0008,0100)** for the first item in View Code Sequence **(0054,0220)**	(0008,0100)	1	(0054,0220)	1
The second Item in the Patient Setup Sequence (300A,0180) in the top level data set.	**absent**	**absent**	**(300A,0180)**	**2**
The second Item in the Beam Limiting Device Sequence (300A,00B6) in third Item in the Beam Sequence (300A,00B0) of an RT Plan	**absent**	**absent**	**(300A,00B0)\ (300A,00B6)**	**3/2**
All Items in the Beam Limiting Device Sequence (300A,00B6) in third Item in the Beam Sequence (300A,00B0) of an RT Plan	**absent**	**absent**	**(300A,00B0)\ (300A,00B6)**	**3/0**
The second Item in the Beam Limiting Device Sequence (300A,00B6) in all Items in the Beam Sequence (300A,00B0) of an RT Plan	**absent**	**absent**	**(300A,00B0)\ (300A,00B6)**	**0/2**

10.17.1.2 Private Attribute References

The Selector Sequence Pointer Private Creator (0072,0054) and the Selector Attribute Private Creator (0072,0056) each have a value that corresponds to the Private Creator Data Element numbers (gggg,00pp), where gggg is odd and pp ranges from 10 to FF. These identify a block of Private Data Elements within the block (gggg,ppxx). When Selector Attribute (0072,0026) or Selector Sequence Pointer (0072,0052) points to a Private Data Element (gggg,ppxx), it shall have the value (gggg,00xx).