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Submission Date	2024/08/21
Correction Number CP-2456	
Log Summary: General handling of known safe private data elements within private sequences	
Name of Standard	
PS3.15	
Rationale for Correction:	
It is not clear how to classify private data elements that are sequences that may contain a mixture of known safe and not safe content within sequence item datasets.	
A rule is added that describes how to handle this situation.	
<i>[Ed.Note: Reconsider consistency of use of Attribute vs. Data Element throughout Annex E.]</i>	
Correction Wording:	

Amend DICOM PS3.15 as follows (changes to existing text are bold and ~~underlined~~ for additions and ~~struckthrough~~ for removals):

E.1.1 De-identifier

...

The Attributes listed in Table E.1-1 for each Profile or Option are contained in Standard IODs, or may be contained in Standard Extended IODs. An implementation claiming conformance to the Basic Application Level Confidentiality Profile as a de-identifier shall protect or retain all instances of the Attributes listed in ???, whether contained in the main dataset or embedded in an Item of a Sequence of Items. The action codes in ??? are used in ???.

E.3.10 Retain Safe Private Option

By definition, Private Attributes contain proprietary information, in many cases the nature of which is known only to the vendor and not publicly documented.

However, some Private Attributes may be necessary for the desired application. For example, specific technique information such as CT helical span pitch, or pixel value transformation, such as PET SUV rescale factors, may only be available in Private Attributes since the information is either not defined in Standard Attributes, or was added to the DICOM Standard after the acquisition device was manufactured.

When this Option is specified in addition to the Basic Application Level Confidentiality Profile, Private Attributes that are known by the de-identifier to be safe from identity leakage shall be retained, together with the Private Creator IDs that are required to fully define the retained Private Attributes; all other Private Attributes shall be removed or processed in the element-specific manner recommended by Deidentification Action (0008,0307), if present within Private Data Element Characteristics Sequence (0008,0300) (see PS3.3 Section C.12.1).

Whether or not an Attribute is known to be safe may be determined by:

- its presence in a block of Private Data Elements with a Value of "SAFE" in Block Identifying Information Status (0008,0303) or individually listed in Nonidentifying Private Elements (gggg,0004) (within Private Data Element Characteristics Sequence (0008,0300); see PS3.3 Section C.12.1)
- its presence in Table E.3.10-1 Safe Private Attributes
- documentation in the Conformance Statement
- some other means.

When this Option is not specified, all Private Attributes shall be removed, as described in ???.

When an entire Sequence (SQ VR) Private Attribute is not known to always only contain safe content, whether that content consists of Standard Attributes or Private Attributes or a combination of both, then when the Retain Safe Private Option is used, any such Sequence Attribute shall be parsed in its entirety and each of the nested Attributes handled on its own merits, rather than removing the Sequence in its entirety without further consideration. Reviewing the content may be a sensible practice to apply even to nominally known safe Private Sequence Attributes.

Note

1. A sample list of Private Attributes thought to be safe is provided here. Vendors do not guarantee them to be safe, and do not commit to sending them in any particular software version (including future products).

Table E.3.10-1. Safe Private Attributes

Data Element	Private Creator	VR	VM	Meaning
(7053,xx00)	Philips PET Private Group	DS	1	SUV Factor - Multiplying Stored Pixel Values by Rescale Slope then this factor results in SUVbw in g/l
...				

Data Element	Private Creator	VR	VM	Meaning
(2001,xx5f)	Philips Imaging DD 001	SQ	1-n	Stack Sequence
...				
(2001,xx61)	Philips Imaging DD 001	CS	1	Series Transmitted
(2001,xx65)	Philips Imaging DD 001	SQ	1-n	Overlay Plane Sequence
(2001,xx66)	Philips Imaging DD 001	SQ	1-n	Image Curve
(2001,xx67)	Philips Imaging DD 001	CS	1	Linear Presentation GI Trafo Shape Sub
(2001,xx68)	Philips Imaging DD 001	SQ	1-n	Modality GI Trafo Sequence
(2001,xx69)	Philips Imaging DD 001	SQ	1-n	Display Shutter Sequence
(2001,xx6a)	Philips Imaging DD 001	SQ	1-n	Spatial Transformation Sequence
(2001,xx6b)	Philips Imaging DD 001	SQ	1-n	Edge Enhancement Sequence
(2001,xx6d)	Philips Imaging DD 001	LO	1	Text Font
(2001,xx6e)	Philips Imaging DD 001	SH	1	Series Type
(2001,xx6f)	Philips Imaging DD 001	SQ	1-n	Mixing Sequence
(2001,xx71)	Philips Imaging DD 001	CS	1	Graphic Constraint
(2001,xx72)	Philips Imaging DD 001	IS	2	Ellips Displ Shut Other Ax Scnd End Pnt
(2001,xx73)	Philips Imaging DD 001	SQ	1-n	Referenced Mask Image Sequence
(2001,xx74)	Philips Imaging DD 001	DS	1-n	Window Center Sub
(2001,xx75)	Philips Imaging DD 001	DS	1-n	Window Width Sub
(2001,xx76)	Philips Imaging DD 001	UL	1	Presentation State Xray Contrast Transfer Taste
(2001,xx77)	Philips Imaging DD 001	CS	1	GI Trafo Type
(2001,xx79)	Philips Imaging DD 001	SQ	1-n	Harmonisation Sequence
...				
(2001,xx9a)	Philips Imaging DD 001	SQ	1-n	Graphic Number Sequence
...				
(2001,xxc5)	Philips Imaging DD 001	SQ	0-1	Mask Image Lut Sequence
(2001,xxc6)	Philips Imaging DD 001	SQ	0-1	Gain Lut Sequence
(2001,xxc7)	Philips Imaging DD 001	SQ	0-1	Contrast Image Lut Sequence
(2001,xxca)	Philips Imaging DD 001	SQ	1	Reversed Modality Lut
...				
(2001,xxe9)	Philips Imaging DD 001	SQ	0-n	Per Frame Voxels Functional Group
...				
(2001,xxf9)	Philips Imaging DD 001	SQ	0-n	Flagging Sequence
(2001,xxfb)	Philips Imaging DD 001	SQ	0-1	Bookmark Sequence
(2001,xxfc)	Philips Imaging DD 001	SQ	0-1	Ris Code Sequence
(2001,xxfd)	Philips Imaging DD 001	SQ	0-n	Workflow Step Sequence
...				
(2001,xx3a)	Philips Imaging DD 002	SQ	1	Ranger Set Sequence
(2001,xx3b)	Philips Imaging DD 002	SQ	0-n	Rox Sequence

Data Element	Private Creator	VR	VM	Meaning
(2001,xx3c)	Philips Imaging DD 002	SQ	1-n	Xray Edge Enhancement Sequence
(2001,xx3d)	Philips Imaging DD 002	SQ	0-1	Edr Lut Sequence
...				
(2001,xx57)	Philips Imaging DD 002	SQ	0-1	Workflow Step Input Sequence
(2001,xx58)	Philips Imaging DD 002	SQ	0-1	Workflow Step Output Sequence
(2001,xx5a)	Philips Imaging DD 002	LO	1	Workflow Step Type
(2001,xx5c)	Philips Imaging DD 002	LO	1	Workflow Id
(2001,xx5d)	Philips Imaging DD 002	UL	1	Pixel Data Representation Rows
(2001,xx5e)	Philips Imaging DD 002	UL	1	Pixel Data Representation Columns
(2001,xx5f)	Philips Imaging DD 002	SQ	0-1	Private Dicom Extension Sequence
(2001,xx63)	Philips Imaging DD 002	ST	1	Isyntax Reference
(2001,xx64)	Philips Imaging DD 002	SQ	0-1	Workflow Step Job Params Sequence
...				
(2001,xx01)	Philips Imaging DD 097	SQ	1	View Geometry
(2001,xx02)	Philips Imaging DD 097	FD	3	Frame Geometry Origin
(2001,xx03)	Philips Imaging DD 097	FD	2	Frame Geometry Extent
(2001,xx04)	Philips Imaging DD 097	FD	6	Frame Geometry Orientation
(2001,xx05)	Philips Imaging DD 097	SQ	1-n	Visual Sequence
(2001,xx06)	Philips Imaging DD 097	SQ	0-n	Cut Sequence
(2001,xx07)	Philips Imaging DD 097	FD	1	Visual Opacity
(2001,xx08)	Philips Imaging DD 097	SQ	1	Opacity Map Sequence
(2001,xx0a)	Philips Imaging DD 097	SQ	1-n	Light Sequence
(2001,xx0b)	Philips Imaging DD 097	SQ	1	Color Map Sequence
(2001,xx0d)	Philips Imaging DD 097	FD	1	Visual Threshold
(2001,xx0e)	Philips Imaging DD 097	SQ	0-n	Scene Sequence
(2001,xx0f)	Philips Imaging DD 097	FD	2	Frame Geometry Slab
(2001,xx12)	Philips Imaging DD 097	SQ	1	Gradient Map Sequence
...				
(2001,xx2e)	Philips Imaging DD 097	SQ	0-1	Volume Mask Sequence
...				
(2001,xx3c)	Philips Imaging DD 097	SQ	1	Intensity Map Sequence
(2001,xx3d)	Philips Imaging DD 097	FD	1-n	Intensity Map Samples
(2001,xx3e)	Philips Imaging DD 097	SQ	0-n	Mesh Sequence
(2001,xx40)	Philips Imaging DD 097	UL	1	Mesh Color
(2001,xx41)	Philips Imaging DD 097	LO	1	Mesh Draw Style
(2001,xx42)	Philips Imaging DD 097	SQ	0-n	Mesh Section Sequence
(2001,xx44)	Philips Imaging DD 097	LO	1	Mesh Section Vertex Connectivity
(2001,xx45)	Philips Imaging DD 097	SL	1	Mesh Section Vertex Size
(2001,xx46)	Philips Imaging DD 097	LO	1	Mesh Section Vertex Format

Data Element	Private Creator	VR	VM	Meaning
(2001,xx47)	Philips Imaging DD 097	OB	1-n	Mesh Section Vertex Data
(2001,xx49)	Philips Imaging DD 097	SQ	1	Referenced Volume Definition Sequence
...			1	
(2001,xxa9)	Philips Imaging DD 097	SQ	0-n	Linear Modality GI Trafo Sequence
(2001,xxaa)	Philips Imaging DD 097	FD	1-n	Volume Slice Offsets
(2001,xxab)	Philips Imaging DD 097	IS	1	Number Of Volume Definitions
(2001,xx00)	Philips Imaging DD 129	SQ	1	Presentation State Sequence
(2001,xx01)	Philips Imaging DD 129	SQ	1	Embedded Original Presentation State Sequence
(2001,xx02)	Philips Imaging DD 129	SQ	0-1	Planar Intersection Sequence
(2001,xx03)	Philips Imaging DD 129	UL	1	Plane Separator Line Color
(2001,xx04)	Philips Imaging DD 129	SQ	1-n	Plane Sequence
...				
(7E01,xx10)	HOLOGIC, Inc.	SQ	1	High Resolution Data Sequence
(7E01,xx11)	HOLOGIC, Inc.	SQ	1	Low Resolution Data Sequence
...				
(0119,xx02)	SIEMENS Ultrasound SC2000	SQ	1	Multi Stream Sequence
(0119,xx03)	SIEMENS Ultrasound SC2000	SQ	1	Acoustic Data Sequence
...				
(0129,xx00)	SIEMENS Ultrasound SC2000	SQ	1	MPR View Sequence
(0129,xx02)	SIEMENS Ultrasound SC2000	UI	1	Bookmark UID
(0129,xx03)	SIEMENS Ultrasound SC2000		1	Plane Origin Vector
(0129,xx04)	SIEMENS Ultrasound SC2000		1	Row Vector
(0129,xx05)	SIEMENS Ultrasound SC2000		1	Column Vector
(0129,xx06)	SIEMENS Ultrasound SC2000	SQ	1	Visualization Sequence
(0129,xx07)	SIEMENS Ultrasound SC2000	UI	1	Bookmark UID
(0129,xx08)	SIEMENS Ultrasound SC2000	OB	1	Visualization Information
(0129,xx09)	SIEMENS Ultrasound SC2000	SQ	1	Application State Sequence
(0129,xx10)	SIEMENS Ultrasound SC2000	OB	1	Application State Information
(0129,xx11)	SIEMENS Ultrasound SC2000	SQ	1	Referenced Bookmark Sequence
(0129,xx12)	SIEMENS Ultrasound SC2000	UI	1	Referenced Bookmark UID
(0129,xx20)	SIEMENS Ultrasound SC2000	SQ	1	Cine Parameters Sequence

2. One approach to retaining Private Attributes safely, either when the VR is encoded explicitly or known from a data dictionary (such as may be derived from published DICOM Conformance Statements or previously encountered instances, perhaps by adaptively extending the data dictionary as new explicit VR instances are received), is to retain those Attributes that are numeric only. For example, one might retain US, SS, UL, SS, FL and FD binary Values, and IS and DS string Values that contain only valid numeric characters. One might assume that other string Value Representations are unsafe in the absence of definite confirmation from the vendor to the contrary; code strings (CS) may be an exception. Bulk binary data in OB Value representations is particularly unsafe, and may often contain entire proprietary format headers in binary or text or XML form that includes the patient's name and other identifying information.

The safe Private Attributes that are retained shall be described in the Conformance Statement.