

1	Status	Final Text
2	Date of Last Update	2018/03/27
3	Person Assigned	David Clunie
4		mailto:dclunie@dclunie.com
5	Submitter Name	David Clunie
6		mailto:dclunie@dclunie.com
7	Submission Date	2017/07/09

8	Correction Number CP-1740	
9	Log Summary: WSI is missing Frame Type	
10	Name of Standard	
11	PS3.3, PS3.6 2018a	
12	Rationale for Correction:	
13	WSI has no functional group to specify FrameType and hence there is uncertainty over conditions that depend on it, e.g., Frame	
14	Content data time and duration attributes that are conditioned on originality.	
15	Add a modality-specific Frame Type functional group macro to be consistent with all the other enhanced multi-frame family IODs.	
16	Correction Wording:	

Amend DICOM PS3.3 as follows (changes to existing text are bold and underlined for additions and ~~struckthrough~~ for removals):

## A.32.8 VL Whole Slide Microscopy Image IOD

### A.32.8.4 VL Whole Slide Microscopy Image Functional Group Macros

Table A.32.8-2 specifies the use of the Functional Group Macros used in the Section C.7.6.16 for the VL Whole Slide Microscopy Image IOD.

**Table A.32.8-2. VL Whole Slide Microscopy Image Functional Group Macros**

Functional Group Macro	Section	Usage
Pixel Measures	C.7.6.16.2.1	M - Shall be used as a Shared Functional Group.
Frame Content	C.7.6.16.2.2	M - Shall not be used as a Shared Functional Group.
Referenced Image	C.7.6.16.2.5	U
Derivation Image	C.7.6.16.2.6	C - Required if the image or frame has been derived from another SOP Instance.
Real World Value Mapping	C.7.6.16.2.11	U
Plane Position (Slide)	C.8.12.6.1	M
Optical Path Identification	C.8.12.6.2	M
Specimen Reference	C.8.12.6.3	U
<u>Whole Slide Microscopy Image Frame Type</u>	C.8.12.9	<u>M - Shall be used as a Shared Functional Group.</u>

### C.8.12.9 Whole Slide Microscopy Image Frame Type Macro

Table C.8.12.9-1 specifies the attributes of the Whole Slide Microscopy Image Frame Type Functional Group Macro.

**Table C.8.12.9-1. Whole Slide Microscopy Image Frame Type Macro Attributes**

<u>Attribute Name</u>	<u>Tag</u>	<u>Type</u>	<u>Attribute Description</u>
<u>Whole Slide Microscopy Image Frame Type Sequence</u>	<u>(0040,0710)</u>	<u>1</u>	<u>Identifies the characteristics of this Whole Slide Microscopy Image frame.</u> <u>Only a single Item shall be included in this Sequence.</u>
<u>&gt;Frame Type</u>	<u>(0008,9007)</u>	<u>1</u>	<u>Type of Frame. A multi-valued attribute analogous to Image Type (0008,0008).</u> <u>Enumerated Values and Defined Terms are the same as those for the four values of Image Type (0008,0008). See Section C.8.12.4.1.</u>

For reference, unchanged:

### C.7.6.16.2.2 Frame Content Macro

Table C.7.6.16-3 specifies the attributes of the Frame Content Functional Group Macro.

This Functional Group Macro may only be part of the Per-frame Functional Groups Sequence (5200,9230) attribute.

**Table C.7.6.16-3. Frame Content Macro Attributes**

Attribute Name	Tag	Type	Attribute Description
Frame Content Sequence	(0020,9111)	1	Identifies general characteristics of this frame.  Only a single Item shall be included in this Sequence.
>Frame Acquisition Number	(0020,9156)	3	A number identifying the single continuous gathering of data over a period of time that resulted in this frame.
>Frame Reference DateTime	(0018,9151)	1C	The point in time that is most representative of when data was acquired for this frame. See Section C.7.6.16.2.2.1 and Section C.7.6.16.2.2.2 for further explanation.  <b>Note</b>  The synchronization of this time with an external clock is specified in the synchronization Module in Acquisition Time synchronized (0018,1800).  Required if Frame Type (0008,9007) Value 1 of this frame is ORIGINAL and the SOP Class UID is not "1.2.840.10008.5.1.4.1.1.2.2" or "1.2.840.10008.5.1.4.1.1.4.4" or "1.2.840.10008.5.1.4.1.1.128.1" (Legacy Converted). May be present otherwise.
>Frame Acquisition DateTime	(0018,9074)	1C	The date and time that the acquisition of data that resulted in this frame started. See Section C.7.6.16.2.2.1 for further explanation.  Required if Frame Type (0008,9007) Value 1 of this frame is ORIGINAL and the SOP Class UID is not "1.2.840.10008.5.1.4.1.1.2.2" or "1.2.840.10008.5.1.4.1.1.4.4" or "1.2.840.10008.5.1.4.1.1.128.1" (Legacy Converted). May be present otherwise.
>Frame Acquisition Duration	(0018,9220)	1C	The actual amount of time [in milliseconds] that was used to acquire data for this frame. See Section C.7.6.16.2.2.1 and Section C.7.6.16.2.2.3 for further explanation.  Required if Frame Type (0008,9007) Value 1 of this frame is ORIGINAL and the SOP Class UID is not "1.2.840.10008.5.1.4.1.1.2.2" or "1.2.840.10008.5.1.4.1.1.4.4" or "1.2.840.10008.5.1.4.1.1.128.1" (Legacy Converted). May be present otherwise.
...	...	...	...

## C.8.12.4 Whole Slide Microscopy Image Module

Table C.8.12.4-1 specifies the Attributes that describe the Whole Slide Microscopy Image Module.

**Table C.8.12.4-1. Whole Slide Microscopy Image Module Attributes**

Attribute Name	Tag	Type	Attribute Description
Image Type	(0008,0008)	1	Image identification characteristics.  See Section C.8.12.4.1.1 for specialization.
...			

### C.8.12.4.1 Whole Slide Microscopy Image Attribute Descriptions

#### C.8.12.4.1.1 Image Type

Image Type (0008,0008) is specified to be Type 1 with the following constraints:

1 Value 1 shall have a value of ORIGINAL or DERIVED

2 Value 2 shall have a value of PRIMARY

3 Value 3 (Image Flavor) shall have the Defined Terms in Table C.8.12.4-2.

4 **Table C.8.12.4-2. Whole Slide Microscopy Image Flavors**

5 LOCALIZER	Collected for the purpose of planning or navigating other images.
6 VOLUME	Set of frames that define a regularly sampled volume
7 LABEL	Purpose of image is to capture the slide label; any non-label area captured is incidental to that
8	purpose.

9 Value 4 (Derived Pixel) shall have the Defined Terms specified in Table C.8.12.4-3.

10 **Table C.8.12.4-3. Whole Slide Microscopy Image Derived Pixels**

11 NONE	No derivation of pixels (original)
12 RESAMPLED	Pixels were derived by down sampling a higher resolution image

13 No additional values shall be present.

14 *Amend DICOM PS3.6 as follows (changes to existing text are bold and underlined for additions and ~~struckthrough~~ for removals):*

## 15 6 Registry of DICOM Data Elements

16 **Table 6-1. Registry of DICOM Data Elements**

17 Tag	Name	Keyword	VR	VM	
18 <b>(0040,0710)</b>	<b><u>Whole Slide Microscopy Image</u></b>	<b><u>WholeSlideMicroscopyImageFrame</u></b>	<b><u>SQ</u></b>	<b><u>1</u></b>	
19	<b><u>Frame Type Sequence</u></b>	<b><u>TypeSequence</u></b>			