

DICOM Correction Item

Correction Number		CP-382
Log Summary: Clarify Concatenation requirements in Enhanced MR		
Type of Modification	Name of Standard	
Clarification	PS 3.3 2003	
Rationale for Correction		
<p>Concatenations were intended to allow a single large SOP Instance to be (conceptually) split into multiple smaller SOP Instances for the purpose of transmission or storage. There was no intent to allow changes to such attributes as those affecting image rendering (the Image Pixel Module) between multiple SOP Instances of a Concatenation.</p> <p>What could or could not change was not explicitly specified apart from the contents of Functional Group macros, leading to questionable interpretations that Image Pixel Module Attributes may change.</p> <p>This correction clarifies that such Attributes shall not change, defines what may change in terms of those few Attributes that need to change, and restates the intention more explicitly in a note.</p>		
Sections of documents affected		
PS 3.3 C.7.6.16.2.2.4		
Correction Wording:		

7.5.1 CONCATENATION

For implementation specific reasons (such as practical limits on the maximum size of an individual SOP Instance) the content of a multi-frame image may need to be split into more than one SOP Instance. These SOP Instances together form a Concatenation, which is a group of SOP Instances within a Series that is uniquely identified by the Concatenation UID (0020,9133).

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C.7.6.16.2.2.4 Concatenations and Stacks

Due to implementation specific reasons (such as maximum object size) the information of a multi-frame image may be split into more than one SOP Instance. These SOP Instances form together a Concatenation. This is a group of SOP Instances within a Series that is uniquely identified by the Concatenation UID (0020,9133).

The Dimension Index Sequence (0020,9222) for each SOP Instance with the same Concatenation UID (0020,9133) shall contain exactly the same tags and values.

In a Concatenation the Dimension Index Sequence (0020,9222) items of the Shared Functional Groups (5200,9229) shall be identical and have the same values for all individual SOP Instances. The items of the Per-frame Functional Groups (5200,9230) shall be identical for all individual SOP Instances but the values may change per frame. **For all other Attributes of all the Modules of the IOD, the same Attributes shall be present and the values shall be identical, with the exception of the following Attributes:**

- **Number of Frames (0028,0008)**
- **Concatenation Frame Offset Number (0020,9228)**

Note: The intent of Concatenations is to split what might have been encoded in a single SOP Instance into smaller fragments for more convenient storage or transmission. All the multiple SOP Instances of a Concatenation should be able to be assembled into a valid single SOP Instance. Hence it is not permitted to change such Attributes as Photometric Interpretation (0028,0004), Rows (0028,0010), Columns (0028,0011), etc.

Stacks describe application-specific groups of frames that have a geometric relationship. Stacks have a Stack ID (0020,9056) that contains a descriptive name that identifies the stack. A Stack ID (0020,9056) may be re-used in another SOP Instance even outside a concatenation. The value of Stack ID (0020,9056) is unique within the scope of a particular Dimension Organization UID (0020,9164) if present, otherwise it is unique within in the scope of a particular Concatenation UID (0020,9133). See Figure C7.6.16-3 for an example.