Correction Number CP-2025
Log Summary: Require Whole Slide OVERVIEW images to be single frame

Name of Standard
PS3.3

Rationale for Correction:
CP 1829 added the OVERVIEW image type, similar to the LABEL and LOCALIZER types, but failed to require that it be single frame as intended.

Also, it may not be obvious that a Dimension Organization Type of TILED_FULL is not applicable to these single frame images whose spatial extent may not match the Total Pixel Matrix.

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

C.8.12.4 Whole Slide Microscopy Image Module

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

<table>
<thead>
<tr>
<th>Attribute Name</th>
<th>Tag</th>
<th>Type</th>
<th>Attribute Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Image Type</td>
<td>(0008,0008)</td>
<td>1</td>
<td>Image identification characteristics. See Section C.8.12.4.1.1 for specialization.</td>
</tr>
<tr>
<td>Number of Frames</td>
<td>(0028,0008)</td>
<td>1</td>
<td>Number of frames in a multi-frame image. Enumerated Values if Image Type (0008,0008) Value 3 is LOCALIZER or LABEL or OVERVIEW: 1</td>
</tr>
</tbody>
</table>

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:

- Value 1 shall have a value of ORIGINAL or DERIVED
- Value 2 shall have a value of PRIMARY
- Value 3 (Image Flavor) shall have the Defined Terms in Table C.8.12.4-2.

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

<table>
<thead>
<tr>
<th>LOCALIZER</th>
<th>Collected for the purpose of planning or navigating other images; provides frame-level navigational features.</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOLUME</td>
<td>Set of frames that define a regularly sampled volume</td>
</tr>
<tr>
<td>LABEL</td>
<td>Purpose of image is to capture the slide label only; non-label area shall not be present; the label is shown in ???.</td>
</tr>
<tr>
<td>OVERVIEW</td>
<td>Purpose of image is to provide an overview of the entire glass slide; shall include the label, the specimen and the empty space that are shown in ???. Note</td>
</tr>
<tr>
<td></td>
<td>One purpose of the OVERVIEW image is to allow visual quality control to assure that tissue fragments have not been omitted when selecting areas (manually or automatically) to digitize at high resolution. The OVERVIEW image is distinct from the lowest resolution VOLUME image(s) of WSI pyramids.</td>
</tr>
</tbody>
</table>

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

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

<table>
<thead>
<tr>
<th>NONE</th>
<th>No derivation of pixels (original)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESAMPLED</td>
<td>Pixels were derived by down sampling a higher resolution image</td>
</tr>
</tbody>
</table>

No additional values shall be present.
C.7.6.17.3 Spatial Location and Optical Path of Tiled Images

If Dimension Organization Type (0020,9311) is present with a value of TILED_FULL, then the Per-Frame Functional Group Macros that would otherwise describe the spatial location of each tile explicitly (e.g., the X, Y and Z offsets from the origin in the Slide Coordinate System Plane Position (Slide)), and the optical path, may be omitted.

A value of TILED_FULL indicates that the frames across all Instances of a Concatentation, or a single Instance in the absence of a Concatenation, comprise a non-sparse non-overlapping representation of an entire rectangular region, and are sequentially encoded as successive frames in Pixel Data (7FE0,0010) in an implicit order varying:

- first along the row direction from left to right, where the row direction is defined in the Slide Coordinate System by the first three values of Image Orientation (Slide) (0048,0102),
- then along the column direction from top to bottom, where the column direction is defined in the Slide Coordinate System by the second three values of Image Orientation (Slide) (0048,0102),
- then along the depth direction from the glass slide towards the coverslip, where the depth direction is defined in the Slide Coordinate System from zero to positive,
- then along optical paths, where the direction is defined by successive Items of the Optical Path Sequence (0048,0105) in the order in which they are listed in that Sequence.

If Dimension Organization Type (0020,9311) is absent or has a value of TILED_SPARSE, then the spatial location of each tile is explicitly encoded using information in the Per-Frame Functional Group Sequence, and the recipient shall not make any assumption about the spatial position or optical path or order of the encoded frames but shall rely on the values of the relevant Per-Frame Functional Group Macro.

**Note**

Dimension Organization Type (0020,9311) is not applicable to images with an Image Type (0008,0008) Value 3 of LOCALIZER, LABEL and OVERVIEW, which are single frame and may have a spatial extent that is not the same as the Total Pixel Matrix.