### Correction Proposal Form

<table>
<thead>
<tr>
<th>Tracking Information - Administration Use Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correction Proposal Number</td>
</tr>
<tr>
<td>STATUS</td>
</tr>
<tr>
<td>Date of Last Update</td>
</tr>
<tr>
<td>Person Assigned</td>
</tr>
<tr>
<td>Submitter Name</td>
</tr>
<tr>
<td>Submission date</td>
</tr>
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- **Correction Number**: CP-265
- **Log Summary**: Modify numeric measurement templates
- **Type of Modification**: Clarification
- **Name of Standard**: PS 3.16

### Rationale for Correction

The Templates specified for numeric measurement under TID 2000 require clarification for measurements made on images.

1. **In TID 1400**, Linear measurements do not provide for measurements across multiple images (e.g., ends of a linear path in different cross-sectional planes). This CP provides for linear paths to be defined by SCOORDs of vertices in multiple images. [Note: By virtue of the current definition of TID 1402, implementations handling TID 2000 must deal with multiple SCOORDs subsidiary to a NUM.]

2. The SCOORD content item (Row 2) in the Linear Measurement Template is specified with Requirement Type of “M”, mandatory. This is intended to be a template for general use, and there are use cases where a numeric measurement may be defined without having the capability to associate the measurement with a specific coordinate path on an image. This content item should be “U”, user optional. [Note: The corresponding SCOORD content item in TID 1401 Area Measurement Template is “MC”, required only with concept name “Area of Defined Region” for the numeric measurement, and in TID 1402 Volume Measurement Template is “U”.]

3. **In TID 1402**, Volumes may be represented by intersection with the identified image, rather than projection. [Note that this may be implied by Value Multiplicity of 1-n on the Volume SCOORDs.] This CP clarifies that use.

4. **Definition of Concept Names for SCOORDs are incomplete** (Defined vs. Enumerated). Similarly in the Path definition, "can be" might imply Defined (can be this, or can be something else) or Enumerated (can only be this). This CP clarifies those items.

### Sections of documents affected

PS 3.16 Annex A and D

### Correction Wording:
## TID 1400 Linear Measurement Template

<table>
<thead>
<tr>
<th>NL</th>
<th>Rel with Parent</th>
<th>VT</th>
<th>Concept Name</th>
<th>VM</th>
<th>Req Type</th>
<th>Condition</th>
<th>Value Set Constraint</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NUM</td>
<td>DCID (7470) “Linear Measurements”</td>
<td>1 M</td>
<td></td>
<td></td>
<td>UNITS = DCID(7460) “Units of Linear Measurement”</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>INFERRED FROM</td>
<td>SCOORD EV (121055, DCM, “Path”)</td>
<td>1 M UC XOR Row 5</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>R- SELECTED FROM</td>
<td>MAGE</td>
<td>1 MC XOR Row 4</td>
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<td>4</td>
<td>SELECTED FROM</td>
<td>MAGE</td>
<td>1 MC XOR Row 3</td>
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</tr>
<tr>
<td>5</td>
<td>INFERRED FROM</td>
<td>SCOORD EV (121230, DCM, “Path Vertex”)</td>
<td>2-n UC XOR Row 2</td>
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<tr>
<td>6</td>
<td>R- SELECTED FROM</td>
<td>MAGE</td>
<td>1 MC XOR Row 7</td>
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<td>7</td>
<td>SELECTED FROM</td>
<td>MAGE</td>
<td>1 MC XOR Row 6</td>
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### Content Item Descriptions

#### Row 2 “Path”
Path shall represent the measured path or a projection of the measured path in the image. The Graphic Type (0070,0023) of the Path SCOORD can be:  
- an open POLYLINE with two different points (to measure length, diameter, distance, proximity, etc),  
- a CIRCLE or ELLIPSE (to measure circumference) or  
- an open or closed POLYLINE (closed polygon) to measure path length (open) or perimeter (closed).

#### Row 5 “Path Vertex”
A measured path that traverses two or more images (e.g., the ends of the path are in different cross-sectional plane images) shall be identified by vertices along the path. The Path Vertices shall be ordered by the order of their SCOORD Content Items to identify the measured path. The Graphic Type (0070,0023) of each SCOORD shall be POINT

## TID 1401 Area Measurement Template

<table>
<thead>
<tr>
<th>NL</th>
<th>Rel with Parent</th>
<th>VT</th>
<th>Concept Name</th>
<th>VM</th>
<th>Req Type</th>
<th>Condition</th>
<th>Value Set Constraint</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>NUM</td>
<td>DCID (CID 7471) “Area Measurements”</td>
<td>1 M</td>
<td></td>
<td></td>
<td>Value shall be &gt; 0 UNITS = DCID (7461) “Units of Area Measurement”</td>
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<tr>
<td>2</td>
<td>INFERRED FROM</td>
<td>SCOORD EV (121056, DCM, “Area Outline”)</td>
<td>1 MC</td>
<td>Shall be present if concept name of Row 1 is (121202, DCM, “Area of Defined Region”), May be present otherwise.</td>
<td>Graphic data Type shall not be MULTIPOINT</td>
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<td>Concept Name</td>
<td>VM</td>
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<td>Condition</td>
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<td>----------</td>
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<td>---------------------</td>
</tr>
<tr>
<td>3</td>
<td>&gt;&gt;</td>
<td>R-SELECTED FROM</td>
<td>IMAGE</td>
<td>1</td>
<td>MC</td>
<td>XOR Row 4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>&gt;&gt;</td>
<td>SELECTED FROM</td>
<td>IMAGE</td>
<td>1</td>
<td>MC</td>
<td>XOR Row 3</td>
<td></td>
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**Content Item Descriptions**

**Row 2 "Area Outline"**

A Graphic Data Type of POINT implies that the object is a single pixel and the object’s area is the area of the pixel. Otherwise the type shall be a closed POLYLINE (start and end point the same) or a CIRCLE or an ELLIPSE.

**TID 1402 Volume Measurement Template**

**TID 1402**

**VOLUME MEASUREMENT**

<table>
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<th>Req Type</th>
<th>Condition</th>
<th>Value Set Constraint</th>
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<tbody>
<tr>
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<td></td>
<td>NUM</td>
<td>DCID (CID 7472) “Volume Measurements”</td>
<td>1</td>
<td>M</td>
<td></td>
<td>Value shall be &gt; 0 UNITS = DCID(7462) “Units of Volume Measurement”</td>
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<td>&gt;&gt;</td>
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<td>SCOORD</td>
<td>EV (121057, DCM, “Perimeter Outline”)</td>
<td>1-n</td>
<td>UC</td>
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<tr>
<td>3</td>
<td>&gt;&gt;</td>
<td>R-SELECTED FROM</td>
<td>IMAGE</td>
<td>1</td>
<td>MC</td>
<td>XOR Row 4</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>&gt;&gt;</td>
<td>SELECTED FROM</td>
<td>IMAGE</td>
<td>1</td>
<td>MC</td>
<td>XOR Row 3</td>
<td></td>
</tr>
</tbody>
</table>

**Content Item Descriptions**

**Row 2 "Perimeter Outline"**

The two dimensional perimeter of the volume’s intersection with or projection into the image.

A Graphic Data Type of POINT implies that the volume’s intersection or projection in a plane is a single pixel. A single pixel projection perimeter cannot cause a volume calculation to become 0.

Otherwise the type shall be a closed POLYLINE (start and end point the same) or a CIRCLE or an ELLIPSE.
## DICOM Code Definitions (Coding Scheme Designator “DCM” Coding Scheme Version “01”)

<table>
<thead>
<tr>
<th>Code Value</th>
<th>Code Meaning</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>121230</td>
<td>Path Vertex</td>
<td>Coordinates of a point on a defined path</td>
</tr>
</tbody>
</table>