DICOM Correction Proposal

STATUS	New
Date of Last Update	2024/10/30
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Correction Number CP-2433
Log Summary: Correct PS 3.3 section C.20.3.1.3 Vector Grid Data memory layout
Name of Standard PS 3.3 2024b C.20.3.1
Rationale for Correction: A multi-dimensional array indexed as [i,j,k], when stored linearly in memory, can have i or k as the most rapidly varying index. Why not just say which? The existing text talks about "vector planes". This is ambiguous, because a 3D rectangular grid can be represented as a stack of planes in three different ways: planes perpendicular to the X-axis, Y-axis, or Z-axis.
Correction Wording: Delete this sentence: "The order of vectors encoded for each vector plane shall be left to right, top to bottom, i.e., the upper left vector (labeled 1,1) is encoded first followed by the remainder of row 1, followed by the first vector of row 2 (labeled 2,1) then the remainder of row 2 and so on." Replace with: The order of vectors in the vector grid data shall be indexed with i as the most rapidly varying index. Thus the index into the grid data for a point with indices (i, j, k) shall be k * Y_D * X_D + j * X_D + i This makes it completely unambiguous.

Modify PS3.3 Section C.20.3.1.3 Vector Grid Data as shown

The order of vectors encoded for each vector plane shall be left to right, top to bottom, i.e., the upper left vector (labeled 1,1) is encoded first followed by the remainder of row 1, followed by the first vector of row 2 (labeled 2,1) then the remainder of row 2 and so on. **I.e., the index into the grid data for a point with indices (i, j, k) is**

$$\boldsymbol{index = k * Y_D * X_D + j * X_D + i}$$