6.2.2 Unknown (UN) Value Representation

The Unknown (UN) VR shall only be used for Private Attribute Data Elements and Standard Data Elements previously encoded as some DICOM VR other than UN using the DICOM Default Transfer Syntax (Implicit VR Little Endian), and whose Value Representation is currently unknown, or whose known Value Representation is none of OB, OD, OF, OW, SQ, UC, UR or UT and whose value length exceeds 65534 ($2^{16}$-2) and therefore cannot be encoded as a 16-bit unsigned integer in the Value Length Field defined for the known Value Representation (see section 7.2.1). As long as the VR is unknown the Value Field is insensitive to Little/Big Endian byte ordering and shall not be ‘byte-swapped’ (see section 7.3). In the case of undefined length sequences, the value shall remain in implicit VR form. See section 7.8 for a description of Private Data Attribute Elements and section 10 and Annex A for a discussion of Transfer Syntaxes.

The UN VR shall not be used for Private Creator Data Elements (i.e. the VR is equal to LO, see section 7.8.1).
The UN VR shall not be used for File Meta Information Data Elements (any Tag (0002,xxxx), see PS 3.10).

Notes:
1. All other (non-default) DICOM Transfer Syntaxes employ explicit VR in their encoding, and therefore any Private and/or Standard Data Element Value Field Attribute value encoded and decoded using any Transfer Syntax other than the default, and not having been translated to the DICOM Default Transfer Syntax default in the interim, will have a known VR.
2. If at some point an application knows the actual VR for an Attribute of VR UN (e.g. has its own applicable data dictionary), it can assume that the Value Field of the Attribute is encoded in Little Endian byte ordering with implicit VR encoding, irrespective of the current Transfer Syntax.
3. This VR of UN is needed when an explicit VR must be given to a Data Element whose Value Representation is unknown (e.g. store and forward). **UN is a means to explicitly indicate that the Value Representation of a Data Element is unknown.**
4. **This VR of UN is also needed for the encoding of Data Elements with explicit VR whose value length exceeds 65534 \( (2^{16} - 2) \) (FFEH, the largest even length unsigned 16 bit number) but which are defined to have a 16 bit explicit VR length field.**
5. The length field of the Value Representation of UN may contain the value of **“unknown length” “Undefined Length**, in which case the contents can be assumed to be encoded with implicit VR. See section 7.5.1 to determine how to parse Data Elements with an **unknown length Undefined Length.**
6. **An example of a Standard Data Element using a UN VR is a Type 3 or Type U Standard Attribute added to an SOP Class definition.** An existing application that does not support that new Attribute (and encounters it) could convert the VR to UN.