

DICOM Correction Proposal

STATUS	Letter Ballot
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Submission Date	2013/08/14

Correction Number	CP-1324
Log Summary:	Add a new Value Representation "UR" for URI/URLs
Name of Standard:	PS 3.5 2011
Rationale for Correction:	<p>URIs and URLs are becoming an important part of the standard in PS 3.18 and PS 3.19 and adding a Value Representation "UR" for them will help insure that they have the correct syntax. Also note that RFC 3986 <i>Uniform Resource Identifier (URI): Generic Syntax</i> has superseded RFC 2396.</p> <p>WG-06 noted that the VRs of existing tags almost never change, but that there have been changes in the past when it was deemed that the change was important, and would be unlikely to have significant impact on existing studies. WG-06 believes that this is such a case. The four tags affected by this change are all relatively new. The only current studies that might be affected are those using non-default character repertoires, which will be in error unless they are parsed as URIs.</p> <p>There are four attributes affected by this CP: Retrieve URL (0008,1190), Pixel Data Provider URL (0028,7FE0), Retrieve URI (0040,E010), and Contact URI (0074,100a).</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. The Value Multiplicity of the Value Representation "UR" shall be 1. 2. URL is included in the definition because some tags specify that the value must be a URL. 3. URI/URLs can be encoded using different character repertoires. (See IETF RFC 3987 Internationalization of URIs and RFC 5890 Internationalization of Domain Names and 5891) 4. The maximum length of the value field of an attribute with a VR of "UR" is defined to be 2³²-2).
Correction Wording:	

Update PS 3.3 Table 10-3b REFERENCED INSTANCES AND ACCESS MACRO ATTRIBUTES

>Retrieve URI	(0040,E010)	1	Retrieval access path to the referenced instance(s). Includes fully specified scheme, authority, path, and query in accordance with RFC 2396. <p style="text-align: center;"><u>Note: The VR of this attribute has changed from UT to UR.</u></p>
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Update PS 3.3 Table C.4.23-1 INSTANCE AVAILABILITY NOTIFICATION MODULE ATTRIBUTES

>>Retrieve URI	(0040,E010)	Retrieval access path to the referenced SOP instance(s). Includes fully specified scheme,
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		authority, path, and query in accordance with RFC 2396. Note: The VR of this attribute has changed from UT to UR.
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Update PS 3.3 Table C.7-11a IMAGE PIXEL MODULE ATTRIBUTES

Attribute Name	Tag	Type	Attribute Description
<i>Include 'Image Pixel Macro' Table C.7-11b</i>			
Pixel Data Provider URL	(0028,7FE0)	1C	A URL of a provider service that supplies the pixel data of the Image. Required if the image is to be transferred in one of the following presentation contexts identified by Transfer Syntax UID: 1.2.840.10008.1.2.4.94 (DICOM JPIP Referenced Transfer Syntax) 1.2.840.10008.1.2.4.95 (DICOM JPIP Referenced Deflate Transfer Syntax) Note: The VR of this attribute has changed from UT to UR.

Update PS 3.3 Table C.12-1 SOP COMMON MODULE ATTRIBUTES

>Retrieve URI	(0040,E010)	3	Retrieval access path to HL7 Structured Document. Includes fully specified scheme, authority, path, and query in accordance with RFC 2396 Note: The VR of this attribute has changed from UT to UR.
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Update PS 3.3 Table C.26-1 PRODUCT CHARACTERISTICS MODULE ATTRIBUTES

>Retrieve URI	(0040,E010)	Retrieval access path to Product Label Document. Includes fully specified scheme, authority, path, and query in accordance with RFC 2396 Note: The VR of this attribute has changed from UT to UR.
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Update PS 3.3 Table C.30.1-1 Unified Procedure Step Progress Information Module Attributes

>>Contact URI	(0074,100a)	URI to communicate with performer of the procedure in progress. Any URI (telephone number, URL, etc.) is permitted. Note: The VR of this attribute has changed from UT to UR.
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Update PS 3.5 Section 2, Normative references

~~IETF RFC2396 Uniform Resource Identifiers (URI): Generic Syntax~~

~~Note: RFC 2396 is available from "<http://www.ietf.org/rfc/rfc2396.txt>".~~

IETF RFC3986 Uniform Resource Identifiers (URI): Generic Syntax

Note: RFC 3986 is available at "<http://www.ietf.org/rfc/rfc3986.txt>".

Append at end of PS 3.5 Section 2, Normative references

IETF RFC3887 Internationalized Resource Identifiers (IRIs)

Note: RFC 3887 is available at "<http://www.ietf.org/rfc/rfc3887.txt>".

IETF RFC5890 Internationalized Domain Names for Applications (IDNA): Definitions and Document Framework

Note: RFC 5890 is available at "<http://www.ietf.org/rfc/rfc5890.txt>".

IETF RFC5891 Internationalized Domain Names in Applications (IDNA): Protocol

Note: RFC 5891 is available at "<http://www.ietf.org/rfc/rfc5891.txt>".

Append to PS 3.5 Section 4 Symbols and abbreviations

URI/URL Uniform Resource Identifier / Locator

Update PS 3.5 Section 6.1.2.2 with the following:

(Long Text), PN (Person Name), **UR (URI/URL)** or UT (Unlimited Text) the default character repertoire may be extended

Update PS 3.5 Section 6.1.2.3 with the following:

PN, **UR** and UT with one of the single-byte codes defined in PS3.3.

Update PS 3.5 Section 6.1.2.3 with the following:

shall only be used in character strings with Value Representations of **UT, ST and LT, ST, UR and UT** (see Section 6.2).

Update PS 3.5 Section 6.1.2.4 with the following:

(Long Text), **UR (URI/URL)**, UT (Unlimited Text) or PN (Person Name), the default character repertoire or the character

Insert row below into PS 3.5 Section 6.2, Table 6.2-1 after UN and before US

<u>UR Universal Resource Identifier or Universal Resource</u>	<u>A string of characters that identifies a URI or a URL as defined in IETF RFC 3986 "Uniform Resource</u>	<u>The subset of the Default Character Repertoire required for the URI as defined</u>	<u>2³²-2 bytes maximum Note: limited only by the size of the maximum unsigned integer representable in a 32</u>
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<u>Locator (URI/URL)</u>	<u>Identifier (URI): Generic Syntax</u> . Leading spaces are not allowed. Trailing spaces shall be ignored. Data Elements with this VR shall not be multi-valued and therefore character code 5CH (the BACKSLASH "\ in ISO-IR 6) may be used. <u>Note: Both absolute and relative URIs are permitted. If the URI is relative, then it is relative to the base URI of the object within which it is contained.</u>	<u>in IETF RFC 3986 Section 2.</u> <u>Note: Reserved characters are "percent encoded".</u>	<u>bit VL field minus one, since FFFFFFFFH is reserved</u>
...			
UT Unlimited Text	A character string that may contain one or more paragraphs. It may contain the Graphic Character set and the Control Characters, CR, LF, FF, and ESC. It may be padded with trailing spaces, which may be ignored, but leading spaces are considered to be significant. Data Elements with this VR shall not be multi-valued and therefore character code 5CH (the BACKSLASH "\ in ISO-IR 6) may be used.	Default Character Repertoire and/or as defined by (0008,0005).	232-2 bytes maximum See Note 2

Update PS 3.5 Section 6.4 with the following:

Data Elements with a VR of SQ, OF, OW, OB, ~~or~~ **UN** **or** **UR** shall always have a Value Multiplicity of one.

Update PS 3.5 Section 7.1.2 with the following:

- for VRs of **UR** and **UT** the 16 bits following the two character VR Field are reserved for use by later versions of the DICOM Standard. These reserved bytes shall be set to 0000H and shall not be used or decoded. The Value Length Field is a 32-bit unsigned integer. The Value Field is required to have an Explicit Length; that is, the Value Length Field shall contain a value equal to the length (in bytes) of the Value Field.

Note: VRs of **UR** and **UT** may not have an Undefined Length, i.e. a Value Length of FFFFFFFFH.

Update PS 3.5 Section 7.1.2 with the following:

**Table 7.1-1
DATA ELEMENT WITH EXPLICIT VR OF OB, OW, OF, SQ, UR, UT OR UN**

Tag		VR		Value Length	Value
Group Number (16-bit unsigned integer)	Element Number (16-bit unsigned integer)	VR (2 byte character string) of "OB", "OW", "OF", "SQ", <u>"UR"</u> , "UT" or "UN"	Reserved (2 bytes) set to a value of 0000H	32-bit unsigned integer	Even number of bytes containing the Data Element Value(s) encoded according to the VR and negotiated Transfer Syntax. Delimited with Sequence Delimitation Item if of Undefined Length.
2 bytes	2 bytes	2 bytes	2 bytes	4 bytes	'Value Length' bytes if of Explicit Length

Update PS 3.5 Section 8.4.1:

The syntax of the Pixel Data Provider URL (0028,7FE0) is defined in ISO/IEC 15444-9 Annex C (Client Request). That standard respects the URI recommendations IETF RFC2396. The transport protocol shall be HTTP or HTTPS.

Note: 1. According to ISO/IEC 15444-9, "Each JPIP request is directed to a specific representation of a specific original named resource or a specific portion of that resource. That resource may be a physically stored file or object, or may be something that is created virtually by the server upon request."
 "The Target request field specifies the original named resource to which the request is directed. It is specified using a *PATH*, which could be a simple string or a URI.
 If the Target field is not specified and the request is carried over HTTP, then the JPIP request shall be directed to the resource specified through the path component of the JPIP request URL."

2. Transport over UDP or other protocols is not supported.

3. IETF RFC2396 is obsolete and has been replaced by RFC3986.

Update PS 3.6 Section 6:

Tag	Name	Keyword	VR	VM
(0008,1190)	Retrieve URL	RetrieveURL	<u>UTUR</u>	1
(0028,7FE0)	Pixel Data Provider URL	PixelDataProviderURL	<u>UTUR</u>	1
(0040,E010)	Retrieve URI	RetrieveURI	<u>UTUR</u>	1
(0074,100a)	Contact URI	ContactURI	<u>STUR</u>	1

Update Table 6.6.1-2 of Supplement 163 STOW-RS as follows:

>Retrieve URL	(0008,1190)	2	The URL where the SOP Instance is available for retrieval via a WADO-URI or WADO-RS service. If the study Retrieve <u>URIURL</u> is specified above, this <u>URIURL</u> can be constructed if the client knows the series and instance UIDs.
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Update Section 6.6.1.3.2.2 Response Message Body Example of Supplement 163 STOW-RS

```
<DicomAttribute tag="00081190" vr="UTUR" keyword="RetrieveURL">
```

Update Section 6.6.1.3.2.2 Response Message Body Example of Supplement 163 STOW-RS

```
<DicomAttribute tag="00081190" vr="UTUR" keyword="RetrieveURL">
```

Update Section 6.6.1.3.2.2 Response Message Body Example of Supplement 163 STOW-RS

```
<DicomAttribute tag="00081190" vr="UTUR" keyword="RetrieveURL">
```

Update Section 6.6.1.3.2.2 Response Message Body Example of Supplement 163 STOW-RS as follows:

```
VR = attribute vr { "AE" | "AS" | "AT" | "CS" | "DA" | "DS" | "DT" | "FL" | "FD"  
  | "IS" | "LO" | "LT" | "OB" | "OF" | "OW" | "PN" | "SH" | "SL"  
  | "SQ" | "SS" | "ST" | "TM" | "UI" | "UL" | "UN" | "US" | "UR" | "UT" }
```

Update Section F.4 DICOM JSON MODEL EXAMPLE in Supplement 166 QIDO-RS as follows:

```
  "00081190": {  
    "vr": "UTUR",  
    "Value": [  
      "http://wado.nema.org/studies/1.2.392.200036.9116.2.2.2.1762893313.1029997326  
      .945873"    ]  
    },
```

Update Section F.4 DICOM JSON MODEL EXAMPLE in Supplement 166 QIDO-RS as follows:

```
  "00081190": {  
    "vr": "UTUR",  
    "Value": [  
      "http://wado.nema.org/studies/1.2.392.200036.9116.2.2.2.2162893313.1029997326  
      .945876"    ]  
    },
```

Update PS 3.19 A.1.6 Schema as shown below.

```
VR = attribute vr { "AE" | "AS" | "AT" | "CS" | "DA" | "DS" | "DT" | "FL" | "FD"  
  | "IS" | "LO" | "LT" | "OB" | "OF" | "OW" | "PN" | "SH" | "SL"  
  | "SQ" | "SS" | "ST" | "TM" | "UI" | "UL" | "UN" | "US" | "UR" |  
  "UT" }
```