

# DICOM Correction Proposal

STATUS	Final Text
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Correction Number	CP-1334
Log Summary: Clarify worklist extended negotiation after Sup 157	
Name of Standard	PS 3.4 2013
Rationale for Correction:	Worklist extended negotiation has followed the underlying C-FIND description, but the addition of CPs 1027, 1172 and Sup 157 were not entirely complete or consistent in this respect. Clarify, and amend the worklist negotiation to follow the C-FIND pattern of anticipating more fields being added in the future.
Correction Wording:	

*Amend the worklist negotiation in PS 3.4 as most recently amended by CP 1172*

## K.5.1 SOP Class Extended Negotiation

The SOP Class Extended Negotiation allows, at Association establishment, peer DICOM AEs to exchange application Association information defined by specific SOP Classes. This is achieved by defining the Service-class-application-information field. The Service-class-application-information field is used to define support for fuzzy semantic matching of person names.

This negotiation is optional. If absent, the default conditions shall be:

- literal matching of person names with case sensitivity unspecified
- timezone query adjustment unspecified

The Association-requester, for each SOP Class, may use one SOP Class Extended Negotiation Sub-Item. The SOP Class is identified by the corresponding Abstract Syntax Name (as defined by PS 3.7) followed by the Service-class-application-information field. This field defines **either** three **or more** sub-fields:

- reserved; shall always be 1
- reserved; shall always be 1
- literal or fuzzy semantic matching of person names by the Association-requester

**or four sub-fields:**

- ~~reserved; shall always be 1~~
- ~~reserved; shall always be 1~~
- ~~literal or fuzzy semantic matching of person names by the Association-requester~~
- timezone query adjustment by the Association-requester

The meaning of fuzzy semantic person name matching and of timezone query adjustment is as defined in K.2.2.2 and C.2.2.2.1.

The Association-acceptor shall return a three byte field (three sub-fields) if offered a three byte field (three sub-fields) by the Association-requester. The Association-acceptor may return **more than either a three bytes field (three sub-fields) or a four byte field (three sub-fields)** if offered **more than three a four bytes field (four sub-fields)** by the Association-requester. A three byte response to a **more than three four** byte request means that the missing sub-fields shall be treated as 0 values.

The Association-acceptor, for each sub-field of the SOP Class Extended Negotiation Sub-Item offered, either accepts the Association-requester proposal by returning the same value (1) or turns down the proposal by returning the value (0).

If the SOP Class Extended Negotiation Sub-Item is not returned by the Association-acceptor then fuzzy semantic matching of person names is not supported and timezone query adjustment is unspecified over the Association (default condition).

If the SOP Class Extended Negotiation Sub-Items do not exist in the A-ASSOCIATE indication they shall be omitted in the A-ASSOCIATE response.

#### K.5.1.1 SOP Class Extended Negotiation Sub-Item Structure (A-ASSOCIATE-RQ)

The SOP Class Extended Negotiation Sub-Item consists of a sequence of mandatory fields as defined by PS 3.7. This field shall be three or four bytes in length.

**Table K.5.1-1—SOP CLASS EXTENDED NEGOTIATION SUB-ITEM (service-class-application-information field)—A-ASSOCIATE-RQ**

Item Bytes	Field Name	Description of Field
1	reserved	This byte field shall always be 1
2	reserved	This byte field shall always be 1
3	Fuzzy semantic matching of person names	This byte field defines whether or not fuzzy semantic person name attribute is requested by the Association-requester. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – fuzzy semantic matching not requested 1 – fuzzy semantic matching requested
4	Timezone query adjustment	This byte field defines whether or not the Attribute Timezone Offset From UTC (0008,0201) shall be used to adjust the query meaning for time and datetime fields in queries. 0 - Timezone query adjustment not requested 1 – Timezone query adjustment requested

Note: This Sub-Item is identical to Extended Negotiation Sub-Items as used by the Query/Retrieve SOP Classes. However, relational queries (Byte 1) are not relevant since the worklist information models are single level, and date-time matching (Byte 2) is already required by the worklist information models **and Enhanced Multi-Frame Image Conversion support is not applicable (Byte 5)**.

#### K.5.1.2 SOP Class Extended Negotiation Sub-Item Structure (A-ASSOCIATE-AC)

The SOP Class Extended Negotiation Sub-Item is made of a sequence of mandatory fields as defined by PS 3.7. This field shall be three or four bytes in length.

**Table K.5.1-2—SOP CLASS EXTENDED NEGOTIATION SUB-ITEM (service-class-application-information field)—A-ASSOCIATE-AC**

Item Bytes	Field Name	Description of Field
1	reserved	This byte field shall always be 1
2	reserved	This byte field shall always be 1

3	Fuzzy semantic matching of person names	This byte field defines whether or not fuzzy semantic person name attribute matching will be performed by the Association-acceptor. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – fuzzy semantic matching not performed 1 – fuzzy semantic matching performed
4	Timezone query adjustment	This byte field defines whether or not the Attribute Timezone Offset From UTC (0008,0201) shall be used to adjust the query meaning for time and datetime fields in queries. 0 – Timezone adjustment of queries not performed 1 – Timezone adjustment of queries performed

*For reference, the C-FIND negotiation in PS 3.4 as most recently amended by Sup 157:*

### **C.5.1.1 SOP Class Extended Negotiation**

The SOP Class Extended Negotiation allows, at Association establishment, peer DICOM AEs to exchange application Association information defined by specific SOP Classes. This is achieved by defining the Service-class-application-information field. The Service-class-application-information field is used to define support for relational-queries, combined date time matching, fuzzy semantic matching of person names, timezone query adjustment and Enhanced Multi-Frame Image Conversion.

This negotiation is optional. If absent, the default conditions shall be:

- no relational-query support
- separate (independent) range matching of date and time attributes
- literal matching of person names with case sensitivity unspecified
- timezone query adjustment unspecified
- no Enhanced Multi-Frame Image Conversion support

The Association-requester, for each SOP Class, may use one SOP Class Extended Negotiation Sub-Item. The SOP Class is identified by the corresponding Abstract Syntax Name (as defined by PS 3.7) followed by the Service-class-application-information field. This field defines one or more sub-fields:

- relational-query support by the Association-requester
- combined date and time range matching by the Association-requester
- literal or fuzzy semantic matching of person names by the Association-requester
- timezone query adjustment by the Association-requester
- Enhanced Multi-Frame Image Conversion support by the Association-requester

The Association-acceptor shall return a single byte field (single sub-field) if offered a single byte field (single sub-field) by the Association-requester. The Association-acceptor may return either a single byte field (single sub-field) or a multiple byte field if offered a multiple byte field by the Association-requester. A one byte response to a multiple byte request means that the missing sub-fields shall be treated as 0 values.

Note: The restriction to return only a single byte field if that was all that was offered is because the original DICOM standard only contained one byte and older systems may not be expecting more.

The Association-acceptor, for each sub-field of the SOP Class Extended Negotiation Sub-Item offered, either accepts the Association-requester proposal by returning the same value (1) or turns down the proposal by returning the value (0)

If the SOP Class Extended Negotiation Sub-Item is not returned by the Association-acceptor then relational-queries are not supported over the Association (default condition).

If the SOP Class Extended Negotiation Sub-Items do not exist in the A-ASSOCIATE indication they shall be omitted in the A-ASSOCIATE response.

**C.5.1.1.1 SOP Class Extended Negotiation Sub-Item Structure (A-ASSOCIATE-RQ)**

The SOP Class Extended Negotiation Sub-Item consists of a sequence of mandatory fields as defined by PS 3.7. Table C.5-1 defines the Service-class-application-information field for DICOM Query/Retrieve SOP Classes and Specialized DICOM Query/Retrieve SOP Classes which include the C-FIND operation. This field may be either one or more bytes in length (i.e., item bytes 2, 3, 4 and 5 are optional).

**Table C.5-1—SOP CLASS EXTENDED NEGOTIATION SUB-ITEM (service-class-application-information field)—A-ASSOCIATE-RQ**

Item Bytes	Field Name	Description of Field
1	Relational-queries	This byte field defines relational-query support by the Association-requester. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – relational queries not supported 1 – relational queries supported
2	Date-time matching	This byte field defines whether or not combined date and time attribute range matching is requested by the Association-requester. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – combined matching not requested 1 – combined matching requested
3	Fuzzy semantic matching of person names	This byte field defines whether or not fuzzy semantic person name attribute matching is requested by the Association-requester. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – fuzzy semantic matching not requested 1 – fuzzy semantic matching requested
4	Timezone query adjustment	This byte field defines whether or not the Attribute Timezone Offset From UTC (0008,0201) shall be used to adjust the query meaning for time and datetime fields in queries. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 - Timezone query adjustment not requested 1 – Timezone query adjustment requested
5	Enhanced Multi-Frame Image Conversion	This byte field defines whether or not the Attribute Query/Retrieve View (0008,0053) shall be used to adjust the view returned in queries to consider conversion to or from Enhanced Multi-Frame Images. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – Query/Retrieve View not supported 1 – Query/Retrieve View supported

**C.5.1.1.2 SOP Class Extended Negotiation Sub-Item Structure (A-ASSOCIATE-AC)**

The SOP Class Extended Negotiation Sub-Item is made of a sequence of mandatory fields as defined by PS 3.7. Table C.5-2 defines the Service-class-application-information field for DICOM Query/Retrieve SOP Classes and Specialized DICOM Query/Retrieve SOP Classes which include the C-FIND operation. This field may be either one or more bytes in length (i.e., item bytes 2, 3, 4 and 5 are optional).

**Table C.5-2—SOP CLASS EXTENDED NEGOTIATION SUB-ITEM (service-class-application-information field)—A-ASSOCIATE-AC**

Item Bytes	Field Name	Description of Field
1	Relational-queries	This byte field defines relational-query support for the Association-acceptor. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – relational-queries not supported 1 – relational-queries supported
2	Date-time matching	This byte field defines whether or not combined date and time attribute range matching will be performed by the Association-acceptor. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – combined matching not performed 1 – combined matching performed
3	Fuzzy semantic matching of person names	This byte field defines whether or not fuzzy semantic person name attribute matching will be performed by the Association-acceptor. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – fuzzy semantic matching not performed 1 – fuzzy semantic matching performed
4	Timezone query adjustment	This byte field defines whether or not the Attribute Timezone Offset From UTC (0008,0201) shall be used to adjust the query meaning for time and datetime fields in queries. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – Timezone adjustment of queries not performed 1 – Timezone adjustment of queries performed
5	Enhanced Multi-Frame Image Conversion	This byte field defines whether or not the Attribute Query/Retrieve View (0008,0053) shall be used to adjust the view returned in queries to consider conversion to or from Enhanced Multi-Frame Images. It shall be encoded as an unsigned binary integer and shall use one of the following values 0 – Query/Retrieve View not supported 1 – Query/Retrieve View supported