

Appendix 1 - DICOM Requirements

1. PACS Modality and DICOM Interface Requirements

A. Introduction: This section contains the DICOM conformance requirements for the PACS system. The conformance requirements specification is written from an “outside perspective” into the PACS system i.e. based on the function that has to be provided via the DICOM interface viewed from the viewpoint of the devices that are connected.

B. General Requirements: The PACS interface shall conform to the DICOM Standard (complete standards can be found at <http://medical.nema.org/>) in effect 6 months prior to the issuance of the site specific delivery order. In addition, the interface shall conform to the specific requirements as defined below. The vendor shall provide a detailed description on how the proposed system meets the requirements set forth in this appendix and in TAB K and TAB L above. The vendor shall provide DICOM conformance statements for the proposed PACS system compliant with the format as described in part PS 3.2 of the DICOM standard. The vendor is strongly encouraged to support the explicit Value Representation (VR) Presentation syntax.

1) The PACS system shall provide a Modality Worklist to the modality. Schedule information and required patient demographic information will be provided so that operators at the modality will not have to reenter this information.

2. Level of Conformance: The PACS shall provide full conformance (level 2) with regard to the required Storage classes. All Type 1, 2, and 3 attributes that are communicated shall be stored and may be accessed. Coercion is allowed for Patient ID, Study Instance UID, and the Series Instance UID to synchronize the PACS database with the HIS. In addition, there are two scenarios when images can be sent without complete identification:

A. A study has not been entered in the RIS prior to the exam, and the modality cannot retrieve the information from the PACS. The patient information is entered at the modality, and a Study Instance UID is generated by the modality. The PACS has to be able to match this study later with the study ID generated by the RIS after the images have been transferred.

B. Patient information is unknown, which could be the case with trauma patients. In that case, patient information as well as Study ID has to be linked to the images in the PACS from information entered into the RIS after the images have been transferred.

3. Required Attributes:

A. Modality Worklist Required Attributes: As a minimum, each modality worklist entry shall contain the following information:

- Patient name
- Patient ID
- Order/Accession Number
- Requested Procedure Description
- Scheduled Station Application Entity

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B. Configurable Parameters: All operational parameters, which may influence performance and/or AE behavior, shall be configurable. These include the following:

- Number of simultaneous associations
- Maximum PDU size
- Time out values
- Local AE titles
- Local IP address and Subnet Mask
- Remote AE Title fields
- Responding TCP/IP ports and addresses

The vendor shall provide a complete list of these parameters including the value range of the configuration parameters.

C. Future Standard Extensions: The PACS vendor shall demonstrate plans for implementing future extensions

to the DICOM implementation. This includes, but is not limited to, the capability to support additional Storage SOP classes using newly defined IOD's, and the capability to receive information from the modality based on the Performed Procedure Step Service class.

4. **DICOM Modalities:**

A. Vendors will be expected to support integration of emerging or new DICOM modalities as they become available.

B. A thorough description of the method of image acquisition shall be supplied for each type of image acquisition system. The description shall include the method used to obtain correct patient ID and study UID and how the "housekeeping" functions for DICOM objects such as Image Series, Study Components, and Study IODs are handled.

C. The system shall include one or more DICOM Storage SCPs which support all necessary storage SOP classes required to support the DICOM Storage SCUs implemented on each image acquisition system.

D. The system shall include a DICOM Query/Retrieve SCP/SCU. This requirement is intended to support both imaging modalities, third party workstations and a foreign archive.

E. The DICOM Query/Retrieve SCP shall, at a minimum, support study root query/retrieve information model.

F. The system shall include a DICOM Modality Worklist Management SCP (DICOM Supplement 10). The system will support modality worklists.

G. The system shall include a DICOM Storage Commitment Push Model SCP. The system will accept ownership of identified images.

H. The system shall include a DICOM Study Component Management SCP. The system will correctly map identified images to RIS ordered studies.

I. In situations where a procedure is performed on a patient without prior registration in the RIS, no patient information and study UID is available for the modality to use for the store operation. In these cases the modality will allow the operator to enter the patient information manually, and allocate a study UID of its own. The system shall include an automated mechanism to remap this UID when the RIS order has been performed and communicated to the system and thereby correctly associate the images thus acquired with the appropriate RIS ordered exam.

J. The vendor shall provide with the proposal one or more Conformance Statements covering all DICOM functions of the system.

K. The vendor shall provide upon request, conformance-testing results that validate the system Conformance Statements.