

Fluorospot H VD 11 (or later)

RX

DICOM Interface Fluorospot H DICOM Conformance Statement

V 1.0

Last Change: 8-Sep-1995

H. Forkel
RXET 4
H. Kunert
BNE P 12

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History

Document History

Version	Date of Issue	Author	Change & Reason of Change/ Change Request
V 0.1	18-Aug-1995	H. Forkel	initial version
V 1.0	08-Sep-1995	H. Forkel	released version

Review History

Version	Review Date	Review Document/Protocol
V 0.1	08-Sep-1995	Review Report/Record

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Introduction

0.1 Purpose

This DICOM Conformance Statement is written according to part PS 3.2 of [1].

The application described in this conformance statement is the DICOM Interface of the Fluorospot H. The DICOM Interface acts as a service class user (SCU) for both Storage Service Class and Verification Service Class.

0.2 Definitions, Acronyms and Abbreviations

ACR	American College of Radiology
AE	DICOM Application Entity
DFOS	DICOM Folder Sender for DICOM Image Store
DIAG	DICOM Gateway Diagnostic Tool
Folder	SIEMENS specific name for a set of (ACR/NEMA) images, corresponds to a DICOM Study Component
IOD	DICOM Information Object Definition
NEMA	National Electrical Manufacturers Association
PACSnet	SIEMENS proprietary implementation to transfer ACR/NEMA images
PLA	Pacsnet Logical Address (to identify an application on a PACSnet node)
SCU	DICOM Service Class User (client using this DICOM service)
SCP	DICOM Service Class Provider (server providing this service)
SOP	DICOM Service Object Pair
UID	Unique IDentifier, string unique in the whole network

0.3 References

- [1] Digital Imaging and Communications in Medicine (DICOM) 3.0, NEMA PS 3.1-9, 1993
- [2] DICOM Gateway DICOM Conformance Statement, SIEMENS AG B Med, 1995

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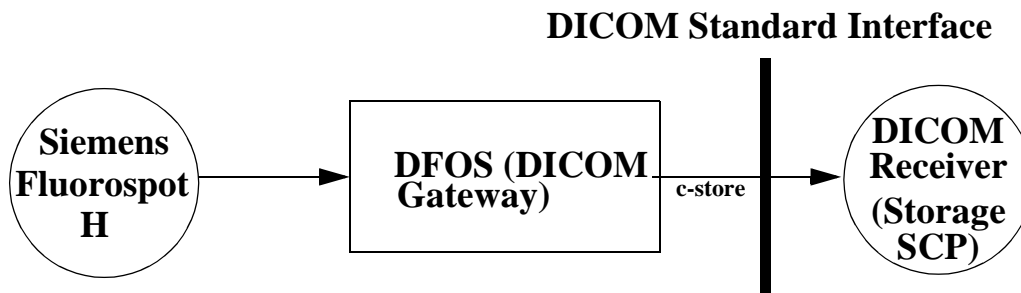
1 Implementation Model

The DICOM Interface Application Entity originates associations for Storage of DICOM Composite Information Objects in Remote Application Entities.

1.1 Application Data Flow Diagram

The DICOM Interface of the Fluorospot H uses the Siemens DICOM Gateway (MagicLink D) [2]. DFOS (DICOM Folder Sender for DICOM Image Store) is the UNIX application of the DICOM Gateway to handle the DICOM communication.

For each folder being received from the Fluorospot H a new association to the corresponding remote DICOM AE is initiated by the DICOM Gateway. The ACR/NEMA data sets are read in, converted to DICOM Information Objects and sent via that open association.



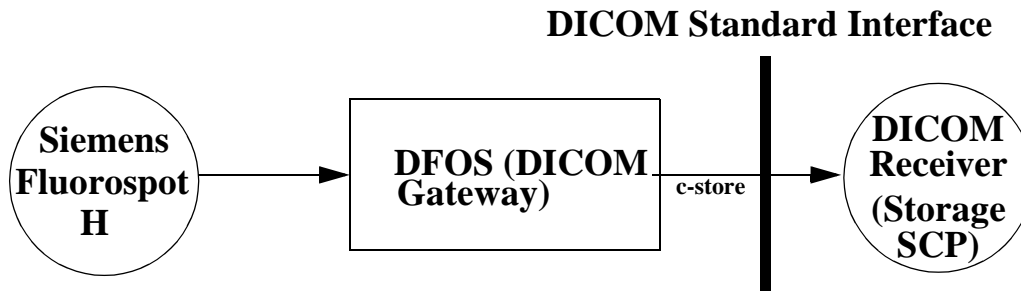
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1.2 Functional Definitions of Application Entities

DFOS acting as a SCU is waiting for requests from the Fluorospot H local process FOS (Folder Sender), i.e. a new folder is coming in via PACSnet. Upon such a request, it initiates an association with a remote Application Entity.

1.3 Sequencing of real World Activities

not applicable.

1.2 Functional Definitions of Application Entities

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not applicable.

2 Application Entity Specifications

2.1 Storage AEs Specification

DFOS provides only one AE being used when initiating associations to remote DICOM nodes.

The DICOM Interface of the Fluorospot H provides Standard Conformance to the following DICOM V3.0 SOP Classes as an SCU:

Table 1: SOP Classes as an SCU

SOP Class Name	SOP Class UID
SC (Secondary Capture) Image Information Object Storage	1.2.840.10008.5.1.4.1.1.7
Verification	1.2.840.10008.1.1

2.1.1 Association Establishment Policies

2.1.1.1 General

The configuration of the DICOM Interface of the Fluorospot H defines the Application Entity Titles, the port numbers and of course the host name and net address.

2.1.1.2 Number of Associations

DFOS initiates several associations at a time, one for each transfer request being processed. There may be several concurrent associations initiated by DFOS active at a time, which are processed in parallel.

2.1.1.3 Asynchronous Nature

This version of the software does not support asynchronous communication (multiple outstanding transactions over a single association).

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2.1.1.4 Implementation Identifying Information

The DICOM Interface of the Fluorospot H provides a single Implementation Class UID of

- “1.3.12.2.1107.5.1995.1”

and an Implementation Version Name of

- “SIEMENS_DICOM_10”.

2.1.2 Association Initiation Policy

The DICOM Interface of the Fluorospot H attempts to initiate a new association for

- DIMSE-C-ECHO
- DIMSE-C-STORE

service operations.

2.1.2.1 Real-World Activity - Send Echo

2.1.2.1.1 Associated Real-World Activity - check if remote node is responding

The associated Real-World activity is a C-Echo request initiated by the DIAG process (DICOM Gateway Diagnostic Tool). DIAG will check this way if a remote DICOM node is reachable and the AE is responding.

The user interface for the echo function is the 'test' command to be entered at the Diagnostic Tool prompt.

2.1.2.1.2 Proposed Presentation Contexts

The DICOM Interface of the Fluorospot H will propose Presentation Contexts as shown in the following table.

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification Service class	1.2.840.10008.1.1	DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2	SCU	None

2.1.1.4 Implementation Identifying Information

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2.1.2.1.3 SOP Specific Conformance to the Verification SOP Class

The DICOM Interface of the Fluorospot H provides standard conformance to the DICOM Verification Service Class.

2.1.2.2 Real-World Activity - Send Image Objects to a remote Node

2.1.2.2.1 Associated Real-World Activity -Send Image Objects to a remote Node

The associated Real-World activity is a C-Store request initiated by the internal daemon process DFOS. If DFOS successfully establishes an association to a remote Application Entity, it will convert and then transfer each image of that folder one after another via the open association. If the C-Store Response from the remote Application contains a status other than Success the association is aborted and after a configurable time period the transfer of the whole folder started again. If the Retry also fails the folder will remain on the DICOM Gateway with status Aborted.

The DICOM target are configured at configuration time. At that time it's also specified which PACSnet channel of the DICOM Interface of the Fluorospot H correspond to which DICOM target.

2.1.2.2.2 Proposed Presentation Contexts

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2.1.2.2.3 SOP Specific Conformance Statement

The DICOM images created by the DICOM Interface of the Fluorospot H conform to the DICOM IOD definitions (Standard extended IODs). But they will contain additional private elements which have to be discarded by a DICOM system when modifying the image.

The DICOM nodes are responsible for data consistency when modifying images. All unknown private attributes have to be removed upon modification!

2.1.2.1.3 SOP Specific Conformance to the Verification SOP Class

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3 Communication Profiles

3.1 Supported Communication Stacks

The DICOM Interface of the Fluorospot H provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

3.1.1 OSI Stack

not yet supported.

3.1.2 TCP/IP Stack

The DICOM Interface of the Fluorospot H uses the TCP/IP stack from the SUN-OS UNIX system upon which it executes. It uses a subroutine library that is based on a Berkeley socket interface.

3.1.2.1 API

The DICOM Interface of the Fluorospot H uses a library that is based on a Berkeley socket interface.

3.1.2.2 Physical Media Support

The DICOM Interface of the Fluorospot H is indifferent to the physical medium over which TCP/IP executes; it inherits this from the SUN-OS UNIX system upon which it executes.

3.1.3 Point-to-Point Stack

not supported.

3 Communication Profiles

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3.1.3 Point-to-Point Stack

not supported.

4 Extensions/Specializations/ Privatizations

4.1 Standard Extended/Specialized/Private SOPs

The DICOM Interface of the Fluorospot H creates DICOM standard extended Information Objects in such a way that each image can contain additional private elements stored in private groups. These elements are used to store data not defined in DICOM and are evaluated when re-importing the images via the DICOM Gateway into SIENET. For more details about these elements see the SIENET Conformance Level Specification.

If these images are modified on DICOM nodes then these applications are responsible for data consistency. All unknown private attributes have to be removed upon modification!

The DICOM Interface of the Fluorospot H does not support specialized or private SOPs.

4.2 Private Transfer Syntaxes

None.

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4.2 Private Transfer Syntaxes

None.

5 Configuration

5.1 AE Title / Presentation Address Mapping

The DICOM Gateway maps Application Entity Titles to host name and port number via an internal configuration method. The IP address for the host name is determined using standard Unix system calls.

For each DICOM Gateway unique Application Entity Titles are assigned using the following mechanism:

Each Application Entity Title starts with a unique 10 character string assigned for this DICOM Gateway node. This string is also used as the first 10 characters of each PACSnet Logical Address (PLA) of the SIENET processes on the DICOM Gateway. An example for such a string is '049SA1OT39'.

The DICOM Sender Application DFOS provides the Application Entity Title

<AERoot>DFOS

and the DICOM Gateway Diagnostic Tool the Application Entity Title

<AERoot>DIAG

The PACSnet Logical Addresses of the SIENET processes of the DICOM Gateway are assigned in a similar way. There are up to 8 PACSnet Receiver processes RCV2 to RCV9, one for each DICOM destination accessible via the DICOM Gateway:

<AERoot>RCV2	port 50072
<AERoot>RCV3	port 50073
<AERoot>RCV4	port 50074
<AERoot>RCV5	port 50075
<AERoot>RCV6	port 50076
<AERoot>RCV7	port 50077
<AERoot>RCV8	port 50078
<AERoot>RCV9	port 50079

An additional PACSnet Receiver Process RCV0 is started on the DICOM Gateway for compatibility reasons with current Siemens products.

<AERoot>RCV0	port 50026
--------------	------------

Images sent to this PACSnet Receiver are forwarded to the same DICOM destination as those sent to PACSnet Receiver RCV2 (PLA <AERoot>RCV2) on the DICOM Gateway.

5.2 Configurable Parameters

The Application Entity Titles, host names and port numbers are configured using the SIENET Install Tool of the DICOM Gateway.

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<AERoot>RCV4	port 50074
<AERoot>RCV5	port 50075
<AERoot>RCV6	port 50076
<AERoot>RCV7	port 50077
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5.2 Configurable Parameters

The Application Entity Titles, host names and port numbers are configured using the SIENET Install Tool of the DICOM Gateway.

If a folder transfer fails a retry is automatically started after a configurable time period. This time is configurable:

- DFOS retry time (PACSnet to DICOM): default 300 sec

This Install Tool also uses some default parameters:

- max PDU size set to 16384 Bytes (16 kB)
- time-out for accepting/rejecting an association request: 30 sec
- time-out for responding to an association open/close request: 15 sec
- time-out for accepting a message over network: 15 sec

6 Support of Extended Character Sets

None.

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