Philips Medical Systems

DICOM

CONFORMANCE STATEMENT

EasyAccess Modality 2.1

Document Number XPB 080-020076

20 August 2002

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1. INTRODUCTION

This chapter provides general information about the purpose, scope and contents of this Conformance Statement.

1.1. Scope and Field of Application

The scope of this DICOM Conformance Statement is to facilitate data exchange with equipment of Philips Medical Systems. This document specifies the compliance to the DICOM standard (formally called the NEMA PS 3.X standards). It contains a short description of the applications involved and provides technical information about the data exchange capabilities of the equipment. The main elements describing these capabilities are: the supported DICOM Service Object Pair (SOP) Classes, Roles, Information Object Definitions (IOD) and Transfer Syntaxes.

The field of application is the integration of the Philips Medical Systems equipment into an environment of medical devices. This Conformance Statement should be read in conjunction with the DICOM standard and its addenda [DICOM].

1.2. Intended Audience

This Conformance Statement is intended for:

➢ (potential) customers
➢ system integrators of medical equipment
➢ marketing staff interested in system functionality
➢ software designers implementing DICOM interfaces

It is assumed that the reader is familiar with the DICOM standard.

1.3. Contents and Structure

The DICOM Conformance Statement is contained in chapter 2 through 7 and follows the contents and structuring requirements of DICOM PS 3.2.

1.4. Used Definitions, Terms and Abbreviations

DICOM definitions, terms and abbreviations are used throughout this Conformance Statement. For a description of these, see NEMA PS 3.3 and PS 3.4.

The word Philips in this document refers to Philips Medical Systems.

1.5. References

[DICOM]   The Digital Imaging and Communications in Medicine
          (DICOM) standard (NEMA PS 3.X):
          National Electrical Manufacturers Association (NEMA)
          Publication Sales 1300 N. 17th Street, Suite 1847
          Rosslyn, Va. 22209, United States of America

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1.6.   Important Note to the Reader

This Conformance Statement by itself does not guarantee successful interoperability of Philips equipment with non-Philips equipment. The user (or user's agent) should be aware of the following issues:

> **Interoperability**

Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into a IT environment may require application functions that are not specified within the scope of DICOM. Consequently, using only the information provided by this Conformance Statement does not guarantee interoperability of Philips equipment with non-Philips equipment.

It is the user's responsibility to analyze thoroughly the application requirements and to specify a solution that integrates Philips equipment with non-Philips equipment.

> **Validation**

Philips equipment has been carefully tested to assure that the actual implementation of the DICOM interface corresponds with this Conformance Statement.

Where Philips equipment is linked to non-Philips equipment, the first step is to compare the relevant Conformance Statements. If the Conformance Statements indicate that successful information exchange should be possible, additional validation tests will be necessary to ensure the functionality, performance, accuracy and stability of image and image related data. It is the responsibility of the user (or user's agent) to specify the appropriate test suite and to carry out the additional validation tests.

> **New versions of the DICOM Standard**

The DICOM Standard will evolve in future to meet the user's growing requirements and to incorporate new features and technologies. Philips is actively involved in this evolution and plans to adapt its equipment to future versions of the DICOM Standard. In order to do so, Philips reserves the right to make changes to its products or to discontinue its delivery.

The user should ensure that any non-Philips provider linking to Philips equipment, also adapts to future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

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1.7.   General Acronyms and Abbreviations.

The following acronyms and abbreviations are used in the document.

- ➢ ACC   American College of Cardiology
- ➢ AE   Application Entity
- ➢ ACR   American College of Radiology
- ➢ ANSI   American National Standard Institute
- ➢ DICOM   Digital Imaging and Communication in Medicine
- ➢ DIMSE   DICOM Message Service Element
- ➢ ELE   Explicit VR Little Endian
- ➢ EBE   Explicit VR Big Endian
- ➢ ILE   Implicit VR Little Endian
- ➢ IOD   Information Object Definition
- ➢ NEMA   National Electrical Manufacturers Association
- ➢ PDU   Protocol Data Unit
- ➢ RIS   Radiology Information System
- ➢ RWA   Real World Activity
- ➢ SCU   Service Class User
- ➢ SOP   Service Object Pair
- ➢ TCP/IP   Transmission Control Protocol/Internet protocol
- ➢ UID   Unique Identifier

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2. IMPLEMENTATION MODEL

The EasyAccess Modality Release 2.1, later referred to as EasyAcces Modality provides the following features:
➢ It replies on communication tests from remote applications.
➢ It allows remote applications to send images to it.
➢ It allows remote applications to commit storage of sent images.
➢ It allows remote applications to query the EasyAccess Modality database and retrieve images.
➢ Send images to a remote application (e.g. a workstation or a DICOM archive).

2.1 Application Data Flow Diagram
EasyAccess Modality behaves as a system with 3 different Application Entities (AE):

➢ Storage SCU AE
➢ Query Retrieve SCP AE
➢ Storage SCP AE

EasyAccess Modality **in a DICOM network**

The figure below shows the Position of EasyAccess Modality in a Radiology environment.

EasyAccess Modality provides (among other things) the following features:

➢ It replies on communication tests from remote applications
➢ It allows remote applications (modalities and image workstations) to send images to it
➢ It allows remote applications to commit storage of sent images
➢ It allows remote applications to query the EasyAccess Modality database and retrieve images
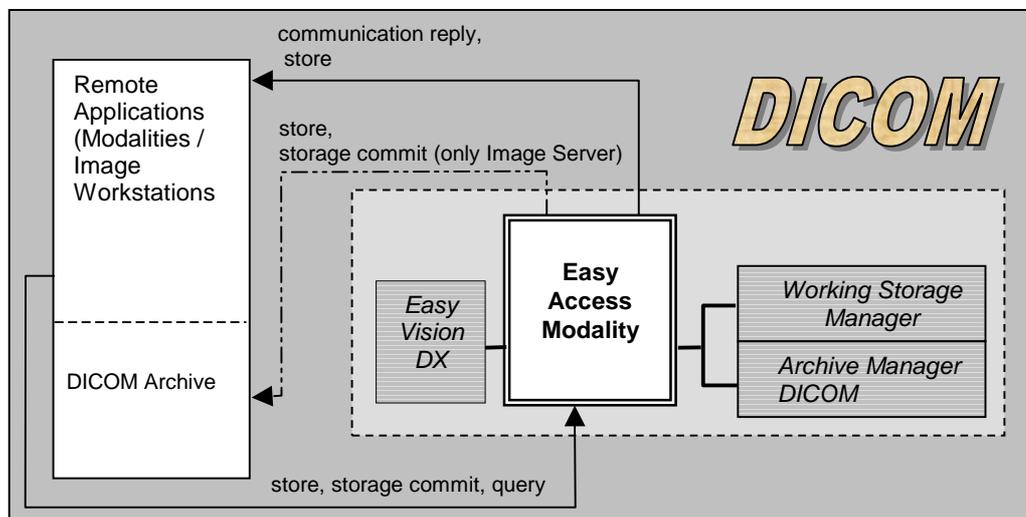➢ Send images to a remote application (e.g. workstation or a DICOM archive)

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2.1.   Application Data Flow Diagram

EasyAccess Modality behaves as a system with three different Application Entities (AE's). Its related Implementation Model is shown in Figure 1 on page 7. The three Application Entities are:

➢ **Storage - SCU –** Storage SCU is the AE responsible for sending images to a remote applications. There is only one Storage SCU AE. Sending images is initiated in the following situations:
   - by a retrieve operation from Q/R SCP,
   - from an EasyVision or
   - as a result of archiving command when using ImageServer/xd

   The second situation is described in the EasyVision User's Documentation. When the EasyVision workstation user selects examinations to send from the information window, he or she issues the send command by selecting the desired destination. The command is forwarded to EasyAccess Modality, which will activate the Storage SCU AE indicating the examinations and destination that the user has chosen. The Storage SCU AE will then initiate an association with the remote AE, supporting DICOM Storage as SCP.

➢ **Storage - SCP –** Storage SCP is the AE responsible for receiving images. There can be any number of Storage SCP AE's set up, each with its own AE title. A Storage SCP AE can receive images from a remote application entity. A Storage SCP AE also supports verification of the DICOM communication from a remote AE and Storage Commitment of images.

➢ **Q/R - SCP -** Q/R SCP is the AE responsible for receiving queries and sending images to other application entities as a response to a move request. The Q/R SCP AE is connected to the EasyAccess Modality product. There is only one Q/R SCP AE. When the Q/R SCP AE receives a query (C-FIND request) it will search in the EasyAccess Modality database for information matching the conditions in the request message. It will search both on-line and in the archive. It returns any found information to the requesting remote AE.
   When the Q/R SCP AE receives a retrieve request (C-MOVE request) it will search for images in the EasyAccess Modality database identified by the conditions in the request message. It will search both on-line and in the archive. If any images are found the Q/R SCP AE will change into a Storage SCU and send the images found to the requested destination AE. If the retrieve request refers to images in the archive the images will be fetched from the archive and temporarily put on-line. When the retrieve is done, the temporary images on-line will be removed. Only C-MOVE requests are handled in order to supply retrieve functionality, not C-GET requests.
   The Q/R SCP AE supports verification of the DICOM communication from a remote AE.

2.2.   Functional Definition of Application Entities

➢ The EasyAccess Modality Storage SCU Application Entity acts as Service Class User (SCU) of the Storage Service Class.
➢ The EasyAccess Modality Storage SCP Application Entity acts as Service Class Provider (SCP) of the Storage Service Class.
➢ The EasyAccess Modality Q/R Application Entity acts as Service Class Provider (SCP) of the Query/Retrieve Service.

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2.3.   Sequencing of Real World Activities

The following sequence of Real World activities is supported by the system:

EasyAccess Modality receives images and can then be queried through both Q/R and EasyAccess Modality API. Sending images, and storage commitment can be performed on the image storage service.

The EasyAccess Modality related Implementation Model is shown in the figure below. As documented in the PS 3.4, the arrows in the diagram on the previous page have the following meanings:

➢ An arrow pointing to the right indicates the local application entity initiates an association.
➢ An arrow pointing to the left indicates the local application entity accepts an association.

Figure 1   Implementation Model

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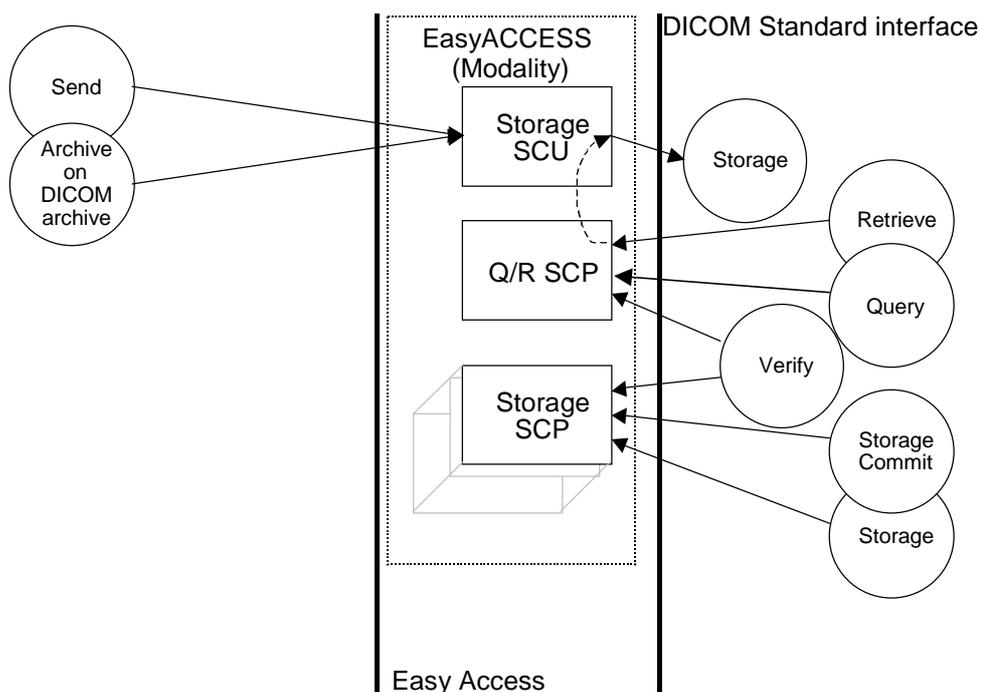
3. AE SPECIFICATIONS

The Network capabilities of the system consists of three DICOM Application Entities:
- A Storage SCU AE
- A Query / Retrieve SCP AE
- A Storage SCP AE

3.1.   Storage AE / SCU

The EasyAccess Modality Storage AE Application Entity provides Standard Conformance to the DICOM V3.0 SOP classes as an SCU specified in Table 1.

1.   Supported SOP Classes as SCU by the Storage AE

SOP Class Name	UID
CR Image Storage	1.2.840.10008.5.1.4.1.1.1
DX Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1
DX Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1
MG Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2
MG Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
IO Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3
IO Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
US Multi-Frame Image Storage (Ret.)	1.2.840.10008.5.1.4.1.1.3
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
NM Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1
SC Image Storage	1.2.840.10008.5.1.4.1.1.7
MF SC Single Bit Image Storage	1.2.840.10008.5.1.4.1.1.7.1
MF SC Grayscale Byte Image Storage	1.2.840.10008.5.1.4.1.1.7.2
MF SC Grayscale Word Image Storage	1.2.840.10008.5.1.4.1.1.7.3
MF SC True Color Image Storage	1.2.840.10008.5.1.4.1.1.7.4
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1
Cardiac Electophysiology Waveform St.	1.2.840.10008.5.1.4.1.1.9.3.1
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1
Stand-alone Modality LUT	1.2.840.10008.5.1.4.1.1.10
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11
Grayscale Softcopy Pres. State Storage	1.2.840.10008.5.1.4.1.1.11.1
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
X-Ray Angio. Bi-plane Image St. (Ret.)	1.2.840.10008.5.1.4.1.1.12.3
NM Image Storage	1.2.840.10008.5.1.4.1.1.20
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2

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SOP Class Name	UID
VL Slide-Coordinates Micros. Image St.	1.2.840.10008.5.1.4.1.1.77.1.3
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.50
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.59
PET Image Storage	1.2.840.10008.5.1.4.1.1.128
Stand-alone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29
Stored Print Storage	1.2.840.10008.5.1.1.27
Philips Private CX Image Storage	1.3.46.670589.2.4.1.1
Philips Private Volume Storage	1.3.46.670589.5.0.1
Philips Private 3D Object Storage	1.3.46.670589.5.0.2
Philips Private 3D Object 2 Storage	1.3.46.670589.5.0.2.1
Philips Private Surface Storage	1.3.46.670589.5.0.3
Philips Private Surface 2 Storage	1.3.46.670589.5.0.3.1
Philips Private Composite Object Storage	1.3.46.670589.5.0.4
Philips Private MR Cardio Profile	1.3.46.670589.5.0.7
Philips Private MR Cardio	1.3.46.670589.5.0.8
Philips Private CT Synthetic Image St.	1.3.46.670589.5.0.9
Philips Private MR Synthetic Image St.	1.3.46.670589.5.0.10
Philips Private MR Cardio Analysis St.	1.3.46.670589.5.0.11
Philips Private CX Synthetic Image St.	1.3.46.670589.5.0.12
Philips Private Gyroscan MR Spectrum	1.3.46.670589.11.0.0.12.1
Philips Private Gyroscan MR Serie Data	1.3.46.670589.11.0.0.12.2
Philips Private Specialized XA Storage	1.3.46.670589.2.3.1.1

3.1.1. Association Establishment Policies

3.1.1.1. General

The maximum PDU size the Storage SCU Application Entity will use is 28672 bytes (28kB).

3.1.1.2. Number of Associations

The Storage SCU Application Entity can handle only one association at a time. One send-request has to be finished before the next started.

3.1.1.3. Asynchronous Nature

The Storage SCU Application Entity does not support asynchronous operations and will not perform asynchronous window negotiation.

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3.1.1.4. Implementation Identifying Information

The Storage SCU Application Entity will provide the following Implementation Class UID and Implementation Version Name:

THE IMPLEMENTATION CLASS UID:	1.2.752.24.3.3.25.7
THE IMPLEMENTATION VERSION NAME:	"WISTOSCU_8_20"

3.1.2. Association Acceptance Policy

The Storage SCU Application Entity does not handle incoming associations (see Storage SCP AE).

3.1.3. Association Initiation Policy

3.1.3.1. Real-World Activity – Send Command

3.1.3.1.1. Associated Real-World Activity

As described in the EasyVision User's Documentation the EasyVision workstation user selects examinations to send from the information window. Then he or she issues the send command by selecting the desired destination. The command is forwarded to EasyAccess Modality, which will activate the Storage SCU AE indicating the examinations, and destination that the user has chosen. The Storage SCU AE will then initiate an association with the remote AE, which supports DICOM Storage as SCP.
Image Sending can also be activated as a result of a C-MOVE request towards the Q/R SCP or when archiving images using ImageServer/xd.

3.1.3.1.2. Presentation Context Table

The Storage SCU AE will propose the presentation contexts as given in the next table.

2. Proposed Present. Context for the Storage Service by the Storage SCU AE

Abstract Syntax	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Note 1	Note 1	ELE EBE ILE	1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2	SCU SCU SCU	

Note 1: All Image Storage SOP Classes from Table 1

3.1.3.1.3. SOP Specific Conformance

The Storage SCU provides standard conformance to the Storage SOP class. If patient or exam data for exported images has been changed in EasyAccess Modality, the exported images will contain the values from EasyAccess Modality.
If settings and annotations have been made in the default setting for images in EasyVision, this information will be exported as Standard Grayscale Presentation State, if the receiving side supports such (see Table 3), otherwise the annotations will be exported as standard DICOM overlays.
If the EasyVision user changes an existing default setting the SOP Instance UID of the associated presentation state will be changed. The old setting will not be saved. If configured so, the Storage SCU AE will export EasyAccess Modality private attributes. (see Table 4).

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3. Exported Presentation States

Module	EasyVision Correspondence	Note
Presentation State	-	Label: "EasyVision DEFAULT"
Mask	-	Not used
Display Shutter	Cropping	Always RECTANGULAR
Bitmap Display Shutter	-	Not used
Overlay Plane	-	Not used
Overlay/Curve Activation	-	All 60xx overlays are rendered in graphic layer 0. 50xx curves are not displayed.
Displayed Area	A combination of view port, zoom factor, zoom to fit, true size	The presentation size mode can be one of "TRUE SIZE", "SCALE TO FIT", or "MAGNIFY", depending on the EasyVision settings.
Graphic Annotation	All overlays graphics and measurements.	Always annotation units "PIXEL", i.e. image relative coordinates.
Spatial Transformation	Rotation/flip	
Graphic Layer	-	Only one single layer.
Modality LUT	-	Copied from original image.
Softcopy VOI LUT	Window width/center setting or currently selected LUT	If the user has selected a true lookup table from the original image, this table is copied from the original image. Otherwise the current window width/center is used.
Softcopy Presentation LUT	-	Normally "IDENTITY", but in some cases it could also be "INVERSE".

4. EasyAcess Private Attributes

Tag	Name	VR	VM	Description
(0009,00xx)	Private Creator Code	LO	1	Value: SECTRA_Ident_01
(0009,xx01)	Request number	LO	1	Unique id of request for this image
(0009,xx02)	Examination number	LO	1	Unique id of examination for this image
(0029,00yy)	Private Creator Code	LO	1	Value: SECTRA_ImageInfo_01
(0029,yy01)	Image Info	OB	1	Image settings made on EasyVision Workstation

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3.2.   Storage AE / SCP

The EasyAccess Modality Storage SCP Application Entity provides Standard
Conformance to the DICOM V3.0 SOP classes as an SCP specified in Table 5.

5.   Supported SOP Classes as SCP by the Storage SCP AE

SOP Class Name	UID
CR Image Storage	1.2.840.10008.5.1.4.1.1.1
DX Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1
DX Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1
MG Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2
MG Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
IO Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3
IO Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1
CT Image Storage	1.2.840.10008.5.1.4.1.1.2
US Multi-Frame Image Storage (Ret.)	1.2.840.10008.5.1.4.1.1.3
US Multi-Frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1
MR Image Storage	1.2.840.10008.5.1.4.1.1.4
NM Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5
US Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6
US Image Storage	1.2.840.10008.5.1.4.1.1.6.1
SC Image Storage	1.2.840.10008.5.1.4.1.1.7
MF SC Single Bit Image Storage	1.2.840.10008.5.1.4.1.1.7.1
MF SC Grayscale Byte Image Storage	1.2.840.10008.5.1.4.1.1.7.2
MF SC Grayscale Word Image Storage	1.2.840.10008.5.1.4.1.1.7.3
MF SC True Color Image Storage	1.2.840.10008.5.1.4.1.1.7.4
Stand-alone Overlay Storage	1.2.840.10008.5.1.4.1.1.8
Stand-alone Curve Storage	1.2.840.10008.5.1.4.1.1.9
12-lead ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.1
General ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.2
Ambulatory ECG Waveform Storage	1.2.840.10008.5.1.4.1.1.9.1.3
Hemodynamic Waveform Storage	1.2.840.10008.5.1.4.1.1.9.2.1
Cardiac Electophysiology Waveform St.	1.2.840.10008.5.1.4.1.1.9.3.1
Basic Voice Audio Waveform Storage	1.2.840.10008.5.1.4.1.1.9.4.1
Stand-alone Modality LUT	1.2.840.10008.5.1.4.1.1.10
Stand-alone VOI LUT Storage	1.2.840.10008.5.1.4.1.1.11
Grayscale Softcopy Pres. State Storage	1.2.840.10008.5.1.4.1.1.11.1
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2
X-Ray Angio. Bi-plane Image St. (Ret.)	1.2.840.10008.5.1.4.1.1.12.3
NM Image Storage	1.2.840.10008.5.1.4.1.1.20
VL Endoscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.1
VL Microscopic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.2
VL Slide-Coordinates Micros. Image St.	1.2.840.10008.5.1.4.1.1.77.1.3
VL Photographic Image Storage	1.2.840.10008.5.1.4.1.1.77.1.4
Basic Text SR	1.2.840.10008.5.1.4.1.1.88.11
Enhanced SR	1.2.840.10008.5.1.4.1.1.88.22
Comprehensive SR	1.2.840.10008.5.1.4.1.1.88.33
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.50
Mammography CAD SR	1.2.840.10008.5.1.4.1.1.88.59
PET Image Storage	1.2.840.10008.5.1.4.1.1.128
Stand-alone PET Curve Storage	1.2.840.10008.5.1.4.1.1.129

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SOP Class Name	UID
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1
RT Dose Storage	1.2.840.10008.5.1.4.1.1.481.2
RT Structure Set Storage	1.2.840.10008.5.1.4.1.1.481.3
RT Beams Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.4
RT Plan Storage	1.2.840.10008.5.1.4.1.1.481.5
RT Brachy Treatment Record Storage	1.2.840.10008.5.1.4.1.1.481.6
RT Treatment Summary Record Storage	1.2.840.10008.5.1.4.1.1.481.7
Hardcopy Color Image Storage	1.2.840.10008.5.1.1.30
Hardcopy Grayscale Image Storage	1.2.840.10008.5.1.1.29
Stored Print Storage	1.2.840.10008.5.1.1.27
Philips Private CX Image Storage	1.3.46.670589.2.4.1.1
Philips Private Volume Storage	1.3.46.670589.5.0.1
Philips Private 3D Object Storage	1.3.46.670589.5.0.2
Philips Private 3D Object 2 Storage	1.3.46.670589.5.0.2.1
Philips Private Surface Storage	1.3.46.670589.5.0.3
Philips Private Surface 2 Storage	1.3.46.670589.5.0.3.1
Philips Private Composite Object Storage	1.3.46.670589.5.0.4
Philips Private MR Cardio Profile	1.3.46.670589.5.0.7
Philips Private MR Cardio	1.3.46.670589.5.0.8
Philips Private CT Synthetic Image St.	1.3.46.670589.5.0.9
Philips Private MR Synthetic Image St.	1.3.46.670589.5.0.10
Philips Private MR Cardio Analysis St.	1.3.46.670589.5.0.11
Philips Private CX Synthetic Image St.	1.3.46.670589.5.0.12
Philips Private Gyroscan MR Spectrum	1.3.46.670589.11.0.0.12.1
Philips Private Gyroscan MR Serie Data	1.3.46.670589.11.0.0.12.2
Philips Private Specialized XA Storage	1.3.46.670589.2.3.1.1
Storage Commit Push Model	1.2.840.10008.1.20.1
Verification	1.2.840.10008.1.1

3.2.1. Association Establishment Policies

3.2.1.1. General

The maximum PDU-length, which a Storage SCP AE will use, is configurable. The default is 28672 bytes (28 kB). Configuration can only be done by Philips authorized personnel. Allowed values are between 4096 bytes (4kB) and 131072 bytes (128 kB) including these values.

3.2.1.2. Number of Associations

Each Storage SCP AE can handle five simultaneous associations at a time by default. This number is configurable. Only Philips authorized personnel can do configuration.

Any number of Storage SCP AE's can be set up, meaning that a great number of C-STORE associations can be handled at the same time. Typically one Storage SCP AE per sending application is set up.

3.2.1.3. Asynchronous Nature

A Storage SCP AE will only allow a single outstanding operation on an association. Therefore, a Storage SCP AE will not perform asynchronous operations window negotiation.

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3.2.1.4. Implementation Identifying Information

The Storage Application Entity will provide the following Implementation Class UID and Implementation Version Name:

THE IMPLEMENTATION CLASS UID:	1.2.752.24.3.3.25.7
THE IMPLEMENTATION VERSION NAME:	"WISTOSCP_8_20"

3.2.2. Association Acceptance Policy

A Storage SCP AE accepts associations for the following events:

➢ Verification of the DICOM communication between a remote system and a Storage SCP AE.
➢ Transfer of images from a remote system to the EasyAccess Modality database.
➢ Request for Storage Commitment to store images in EasyAccess Modality.

A Storage SCP AE rejects associations in the following situations:

➢ Association requests from applications that do not address it, i.e. specify an incorrect called AE title.
➢ Association requests from hosts with host names not known to the Storage SCP AE host.
➢ For image transfers if it is already processing the maximum number of associations that it can handle (default: 5).
➢ For image transfers and if configured so, if the EasyAccess Modality server is not responding.
Real-World Activity - Verification of the Communication

3.2.2.1.1. Associated Real-World Activity

A remote system wants to verify the DICOM communication with a Storage SCP AE.

3.2.2.1.2. Presentation Context Table

The Storage SCP AE will propose the presentation contexts as given in the next table. The Verification SOP Class of Storage SCP Application Entity only supports Explicit Little Endian, Explicit Big Endian and Implicit Little Endian Transfer Syntaxes.

6. Proposed Present. Context for Verification Service by the Storage SCP AE

Abstract Syntax	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Verification	1.2.840.10008.1.1	ELE EBE ILE	1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2	SCP SCP SCP	

3.2.2.1.3. SOP Specific Conformance to Verification SOP class

A Storage SCP AE provides standard conformance to the DICOM Verification Service Class.

3.2.2.1.4. Presentation Context Acceptance Criterion

There are no specific rules for acceptance.

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3.2.2.1.5. *Transfer Syntax Selection Policies*

The transfer syntax selection is done according to the order in Table 6.

3.2.2.2. Real-World Activity - Transfer Images from Remote System to local Storage

3.2.2.2.1. *Associated Real-World Activity*

A remote system wants to store images to the EasyAccess Modality database

3.2.2.2.2. *Presentation Context Table*

The proposed abstract syntaxes and transfer syntaxes can be found by investigating Table 7.

7. Proposed Present. Context for the Storage Service by the Storage SCP AE

Abstract Syntax	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Note 1	Note 1	ELE	1.2.840.10008.1.2.1	SCP	
		EBE	1.2.840.10008.1.2.2	SCP	
		ILE	1.2.840.10008.1.2	SCP	
		JPEG Lossless, Non-Hier. (Process14)	1.2.840.10008.1.2.4.57	SCP	
		JPEG Lossless, Hier. First-Order-Pred.	1.2.840.10008.1.2.4.70	SCP	
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51	SCP	

Note 1:   All Image Storage SOP Classes from Table 5 except "Storage Commitment Push Model" which supports only Implicit VR Little Endian (ILE) Transfer Syntax.

3.2.2.2.3. *SOP Specific Conformance to Storage SOP classes*

A Storage SCP AE provides standard level 2 (full) conformance to the DICOM Storage Service Class as SCP. Full conformance mean that all type 1, 2 and 3 attributes sent are stored. All private and retired attributes are also stored.
A Storage SCP AE needs a value of the attribute (0010,0020), Patient ID. If the attribute is empty it will use the attribute (0010,0010), Patient Name, as patient ID. If the patient name is empty as well it will use the request number as patient ID. Applications sending images to a Storage SCP AE must take care when filling in the Patient ID attribute. If it is not filled in, there is a risk that images of different patients can be mixed! If the image storage should fail on the EasyAccess Modality side, a status of refused, "Out of resources", will be returned to the association initiator.
EasyAccess Modality can be configured to overwrite images with same SOP Instance UID or to store all images it receives. Default is the second alternative, i.e. not to overwrite images with same SOP Instance UID. This means that if the same image is sent twice to a Storage SCP AE it will be stored two times in EasyAccess Modality. This implicates that two images with the same SOP Instance UID will be sent if a MOVE request is received by the Q/R SCP AE on that image.
For more detailed information about the handling of specific attributes by EasyAccess Modality and EasyVision, see Appendix 1.
If DICOM attributes are illegal, no responsibilities for consequences are taken. The following consequence has been noted:

Regarding viewing capabilities of EasyVision the following points must be noted:

➢ Multi-frame images in one dimension can be viewed in EasyVision; Multi dimensional on the other hand cannot be viewed correctly. They will behave as a one-dimensional image; showing them will do so with images in a random order. There is an option when installing the DICOM Storage SCP to split Multi-frame images to individual images. If this is used, the images can be viewed as a stack

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in EasyVision. However, moving the images with Q/R will in this case not give Multi-frame images but the frames as individual images. If this option is not used (which is the default) Multi-frame images are stored unaltered in EasyAccess Modality. For NM Multi-frame images only the default is supported, i.e. NM Multi-frame images cannot be split up into individual images.

➢ EasyVision shows images with non-square pixels as if the pixels where square. It is possible to configure image import in EasyAccess Modality so that non-square pixels are transformed to square pixels.

➢ Regarding color images, EasyVision can only view those with (0028,0004), Photometric interpretation, equal to RGB with 24 bits (8 bits per channel) or (0028,0004), Photometric interpretation, equal to PALETTE_COLOR.

➢ Images are handled color-by-pixel internally in EasyAccess Modality and EasyVision. In certain circumstances image that are sent color-by-plane to EasyAccess Modality/ EasyVision are sent color-by-pixel if fetched from EasyVision /EasyAccess Modality.

➢ The first LUT in a Modality LUT sequence (attribute (0028,3000), Modality LUT Sequence, etc.) is handled. The rest (second, third and so on) are ignored.

➢ EasyVision has full support of DICOM Overlays, however if multiple overlays are present in an image you can only choose between showing no DICOM overlays or all DICOM overlays.

3.2.2.2.4. Presentation Context Acceptance Criterion

The intersection between the proposed and acceptable Presentation Contexts is taken for the established association.

3.2.2.2.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 7.

3.2.2.3. Real-World Activity – Request Storage Commit

3.2.2.3.1. Associated Real-World Activity

A remote system sends a request for EasyAccess Modality to commit to store a number of images.

3.2.2.3.2. Presentation Context Table

The proposed abstract syntaxes and transfer syntaxes can be found by investigating Table 7.

3.2.2.3.3. SOP Specific Conformance to Storage Commit SOP classes

Only the Push model is supported, not the Pull model.
The Storage SCP AE provides standard conformance to the Storage Commitment Push Model SOP.

Notes about the implementation:

➢ An attempt will be made to transmit the N-EVENT-REPORT-RQ message on the same association as the N-ACTION-RQ message was received. If the association is down, the Storage SCP AE will open a new association to the Storage Commitment SCU and send the N-EVENT-REPORT-RQ message on the new association. The time between the reception of the N-ACTION_RQ

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message and the sending of the N-EVENT-REPORT-RQ message is dependent on the EasyAccess Modality server load, but it can expected to be short (seconds). To minimize possible error situations the SCU is recommended to keep the association open after the N-ACTION is sent.

➢ Any time after the images have been committed with Storage Commitment, they can be deleted by a EasyVision user, i.e. a Storage Commitment will not make sure that the images will be stored permanently.

➢ Committed images can be retrieved using DICOM Query/Retrieve towards a Q/R SCP AE connected to the same EasyAccess Modality server. If an Q/R SCP is connected towards the EasyAccess Modality server at time of commitment, the AE title of it will be returned in the N-EVENT-REPORT message sent to the SCU.

➢ Storage Commitment can be made for images stored on short-term (RAID) or long-term storage (Archive).

➢ The optional Storage Media File-Set ID & UID attributes will never by filled in by the Storage SCP AE.

3.2.2.3.4. *Presentation Context Acceptance Criterion*

The intersection between the proposed and acceptable Presentation Contexts is taken for the established association.

3.2.2.3.5. *Transfer Syntax Selection Policies*

The transfer syntax selection is done according to the order in Table 7.

3.2.3. Association Initiation Policy

The Storage SCP will not initiate associations.

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3.3. Query/Retrieve AE / SCP

The EasyAccess Modality Query/Retrieve SCP Application Entity provides Standard Conformance to the DICOM V3.0 SOP classes as an SCP specified in Table 8.

8. Supported SOP Classes as SCP by the Q/R MWL AE

SOP Class Name	UID
Patient Root Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.1.1
Study Root Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.2.1
Patient/Study Only Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.3.1
Patient Root Q/R Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2
Study Root Q/R Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2
Patient/Study Only Info. Model - MOVE	1.2.840.10008.5.1.4.1.2.3.2
Verification	1.2.840.10008.1.1

3.3.1. Association Establishment Policies

3.3.1.1. General

The maximum PDU-length that the Q/R SCP AE will use is configurable. Default is 28672 bytes (28 kB). Configuration can only be done by Philips authorized personnel. Allowed values are between 4096 bytes (4 kB) and 131072 bytes (128 kB) including these values.

3.3.1.2. Number of Associations

The Q/R SCP AE can handle at most 100 simultaneous associations at a time.

3.3.1.3. Asynchronous Nature

The Q/R SCP AE will only allow a single outstanding operation on an association. Therefore, the Q/R SCP AE will not perform asynchronous operations window negotiation.

3.3.1.4. Implementation Identifying Information

The Q/R MWL Application Entity will provide the following Implementation Class UID and Implementation Version Name:

THE IMPLEMENTATION CLASS UID:	1.2.752.24.3.3.25.7
THE IMPLEMENTATION VERSION NAME:	" WIQRSCP_8_20"

3.3.2. Association Acceptance Policy

The Q/R SCP AE will reject associations from applications that do not address it, i.e. specify an incorrect called AE title. The Q/R SCP AE will also reject associations with C-MOVE requests from hosts not present in the /etc/hosts file.
The Q/R SCP AE accepts associations for the following events:

➢ Verification of the DICOM communication between a remote system and the Q/R SCP AE

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> ➢ Query of the EasyAccess Modality database
> ➢ Retrieve images from the EasyAccess Modality database.

3.3.2.1. Real-World Activity – Verification of the Communication

3.3.2.1.1. Associated Real-World Activity
A remote system wants to verify the DICOM communication with the Q/R SCP AE.

3.3.2.1.2. Presentation Context Table
The Q/R SCP AE will propose the presentation contexts as given in the next Table.

9. Proposed Pres. Context for the Verification Service by the Q/R SCP AE

Abstract Syntax	UID	Transf. Syntax	UID List	Role	Ext. Neg.
Verification	1.2.840.10008.5.1.4.1.2.1.1	ELE	1.2.840.10008.1.2.1	SCP	
	1.2.840.10008.5.1.4.1.2.2.1	EBE	1.2.840.10008.1.2.2	SCP	
	1.2.840.10008.5.1.4.1.2.3.1	ILE	1.2.840.10008.1.2	SCP	

3.3.2.1.3. SOP Specific Conformance to Verification SOP class
The Q/R SCP AE provides standard conformance to the DICOM Verification Service Class.

3.3.2.1.4. Presentation Context Acceptance Criterion
There are no specific rules for acceptance.

3.3.2.1.5. Transfer Syntax Selection Policies
The transfer syntax selection is done according to the order in Table 9.

3.3.2.2. Real-World Activity – Query of EasyAccess Modality Database

3.3.2.2.1. Associated Real-World Activity
A remote system wants to query the EasyAccess Modality database using the C-FIND command.

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3.3.2.2.2. Presentation Context Table

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 10.

10. Proposed Presentation Context for the Q/R Service by the Q/R SCP AE

Abstract Syntax	UID	Transf. Syntax	UID List	Role	Ext. Neg.
Pat. Root Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.1.1				
Study Root Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.2.1				
Pat./Study Only Q/R Info. Model – FIND	1.2.840.10008.5.1.4.1.2.3.1	ELE	1.2.840.10008.1.2.1	SCP	
Pat. Root Q/R Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.1.2	EBE	1.2.840.10008.1.2.2	SCP	
Study Root Q/R Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.2.2	ILE	1.2.840.10008.1.2	SCP	
Pat./Study Only Info. Model – MOVE	1.2.840.10008.5.1.4.1.2.3.2				

3.3.2.2.3. SOP Specific Conformance to FIND SOP classes

The Q/R SCP AE provides standard conformance to the DICOM FIND SOP classes as SCP with the following exceptions:

➢ Fractions of seconds are ignored.
➢ At most 500 matches are returned. The hit limit can be configured. If there are more items than the hit limit in the EasyAccess Modality database, zero matches are returned.

The tables 11,12,13 and 14 on page 21 and page 22 lists all attributes that are supported as matching and return keys. Relational queries are supported.
Case insensitive matching is used for patient name. For all other attributes, case sensitive matching is used.
Range matching is supported for both Study Date and Study Time. If both Study Date and Study Time is specified as a range, e.g. date1 – date2 and time1 – time2, all studies between date1.time1 and date2.time2 are returned. I.e. the result is not all studies between two time points on consecutive dates. If this is required, the SCU must do a query on date range only, requiring time in return and filter out the required studies himself. If Study Date is not specified and Study Time is specified as a range an implicit Study Date of today is assumed, i.e. all studies between the two time point on the day the query is done is returned.
If no matches are found, a response with SUCCESS is sent.

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The tables below contain the DICOM keys that are supported by the Q/R SCP AE in C-FIND requests. The three columns under Type corresponds to the different Q/R information models:

➢ Pat   =   Patient Root
➢ Study =   Study Root and
➢ P/S O =   Patient/Study Only

The contents of the Type columns specify the key type, where

➢ M   =   supported for matching
➢ R   =   supported as return key

A "X" indicates that the key is supported.

11. Key List Q/R C-FIND request PATIENT Level

Key	Tag	Type		Modality	Comment
		Pat	P/S O		
Patient's Name	(0010,0010)	M	M	X	Case insensitive matching
Patient ID	(0010,0020)	M	M	X	
Patient's Birth Day	(0010,0030)	M	M	X	
Patient's Sex	(0010,0040)	M	M	X	

12. Key List Q/R C-FIND request STUDY Level

Key	Tag	Type			Modality	Comment
		Pat	Study	P/S O		
Study Date	(0008,0020)	M	M	M	X	
Study Time	(0008,0030)	M	M	M	X	
Accession Number	(0008,0050)	M	M	M	X	Space character will be removed during import
Modalities in Study	(0008,0061)	M	M	M	X	
Ref. Physician's Name	(0008,0090)	R	R	R	X	
Study Description	(0008,1030)	M	M	M	X	
Patient's Name	(0010,0010)	-	M	-	X	Case sensitive matching
Patient ID	(0010,0020)	-	M	-	X	
Patient's Birth Day	(0010,0030)	-	M	-	X	
Patient's Sex	(0010,0040)	-	M	-	X	
Study ID	(0020,0010)	M	M	M	X	Space character will be removed during import
Study Instance UID	(0020,000D)	M	M	M	X	

13. Key List Q/R C-FIND request SERIES Level

Key	Tag	Type		Modality	Comment
		Pat	Study		
Modality	(0008,0060)	M	M	X	
Body Part Examined	(0008,0015)	M	M	X	
Series Number	(0020,0010)	M	M	X	
Series Instance UID	(0020,000E)	M	M	X	

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14. Key List Q/R C-FIND request INSTANCE Level

Key	Tag	Type		Modality	Comment
		Pat	**Study**		
SOP Class UID	(0008,0016)	M	M	X	
SOP Instance UID	(0008,0018)	M	M	X	
Instance Number	(0020,0013)	M	M	X	

3.3.2.2.4. *Presentation Context Acceptance Criterion*

The intersection between the proposed and acceptable Presentation Contexts is taken for the established association.

3.3.2.2.5. *Transfer Syntax Selection Policies*

The transfer syntax selection is done according to the order in Table 10.

3.3.2.3. Real-World Activity – Retrieve Images from EasyAccess Modality Database

3.3.2.3.1. *Associated Real-World Activity*

A remote application entity wishes to retrieve images from the EasyAccess Modality database using the C-MOVE command.

3.3.2.3.2. *Presentation Context Table*

The proposed abstract syntaxes and transfer syntaxes is found by investigating Table 10.

3.3.2.3.3. *SOP Specific Conformance to MOVE SOP classes*

The Q/R SCP AE provides standard conformance to the DICOM MOVE SOP classes as SCP. In case of no matching examinations, a response of SUCCESS is returned to the association initiator.
If the association to the move destination is rejected a response "Unable to process" (C001) is returned to the association initiator.
If the move destination is unknown (not defined in the configuration file) a response "Destination unknown" (A801) is returned to the association initiator.
For other errors a response "Out of resources" (A702) is returned to the association initiator. See Tables 11,12, and 13 for further information.

3.3.2.3.4. *Presentation Context Acceptance Criterion*

The intersection between the proposed and acceptable Presentation Contexts is taken for the established association.

3.3.2.3.5. *Transfer Syntax Selection Policies*

The transfer syntax selection is done according to the order in Table 10.

3.3.3. Association Initiation Policy

The Q/R SCP AE will not initiate any associations. When a retrieve request is forwarded to the Q/R SCP, the images will be copied using the Storage SCU AE.

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4. COMMUNICATION PROFILES

4.1. Supported Communication Stacks

All AE's described in this conformance statement provide DICOM 3.0 TCP/IP Network Communication Support as defined in part eight of the DICOM Standard.

4.2. TCP/IP Stack

The AE's uses the TCP/IP stack built into their respective operating system. For more information about operating systems consult their manuals.

4.3. Physical Media Support

All AE's are neutral to the physical medium over which TCP/IP executes. They can e.g. be used with fiber optics, token ring, Ethernet and twisted pair.

4.4. OSI Stack

Not supported

4.5. Point to Point Stack

Not supported

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5. EXTENSIONS/SPECIALIZATION/PRIVATIZATION

5.1. Transfer Syntaxes

The Sectra Compression Transfer Syntax can be used between different components of Sectra PACS. The UID of the Transfer Syntax is 1.2.752.24.3.7.6.

5.2. Private Attributes

If configured so, the Store Application Entity can include some Private Attributes in images exported from it. The Table below gives an overview of these Private Attributes.

15. Private Attributes

Tag	Name	VR	VM	Description
(0009,00xx)	Private Creator Code	LO	1	Value: SECTRA_Ident_01
(0009,xx01)	Request Number	LO	1	Unique ID of request for this image
(0009,xx02)	Examination Number	LO	1	Unique ID of examination for this image
(0029,00yy)	Private Creator Code	LO	1	Value: SECTRA_ImageInfo_01
(0029,yy01)	Image info	OB	1	Image settings made on EasyVision Workstation

5.3. Exported Presentation States

If the EasyVision user makes changes in the default image settings and/or annotations, these settings and annotations can be exported as DICOM Standard Grayscale Presentation States if the Storage SCP supports this function. The presentation states modules contain the following information generated from EasyAccess Modality settings and annotations.

If the EasyAccess Modality user changes an existing default setting the SOP Instance UID of the associated presentation state will be changed. The old setting will not be saved. Please note that Presentation States that has been imported into EasyAcess will be exported in a transparent way.

16. Exported Presentation States

Module	EasyVision correspondence	Comment
Presentation State	-	Label: "EasyVision" ; Description: "EasyVision Default setting"
Mask	-	Not used
Display Shutter	Cropping	Always RECTANGULAR
Bitmap Display Shutter	-	Not used
Overlay Plane	-	Not used
Overlay/Curve Activation	-	All 60xx overlays are rendered in graphic layer 0. 50xx curves are not displayed.
Displayed Area	A combination of view port, zoom factor, zoom to fit, true size	The presentation size mode can be one of "TRUE SIZE", "SCALE TO FIT"' or "MAGNIFY", depending on the EasyVision settings.
Graphic Annotation	All overlays graphics and measurements.	Always use annotations units "PIXEL", i.e. image relative coordinates.
Spatial Transformation	Rotation/flip.	-
Graphic Layer	-	Only one single layer "0".

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Module	EasyVision correspondence	Comment
Modality LUT	-	Copied from original image.
Softcopy VOI LUT	Window width/center setting or currently selected LUT.	If the user has selected a true lookup table from the original image, this table is copied from the original image. Otherwise the current window width/center is used.
Softcopy Presentation LUT	-	Normally "IDENTITY", but in some cases it could also be "INVERSE".

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6. CONFIGURATION

6.1.   General

EasyAccess Modality is configurable. The section below describes the configuration parameter for each Application Entity.

6.2.   Storage SCU

Configuration is specified in the Teleradiology section of the EasyAccess Modality System Administrator's Guide.

➢ **Configuration file**
The file ctn_qrscu.def contains configuration for Storage SCU.
➢ **Remote AE**
Storage SCP must recognize remote hosts.

6.3.   Storage SCP

➢ **Configuration file**
The file ctn_store.def contains configuration for Storage SCU.
➢ **AE title**
The default AE title is DICOM_STORAGE.
➢ **Port**
Default port is 7810
➢ **Remote AE**
Storage SCP must recognize remote hosts.

6.4.   Q/R SCP

➢ **Configuration file**
The file ctn_qrscp.def contains configuration for Storage SCU.
➢ **AE title**
The default AE title is DICOM_QR_SCP
➢ **Port**
Default port is 7840
➢ **Remote AE**
Storage SCP must recognize remote hosts.

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7. SUPPORT OF EXTENDED CHARACTER SETS

7.1. Supported Extended Character Sets

All AE provide support for ISO_IR 100 extended character set except Print SCU AE. However, note that all text in the images is passed to the printer in the image data itself. This means that all overlay text appears on the printed medium in the same way as on the screen. EasyAccess Modality handles most character repertoires used in Western Europe.

8. APPENDIX

8.1.   Appendix 1 - Attribute List for EasyVision Storage AE

This list contains the DICOM attributes that are used by a Storage SCP AE by default. Please note that the default behavior can be changed for both EasyAcess and EasyVision. The comments give indication what the attributes are used for. If an attribute is not present in this list it is still stored by EasyAcess but ignored by EasyVision.

17. Mapped Attributes for EasyVision Storage AE

DICOM Attribute	Tag	Comment
Specific Character Set	(0008,0005)	ISO_IR 100 is supported
SOP Class UID	(0008,0016)	Stored in EasyAcess Modality image data (max 64 characters)
SOP Instance UID	(0008,0018)	Stored in EasyAcess Modality image data (max 64 characters) Required attribute for compression. Used in w_store to overwrite equivalent image (if -k is not specified).
Study Date	(0008,0020)	Stored in EasyAcess Modality examination data if value not found in RIS. Shown in all EasyVision image windows if present and (0008,0023) and (0008,0022) and (0008,0021) not present.
Study Time	(0008,0030)	Stored in EasyAcess Modality examination data if value not found in RIS. Shown in all EasyVision image windows if present and (0008,0033) and (0008,0022) and (0008,0021) not present.
Accession Number	(0008,0030)	Stored in EasyAcess Modality examination data (max 16 characters). Default attribute for examination number in EasyAcess. Used for connecting the image to RIS entities.
Modality	(0008,0050)	Stored in EasyAcess Modality series data (max 32 characters). Stored in EasyAcess Modality exam data (max 16 characters). Defines modality for modality specific settings in EasyVision (e.g. information in images and selecting default print partition).
Institution Name	(0008,0060)	Stored in EasyAcess Modality examination data (max 32 characters).
Referring Physician's Name	(0008,0080)	Stored in EasyAcess Modality request data (max 64 characters).
Station Name	(0008,1010)	Stored in EasyAcess Modality series data (max 64 characters). Stored in EasyAcess Modality exam data (max 32 characters).
Study Description	(0008,1030)	Stored in EasyAcess Modality examination data (max 64 characters).
Performing Physician's Name	(0008,1050)	Stored in EasyAcess Modality examination data (max 32 characters).
Referenced Image Sequence	(0008,1140)	Used by EasyAcess Modality in default method for locating scanograms.
Referenced SOP Instance UID	(0008,1155)	Used by EasyAcess Modality in default method for locating scanograms.
Patient Name	(0010,0010)	Stored in EasyAcess Modality patient data if value not found in RIS (max 64 characters).

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DICOM Attribute	Tag	Comment
Patient ID	(0010,0020)	Must be set. If not, (0010,0010) Patient Name is used as Patient ID in EasyAcess Modality. If both (0010,0020) Patient ID and (0010,0010) Patient Name are empty, the request number is used as Patient ID in EasyAcess Modality. Stored in EasyAcess Modality patient data if value not found in RIS (max 64 characters). Used as request number in EasyAcess Modality if attribute for request number (default: (0020,0010) Study ID) is empty.
Patient's Birth Date	(0010,0030)	Stored in EasyAcess Modality patient data if value not found in RIS.
Patient's Sex	(0010,0040)	Stored in EasyAcess Modality patient data if value not found in RIS.
Body Part Examined	(0018,0015)	Stored in EasyAcess Modality examination data (max 32 characters).
Study Instance UID	(0020,000D)	Stored in EasyAcess Modality examination data (max 64 characters).
Series Instance UID	(0020,000E)	Stored in EasyAcess Modality series data (max 64 characters). Is used for non-default method for identifying scanogram images if "-S U" option is used with w_store. By default, must be equal for all images within a stack.
Study ID	(0020,0010)	Stored in EasyAcess Modality examination data (max 16 characters). Default attribute for request number in EasyAcess. Used for connecting the image to RIS entities.
Series Number	(0020,0011)	Stored in EasyAcess Modality series data Is used for non-default method for identifying scanogram images if "-S S" option is used with w_store.
Instance (Image) Number	(0020,0013)	Stored in EasyAcess Modality image data Is used for non-default method for identifying scanogram images if "-S I" option is used with w_store. Shown in EasyVision image window for all CT and MR images
Frame of Reference UID	(0020,0052)	Is used for non-default method for identifying scanogram images if "-S A" option is used with w_store.
Photometric Interpretation	(0028,0004)	MONOCHROME1, MONOCHROME2, PALETTE_COLOR and RGB are supported by EasyVision. If this attribute is not set, MONOCHROME2 is used by EasyVision.
Pixel Spacing	(0028,0030)	Used for calibrating the image in EasyVision. If empty (0018,1164) is used. Important attribute for showing location of images in scanograms in EasyVision. Needs to be present in both the stack and in the scanogram. See also (0020,0032) and (0020,0037). An images with non-square pixels can be transformed to an image with square pixels during image import. EasyVision can only handle images with square pixels.
Pixel Aspect Ratio	(0028,0034)	Not used. 1/1 assumed by EasyVision. There are possibilities to convert non-square pixels to square pixels in image import.
Bits Allocated	(0028,0100)	Must be set to be viewable in EasyVision
Bits Stored	(0028,0101)	Must be set and less than (0028,0100) Bits Allocated to be viewable in EasyVision.
High Bit	(0028,0102)	If not set, (Bit Stored)-1 is used by EasyVision. If set, must be between greater than 0 and less than or equal to Bits Allocated. If not, (Bits Stored)-1 is used by EasyVision.
Pixel Representation	(0028,0103)	If not set, 0000H (unsigned integer) is assumed by EasyVision.
Window Center	(0028,1050)	If not set, the default in IDS is half the bit depth.
Window Width	(0028,1051)	If not set, the default in EasyVision is the bit depth.

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DICOM Attribute	Tag	Comment
Rescale Intercept	(0028,1052)	Is used for calculating Hounsfield units of CT images in EasyVision.
Rescale Slope	(0028,1053)	Is used for calculating Hounsfield units of CT images in EasyVision.
Modality LUT Sequence	(0028,3000)	The first LUT in a sequence is used by EasyVision, the rest is ignored.
LUT Descriptor	(0028,3002)	Must be set if (0028,3000) Modality LUT Sequence is used.
LUT Data	(0028,3006)	Must be set if (0028,3000) Modality LUT Sequence is used.
Performed Procedure Step Start Date	(0040,0244)	Stored in EasyAcess Modality series data
Performed Procedure Step Start Time	(0040,0245)	Stored in EasyAcess Modality series data
Performed Procedure Step Description	(0040,0254)	Stored in EasyAcess Modality examination data, comments field (max 512 characters).
Request Attribute Sequence	(0040,0275)	Stored in EasyAcess Modality series data
> Scheduled Procedure Step ID	(0040,0009)	Stored in EasyAcess Modality series data
> Requested Procedure ID	(0040,1001)	Stored in EasyAcess Modality series data
Pixel Data	(7FE0,0010)	Must be set.

The ">"character indicates that the SOP Class is part of the above mentioned Meta SOP Class

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