Philips Medical Systems

DICOM

CONFORMANCE STATEMENT

EasyVision 8.2

DX / CL / RG / HOME

Document Number XPB 080-020039

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PHILIPS

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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

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).

General Acronyms and Abbreviations.
The following acronyms and abbreviations are used in the document.

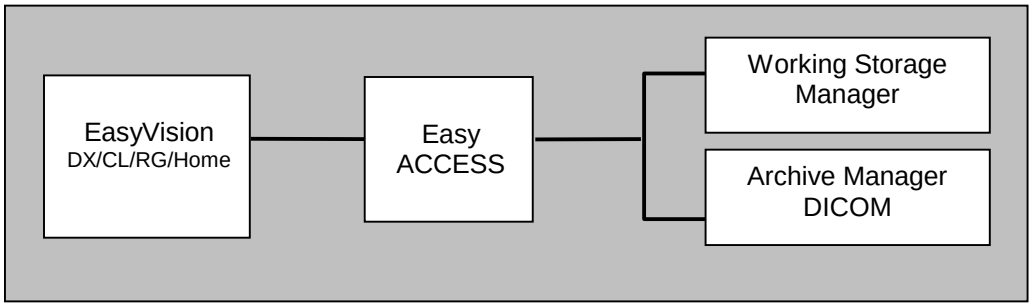
- ACC American College of Cardiology
- AE Application Entity
- ACR American College of Radiology
- ANSI American National Standard Institute
- DICOM Digital Imaging and Communication in Medicine
- DIMSE DICOM Message Service Element
- ELE Explicit VR Little Endian
- EBE Explicit VR Big Endian
- ILE Implicit 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

2. IMPLEMENTATION MODEL

This document is the DICOM Conformance Statement for the Philips Medical Systems EasyVision DX, EasyVision CL, EasyVision RG, and EasyVision Home, later referred to as EasyVision. EasyVision is part of the EasyAccess PACS family. EasyAccess has two different versions, one on Windows 2000 (EasyAccess Entry) and another on Unix (EasyAccess Enterprise). EasyVision is only available on Windows 2000 Platform.
The Figure below shows the main components in a EasyAccess Enterprise/Entry environment:

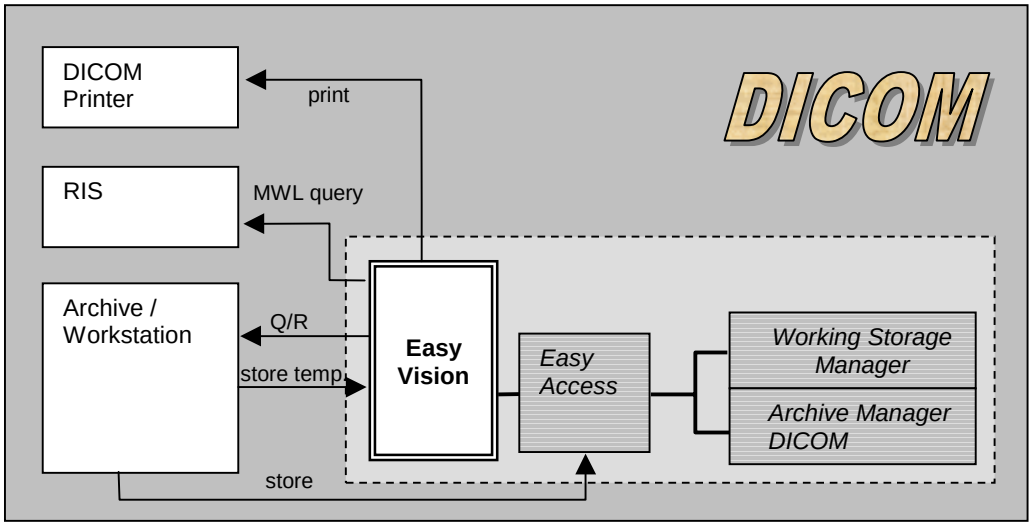
- EasyVision – Workstation, graphical users interface.
- EasyAccess – Database, administration.
- Working Storage Manager – Short-term data storage.
- Archive Manager DICOM – Interface to external DICOM archive

EasyAccess, Working Storage Manager and Archive Manager DICOM have a very tight connection and are from now on called EasyAccess Enterprise/Entry.



EasyVision in a DICOM network

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



EasyVision is a Multi-modality viewing station for DICOM images. It provides (among other things) the following features:

- Reply on communication tests from remote applications
- Print images
- Query a Radiology Information System (RIS) for a modality work list
- Query a DICOM archive
- View images fetched to a temporary location from a DICOM archive
- Import images from a DICOM archive to EasyAccess.

There are differences between the EasyVision versions DX, CL, RG and Home, regarding DICOM and other, non-DICOM functionality. The Matrix below gives an overview of which (DICOM) functionality will be supported by which EasyVision version.

Table 1. Functionality Matrix

Easy Vision DICOM Functionality MATRIX	EasyVision DX	EasyVision CL	EasyVision RG	EasyVision Home
Merges PACS Worklist and RIS information in one view	✔	✔	✔	✔
Printing images to Postscript printer	✔	✔	✔	✔
Adjustable window width and level at image view	✔	✔	✔	✔
Pre defined grayscale settings at image view	✔	✔	✔	✔
Supports viewing a majority of available DICOM SOP Classes at image view	✔	✔	✔	✔
Zoom and window width and level at Multi-frame view	✔	✔	✔	✔
Creation of static Worklist	✔	✔	✔	✔
DICOM Q/R	✔	✔	✔	✔
DICOM Modality Worklist	✔	✔	✔	✔
Dynamic Worklist to quickly find examinations	✔	✔	✔	✔
Personalized Worklist	✔	✔	✔	✔
Image calibration	✔		✔	✔
Remove series of examinations	✔		✔	✔
Remove examinations	✔		✔	✔
View DICOM header information	✔		✔	✔
DICOM Print Management SCU	✔		✔	✔

2.1. Application Data Flow Diagram

EasyVision behaves as a system with three different Application Entities (AE's). Its related Implementation Model is shown in Figure 1 on page 8. The three Application Entities are:

- **Print –** The Print SCU Application Entity is responsible for sending print request to DICOM printers. It is connected to the EasyVision product. There is only one Print SCU AE per EasyVision. As described in the EasyVision User's Documentation the EasyVision workstation user chooses images to print from the matrix or image windows. When the user has collected the images to print, he or she issues the print command. This will open the print preview. From the preview the user can do some further arrangement for the print, choose the printer to print to, and send the images to this printer. When this happens the Print SCU AE is activated, acts as a SCU and initiates an association with the remote AE, supporting DICOM Print Management as SCP (a DICOM printer).
- **Storage –** The Storage SCP AE is responsible for receiving images. The EasyVision Storage SCP is used for receiving Q/R images fetched from a Q/R SCP only. It will only store the images temporary and should not be used for long-term storage. Each time the EasyVision is shut down, all stored images are removed.

- **Q/R-MWL -** Q/R-MWL handles queries and retrieve requests from an EasyVision user. The user can define search criteria and request information from several Q/R SCP's and/or MWL SCP's at the same time. When responses are received from a Q/R SCP the user can select examinations and import them to the EasyAccess Storage SCP or choose to fetch them temporarily to the EasyVision Storage SCP and view them locally.

2.2. Functional Definition of Application Entities

- The EasyVision Print Application Entity acts as Service Class User (SCU) of the Print Service Class.
- The EasyVision Storage Application Entity acts as a Service Class Provider (SCP) of the Storage Service Class, for images fetched from a Q/R SCP only.
- The EasyVision Q/R MWL Application Entity acts as Service Class User (SCU) of the Query/Retrieve Management Worklist Service.
- EasyVision acts as Service Class Provider (SCP) of Verification.

2.3. Sequencing of Real World Activities

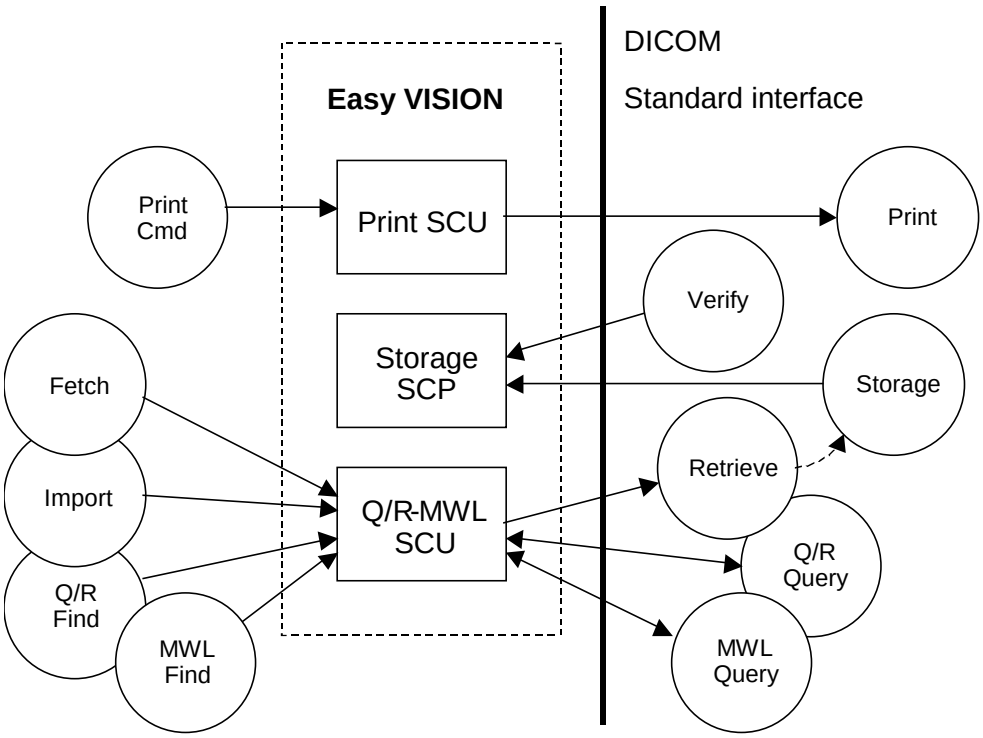
The following sequence of Real World activities is supported by the system:

- EasyVision will perform operations (Print, Send, Approve) on images found in EasyAccess. It can also query DICOM archives and receive images locally for temporary viewing.

The EasyVision 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



3. AE SPECIFICATIONS

The Network capabilities of the system consists of four DICOM Application Entities:
- A Print AE
- An Storage AE
- A Query / Retrieve as SCU AE

The three AE's are specified in section 3.1 to section 3.3.

3.1. Print AE / SCU

The EasyVision Print AE Application Entity provides Standard Conformance to the DICOM V3.0 SOP classes as an SCU specified in Table 3.

Table 2. Supported SOP Classes as SCU by the Print AE

SOP Class Name	UID
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9
> Basic Film Session	1.2.840.10008.5.1.1.1
> Basic Film Box	1.2.840.10008.5.1.1.2
> Grayscale Image Box	1.2.840.10008.5.1.1.4
> Printer	1.2.840.10008.5.1.1.16

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

3.1.1. Association Establishment Policies

3.1.1.1. General

The maximum PDU size the Print Application Entity will use is 16 Kbytes (16kB).

3.1.1.2. Number of Associations

The Number of associations the Print Application Entity can handle at a time is one. One printer request has to be finished before the next can be started.

3.1.1.3. Asynchronous Nature

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

3.1.1.4. Implementation Identifying Information

The Print 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:	**"WIPRISCU_8_20"**

3.1.2. Association Acceptance Policy

The Print Application Entity does not handle incoming associations.

3.1.3. Association Initiation Policy

3.1.3.1. Real-World Activity - Print

3.1.3.1.1. Associated Real-World Activity

As described in the EasyAccess User's Documentation the EasyVision workstation user chooses images to print from the matrix or image windows. When the user has collected the images to print, he or she issues the print command. This will open the print preview. From the preview the user can do some further arrangement for the print, choose the printer to print to and send the images to this printer. When this happens the Print SCU AE is activated, acts as an SCU and initiates an association with a remote AE, supporting DICOM Print Management as SCP (a DICOM printer).

3.1.3.1.2. Presentation Context Table

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

Table 3. Proposed Presentation Context for the Print Service by the Print AE

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	ILE	1.2.840.10008.1.2	SCU	None

3.1.3.1.3. SOP Specific Conformance

The Print Application Entity supports the mandatory SOP classes, which are defined under the Basic Grayscale Print Management Meta SOP Class, see Table 3. No optional SOP classes are supported.
The Print Application Entity uses the following DIMSE Service Elements:

Table 4. DIMSE Service Elements

SOP Class	DIMSE Service Element
Basic Film Session SOP Class	N-CREATE, N-DELETE
Basic Film Box SOP Class	N-CREATE, N-DELETE, N-ACTION
Basic Grayscale Image Box SOP Class	N-SET
Printer SOP Class	N-GET

N-EVENT-REPORT is not supported.

Immediately after establishing an association, the Print SCU AE will execute an N-GET on the Printer SOP Class. This operation can be configured into two modes, one for fetching all available printer attributes and one for fetching a minimal set of printer attributes.
If configured to fetch all attributes, the following attributes will be requested:

Table 5. Requested Attributes (fetch all)

Attribute Name	Tag	Optional according to
Printer Status	(2110,0010)	NO
Printer Status Info	(2110,0020)	NO
Printer Name	(2110,0030)	YES
Manufacture	(0008,0070)	YES
Manufacture Model Name	(0008,1090)	YES
Device Serial Number	(0008,1000)	YES

Attribute Name	Tag	Optional according to
Software Version	(0008,1020)	YES
Date of last Calibration	(0008,1200)	YES
Time of last Calibration	(0008,1201)	YES

If configured to fetch a minimum set of attributes, the following attributes will be requested:

Table 6. Requested Attributes (fetch minimal)

Attribute Name	Tag	Optional according to
Printer Status	(2110,0010)	NO
Printer Status Info	(2110,0020)	NO
Printer Name	(2110,0030)	YES

- If the Printer Status tag is returned as NORMAL, the print job will continue immediately.
- If the status is WARNING, the user will be notified and the value of the Printer Status Info tag will be displayed. The print job is then continued.
- If the status is FAILURE, the user will be notified and the value of the Printer Status Info tag will be displayed. The print job is then aborted.

The Print Application Entity supports the following SOP class attributes:

Table 7. Supported SOP Class Attributes by Print AE

SOP Class DIMSE Service	Attribute Name	Tag	Opt. Accord. to Standard	Configure-able	Default Value
Basic Film Session N-CREATE	Number of Copies	(2000,0010)	YES	YES	1
Basic Film Session N-CREATE	Print Priority	(2000,0020)	YES	YES	MED
Basic Film Session N-CREATE	Medium Type	(2000,0030)	YES	YES	BLUE FILM
Basic Film Session N-CREATE	Film Destination	(2000,0040)	YES	YES	MAGAZINE
Basic Film Box N-CREATE	Image Display Format	(2010,0010)	NO	NO	STANDARD\1,1
Basic Film Box N-CREATE	Film Orientation	(2010,0040)	YES	YES	PORTRAIT
Basic Film Box N-CREATE	Film Size ID	(2010,0050)	YES	YES	14INX17IN
Basic Film Box N-CREATE	Magnification Type	(2010,0060)	YES	YES	(none)
Basic Film Box N-CREATE	Max Density	(2010,0130)	YES	YES	(none)
Basic Film Box N-CREATE	Configuration Information	(2010,0150)	YES	YES	(none)
Basic Film Box N-CREATE	Smoothing Type	(2010,0080)	YES	YES	(none)
Basic Film Box N-CREATE	Border Density	(2010,0100)	YES	YES	BLACK
Basic Film Box N-CREATE	Empty Image Density	(2010,0110)	YES	YES	BLACK
Basic Film Box N-CREATE	Min Density	(2010,0120)	YES	YES	(none)
Basic Film Box N-CREATE	Trim	(2010,0140)	YES	YES	YES

SOP Class DIMSE Service	Attribute Name	Tag	Opt. Accord. to Standard	Configure-able	Default Value
Bas.Gray. Image Box N-SET	Polarity	(2020,0020)	YES	YES	NORMAL

Several images per film can be printed. They are arranged in EasyVision, which composes them and sends them as one big image (Image Display Format "STANDARD\1,1").

3.1.3.1.3.1. Basic Film Session SOP Class

Table 8. N-CREATE-RQ - Basic Film Session Presentation Module

Attribute Name	Tag	Note
Number of Copies	2000,0010	
Print Priority	2000,0020	
Medium Type	2000,0030	
Film Destination	2000,0040	
Film Session Label	2000,0050	
Memory Allocation	2000,0060	
Owner ID	2100,0160	

Table 9. N-CREATE-RQ - Basic Film Session Relationship Module

Attribute Name	Tag	Note
Proposed Study Sequence	2130,00A0	
>Study Date	0008,0020	
>Study Time	0008,0030	
>Accession Number	0008,0050	
>Referring Physician's Name	0008,0090	
>Study Description	0008,1030	
>Name of Physician(s) Reading Study	0008,1060	
>Admitting Diagnoses Description	0008,1080	
>Patient's Name	0010,0010	
>Patient ID	0010,0020	
>Patient's Birth Date	0010,0030	
>Patient's Birth Time	0010,0032	
>Patient's Sex	0010,0040	Applied Value(s): F, M, O
>Other Patient IDs	0010,1000	
>Other Patient Names	0010,1001	
>Patient's Age	0010,1010	
>Patient's Size	0010,1020	
>Patient's Weight	0010,1030	
>Ethnic Group	0010,2160	
>Occupation	0010,2180	
>Patient Comments	0010,4000	
>Study Instance UID	0020,000D	
>Study ID	0020,0010	
>Series Number	0020,0011	

3.1.3.1.3.2. Basic Grayscale Image Box SOP Class

Table 10. N-SET-RQ - Image Box Pixel Presentation Module

Attribute Name	Tag	Note
Magnification Type	2010,0060	
Smoothing Type	2010,0080	
Min Density	2010,0120	
Max Density	2010,0130	
Configuration Information	2010,0150	
Image Position	2020,0010	
Polarity	2020,0020	
Requested Image Size	2020,0030	
Requested Decimate/Crop Behavior	2020,0040	
Preformatted Grayscale Image Sequence	2020,0110	
>Samples per Pixel	0028,0002	Applied Value(s): 1
>Photometric Interpretation	0028,0004	Applied Value(s): MONOCHROME1, MONOCHROME2
>Rows	0028,0010	
>Columns	0028,0011	
>Pixel Aspect Ratio	0028,0034	
>Bits Allocated	0028,0100	Applied Value(s): 16, 8
>Bits Stored	0028,0101	Applied Value(s): 12, 8
>High Bit	0028,0102	Applied Value(s): 11, 7
>Pixel Representation	0028,0103	Applied Value(s): 0x0000
>Pixel Data	7FE0,0010	
Referenced Image Overlay Box Sequence	2020,0130	
>Referenced SOP Class UID	0008,1150	Applied Value(s): 1.2.840.10008.5.1.1.24
>Referenced SOP Instance UID	0008,1155	
Referenced Presentation LUT Sequence	2050,0500	
>Referenced SOP Class UID	0008,1150	
>Referenced SOP Instance UID	0008,1155	
Original Image Sequence	2130,00C0	
>Requested SOP Class UID	0000,0003	
>Requested SOP Instance UID	0000,1001	
>Referenced Frame Number	0008,1160	
>Patient ID	0010,0020	
>Study Instance UID	0020,000D	
>Series Instance UID	0020,000E	
>Instance Number	0020,0013	

3.1.3.1.3.3. Printer SOP Class

Table 11. N-GET-RQ - Printer Module

Attribute Name	Tag	Note
Manufacturer	0008,0070	
Manufacturer's Model Name	0008,1090	
Device Serial Number	0018,1000	
Software Version(s)	0018,1020	
Date of Last Calibration	0018,1200	
Time of Last Calibration	0018,1201	

Attribute Name	Tag	Note
Printer Status	2110,0010	
Printer Status Info	2110,0020	
Printer Name	2110,0030	

3.2. Storage AE / SCP

The EasyVision Storage Application Entity provides Standard Conformance to the DICOM V3.0 SOP classes as an SCP specified in Table 12.

Table 12. Supported SOP Classes as SCP by the Storage AE

SOP Class Name	UID
Verification	1.2.840.10008.1.1
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
RT Image Storage	1.2.840.10008.5.1.4.1.1.481.1

SOP Class Name	UID
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
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 Application Entity will use, is configurable. The default size is 28672 bytes (28 kB). Configuration can be done by Philips authorized personnel only. Allowed values are between 4096 bytes (4kB) and 131072 bytes (128 kB) including these values.

3.2.1.2. Number of Associations

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

3.2.1.3. Asynchronous Nature

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

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

The Storage Application Entity 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, if the EasyAccess server is not responding (Configurable).

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 database.

3.2.2.1. 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 proposed abstract syntaxes and transfer syntaxes is found by investigating and Table 13.

Table 13. Proposed Pres. Context for Verification Service by the Storage AE

Abstract Synt. Name	UID	Transfer Syntax Name List	UID List	Role	Ext. Neg.
Verification	1.2.840.10008.1.1	ELE EBE JPEG lossl. Non-Hierach. JPEG lossl. Hierach.FOP ILE JPEG Extended JPEG full prog. Non-Hier.	1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.55	SCP SCP SCP SCP 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.

3.2.2.1.5. Transfer Syntax Selection Policies

The transfer syntax selection is done according to the order in Table 12.

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 temporary on EasyVision workstation.

3.2.2.2.2. Presentation Context Table

The proposed abstract syntaxes and transfer syntaxes can be found by investigating Table 14.

Table 14. Proposed Pres. Context for the Storage Service by the Storage AE

Abstract Synt. Name	UID	Transfer Syntax Name List	UID List	Role	Ext. Neg.
Note 1		ELE	1.2.840.10008.1.2.1	SCP	
		EBE	1.2.840.10008.1.2.2	SCP	
		JPEG lossl. Non-Hierarchical	1.2.840.10008.1.2.4.57	SCP	
		JPEG lossl. Hier. First-Order Pred.	1.2.840.10008.1.2.4.70	SCP	
		ILE	1.2.840.10008.1.2	SCP	
		JPEG Extended	1.2.840.10008.1.2.4.51	SCP	
		JPEG full prog. Non-Hierarchical	1.2.840.10008.1.2.4.55	SCP	

Note 1: All Image Storage SOP Classes from table 6

3.2.2.2.3. SOP Specific Conformance to Storage SOP classes

When images arrive to Storage SCP, they are sorted into temporary directories from their source AE title, Study Instance UID and Series Instance UID. Images with same Series Instance UID will be interpreted as a stack and shown as one in EasyVision. Receiving the same image twice will not overwrite the first one; instead a duplicate image will be created. Only information available in images and their preceding queries will be shown and used.

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 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. For NM Multi-frame images only the default is supported, i.e. NM Multi-frame images cannot be split up into individual images.
- XA Bi-plane images cannot be viewed.
- EasyVision shows images with non-square pixels as if the pixels where square. It is possible to configure image import in EasyAccess so that non-square pixels are transformed to square pixels.
- Regarding color images, the EasyVision can only view those with Photometric interpretation (0028,0004), equal to RGB with 24 bits (8 bits per channel) or Photometric interpretation (0028,0004), equal to PALETTE_COLOR.
- Images are handled color-by-pixel internally in EasyAccess and EasyVision. In certain circumstances image that are sent color-by-plane to EASYACCESS/EasyVision are sent color-by-pixel if fetched from EasyVision/EasyAccess.
- Only the first LUT in a Modality LUT sequence 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.
- Presentation States cannot be viwed in the Viewer.
- Structured Reports cannot be viewed.

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 14.

3.2.3. Association Initiation Policy

The EasyVision Storage Application Entity will not initiate associations.

3.3. Query/Retrieve Management Worklist AE / SCU

The EasyVision Query/Retrieve MWL Application Entity provides Standard Conformance to the DICOM V3.0 SOP classes as an SCU specified in Table 15.

Table 15. Supported SOP Classes as SCU by the Q/R MWL AE

SOP Class Name	UID
Study Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1
Study Root Q/R Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31

3.3.1. Association Establishment Policies

3.3.1.1. General

The maximum PDU-length, which a Q/R MWL Application Entity will use, is 163842 bytes (16 kB).

3.3.1.2. Number of Associations

The Q/R MWL Application Entity can handle only one associations at a time. One Q/R MWL request must be finished, before the next Q/R MWL request can start.

3.3.1.3. Asynchronous Nature

The Q/R MWL Application Entity does not support asynchronous operations and will not perform asynchronous 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:	**“WIQRSCU_8_20”**

3.3.2. Association Acceptance Policy

The Query/Retrieve Management Worklist Application Entity does not handle incoming associations.

3.3.3. Association Initiation Policy

3.3.3.1. Real-World Activity – Q/R C-FIND

3.3.3.1.1. Associated Real-World Activity

A user creates a search or a Worklist, containing one or several Q/R SCP’s. Then the user defines the search criteria to be used and the search or Worklist search is performed. When several Q/R SCP’s are defined for a search or Worklist they are queried in sequences.

3.3.3.1.2. Proposed Presentation Contexts

The Q/R MWL Application Entity will propose the presentation contexts as given in the next table.

Table 16. Proposed Pres. Context for the Q/R C-FIND Service

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Study Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	ILE	1.2.840.10008.1.2	SCU	

3.3.3.1.3. SOP-Specific Conformance

The Q/R-MWL SCU provides standard conformance to the Q/R SOP class. See table 18 in section 3.3.3.2.2. for attributes used in Q/R C-FIND requests

3.3.3.2. Real-World Activity – MWL C-FIND

3.3.3.2.1. Associated Real-World Activity

A user creates a search or a Worklist, containing one or several Q/R SCP's. Then the user defines the search criteria to be used and the search or Worklist search is performed. When several Q/R SCP's are defined for a search or Worklist they are queried in sequences.

3.3.3.2.2. Proposed Presentation Contexts

The Q/R MWL Application Entity will propose the presentation contexts as given in the next table.

Table 17. Proposed Pres. Context for MWL C-FIND Service

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	ILE	1.2.840.10008.1.2	SCU	

3.3.3.2.3. SOP-Specific Conformance

The Q/R-MWL SCU provides standard conformance to the Q/R SOP class.
The following attributes can be used by the Q/R C-Find SCU.

Table 18. Attributes used by Q/R C-FIND as SCU

Attribute Name	Tag	Used for matching	Required in Response	Remarks
Patient ID	(0010,0020)	YES	YES	
Patient's Name	(0010,0010)	YES	YES	
Patient's Birth Date	(0010,0030)	NO	YES	
Patient's Sex	(0010,0040)	NO	YES	
Study Instance UID	(0020,000D)	NO	YES	
Study ID	(0020,0010)	YES	YES	
Accession Number	(0008,0050)	NO	YES	
Study Description	(0008,1030)	NO	YES	

The Q/R-MWL SCU provides standard conformance to the Q/R SOP class.
The following attributes can be used by the MWL C-FIND SCU.

Table 19. Attributes used by MWL C-FIND as SCU

Attribute Name	Tag	Used for matching	Required in Response	Remarks
Scheduled Procedure Step Sequence	(0040,0100)	YES	YES	
> Scheduled Station AE Title	(0040,0001)	YES	YES	
> Modality	(0008,0060)	YES	YES	
> Scheduled Station Name	(0008,0010)	YES	YES	
> Scheduled Procedure Step Start Date	(0008,0002)	YES	YES	
> Scheduled Procedure Step Start Time	(0008,0003)	YES	YES	
Patient ID	(0010,0020)	YES	YES	
Patient's Name	(0010,0010)	YES	YES	
Patient's Birth Date	(0010,0030)	NO	YES	
Patient's Sex	(0010,0040)	NO	YES	
Study Instance UID	(0020,000D)	NO	YES	
Study ID	(0020,0010)	YES	YES	
Accession Number	(0008,0050)	NO	YES	
Study Description	(0008,1030)	NO	YES	

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

3.3.3.3. Real-World Activity - IMPORT

3.3.3.3.1. Associated Real-World Activity

When responses are received from a search, as described in section 3.3.3.1, the user can select one or several of the matching studies to fetch them from the Q/R SCP. The images are sent to a configured destination, usually a Storage SCP AE on the EasyAccess.

3.3.3.3.2. Proposed Presentation Contexts

The Q/R MWL Application Entity will propose the presentation contexts as given in the next table.

Table 20. Proposed Pres. Context for the Import Service by the Q/R MWL AE

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Study Root Q/R Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	ILE	1.2.840.10008.1.2	SCU	

3.3.3.3.3. SOP-Specific Conformance

The Q/R-MWL SCU provides standard conformance to the Q/R SOP class.

3.3.3.4. Real-World Activity - FETCH

3.3.3.4.1. Associated Real-World Activity

When responses are received from a search, as described in section 3.3.3.2 , the user can select one or several of the matching studies to fetch them from the Q/R SCP. The images are sent to EasyVision workstation for temporary storage.

3.3.3.4.2. Proposed Presentation Contexts

The Q/R MWL Application Entity will propose the presentation contexts as given in the next table.

Table 21. Proposed Pres. Context for the Q/R Service by the Q/R MWL AE

Abstract Syntax Name	UID	Transfer Syntax	UID List	Role	Ext. Neg.
Study Root Q/R Inform. Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	ILE	1.2.840.10008.1.2	SCU	

3.3.3.4.3. SOP-Specific Conformance

The Q/R-MWL SCU provides standard conformance to the Q/R SOP class.

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

5. EXTENSIONS/SPECIALIZATION/PRIVATIZATION

5.1. Transfer Syntaxes

The Sectra Compression Transfer Syntax can be used between different components of EasyAccess. 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

Table 22. 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 DX Workstation

6. CONFIGURATION

6.1. General

Configuration files are found in the XXX\Philips\EasyVision\Config\… directory where "XXX" is specified at installation. See installation guide for EasyVision.

6.2. Storage SCP

More information about configuration for Storage SCP can be found in EasyVision System Administrators Guide.

- **Configuration file**
  The file ctnstore_scp.def contains configuration for Storage SCP.
- **AE title**
  Default AE Title is first part of host name in uppercase with an additional Storage behind it.
  Example: host = john.net => AE title = JOHNSTORE
- **Port**
  Default port is 7820.

6.3. Q/R-MWL SCU

More information about configuration for Storage SCP can be found in EasyVision System Administrators Guide.

- **Configuration file**
  The file data_cache.def contains configuration for Q/R-MWL SCU.

6.4. Print SCU

More information about configuration for Storage SCP can be found in EasyVision System Administrators Guide.

- **Configuration file**
  The file dicom_printer.def contains configuration for Print SCU.
- **AE Title**
  The default AE title is *DICOM_PRINT_SCU*.
- **Remote AE**
  The remote Applications Entity's AE-title, host name and port number are specified the above-mentioned configuration file. Each remote AE is specified in its own section of the file. Default AE title is *PRINT_SERVER_SCP*.

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. EasyVision 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 EasyAccess 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 EasyAccess but ignored by EasyVision.
For the Print Application Entity attributes, see Chapter 3.1 “Print AE Specification”. For supported attributes as keys for the Q/R Application Entity in a C-FIND request, and for supported attributes in exported presentation states, see Chapter 3.3.

Table 23. Mapped Attributes for EasyVision Storage AE

DICOM Attribute	Tag	Comment
Specific Character Set	(0008,0005)	ISO_IR 100 is supported
Image Type	(0008,0008)	Is used for determining default window setting in EasyVision DX if no window is included in the image. Third value used by w_store in default scanogram finding method, and method "-S A"
SOP Class UID	(0008,0016)	Stored in EasyAccess image data (max 64 characters)
SOP Instance UID	(0008,0018)	Stored in EasyAccess 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 EasyAccess 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.
Series Date	(0008,0021)	Shown in all EasyVision image windows if present and (0008,0023) and (0008,0022) not present.
Acquisition Date	(0008,0022)	Shown in all EasyVision image windows if present and (0008,0023) not present.
Image Date	(0008,0023)	If present, shown in all EasyVision image windows.
Study Time	(0008,0030)	Stored in EasyAccess 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.
Series Time	(0008,0031)	Shown in all EasyVision image windows if present and (0008,0033) and (0008,0032) not present.
Acquisition Time	(0008,0032)	Shown in all EasyVision image windows if present and (0008,0033) not present.
Image Time	(0008,0033)	If present, shown in all EasyVision image windows.
Accession Number	(0008,0030)	Stored in EasyAccess examination data (max 16 characters). Default attribute for examination number in EasyAccess. Used for connecting the image to RIS entities.
Modality	(0008,0050)	Stored in EasyAccess series data (max 32 characters). Stored in EasyAccess 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 EasyAccess examination data (max 32 characters).
Referring Physician’s Name	(0008,0080)	Stored in EasyAccess request data (max 64 characters).

DICOM Attribute	Tag	Comment
Station Name	(0008,1010)	Stored in EasyAccess series data (max 64 characters). Stored in EasyAccess exam data (max 32 characters).
Study Description	(0008,1030)	Stored in EasyAccess examination data (max 64 characters).
Performing Physician's Name	(0008,1050)	Stored in EasyAccess examination data (max 32 characters).
Referenced Image Sequence	(0008,1140)	Used by EasyAccess in default method for locating scanograms.
Referenced SOP Instance UID	(0008,1155)	Used by EasyAccess in default method for locating scanograms.
Patient Name	(0010,0010)	Stored in EasyAccess patient data if value not found in RIS (max 64 characters).
Patient ID	(0010,0020)	Must be set. If not, (0010,0010) Patient Name is used as Patient ID in EasyAccess. If both (0010,0020) Patient ID and (0010,0010) Patient Name are empty, the request number is used as Patient ID in EasyAccess. Stored in EasyAccess patient data if value not found in RIS (max 64 characters). Used as request number in EasyAccess if attribute for request number (default: (0020,0010) Study ID) is empty.
Patient's Birth Date	(0010,0030)	Stored in EasyAccess patient data if value not found in RIS.
Patient's Sex	(0010,0040)	Stored in EasyAccess patient data if value not found in RIS.
Contrast/Bolus Agent	(0018,0010)	Shown in EasyVision image window for all CT images
Body Part Examined	(0018,0015)	Stored in EasyAccess examination data (max 32 characters).
Scanning Sequence	(0018,0020)	Shown in EasyVision image window for all MR images if (0018,0024) not present.
Sequence Name	(0018,0024)	If present, shown in EasyVision image window for all MR images
Slice Thickness	(0018,0050)	Shown in EasyVision image window for all CT and MR images
KVP	(0018,0060)	Shown in EasyVision image window for all CT images
Repetition Time	(0018,0080)	Shown in EasyVision image window for all MR images
Echo Time	(0018,0081)	Shown in EasyVision image window for all MR images
Number of Averages	(0018,0083)	Shown in EasyVision image window for all MR images
Contrast/Bolus Volume	(0018,1041)	Shown in EasyVision image window for all CT and MR images
Reconstruction Diameter	(0018,1100)	Shown in EasyVision image window for all CT and MR images
Gantry/Detector Tilt	(0018,1120)	Shown in EasyVision image window for all CT images
Exposure Time	(0018,1150)	Shown in EasyVision image window for all CT images
X-Ray Tube current	(0018,1151)	Shown in EasyVision image window for all CT images
Image Pixel Spacing	(0018,1164)	Used for calibrating the image in EasyVision if (0028,0030) is not set.
Convolution Kernel	(0018,1210)	Shown in EasyVision image window for all CT images
Shutter Left Vertical Edge	(0018,1602)	Is used for EasyVision cropping.
Shutter Right Vertical Edge	(0018,1604)	Is used for EasyVision cropping.
Shutter Upper Horizontal Edge	(0018,1606)	Is used for EasyVision cropping.
Shutter Lower Horizontal Edge	(0018,1608)	Is used for EasyVision cropping.
Center of Circular Shutter	(0018,1610)	If present and (0018,1602) - (0018,1608) not present, defines an EasyVision square cropping.
Radius of Circular Shutter	(0018,1612)	If present and (0018,1602) - (0018,1608) not present, defines an EasyVision square cropping.
Patient Position	(0018,5100)	Shown in EasyVision image window for all CT and MR images
Study Instance UID	(0020,000D)	Stored in EasyAccess examination data (max 64 characters).

DICOM Attribute	Tag	Comment
Series Instance UID	(0020,000E)	Stored in EasyAccess 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 EasyAccess examination data (max 16 characters). Default attribute for request number in EasyAccess. Used for connecting the image to RIS entities.
Series Number	(0020,0011)	Stored in EasyAccess 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 EasyAccess 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
Patient Orientation	(0020,0020)	Always shown in EasyVision image windows for showing anatomical orientation of the image (anterior, posterior, right, left, head, foot). If not present, this information is calculated from tags (0020,0032) and (0020,0037).
Image Position (Patient)	(0020,0032)	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 (0020,0037) and (0028,0030).
Image Orientation (Patient)	(0020,0037)	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 (0028,0030).
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.
Samples per Pixel	(0028,0002)	If not set, 1 is assumed in EasyVision DX.
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 DX.
Planar Configuration	(0028,0006)	If not set, 000 is assumed by EasyVision.
Number of Frames	(0028,0008)	If not set, 1 is assumed by EasyVision.
Rows	(0028,0010)	Must be set to be viewable in EasyVision.
Columns	(0028,0011)	Must be set to be viewable in 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.
Rescale Intercept	(0028,1052)	Is used for calculating Hounsfield units of CT images in EasyVision.

DICOM Attribute	Tag	Comment
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 EasyAccess series data
Performed Procedure Step Start Time	(0040,0245)	Stored in EasyAccess series data
Performed Procedure Step Description	(0040,0254)	Stored in EasyAccess examination data, comments field (max 512 characters).
Request Attribute Sequence	(0040,0275)	Stored in EasyAccess series data
> Scheduled Procedure Step ID	(0040,0009)	Stored in EasyAccess series data
> Requested Procedure ID	(0040,1001)	Stored in EasyAccess 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