

EasyViz 2.8 SP5 Image Display DICOM Conformance Statement

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1 Conformance Statement Overview

The EasyViz Image Display implements the necessary DICOM services to query, retrieve and display CR, CT, DX, MG, MR, PT, RF, SC, US, and XA images. In addition, EasyViz Image Display may be used to: print DICOM instances to a network attached hardcopy device via the General 2D CAM, import DICOM instances from a CD-R/DVD via the EasyViz PACS Workflow Manager, or export DICOM instances to a CD-R/DVD via the EasyViz PACS Workflow Manager.

The DICOM Networking Services supported by the EasyViz Image Display are listed in Table 1.

Networking SOP Classes	User of Service (SCU)	Provider of Service (SCP)
<i>Transfer</i>		
Computed Radiography Image Storage	Yes	Yes
CT Image Storage	Yes	Yes
Digital X-Ray Image Storage – For Presentation	Yes	Yes
Digital X-Ray Image Storage – For Processing	Yes	No
Digital Mammography X-Ray Image Storage – For Presentation	Yes	Yes
Digital Mammography X-Ray Image Storage – For Processing	Yes	No
Digital Intra-oral X-Ray Image Storage – For Presentation	Yes	Yes
Digital Intra-oral X-Ray Image Storage – For Processing	Yes	No
Grayscale Softcopy Presentation State Storage SOP Class	Yes	Yes
Hardcopy Color Image Storage SOP Class	Yes	No
Hardcopy Grayscale Image Storage SOP Class	Yes	No
Key Object Selection Document	Yes	Yes
MR Image Storage	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	Yes	No
Multi-frame Grayscale Word Secondary Capture Image Storage	Yes	No
Multi-frame Single Bit Secondary Capture Image Storage	Yes	No
Multi-frame True Color Secondary Capture Image Storage	Yes	No
Nuclear Medicine Image Storage	Yes	No
Nuclear Medicine Image Storage (Retired)	Yes	No
Ophthalmic Photography 8 Bit Image Storage	Yes	Yes
Ophthalmic Photography 16 Bit Image Storage	Yes	Yes

Networking SOP Classes	User of Service (SCU)	Provider of Service (SCP)
Positron Emission Tomography Image Storage	Yes	Yes
Secondary Capture Image Storage	Yes	Yes
Ultrasound Image Storage	Yes	Yes
Ultrasound Image Storage (Retired)	Yes	Yes
Ultrasound Multi-frame Image Storage	Yes	Yes
Ultrasound Multi-frame Image Storage (Retired)	Yes	Yes
X-Ray Angiographic Image Storage	Yes	Yes
X-Ray Radioflourosopic Image Storage	Yes	Yes
<i>Query/Retrieve</i>		
Study Root Q/R Information Model – FIND	Yes	No
Study Root Q/R Information Model – MOVE	Yes	No
<i>Print Management</i>		
Basic Grayscale Print Management Meta SOP Class	Yes	No
Presentation LUT SOP Class	Yes	No
Basic Annotation Box SOP Class	Yes	No

Table 1: Network Services supported by EasyViz Image Display.

The DICOM Media Services supported by the EasyViz Image Display are listed in Table 2.

Media Storage Application Profile	Write Files (FSC/FSU)	Read Files (FSR)
<i>Compact Disk – Recordable</i>		
General Purpose CD-R Interchange	Yes	Yes
<i>DVD</i>		
General Purpose Interchange on DVD-RAM Media	Yes	Yes

Table 2: Media Services supported by EasyViz Image Display.

2 Introduction

2.1 Revision History

Version	Date of Issue	Author	Description
v0.1	December 13, 2004	NHK	Initial draft.
v0.2	January 13, 2005	NHK	Second draft.
v0.3	February 4, 2005	NHK	Third draft.
v0.4	March 2, 2005	NHK	Fourth draft.
v0.5	April 20, 2005	NHK	Fifth draft.
v0.6	September 15, 2005	NHK	Added supported JPEG Lossless transfer syntaxes to the Storage SCP. Updated the list of supported Storage SOP classes for the Storage SCU.
v0.7	December 15, 2005	NHK	Key Object Selection Document, Grayscale Softcopy Presentation State, Ultrasound Multi-frame Image Storage SOP Class support added.
v0.8	November 14, 2006	NHK	Added section on created IODs.
v0.9	July 31, 2007	NHK	Moved to new document template.
V1.0	October 20, 2008	NHK	Support for Ophthalmic Photography 8/16 bit images added to EasyViz 2.8 SP5. Support for JPEG Baseline, JPEG Extended, and RLE Lossless added in EasyViz 2.8 SP5. Added missing Digital Intra-oral X-Ray Image Storage – For Presentation.

2.2 Audience

This document is intended for hospital staff, health system integrators, software designers or implementers. It is assumed that the reader has a working understanding of DICOM.

2.3 Remarks

DICOM, by itself, does not guarantee interoperability. However, the Conformance Statement facilitates a first-level validation for interoperability between different applications supporting the same DICOM functionality.

This Conformance Statement is not intended to replace validation with other DICOM equipment to ensure proper exchange of information intended.

The scope of this Conformance Statement is to facilitate communication with Medical Insight A/S and other vendors' medical equipment. The Conformance Statement should be read and understood in conjunction with the DICOM Standard [DICOM]. However, by itself it is not guaranteed to ensure the desired interoperability and a successful interconnectivity.

The user should be aware of the following important issues:

- The comparison of different conformance statements is the first step towards assessing interconnectivity between Medical Insight A/S and non-Medical Insight A/S equipment.
- Test procedures should be defined to validate the desired level of connectivity.
- The DICOM Standard will evolve to meet the users' future requirements. Medical Insight A/S is actively involved in developing the standard further and therefore reserves the right to make changes to its products or to discontinue its delivery.

2.4 Definitions, Terms and Abbreviations

Definitions, terms and abbreviations used in this document are defined within the different parts of the DICOM standard. A list of abbreviations and terms can be seen in Table 3.

Abbreviation	Description
AE	DICOM Application Entity.
AET	Application Entity Title.
CD-R	CD Recordable.
CR	Computed Radiography.
CT	Computed Tomography.
DICOM	Digital Imaging and Communications in Medicine.
DX	Digital X-Ray.
FSC	File Set Creator.
FSU	File Set Updater.
FSR	File Set Reader.
GSDF	Grayscale Standard Display Function.
GSPS	Grayscale Presentation State.
MG	Mammography.
MR	Magnetic Resonance.
PT	Positron Emission Tomography.
RF	X-Ray Radiofluoroscopic.
SC	Secondary Capture.
SCP	DICOM Service Class Provider (DICOM Server).
SCU	DICOM Service Class User (DICOM Client).
SOP	DICOM Service-Object Pair.
US	Ultrasound.
XA	X-Ray Angiographic.

Table 3: Abbreviations and Terms.

2.5 References

- [DICOM] Digital Imaging and Communications in Medicine (DICOM), NEMA PS 3.1-3.18, 2004.
National Electrical Manufacturers Association (NEMA), 1300N 17th Street, Rosslyn, Virginia 22209, USA.
- [EVPVS] EasyViz VPS DICOM Conformance Statement.
Medical Insight A/S, Hovedgaden 451, DK-2640 Hedehusene, Denmark.
- [EVIG] EasyViz Installation Guide
Medical Insight A/S, Hovedgaden 451, DK-2640 Hedehusene, Denmark.

3 Networking

3.1 Implementation Model

The EasyViz Image Display DICOM Networking Services are implemented in a number of processes launched and terminated by the user.

The EasyViz PACS Workflow Manager, launched at user login, provides DICOM Services to query and transfer DICOM Instances via the Query/Retrieve SCU and the Storage SCU Application Entities.

The EasyViz CAMs, which are launched from the EasyViz PACS Workflow Manager, provides DICOM Services to retrieve and present DICOM Instances via the Query/Retrieve SCU and Storage SCP Application Entities. More over, the EasyViz General 2D CAM provides DICOM Services to store Grayscale Softcopy Presentation States and Key Objects via the Storage SCU Application Entity and DICOM services related to hardcopy printing via the Print Management SCU Application Entity.

3.1.1 Application Data Flow

Application data flow diagram for the EasyViz Image Display can be seen on Figure 1.

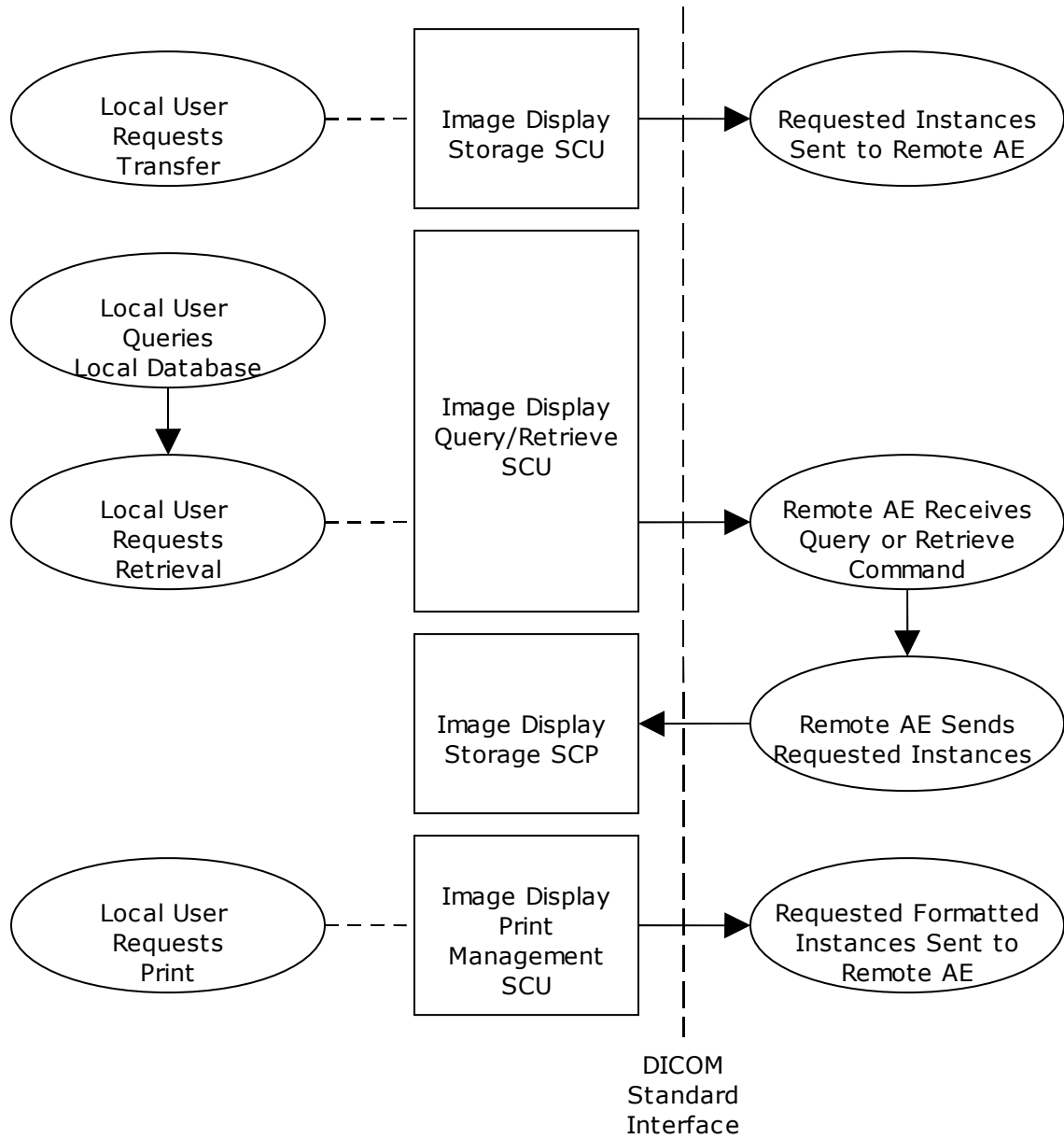


Figure 1: Application Data Flow Diagram.

3.1.2 Functional Definitions of AE's

3.1.2.1 Functional Definition: Query/Retrieve SCU

The Query/Retrieve SCU Application Entity provides DICOM Services to query and retrieve DICOM Instances from remote DICOM Application Entities.

The Query/Retrieve SCU Application Entity does not always query a remote DICOM Application Entities about images before retrieving the images. The Query/Retrieve SCU may also use the information in the internal database to obtain information on available studies. The internal database is updated by EasyViz VPS, see [EVPVS].

3.1.2.1.1 The Query/Retrieve SCU Application Entity Provides DICOM Services to:

- Query and retrieve DICOM Instances from remote DICOM Application Entities using the DICOM Query/Retrieve SOP (Acting as SCU).

3.1.2.2 Functional Definition: Storage SCU

The Storage SCU Application Entity provides DICOM Services to transfer DICOM Instances to a remote DICOM Application Entity. This Application Entity is intended to be used to transfer DICOM Instances to the local image display, i.e. transfer images from a local CD-ROM/DVD drive to the local archive.

Note: the EasyViz Image Display supports transfer of DICOM Instances, which are not supported for displayed, i.e. the Storage SCU is capable of transferring Nuclear Medicine images, which currently cannot be displayed.

3.1.2.2.1 The Storage SCU Application Entity Provides DICOM Services to:

- Transfer DICOM Instances to a remote DICOM Application Entity using a number of DICOM Image Storage SOPs (Acting as SCU).

3.1.2.3 Functional Definition: Storage SCP

The Storage SCP Application Entity provides DICOM Services to receive images and other DICOM Instances from remote DICOM Application Entities.

3.1.2.3.1 The Storage SCP Application Entity Provides DICOM Services to:

- Receive DICOM Instances from remote DICOM Application Entities using a number of DICOM Image Storage SOPs (Acting as SCP).

3.1.2.4 Functional Definition: Print Management SCU

The Print Management SCU Application Entity provides DICOM Services to print grayscale images including Presentation LUTs and Annotations on a remote DICOM Application Entity.

3.1.2.4.1 The Print Management SCU Application Entity Provides DICOM Services to:

- Print Grayscale Images incl. an optional Presentation LUT to remote DICOM Application Entities using the DICOM Basic Grayscale Print Management Meta SOP Class (Acting as SCU) and the DICOM Presentation LUT SOP Class (Acting as SCU).
- Print annotations to DICOM peer Application Entities using the DICOM Basic Annotation Box SOP (Acting as SCU).

3.1.3 Sequencing of Real World Activities

The sequencing constraints for the EasyViz Image Display Application Entities can be seen on Figure 2 and Figure 3.

The Query/Retrieve SCU may either query the internal DB or a Peer AE for information on SOP Instances, so either the transaction marked by *) is used or the transaction marked by **), see Figure 2.

The Print Management SCU will not update an instance of the Basic Grayscale Image Box SOP Class before it has been received by the Image Display Storage SCP.

If collation is disabled, the Print Management SCU will send the two transactions marked by *), otherwise the two transactions marked by **) are sent – see Figure 3.

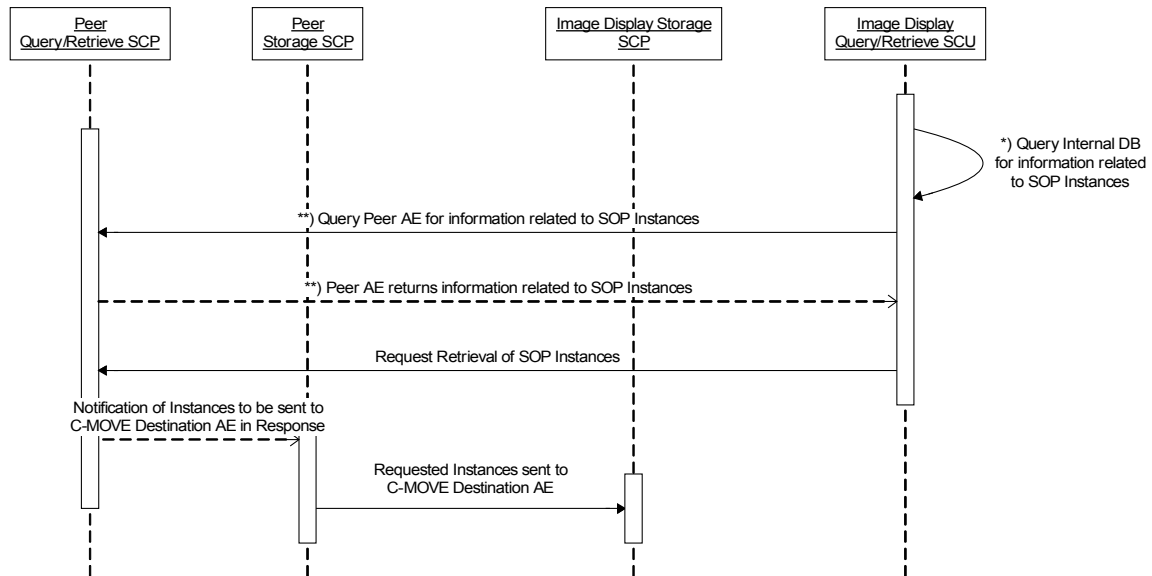


Figure 2: Storage SCP and Query/Retrieve SCU: Sequencing Constraints.

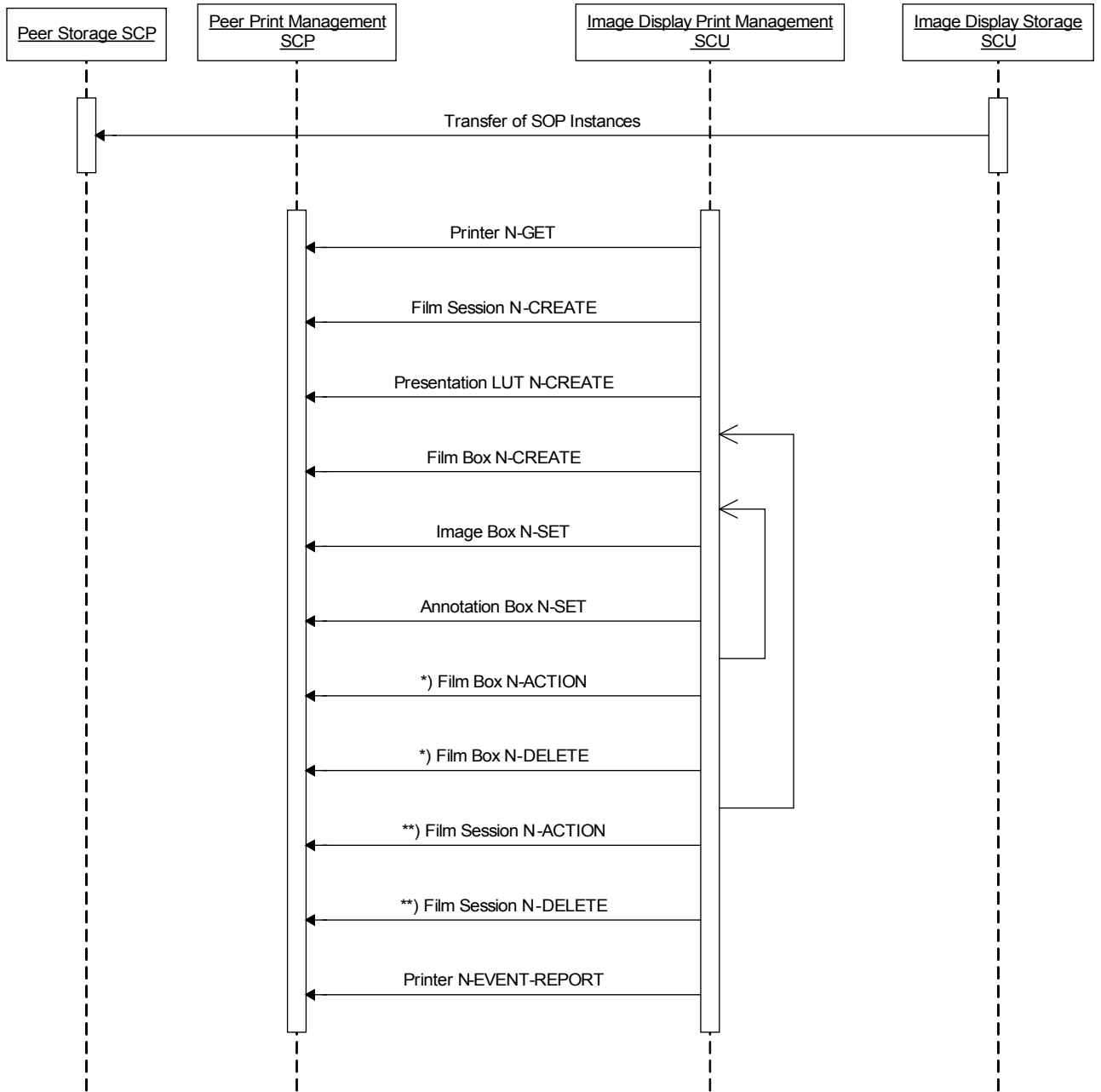


Figure 3: Storage SCU and Print Management SCU: Sequencing Constraints.

AE Specifications

3.1.4 AE Specification: Query/Retrieve SCU

3.1.4.1 SOP Classes

The Query/Retrieve SCU provides Standard Conformance to the SOP Classes listed in Table 4.

SOP Class Name	SOP Class UID	SCU	SCP
<i>Query/Retrieve</i>			
Study Root Q/R Information Model - FIND	1.2.840.10008.5.1.4.1.2.2.1	Yes	No
Study Root Q/R Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Yes	No

Table 4: Query/Retrieve SCU: Supported SOP Classes.

3.1.4.2 Association Policies

3.1.4.2.1 General

The Query/Retrieve SCU will propose Association Requests for DICOM Query/Retrieve Service. The DICOM standard application context name for DICOM 3.0 is always proposed, see Table 5.

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

Table 5: Query/Retrieve SCU: DICOM Application Context.

3.1.4.2.2 Number of Associations

The Query/Retrieve SCU does not support multiple simultaneous associations, see Table 6.

Maximum number of simultaneous associations	1 – Not configurable.
---	-----------------------

Table 6: Query/Retrieve SCU: Number of simultaneous associations.

3.1.4.2.3 Asynchronous Nature

The Query/Retrieve SCU does not support asynchronous communication. Multiple outstanding transactions are not supported, see Table 7.

Maximum number of outstanding asynchronous transactions	1 – Not configurable.
---	-----------------------

Table 7: Query/Retrieve SCU: Asynchronous nature.

3.1.4.2.4 Implementation Identifying Information

The identifying information for the Query/Retrieve SCU can be seen in Table 8.

Implementation Class UID	1.3.6.1.4.1.16978.0
Implementation Version Name	EV_3529

Table 8: Query/Retrieve SCU: DICOM Implementation Class and Version.

3.1.4.3 Association Initiation Policy

3.1.4.3.1 Activity: Query Instances

Description and Sequencing of Activities

The Query/Retrieve SCU sends an Association Request to a remote DICOM Application Entity acting as Query/Retrieve SCP when the user queries a PACS from the EasyViz Workflow Manager. Note that by default, worklist in the EasyViz Workflow Manager are populated using the internal database. Sequencing constraints for the Query Instances activity can be seen in Figure 2.

Proposed Presentation Contexts

The Query/Retrieve SCU will propose the Presentation Context listen in Table 9: Query/Retrieve SCU: Proposed Presentation Contexts for the Query Instances activity. for the Query Instances activity.

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
Study Root Q/R Information Model – FIND	1.2.840.10008.5.1.4.1.2.2.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	Relational-retrieval
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Table 9: Query/Retrieve SCU: Proposed Presentation Contexts for the Query Instances activity.

Extended Negotiation

The Query/Retrieve SCU will try to negotiate Relational-Retrieval with the Peer Application Entity acting as Query/Retrieve SCP. If the Query/Retrieve SCU fails to negotiate Relational-Retrieval, then only baseline SCU behavior is performed.

3.1.4.3.2 Activity: Retrieve Instances

Description and Sequencing of Activities

The Query/Retrieve SCU sends an Association Request to a remote DICOM Application Entity acting as Query/Retrieve SCP when the user launches a CAM from the EasyViz Workflow Manager. Sequencing constraints for the Retrieve Instances activity can be seen in Figure 2.

Proposed Presentation Contexts

The Query/Retrieve SCU will propose the Presentation Contexts listed in Table 10 for the Retrieve Instances activity.

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
Study Root Q/R Information Model - MOVE	1.2.840.10008.5.1.4.1.2.2.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	Relational-retrieval
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Table 10: Query/Retrieve SCU: Proposed Presentation Contexts for the Retrieve Instances activity.

Extended Negotiation

The Query/Retrieve SCU will try to negotiate Relational-Retrieval with the Peer Application Entity acting as Query/Retrieve SCP. If the Query/Retrieve SCU fails to negotiate Relational-Retrieval with the Query/Retrieve SCP, then only baseline SCU behavior is performed.

3.1.4.4 Association Acceptance Policy

The Query/Retrieve SCU does not accept associations.

3.1.5 AE Specification: Storage SCU

3.1.5.1 SOP Classes

The Storage SCU provides Standard Conformance to the SOP Classes listed in Table 11.

SOP Class Name	SOP Class UID	SCU	SCP
<i>Transfer</i>			
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Yes	No
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Yes	No
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Yes	No
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	No
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	No
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Yes	No
Digital Intra-oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Yes	No
Digital Intra-oral X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Yes	No
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Yes	No
Hardcopy Color Image Storage SOP Class	1.2.840.10008.5.1.1.30	Yes	No
Hardcopy Grayscale Image Storage SOP Class	1.2.840.10008.5.1.1.29	Yes	No
Key Object Selection	1.2.840.10008.5.1.4.1.1.88.59	Yes	No
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Yes	No
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Yes	No
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Yes	No
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Yes	No
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Yes	No

SOP Class Name	SOP Class UID	SCU	SCP
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Yes	No
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Yes	No
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	Yes	No
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	Yes	No
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Yes	No
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	No
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Yes	No
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Yes	No
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Yes	No
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Yes	No
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Yes	No
X-Ray Radioflourosopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	No

Table 11: Storage SCU: Supported SOP Classes.

3.1.5.2 Association Policies

3.1.5.2.1 General

The Storage SCU will propose Association Requests for DICOM Storage Services. The DICOM standard application context name for DICOM 3.0 is always proposed, see Table 12.

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

Table 12: Storage SCU: DICOM Application Context.

3.1.5.2.2 Number of Associations

The Storage SCU does not support multiple simultaneous associations, see Table 13.

Maximum number of simultaneous associations	1 – Not configurable.
---	-----------------------

Table 13: Storage SCU: Number of simultaneous associations.

3.1.5.2.3 Asynchronous Nature

The Storage SCU does not support asynchronous communication. Multiple outstanding transactions are not supported, see Table 14.

Maximum number of outstanding asynchronous transactions	1 – Not configurable.
---	-----------------------

Table 14: Storage SCU: Asynchronous nature.

3.1.5.2.4 Implementation Identifying Information

The identifying information for the Storage SCU can be seen in Table 15.

Implementation Class UID	1.3.6.1.4.1.16978.0
Implementation Version Name	EV_3529

Table 15: Storage SCU: DICOM Implementation Class and Version.

3.1.5.3 Association Initiation Policy

3.1.5.3.1 Activity: Transfer Instances

Description and Sequencing of Activities

The Storage SCU sends an Association Request to a remote DICOM Application Entity acting as Storage SCP when the selects import in the EasyViz Workflow Manager. This is intended to be used to import selected DICOM Instances from CD-ROM/DVD to the local archive.

Proposed Presentation Contexts

The Storage SCU will propose the Presentation Contexts listed in Table 16 for the Transfer Instances activity.

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Digital X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
Digital Mammography X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Digital Intra-oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Digital Intra-oral X-Ray Image Storage – For Processing	1.2.840.10008.5.1.4.1.1.1.3.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Hardcopy Color Image Storage SOP Class	1.2.840.10008.5.1.1.30	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Hardcopy Grayscale Image Storage SOP Class	1.2.840.10008.5.1.1.29	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Key Object Selection Document	1.2.840.10008.5.1.4.1.1.88.59	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Multi-frame Grayscale Word Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Multi-frame Single Bit Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
Nuclear Medicine Image Storage	1.2.840.10008.5.1.4.1.1.20	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Nuclear Medicine Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.5	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

Table 16: Storage SCU: Proposed Presentation Contexts for the Transfer Instances activity.

Extended Negotiation

No extended negotiation is performed.

3.1.5.4 Association Acceptance Policy

The Storage SCU does not accept associations.

3.1.6 AE Specification: Storage SCP

3.1.6.1 SOP Classes

The Storage SCP provides Standard Conformance to the SOP Classes listed in Table 17.

SOP Class Name	SOP Class UID	SCU	SCP
<i>Transfer</i>			
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	No	Yes
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	No	Yes
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	No	Yes
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	No	Yes
Digital Intra-oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	No	Yes
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	No	Yes
Key Object Selection	1.2.840.10008.5.1.1.88.59	No	Yes
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	No	Yes
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	No	Yes
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	No	Yes
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	No	Yes
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	No	Yes
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	No	Yes
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	No	Yes
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	No	Yes
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	No	Yes
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	No	Yes
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	No	Yes

Table 17: Storage SCP: Supported SOP Classes.

3.1.6.2 Association Policies

3.1.6.2.1 General

The Storage SCP will accept Association Requests for DICOM Storage Services. The DICOM standard application context name for DICOM 3.0 is always accepted, see Table 18.

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

Table 18: Storage SCP: DICOM Application Context.

3.1.6.2.2 Number of Associations

The Storage SCP does not support multiple simultaneous associations, see Table 19.

Maximum number of simultaneous associations	1 – Not configurable.
---	-----------------------

Table 19: Storage SCP: Number of simultaneous associations.

3.1.6.2.3 Asynchronous Nature

The Storage SCP does not support asynchronous communication. Multiple outstanding transactions are not supported, see Table 20.

Maximum number of outstanding asynchronous transactions	1 – Not configurable.
---	-----------------------

Table 20: Storage SCP: Asynchronous nature.

3.1.6.2.4 Implementation Identifying Information

The identifying information for the Storage SCP can be seen in Table 21.

Implementation Class UID	1.3.6.1.4.1.16978.0
Implementation Version Name	EV_3529

Table 21: Storage SCP: DICOM Implementation Class and Version.

3.1.6.3 Association Initiation Policy

The Storage SCP does not initiate associations.

3.1.6.4 Association Acceptance Policy

3.1.6.4.1 Activity: Receive Instances

Description and Sequencing of Activities

A remote DICOM Application Entity acting as a Storage SCU may establish an association with the Storage SCP. The Storage SCP will accept these associations for the purpose of receiving supported SOP Class Instances.

When the user launches a CAM from the EasyViz Workflow Manager, the CAM will initiate the Retrieve Instances activity as described in section 3.1.4.3. The C-MOVE request in the Retrieve Instances activity contains the Storage SCP as destination Application Entity.

Accepted Presentation Contexts

The Storage SCP accepts the Application Presentation Contexts listed in Table 22.

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.70		
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1)	1.2.840.10008.1.2.5		
		RLE Lossless			
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.70		
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1)	1.2.840.10008.1.2.5		
		RLE Lossless			
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50		
		JPEG Extended (Process 2 & 4)	1.2.840.10008.1.2.4.51		
		JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.70		
		JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1)	1.2.840.10008.1.2.5		
		RLE Lossless			
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		JPEG Baseline (Process 1)	1.2.840.10008.1.2.4.50		

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
		JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5		
Digital Intra-oral X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCP	None
Grayscale Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None
Key Object Selection Document	1.2.840.10008.5.1.1.88.59	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCP	None
Ophthalmic Photography 8 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCP	None

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
		JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5		
Ophthalmic Photography 16 Bit Image Storage	1.2.840.10008.5.1.4.1.1.77.1.5.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCP	None
Positron Emission Tomography Image Storage	1.2.840.10008.5.1.4.1.1.128	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCP	None
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1)	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCP	None

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
		SV1) RLE Lossless			
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCP	None
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCP	None
Ultrasound Multi-frame Image Storage	1.2.840.10008.5.1.4.1.1.3.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCP	None
Ultrasound Multi-frame Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.3	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1)	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50	SCP	None

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
		JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5		
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCP	None
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian JPEG Baseline (Process 1) JPEG Extended (Process 2 & 4) JPEG Lossless, Non-Hierarchical (Process 14) JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 SV1) RLE Lossless	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2 1.2.840.10008.1.2.4.50 1.2.840.10008.1.2.4.51 1.2.840.10008.1.2.4.57 1.2.840.10008.1.2.4.70 1.2.840.10008.1.2.5	SCP	None

Table 22: Storage SCP: Accepted Presentation Contexts for the Receive Instances activity.

Extended Negotiation

No extended negotiation is performed.

3.1.7 AE Specification: Print Management SCU

3.1.7.1 SOP Classes

The Print Management SCU provides Standard Conformance to SOP Classes listed in Table 23.

SOP Class Name	SOP Class UID	SCU	SCP
<i>Print Management</i>			
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No
Basic Annotation Box SOP Class	1.2.840.10008.5.1.1.15	Yes	No
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Yes	No

Table 23: Print Management SCU: Supported SOP Classes.

3.1.7.2 Association Policies

3.1.7.2.1 *General*

The Print Management SCU will propose Association Requests for DICOM Print Management Services. The DICOM standard application context name for DICOM 3.0 is always proposed, see Table 24.

Application Context Name	1.2.840.10008.3.1.1.1
--------------------------	-----------------------

Table 24: Print Management SCU: DICOM Application Context.

3.1.7.2.2 *Number of Associations*

The Print Management SCU does not support multiple simultaneous associations, see Table 25.

Maximum number of simultaneous associations	1 – Not configurable.
---	-----------------------

Table 25: Print Management SCU: Number of simultaneous associations.

3.1.7.2.3 *Asynchronous Nature*

The Print Management SCU does not support asynchronous communication. Multiple outstanding transactions are not supported.

Maximum number of outstanding asynchronous transactions	1 – Not configurable.
---	-----------------------

Table 26: Print Management SCU: Asynchronous nature.

3.1.7.2.4 Implementation Identifying Information

The identifying information for the Print Management SCU can be seen in Table 27.

Implementation Class UID	1.3.6.1.4.1.16978.0.3.5.2.8
Implementation Version Name	EV_3529

Table 27: Print Management SCU: DICOM Implementation Class and Version.

3.1.7.3 Association Initiation Policy

3.1.7.3.1 Activity: Print Images

Description and Sequencing of Activities

The Print Management SCU sends an Association Request to a remote DICOM Application Entity acting as Basic Grayscale Print Management Meta SOP Class SCP when the user prints DICOM Instances from the EasyViz General 2D CAM.

Proposed Presentation Contexts

The Print Management SCU will propose Presentation Contexts as listed in Table 28 for the Print Images activity.

Abstract Syntax		Transfer Syntax		Role	Ext. Neg
Name	UID	Name List	UID List		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Basic Annotation Box SOP Class	1.2.840.10008.5.1.1.15	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Table 28: Print Management SCU: Proposed Presentation Contexts for the Print Images activity.

3.1.7.4 Association Acceptance Policy

The Print Management SCU does not accept Association Requests.

3.2 Network Interfaces

3.2.1 Physical Network Interface

The EasyViz Image Display Application Entities are indifferent to the physical medium over which TCP/IP is executed. This is entirely dependent on the underlying operating system and hardware.

3.2.2 Additional Protocols

When hostnames rather than IP addresses are used to specify presentation addresses for remote Application Entities, the EasyViz Image Display Application Entities depends on the name resolution mechanism of the underlying operating system for proper operation.

3.3 Configuration

3.3.1 AE Title/Presentation Address Mapping

3.3.1.1 Local AE Titles

The default Application Entity title and port number of the EasyViz Image Display Application Entities are listed in Table 29.

The default AE Title for the Storage SCP is created from the hostname and port number of the host where the Storage SCP is installed.

Application Entity	Default AE Title	Default Port Number
Query/Retrieve SCU	ID_QR_SCU	N/A
Storage SCU	ID_STORE_SCU	N/A
Storage SCP	<hostname>-<port nr>	7000
Print Management SCU	ID_PM_SCU	N/A

Table 29: Local AE Titles.

3.3.1.2 Remote AE Title/Presentation Address Mapping

3.3.1.2.1 Remote Query/Retrieve SCP and Storage SCP

The remote Query/Retrieve SCP and Storage SCP configuration is stored in the environment variable EV_PACS. The EasyViz Image Display assumes that the Query/Retrieve SCP and Storage SCP are located on the same host.

The EV_PACS environment variable has the following structure:

hostname=<hostname>,port=<port number>,qr_aet=<aet>,store_aet=<aet>

3.3.1.2.2 Remote Print Management SCP

The Print Management SCP configuration is stored in a printer profile in the internal database. For more information on how to setup a printer, see [EVIG].

3.3.2 Parameters

The configurable parameters of EasyViz Image Display are listed in Table 30.

Parameter	Configurable	Default Value
<i>General Parameters</i>		
PDU Size	No	32Kb
Time-out waiting for acceptance or rejection Response of an Association Open Request (Application level timeout)	No	None
General DIMSE level time-out values	No	None
Time-out waiting for response to TCP/IP connect	Yes	180s [OS Specific]

Parameter	Configurable	Default Value
request (Low-level timeout)		
Time-out waiting for acceptance of a TCP/IP message over the network (Low-level timeout)	Yes	180s [OS Specific]
Time-out waiting for data between TCP/IP packets (Low-level timeout)	Yes	Adaptive 0.2-120s [OS Specific]
Any changes to default TCP/IP setting such as configurable stack parameters	No	None
<i>AE Specific Parameters</i>		
Size constraint in maximum object size	No	None
Maximum PDU Size that the AE can receive	No	32Kb
Maximum PDU Size that the AE can send	No	32Kb
AE specific DIMSE level time-out values	No	None
SOP Class Support	No	All supported SOP Classes always proposed and accepted
Transfer Syntax Support	No	All supported Transfer Syntaxes always proposed and accepted

Table 30: Configurable Parameters.

4 Media Interchange

4.1 Implementation Model

The EasyViz Image Display DICOM Media Interchange Services are implemented in two logical Application Entities: the Media FSR Application Entity, and the Media FSC Application Entity.

The Media FSR Application Entity is a logical Application Entity implemented in the EasyViz Workflow Manager. The Media FSR Application Entity, launched at user login, provides DICOM Media Interchange Services to read DICOM Instances from a DICOM Storage Medium such as CD-ROM or DVD.

The Media FSC Application Entity is a logical Application Entity implemented in the EasyViz Workflow Manager. The Media FSC Application Entity provides DICOM Media Interchange Service to write DICOM Instances to a DICOM Storage Medium.

4.1.1 Application Data Flow Diagram

Application data flow diagram for the DICOM Media Interchange Services of the EasyViz Image Display can be seen in Figure 4.

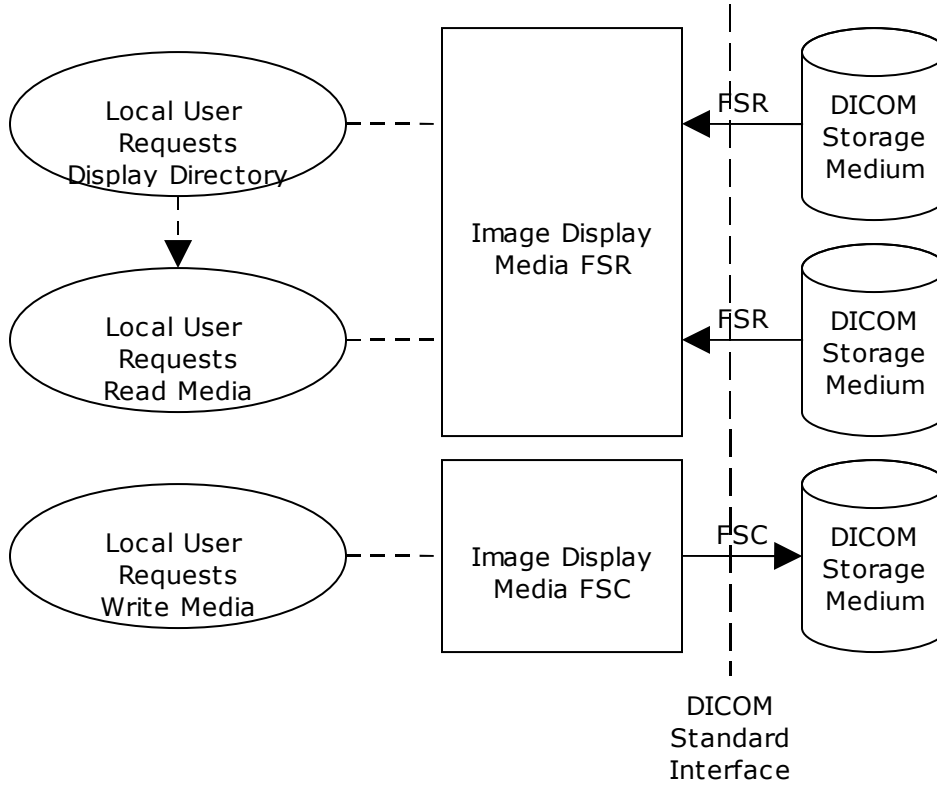


Figure 4: Application Data Flow Diagram.

4.1.2 Functional Definitions of AE's

4.1.2.1 Functional Definition: Media FSR

The Media FSR Application Entity provides DICOM Services to read DICOM files from a DICOM Storage Medium.

4.1.2.1.1 The Media FSR Application Entity Provides DICOM Services to:

- Read DICOM Instances from a DICOM Storage Medium using the DICOM Interchange option of the Media Storage SOP Class (Acting as FSR).

4.1.2.2 Functional Definition: Media FSC

The Media FSC Application Entity provides DICOM Services to write DICOM files to a DICOM Storage Medium.

4.1.2.2.1 The Media FSC Application Entity Provides DICOM Services to:

- Write DICOM Instances to a DICOM Storage Medium using the DICOM Interchange option of the Media Storage SOP Class (Acting as FSC).

4.1.3 Sequencing of Real World Activities

The sequencing of the DICOM Media Interchange activities for the EasyViz Image Display Application Entities can be seen in Figure 5.

The DICOM Network Application Entity, Storage SCU, has been included in the sequence diagram to illustrate that the Display Directory activity must be executed by the Media FSR Application Entity before the Storage SCU may initiate a Transfer of SOP Instances activity.

The Read Media activity should always be preceded by a Display Directory activity.

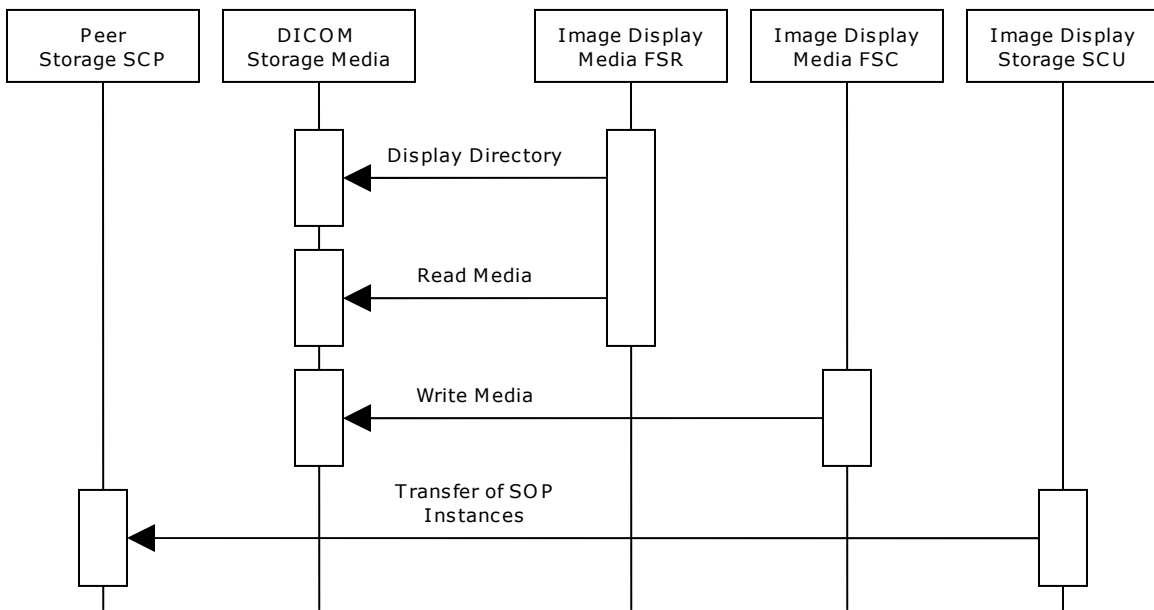


Figure 5: Sequencing of Real World Activities.

4.1.4 File Meta Information for Implementation Class and Version

The File Meta Information for the Implementation Class and Version is listed in Table 31.

Implementation Class UID	1.3.6.1.4.1.16978.0
Implementation Version Name	EV_3529

Table 31: File Meta Information for Implementation Class and Version.

4.2 AE Specifications

4.2.1 AE Specification: Media FSR

The related application profiles, real world activities, and roles for the Media FSR Application Entity are listed in Table 32.

Supported Application Profile	Real World Activity	Roles	SC Option
General Purpose CD-R Interchange	Display Directory	FSR	Interchange
	Read Media	FSR	Interchange
General Purpose Interchange on DVD-RAM Media	Display Directory	FSR	Interchange
	Read Media	FSR	Interchange

Table 32: Media FSR: Related Application Profiles, Real World Activities, and Roles.

4.2.1.1 File Meta Information: Media FSR

No File Meta Information is created by the Media FSR Application Entity.

4.2.1.2 Real-World Activities

4.2.1.2.1 Activity: *Display Directory*

Description and Sequencing of Activities

The local user at the Image Display inserts a CD-R/RW, a DVD-R/RW, a DVD+R/RW, or a DVD-RAM media into the media device, and invokes "Open CD-ROM/DVD" from the EasyViz Workflow Manager. The Media FSR Application Entity will then read the media directory, and display a list of stored DICOM Instances in the Workflow Manager.

Media Storage Application Profile

The Media Storage Application Profile for the Display Directory activity supports the Abstract Syntaxes and Transfer Syntaxes listed in Table 33.

Abstract Syntax		Transfer Syntax		Role	Option
Name	UID	Name List	UID List		
Basic Directory	1.2.840.10008.1.3.10	Implicit VR Little Endian	1.2.840.10008.1.2	FSR	Interchange
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	FSR	Interchange
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	FSR	Interchange
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Digital Mammograph	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	FSR	Interchange

Abstract Syntax		Transfer Syntax		Role	Option
Name	UID	Name List	UID List		
Basic Directory	1.2.840.10008.1.3.10	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Dynamic X-Ray Image Storage – For Presentation		Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2.2		
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Hardcopy Grayscale Image Storage SOP Class	1.2.840.10008.5.1.1.29	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange

Table 33: Media FSR: Media Storage Application Profile for the Read Directory activity.

4.2.1.2.2 *Activity: Read Media*

Description and Sequencing of Activities

Having listed the contents of the storage media using the Display Directory activity, the user may read one or more of the stored DICOM Instance using the appropriate EasyViz CAM. Note that the stored DICOM Instances are not imported to the local database. If the user wishes to import the store DICOM Instances this may be done using the Transfer Instances activity of the Storage SCU Application Entity, see section 3.1.5.

Media Storage Application Profile

The Media Storage Application Profile for the Read Media activity supports the Abstract Syntaxes and Transfer Syntaxes listed in Table 34.

Abstract Syntax		Transfer Syntax		Role	Opt.
Name	UID	Name List	UID List		
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Digital Mammography X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Hardcopy Grayscale Image Storage SOP Class	1.2.840.10008.5.1.1.29	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian Explicit VR Little Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1	FSR	Interchange

Abstract Syntax		Transfer Syntax		Role	Opt.
Name	UID	Name List	UID List		
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	FSR	Interchange
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
(Retired)		Explicit VR Big Endian	1.2.840.10008.1.2.2		
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian	1.2.840.10008.1.2	FSR	Interchange
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian	1.2.840.10008.1.2	FSR	Interchange
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

Table 34: Media FSR: Media Storage Application Profile for the Read Media activity.

4.2.2 AE Specification: Media FSC

The related application profiles, real world activities, and roles for the Media FSC Application Entity are listed in Table 35.

Supported Application Profile	Real World Activity	Roles	SC Option
General Purpose CD-R Interchange	Write Media	FSC	Interchange
General Purpose Interchange on DVD-RAM Media	Write Media	FSC	Interchange

Table 35: Media FSC: Related Application Profiles, Real World Activities, and Roles.

4.2.2.1 File Meta Information: Media FSC

Although the Media FSC creates DICOM File Meta Information for each file that it stores, it does not store information, which is specific to the Media FSC Application Entity. In particular, the Media FSC does not set the Source Application Entity Title.

4.2.2.2 Real-World Activities

4.2.2.2.1 Activity: Write Media

Description and Sequencing of Activity

The local user at the Image Display inserts a CD-R/RW, a DVD-R/RW, a DVD+R/RW, or a DVD-RAM media into the media device, selects a number of DICOM Instances in the Workflow Manager, and invokes "Export". The Media FSC Application Entity will then create the file set corresponding to the selected DICOM Instances.

Note that it is possible to export to a non-local media device.

Media Storage Application Profile

The Media Storage Application Profile for the Write Media activity supports the Abstract Syntaxes and Transfer Syntaxes listed in Table 36.

Abstract Syntax		Transfer Syntax		Role	Opt.
Name	UID	Name List	UID List		
Basic Directory	1.2.840.10008.1.3.10	Implicit VR Little Endian	1.2.840.10008.1.2	FSC	Interchange
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	FSC	Interchange
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
CT Image Storage	1.2.840.10008.5.1.4.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	FSC	Interchange
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
Digital Mammography X-Ray	1.2.840.10008.5.1.4.1.1.1.2	Implicit VR Little Endian	1.2.840.10008.1.2	FSC	Interchange

Abstract Syntax		Transfer Syntax		Role	Opt.
Name	UID	Name List	UID List		
Basic Directory	1.2.840.10008.1.3.10	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSC	Interchange
Image Storage – For Presentation		Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2.1 1.2.840.10008.1.2.2		
Digital X-Ray Image Storage – For Presentation	1.2.840.10008.5.1.4.1.1.1.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSC	Interchange
Hardcopy Grayscale Image Storage SOP Class	1.2.840.10008.5.1.1.29	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSR	Interchange
MR Image Storage	1.2.840.10008.5.1.4.1.1.4	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSC	Interchange
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSC	Interchange
Ultrasound Image Storage	1.2.840.10008.5.1.4.1.1.6.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSC	Interchange
Ultrasound Image Storage (Retired)	1.2.840.10008.5.1.4.1.1.6	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSC	Interchange
X-Ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSC	Interchange
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Implicit VR Little Endian Explicit VR Little Endian Explicit VR Big Endian	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	FSC	Interchange

Table 36: Media FSR: Media Storage Application Profile for the Write Media activity.

4.3 Augmented and Private Application Profiles

The EasyViz Image Display does not support any Augmented or Private Application Profiles.

4.4 Media Configuration

The EasyViz Image Display does not depend on media configuration at installation time.

5 Support of Character Sets

5.1 Overview

EasyViz Image Display supports the default character repertoire. Support extends to correctly decoding and displaying the correct symbol for all names and strings received over the network, found in the DICOMDIR, or found in the local database.

No specific support for sorting of strings other than in the default character set is provided by the EasyViz Image Display.

5.2 Character Sets

EasyViz supports the extended character sets listed in Table 37.

Character Set Description	Defined Term
Latin alphabet No. 1	ISO_IR 100

Table 37: Supported specific character set defined terms.

5.3 Character Set Configuration

Whether or not characters are displayed correctly depends on the presence of font support in the underlying operating system.

It may be necessary for the user to add one of the “all Unicode” fonts to their system configuration in order to correctly display characters that would not typically be used in the default locale. Note, that the font installation should happen at the server side, if EasyViz Image Display is used in a telemedicine configuration.

6 Security

6.1 Security Profiles

The EasyViz Image Display does not support any DICOM security profiles.

6.2 Association Level Security

Neither the Query/Retrieve SCU, Storage SCU, nor the Print Management SCU Application Entities accepts Association Requests.

The Storage SCP accepts all association requests, i.e. it is not possible to restrict associations based on Calling AET. The Storage SCP only verifies that it has been called with the correct AET.

6.3 Application Level Security

The EasyViz Image Display applications can be configured to use the either MIT Kerberos or the internal database for user authentication. It is not possible to configure the EasyViz Image Display not to require user authentication. By default, the internal database is used.

When using MIT Kerberos for user authentication, it is possible to integrate the EasyViz Image Display with Microsoft Active Directory. This allows Microsoft Windows users to use their regular username and password to access the EasyViz Image Display.

7 Annexes

7.1 IOD Contents

7.1.1 Created SOP Instance(s)

The EasyViz Image Display creates Key Objects and Grayscale Softcopy Presentation States. Attributes of Key Objects created by EasyViz Image Display can be seen in Table 38. Attributes of the Grayscale Softcopy Presentation State can be seen in Table 39.

The follow tables use a number of abbreviations. The abbreviations used in the "Presece of ..." column are:

- VNAP Value not always present
- ANAP Attribute not always present
- ALWAYS Always present
- EMPTY Attribute sent without value

The abbreviations used in the "Source" column are:

- IMAGE Attribute value source is referenced image
- USER Attribute value source is user input
- AUTO Attribute value is auto generated
- CONFIG Attribute value source is a configuration parameter

7.1.1.1 Key Object Selection Document IOD

IE	Module	Reference	Presence of Module
Patient	Patient	Table 40	ALWAYS
Study	General Study	Table 41	ALWAYS
	Patient Study		EMPTY
Series	Key Object Document Series	Table 44	ALWAYS
Equipment	General Equipment	Table 43	ALWAYS
Document	Key Object Document	Table 45	ALWAYS
	SR Document Content	Table 46	ALWAYS
	SOP Common	Table 47	ALWAYS

Table 38: IOD of Created Key Object Selection Document SOP Instances.

Attributes of Key Objects created by EasyViz Image Display can be seen in section 7.1.1.3 and section 7.1.1.4.

7.1.1.2 Grayscale Softcopy Presentation State IOD

IE	Module	Reference	Presence of Module
Patient	Patient	Table 40	ALWAYS
Study	General Study	Table 41	ALWAYS
	Patient Study		EMPTY
Series	General Series	Table 42	ALWAYS
	Presentation Series	Table 48	ALWAYS
Equipment	General Equipment	Table 43	ALWAYS
Presentation State	Presentation State Identification	Table 49	ALWAYS
	Presentation State Relationship	Table 50	ALWAYS
	Display Shutter		EMPTY
	Displayed Area	Table 51	ALWAYS
	Graphic Annotation	Table 52	USER
	Spatial Transformation	Table 53	ALWAYS
	Graphic Layer	Table 54	USER
	Modality LUT	Table 55	ANAP – If source image contains Modality transformation, this module is created.
	Softcopy VOI LUT	Table 56	ALWAYS
	Softcopy Presentation LUT	Table 57	ALWAYS
SOP Common	Table 58	ALWAYS	

Table 39: IOD of Created Grayscale Softcopy Presentation State SOP Instances.

Attributes of Grayscale Softcopy Presentation States created by EasyViz Image Display can be seen in section 7.1.1.3 and section 7.1.1.5.

7.1.1.3 Common Modules

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient's Name	(0010, 0010)	PN	From referenced image.	ALWAYS	IMAGE
Patient ID	(0010, 0020)	LO	From referenced image.	ALWAYS	IMAGE
Issuer of Patient ID	(0010, 0021)	LO	From referenced image.	ALWAYS	IMAGE

Attribute Name	Tag	VR	Value	Presence of Value	Source
Patient's Birth Date	(0010, 0030)	DA	From referenced image.	ALWAYS	IMAGE
Patient's Sex	(0010, 0040)	CS	From referenced image.	ALWAYS	IMAGE
Patient's Birth Time	(0010, 0032)	TM	From referenced image.	ALWAYS	IMAGE
Other Patient IDs	(0010, 1000)	LO	From referenced image.	ALWAYS	IMAGE
Other Patient Names	(0010, 1001)	PN	From referenced image.	ALWAYS	IMAGE
Ethnic Group	(0010, 2160)	SH	From referenced image.	ALWAYS	IMAGE
Patient Comments	(0010, 4000)	LT	From referenced image.	ALWAYS	IMAGE

Table 40: Patient Module of Created SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Study Instance UID	(0020, 000D)	UI	From referenced image.	ALWAYS	IMAGE
Study Date	(0008, 0020)	DA	From referenced image.	ALWAYS	IMAGE
Study Time	(0008, 0030)	TM	From referenced image.	ALWAYS	IMAGE
Referring Physician's Name	(0008, 0090)	PN	From referenced image.	ALWAYS	IMAGE
Study ID	(0020, 0010)	SH	From referenced image, or "NoValue" if no value specified by referenced image.	ALWAYS	IMAGE
Accession Number	(0008, 0050)	SH	From referenced image.	ALWAYS	IMAGE
Study Description	(0008, 1030)	LO	From referenced image.	ALWAYS	IMAGE

Table 41: General Study Module of Created SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008, 0060)	CS	Auto-generated: "KO" or "PR".	ALWAYS	AUTO
Series Instance UID	(0020, 000E)	UI	Auto-generated.	ALWAYS	AUTO
Series Number	(0020, 0011)	IS	Auto-generated.	ALWAYS	AUTO
Series Date	(0008, 0021)	DA	Auto-generated: Current date.	ALWAYS	AUTO
Series Time	(0008, 0031)	TM	Auto-generated: Current time.	ALWAYS	AUTO
Series Description	(0008, 103E)	LO	From user input.	ALWAYS	USER

Table 42: General Series Module of Created SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Manufacturer	(0008, 0070)	LO	From system configuration.	ALWAYS	CONFIG
Software Version	(0018, 1020)	LO	From system configuration.	ALWAYS	CONFIG

Table 43: General Equipment Module of Created SOP Instances.

7.1.1.4 Key Object Selection Document Modules

Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008, 0060)	CS	KO	ALWAYS	AUTO
Series Instance UID	(0020, 000E)	UI	Auto-generated.	ALWAYS	AUTO
Series Number	(0020, 0011)	IS	Auto-generated.	ALWAYS	AUTO

Table 44: Key Object Document Series Module of Created KO SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020, 0013)	IS	Auto-generated.	ALWAYS	AUTO
Content Date	(0008, 0023)	DA	Auto-generated.	ALWAYS	AUTO
Content Time	(0008, 0033)	TM	Auto-generated.	ALWAYS	AUTO
Current Requested Procedure Evidence Sequence	(0040, A375)		One or more items.	ALWAYS	AUTO
>Study Instance UID	(0020, 000D)	UI	From referenced image.	ALWAYS	AUTO
>Referenced Series Sequence	(0008, 1115)	SQ	One or more items.	ALWAYS	AUTO
>Series Instance UID	(0020, 000E)	UI	From referenced image.	ALWAYS	AUTO
>Referenced SOP Sequence	(0008, 1199)	SQ	One or more items.	ALWAYS	AUTO
>>Referenced SOP Class UID	(0008, 1150)	UI	From referenced image.	ALWAYS	AUTO
>>Referenced SOP Instance UID	(0008, 1155)	UID	From referenced image.	ALWAYS	AUTO

Table 45: Key Object Document Module of Created KO SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Value Type	(0040, A040)	CS	"CONTAINER"	ALWAYS	AUTO
Concept Name Code Sequence	(0040, A043)	SQ	Sequence containing one item.	ALWAYS	AUTO
>Code Value	(0008, 0100)	SH	User input – but restricted to: 113000-113012, or 113026.	ALWAYS	USER
>Coding Scheme	(0008, 0102)	SH	"DCM"	ALWAYS	AUTO
>Code Meaning	(0008, 0104)	LO	User input – but restricted to: "Of Interest", "Rejected for Quality Reasons", "For Referring Provider", "For Surgery", "For Teaching", "For Conference", "For Therapy", "For Patient", "For Peer Review", "For Research", "Quality Issue", "Document Title Modifier", "Key Object Description", "Double exposure".	ALWAYS	USER
Text Value	(0040, A160)		User input.	ALWAYS	USER

Table 46: SR Document Content Module of Created KO SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Specific Character Set	(0008, 0005)	CS	"ISO_IR 100"	ALWAYS	AUTO
SOP Class UID	(0008, 0016)	UI	1.2.840.10008.5.1.4.1.1.88.59	ALWAYS	AUTO
SOP Instance UID	(0008, 0018)	UI	Auto-generated.	ALWAYS	AUTO

Table 47: SOP Common of Created KO SOP Instances.

7.1.1.5 Grayscale Softcopy Presentation State Modules

Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality	(0008, 0060)	CS	PR	ALWAYS	AUTO

Table 48: Presentation Series Module of Created GSPS SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Instance Number	(0020, 0013)	IS	Auto-generated.	ALWAYS	AUTO
Presentation Label	(0070, 0080)	CS	From user input.	ALWAYS	USER
Presentation	(0070, 0081)	LO	From user input.	ALWAYS	USER

Attribute Name	Tag	VR	Value	Presence of Value	Source
Description					
Presentation Creation Date	(0070, 0082)	DA	Auto-generated: Current date.	ALWAYS	AUTO
Presentation Creation Time	(0070, 0083)	TM	Auto-generated: Current time.	ALWAYS	AUTO
Content Creator's Name	(0070, 0084)	PN	Auto-generated: User display name.	ALWAYS	AUTO

Table 49: Presentation State Identification Module of Created GSPS SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Referenced Series Sequence	(0008, 1115)	SQ	One or more items.	ALWAYS	AUTO
>Series Instance UID	(0020, 000E)	UI	From referenced image.	ALWAYS	AUTO
>Referenced Image Sequence	(0008, 1140)	SQ	From referenced image.	ALWAYS	AUTO
>>Referenced SOP Class UID	(0008, 1150)	UI	From referenced image.	ALWAYS	AUTO
>>Referenced SOP Instance UID	(0008, 1155)	UI	From referenced image.	ALWAYS	AUTO
>>Referenced Frame Number	(0008,1160)	IS	If referenced image is a multi-frame image.	ANAP	AUTO

Table 50: Presentation State Relationship Module of Created GSPS SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Displayed Area Selection Sequence	(0070, 005A)	SQ	One or more items.	ALWAYS	AUTO
>Referenced Image Sequence	(0008, 1140)	SQ	One or more items.	ALWAYS	AUTO
>>Referenced SOP Class UID	(0008, 1150)	UI	From referenced image.	ALWAYS	AUTO
>>Referenced SOP Instance UID	(0008, 1155)	UI	From referenced image.	ALWAYS	AUTO
>>Referenced Frame Number	(0008, 1160)	IS	If referenced image is a multi-frame image.	ANAP	AUTO
>Displayed	(0070, 0052)	SL	From current display settings.	ALWAYS	AUTO

Attribute Name	Tag	VR	Value	Presence of Value	Source
Area Top Left Hand Corner					
>Displayed Area Bottom Right Hand Corner	(0070, 0053)	SL	From current display settings.	ALWAYS	AUTO
>Presentation Size Mode	(0070, 0100)	CS	From current display settings.	ALWAYS	AUTO
>Presentation Pixel Spacing	(0070, 0101)	DS	From current display settings.	ANAP	AUTO
>Presentation Pixel Aspect Ratio	(0070, 0102)	IS	From referenced image.	ANAP	IMAGE
>Presentation Pixel Magnification Ratio	(0070, 0103)	FL	From referenced image.	ANAP	IMAGE

Table 51: Displayed Area Module of Created GSPS SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Graphic Annotation Sequence	(0070, 0001)	SQ	Zero or more items	ANAP	AUTO
>Referenced Image Sequence	(0008, 1140)	SQ	One or more items.	ALWAYS	AUTO
>>Referenced SOP Class UID	(0008, 1150)	UI	From referenced image.	ALWAYS	AUTO
>>Referenced SOP Instance UID	(0008, 1155)	UI	From referenced image.	ALWAYS	AUTO
>>Referenced Frame Number	(0008, 1160)	IS	If referenced image is a multi-frame image.	ANAP	AUTO
>Graphic Layer	(0070, 0002)	CS	Layer in Graphic Layer Module.	ALWAYS	AUTO
>Text Object Sequence	(0070, 0008)	SQ	One or more items if text annotations are present.	ANAP	AUTO
>>Bounding Box Annotation Units	(0070, 0003)	CS	"PIXEL"	ALWAYS	AUTO
>>Anchor Point Annotation Units	(0070, 0004)	CS	"PIXEL"	ALWAYS	AUTO
>>Unformatted Text Value	(0070, 0006)	ST	From user input.	ALWAYS	USER

Attribute Name	Tag	VR	Value	Presence of Value	Source
>>Bounding Box Top Left Hand Corner	(0070, 0010)	FL	From current display settings	ALWAYS	AUTO
>>Bounding Box Bottom Right Hand Corner	(0070, 0011)	FL	From current display settings	ALWAYS	AUTO
>>Bounding Box Text Horizontal Justification	(0070, 0012)	CS	From user input	ALWAYS	USER
>>Anchor Point	(0070, 0014)	FL	From user input.	ALWAYS	USER
>>Anchor Point Visibility	(0070, 0015)	CS	From user input.	ALWAYS	USER
>Graphic Object Sequence	(0070, 0009)	SQ	One or more items if graphic annotations are present.	ANAP	AUTO
>>Graphic Annotation Units	(0070, 0005)	CS	"PIXEL"	ALWAYS	AUTO
>>Graphic Dimensions	(0070, 0020)	US	2	ALWAYS	AUTO
>>Number of Graphic Points	(0070, 0021)	US	From user input.	ALWAYS	USER
>>Graphic Data	(0070, 0022)	FL	From user input.	ALWAYS	USER
>>Graphic Type	(0070, 0023)	CS	One of: "POINT", "POLYLINE", "INTERPOLATED", "CIRCLE" or "ELLIPSE".	ALWAYS	USER
>>Graphic Filled	(0070, 0024)	CS	From user input.	ALWAYS	USER

Table 52: Graphic Annotation Module of Created GSPS SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Image Rotation	(0070, 0042)	US	From current display settings.	ALWAYS	AUTO
Image Horizontal Flip	(0070, 0041)	CS	From current display settings.	ALWAYS	AUTO

Table 53: Spatial Transformation Module of Created GSPS SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Graphic Layer Sequence	(0070, 0060)	SQ	One or more items	ALWAYS	AUTO

Attribute Name	Tag	VR	Value	Presence of Value	Source
>Graphic Layer	(0070, 0002)	CS	LAYER1, LAYER2, ...	ALWAYS	AUTO
>Graphic Layer Order	(0070, 0062)	IS	From current display settings	ALWAYS	AUTO

Table 54: Graphic Layer Module of Created GSPS SOP Instances.

Attribute Name	Tag	VR	Value	Presence of Value	Source
Modality LUT Sequence	(0028, 3000)	SQ	Zero or one item. Either the Modality LUT Sequence is present with one item, or the Rescale Intercept/Slope/Type is present.	ANAP	AUTO
>LUT Descriptor	(0028, 3002)	US	From referenced image.	ALWAYS	AUTO
>Modality LUT Type	(0028, 3004)	LO	From referenced image.	ALWAYS	AUTO
>LUT Data	(0028, 3006)	US	LUT	ALWAYS	AUTO
Rescale Intercept	(0028, 1052)	DS	From referenced image. If referenced image does not contain rescale intercept, this value is set to 0.0.	ANAP	AUTO
Rescale Slope	(0028, 1053)	DS	From referenced image. If referenced image does not contain rescale slope, this value is set to 1.0.	ANAP	AUTO
Rescale Type	(0028, 1054)	LO	"US"	ANAP	AUTO

Table 55: Modality LUT Module of Created GSPS SOP Instances

Attribute Name	Tag	VR	Value	Presence of Value	Source
Softcopy VOI LUT Sequence	(0028, 3110)	SQ	One or more items.	ALWAYS	AUTO
>Referenced Image Sequence	(0008, 1140)	SQ	One or more items.	ALWAYS	AUTO
>>Referenced SOP Class UID	(0008, 1150)	UI	From referenced image.	ALWAYS	AUTO
>>Referenced SOP Instance UID	(0008, 1155)	UI	From referenced image.	ALWAYS	AUTO
>>Referenced Frame Number	(0008, 1160)	IS	If referenced image is a multi-frame image.	ANAP	AUTO
>Window Center	(0028, 1050)	DS	From current display settings.	ALWAYS	AUTO

>Window Width	(0028, 1051)	DS	From current display settings.	ALWAYS	AUTO
>Window Center & Width Explanation	(0028, 1055)	LO	Name of Window Preset	ANAP	AUTO

Table 56: Softcopy VOI LUT Module of Created GSPS SOP Instances

Attribute Name	Tag	VR	Value	Presence of Value	Source
Presentation LUT Shape	(2050, 0020)	CS	Auto-generated: "IDENTITY" or "INVERSE".	ALWAYS	AUTO

Table 57: Softcopy Presentation LUT Module of Created GSPS SOP Instances

Attribute Name	Tag	VR	Value	Presence of Value	Source
Specific Character Set	(0008, 0005)	CS	"ISO_IR 100"	ALWAYS	AUTO
SOP Class UID	(0008, 0016)	UI	1.2.840.10008.5.1.4.1.1.11.1	ALWAYS	AUTO
SOP Instance UID	(0008, 0018)	UI	Auto-generated.	ALWAYS	AUTO

Table 58: SOP Common Module of Created GSPS SOP Instances

7.1.2 Usage of Attributes of Received IOD's

The local database and remote query make use of conventional identification attributes to distinguish patients, studies, series and instances. In particular, if two patients have the same value for Patient ID, they will be treated as the same patient by the EasyViz Image Display.

7.1.3 Attribute Mapping

Not applicable.

7.1.4 Coerced/Modified Fields

The EasyViz Image Display does not perform any coercion.

7.2 Data Dictionary of Private Attributes

The EasyViz Image Display does not define any private attributes.

7.3 Coded Terminology and Templates

The value for Coded Meaning will be displayed for all coded values. The EasyViz Image Display does not provide a local lexicon to lookup alternative code meanings.

7.4 Grayscale Image Consistency

The image display monitor attached to EasyViz can – if supported by the monitor – be calibrated according to the DICOM Grayscale Standard Display Function (GSDF). The

monitors Service/Installation Tool is used together with a luminance meter to measure the Characteristics Curve for the display system and the current ambient light. See the product Service Manual for details on the calibration procedure and supported calibration hardware. The result of the calibration procedure is a Monitor Correction LUT that will be active within the display system after a system reboot.

7.5 Standard Extended/Specialized/Private SOP Classes

The EasyVizImage Display does not use Standard Extended/Specialized/Private SOP classes.

7.6 Private Transfer Syntaxes

The EasyViz Image Display does not support any private transfer syntaxes.