DICOM Conformance Statement

EasyDiagnost Eleva Rel. 5.0

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PHILIPS

Issued by:
Philips Healthcare Philips Nederlands Best

P.O. Box 10.000
5680 DA Best
The Netherlands

Email: dicom@philips.com
Internet: http://www.medical.philips.com/connectivity

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1. DICOM Conformance Statement Overview

The EasyDiagnost Eleva is a multifunctional X-ray system, designed to provide faster, more confident diagnoses. It combines a wide application range with revolutionary Eleva technology that adapts the system to your way of working.

The main application areas are:

- R/F examinations
- Vascular examinations
- Interventional procedures

EasyDiagnost Eleva allows the operator also to view, analyze and process the images stored in the database. Some advanced analysis and processing applications are primarily designed for images generated by Philips equipment when sent to the EasyDiagnost Eleva.

The EasyDiagnost Eleva system is a Digital Fluorography modality. Depending on the purchased options and chosen configuration, the EasyDiagnost Eleva system provides the DICOM data exchange features:

This document explains the DICOM features in the two possible configurations

1) DI Configuration (Digital Imaging Configuration which is the Basic Configuration)
2) EDI Configuration (Extended Digital Imaging Configuration with additional software application for extended DICOM features)

DI Configuration has the following DICOM data exchange features.

- Request Worklist
- Image acquisition and display
- Image handling, storage and networking,
- Copy images from the local database to remote database

EDI Configuration has the following DICOM data exchange features.

- Request Worklist
- Issue Procedure information to RIS / HIS system
- Image acquisition and display
- Image review and processing
- Image handling, storage and networking,
- Administration of patient, physician and examination data.
- Read and Write DICOM CD-RW disks.
- Read and write DICOM DVD-RW disks.
- It allows the operator to print images stored in the database on a DICOM printer.
- Copy images from the local database to remote databases and vice versa.
- Import images for viewing.
- Storage Commitment function
- It allows a remote system to Query the ED ELEVA System database and to retrieve images from it.
- Can send out images either as raw data or as processed data.

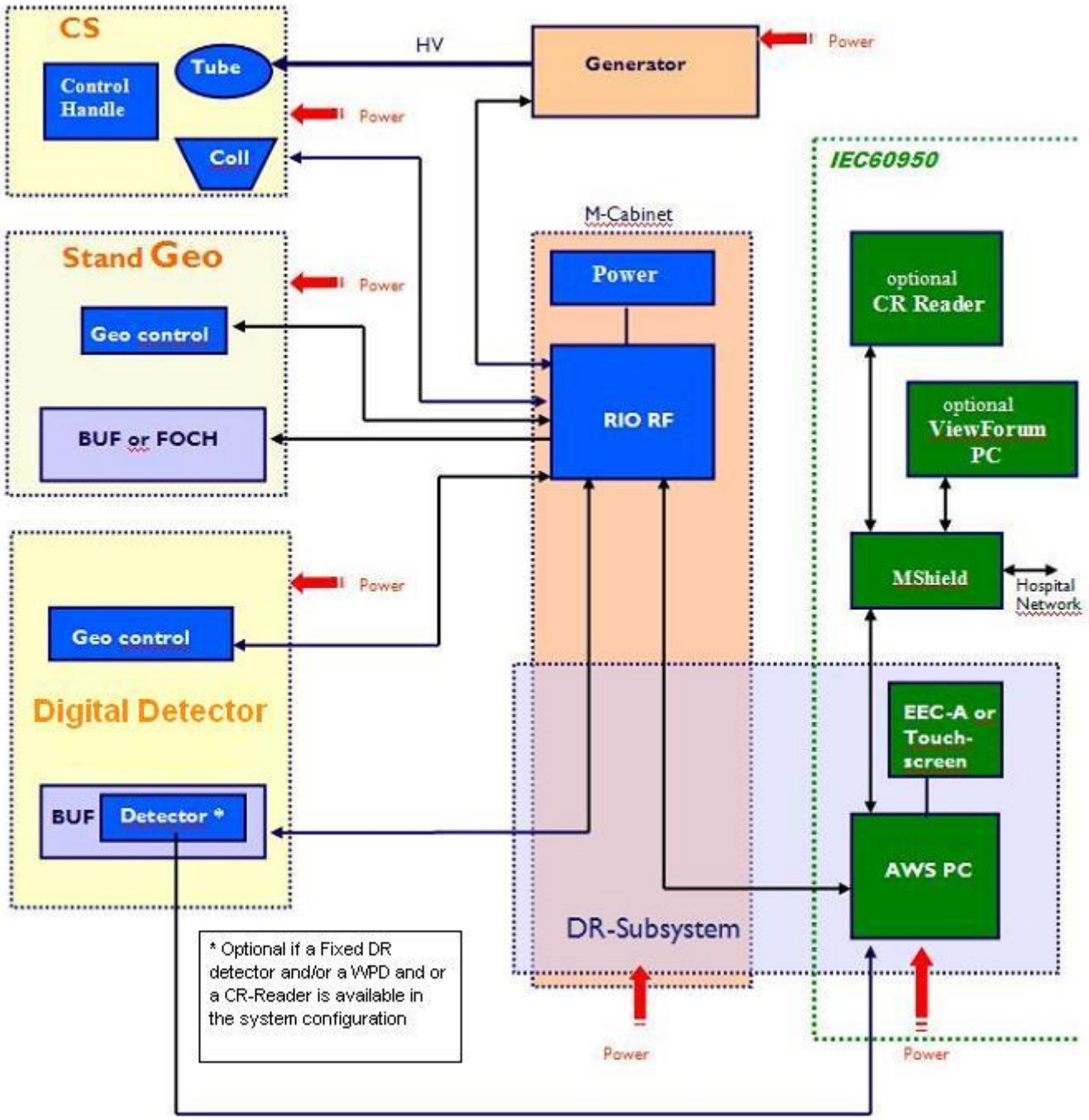

Figure 1: Block Diagram ED40 (including optional digital detector in wall stand)

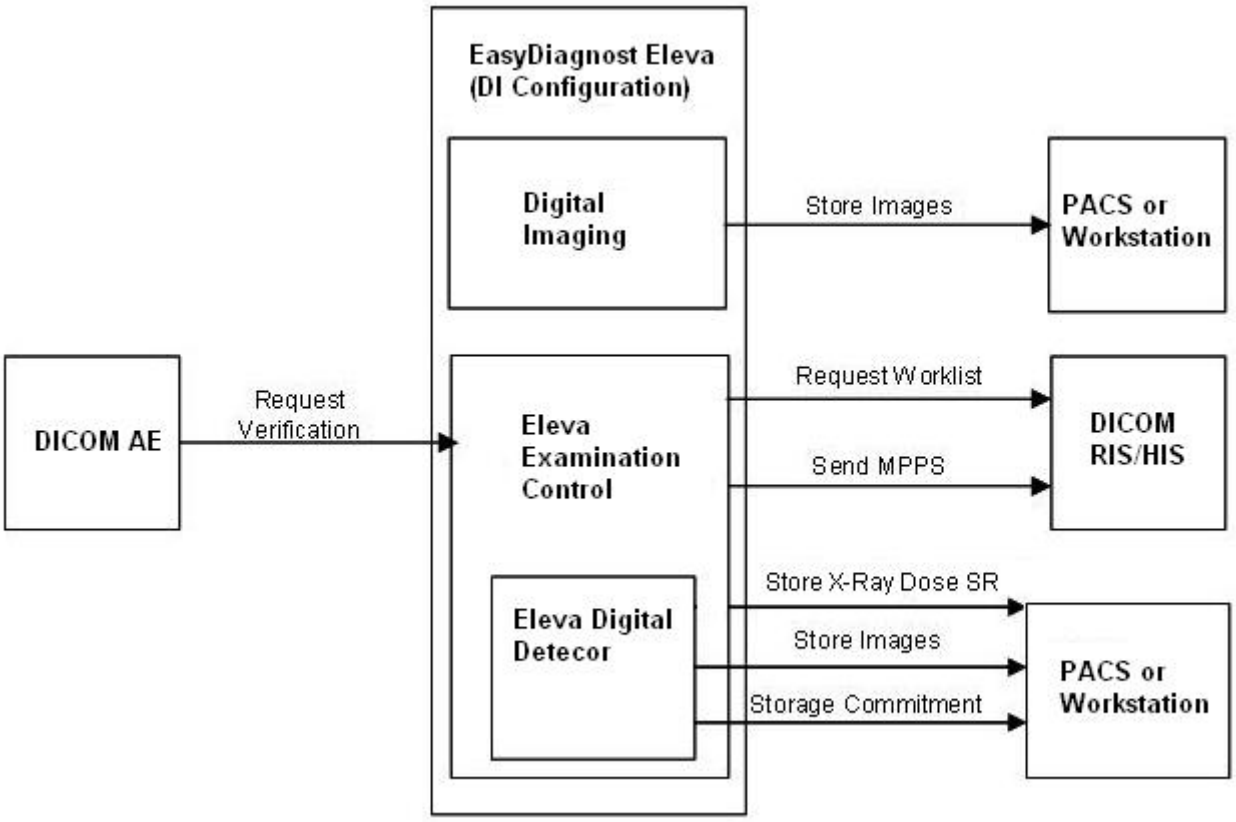

Figure 2: EasyDiagnost Eleva System in DICOM Network environment (DI Configuration)

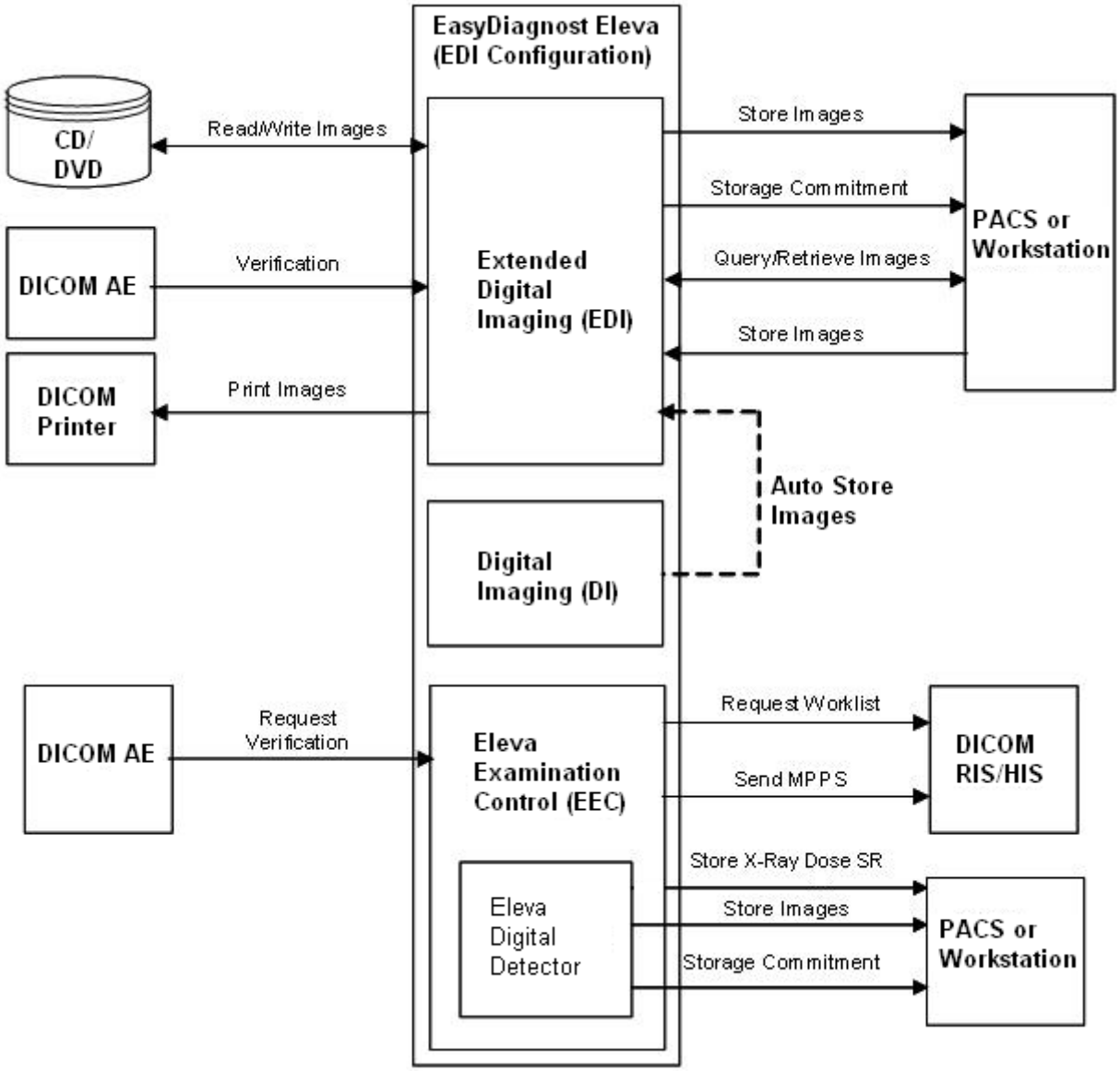

Figure 3: EasyDiagnost Eleva System in DICOM Network environment (EDI Configuration)

This DICOM Conformance Statement describes the DICOM conformance of the EasyDiagnost Eleva platform.

A table of Supported Networking DICOM Service (SOP) Classes is provided with roles (User/Provider).
Next table presents an overview of all network services and the applicable SOP classes as provided by EasyDiagnost Eleva system in EDI Configuration

Table 1: Network Services (For Eleva EDI Configuration Only)

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	**UID**		
Other			
Verification SOP Class	1.2.840.10008.1.1	No	Yes
Print Management			
Basic Annotation Box SOP Class	1.2.840.10008.5.1.1.15	Yes	No

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	**UID**		
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Yes	No
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Yes	No
Print Job SOP Class	1.2.840.10008.5.1.1.14	Yes	No
Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Query/Retrieve			
Patient Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Yes	Yes
Patient Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Yes	Yes
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	Yes
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes
Transfer			
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
X-Ray Radiation Dose SR SOP Class	1.2.840.10008.5.1.4.1.1.88.67	Yes	No
Specialized PMS X-Ray Image Store (Private)	1.3.46.670589.2.3.1.1	Yes	Yes
Workflow Management			
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Yes	No

The services can be specified as a SCU, SCP or as an Option, which means that it is either configurable or that it can be purchased separately.
A table of Supported Media Storage Application Profiles (with roles) is provided

Table 2: Media Services

Media Storage Application Profile	File-set Creator (FSC)	File-set Updater (FSU)	File-set Reader (FSR)	Display Directory (DD)
Compact Disk-Recordable				
General Purpose CD-R Interchange	Yes	Yes	Yes	No
DVD				
General Purpose DVD Interchange with JPEG	Yes	Yes	Yes	No
USB				
General Purpose USB Media Interchange with JPEG	Yes	Yes	Yes	No

Next table presents an overview of all network services and the applicable SOP classes as provided by EasyDiagnost Eleva system in DI Configuration

Table 3: Network Services (For Eleva DI Configuration only)

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	**UID**		
Storage for the NON PRO Mode (RF + SC, SC only and RAW)			
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	No

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	**UID**		
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	Yes	No
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	No
X-Ray Radiation Dose SR SOP Class	1.2.840.10008.5.1.4.1.1.88.67	Yes	No
Specialized X-Ray	1.3.46.670589.2.3.1.1	Yes	No
Workflow Management			
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	No	Yes
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	No	Yes

Table 4: Network Services (For Eleva Digital Detector only)

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	**UID**		
Other			
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes
Print Management			
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Transfer			
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Yes	No
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	Yes	No
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	No
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	No
X-Ray Radiation Dose SR SOP Class	1.2.840.10008.5.1.4.1.1.88.67	Yes	No
Workflow Management			
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Yes	No
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No

The EasyDiagnost Eleva in DI configuration does not support any Media Storage Application Profiles.

Disclaimer:
Imported Images are not intended to be exported

2. Table of Contents

3. Introduction

The introduction specifies product and relevant disclaimers as well as any general information that the vendor feels is appropriate.

3.1. Revision History

The revision history provides dates and differences of the different releases.

Table 5: Revision History

Document Version	Date of Issue	Status	Description
00	05-October-2012	Approved	Approved version

3.2. 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
- Application specialists and sales

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

3.3. Remarks

The DICOM Conformance Statement is contained in chapter 4 through 8 and follows the contents and structuring requirements of DICOM PS 3.2.
This DICOM 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 an 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).

3.4. Definitions, Terms and Abbreviations

Table 6: Definitions, Terms and Abbreviations

Abbreviation/Term	Explanation
AE	Application Entity
ANSI	American National Standard Institute
AWS	Acquisition Work Spot
AP	Application Profile
BOT	Basic Offset Table
CD	Compact Disc
CD-R	CD-Recordable
CD-M	CD-Medical
CR	Computed Radiography
CT	Computed Tomography
DCR	Dynamic Cardio Review
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DIMSE-Composite
DIMSE-N	DIMSE-Normalized
DX	Digital X-Ray
EBE	DICOM Explicit VR Big Endian
ED	Easy Diagnost
ELE	DICOM Explicit VR Little Endian
FSC	File-set Creator
FSR	File-set Reader
FSU	File-set Updater
GUI	Graphic User Interface
HIS	Hospital Information System
HL7	Health Level Seven
ILE	DICOM Implicit VR Little Endian
IOD	Information Object Definition
ISIS	Information System - Imaging System
MOD	Magneto-Optical Disk
MPPS	Modality Performed Procedure Step
MR	Magnetic Resonance
NEMA	National Electrical Manufacturers Association
NM	Nuclear Medicine
PDU	Protocol Data Unit
RF	X-Ray Radiofluoroscopic
RIS	Radiology Information System
RT	Radiotherapy
RWA	Real-World Activity
SC	Secondary Capture
SCM	Study Component Management
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol

Abbreviation/Term	Explanation
UID	Unique Identifier
US	Ultrasound
USMF	Ultrasound Multi-frame
WLM	Worklist Management

3.5. References

[DICOM] Digital Imaging and Communications in Medicine, Parts 1 - 18 (NEMA PS 3.1- PS 3.18),
National Electrical Manufacturers Association (NEMA)
Publication Sales 1300 N. 17th Street, Suite 1847 Rosslyn, Virginia. 22209, United States of America
Internet: http://medical.nema.org/
Note that at any point in time the official standard consists of the most recent yearly edition of the base standard (currently 2008) plus all the supplements and correction items that have been approved as Final Text.

4. Networking

This section contains the networking related services (vs. the media related ones).

4.1. Implementation model

The implementation model consists of three sections:

- The application data flow diagram, specifying the relationship between the Application Entities and the "external world" or Real-World Activities,
- A functional description of each Application Entity, and
- The sequencing constraints among them.

4.1.1. Application Data Flow

Depending on the purchased configuration, EasyDiagnost Eleva has two possible device configurations.

- EasyDiagnost Eleva EDI Configuration
- EasyDiagnost Eleva DI Configuration

4.1.1.1. Application Data Flow for EasyDiagnost Eleva EDI Configuration

The EasyDiagnost Eleva (ED ELEVA) in EDI Configuration has two main Application Entities and one Application Entity for optional wall stand (*) in its implementation, namely

- EasyDiagnost Eleva RIS Application Entity (ED Eleva RIS AE)
- EasyDiagnost Eleva ACP Application Entity (ED Eleva ACP AE)
- EasyDiagnost Eleva Digital Detector Application Entity (ED ELEVA Digital Detector AE)

  * Optional if a Fixed DR detector and/or a WPD and or a CR-Reader is available in the system configuration.

Figure below shows the Networking application data flow as a functional overview of these application entities. On the left-hand side, the local Real-World Activities (RWA) are presented, whereas on the right-hand side, the remote Real-World Activities are presented.

The figure below depicts the real world activities and the associated DICOM service classes used or provided by ED Eleva RIS, ED Eleva ACP and ED Eleva Digital Detector application entities.

- After RWA Request Verification, the ED ELEVA as SCP provides standard Verification Service Class functionality to the requesting SCU.
- After RWA Import Images, the ED ELEVA as SCP provides standard Storage Service Class functionality to the requesting SCU.
- After RWA Query Local Images /Retrieve Local Images, the ED ELEVA as SCP provides standard Query/Retrieve Service Class functionality to the requesting SCU.
- After RWA Export Images (triggered by either the operator or RWA Retrieve Local Images), the ED ELEVA as SCU uses the remote SCP Storage Service Class functionality to store local images, either as raw data or as processed data, on a remote database.
- After operator RWA Find Remote Images, the ED ELEVA as SCU uses the remote SCP Query/Retrieve Service Class functionality to query remote images.
- After operator RWA Move Remote Images, the ED ELEVA as SCU uses the remote SCP Query/Retrieve Service Class functionality to retrieve remote images.
- After operator RWA Request Storage Commitment, the ED ELEVA as SCU uses the remote SCP Storage Commitment Service Class functionality to commit remote images.
- After operator RWA Print Images, the ED ELEVA as SCU uses the remote Print Management Service Class to print local images.

- The ED ELEVA can request a Worklist from a remote system such as a RIS / HIS system. The ED ELEVA can issue the request information using the Modality Performed Procedure Step service to update the RIS.
- The ED ELEVA can request to query a selected remote system, request to copy images from ED ELEVA to a selected remote system, request storage commitment on exported images, request to retrieve selected images from remote systems and can request to print images. This results in Associations initiated by ED ELEVA.
- The ED ELEVA is able to reply on verification requests, to execute a requested query, to store received images into ED ELEVA and retrieve requested images from ED ELEVA. These requests from remote systems are done via Associations initiated by the remote systems.
- The ED ELEVA is also able to display the contents (i.e. directory listing) of DICOM CD-Recorda-ble disk to Write, Read and Update images, either as raw data or as processed data (RF), on / from a DICOM CD-Recordable disk.
- The ED ELEVA is also able to display the contents (i.e. directory listing) of DICOM DVD disk to Write and Read images, either as raw data or as processed data (RF), on / from a DICOM DVD disk.

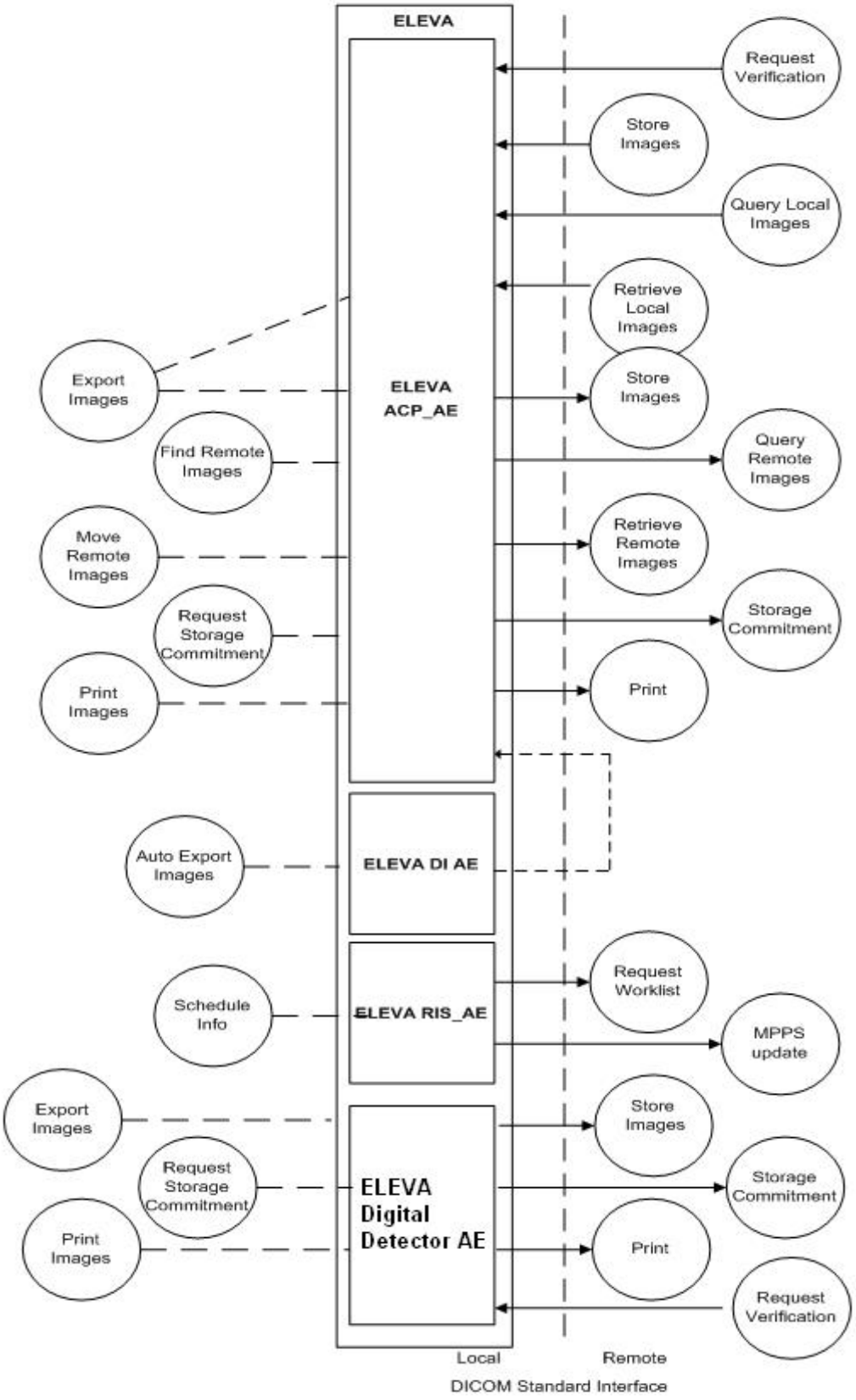

Figure 4: Application Data Flow Diagram (EDI Configuration)

4.1.1.2. Application Data Flow for EasyDiagnost Eleva DI Configuration

The EasyDiagnost Eleva (ED ELEVA) in DI Configuration has two Application Entities in its implementation, namely
The EasyDiagnost Eleva (ED ELEVA) in DI Configuration has two main Application Entities and one Application Entity for optional wall stand in its implementation, namely

- EasyDiagnost Eleva RIS Application Entity (ED Eleva RIS AE)
- EasyDiagnost Eleva ACP Application Entity (ED Eleva DI AE)
- EasyDiagnost Eleva Digital Detector Application Entity (ED ELEVA Digital Detector AE)

The figure below depicts the real world activities and the associated DICOM service classes used or provided by ED Eleva RIS, ED Eleva DI and ED Eleva Digital Detector application entities.

- After RWA Export Images (triggered by either the operator or RWA Retrieve Local Images), the ELEVA DI System as SCU uses the remote SCP Storage Service Class functionality to store local images on a remote database.

- The ELEVA DI System can request a Worklist from a remote system such as a RIS / HIS system. The ELEVA DI System can issue the request information using the Modality Performed Procedure Step service to update the RIS

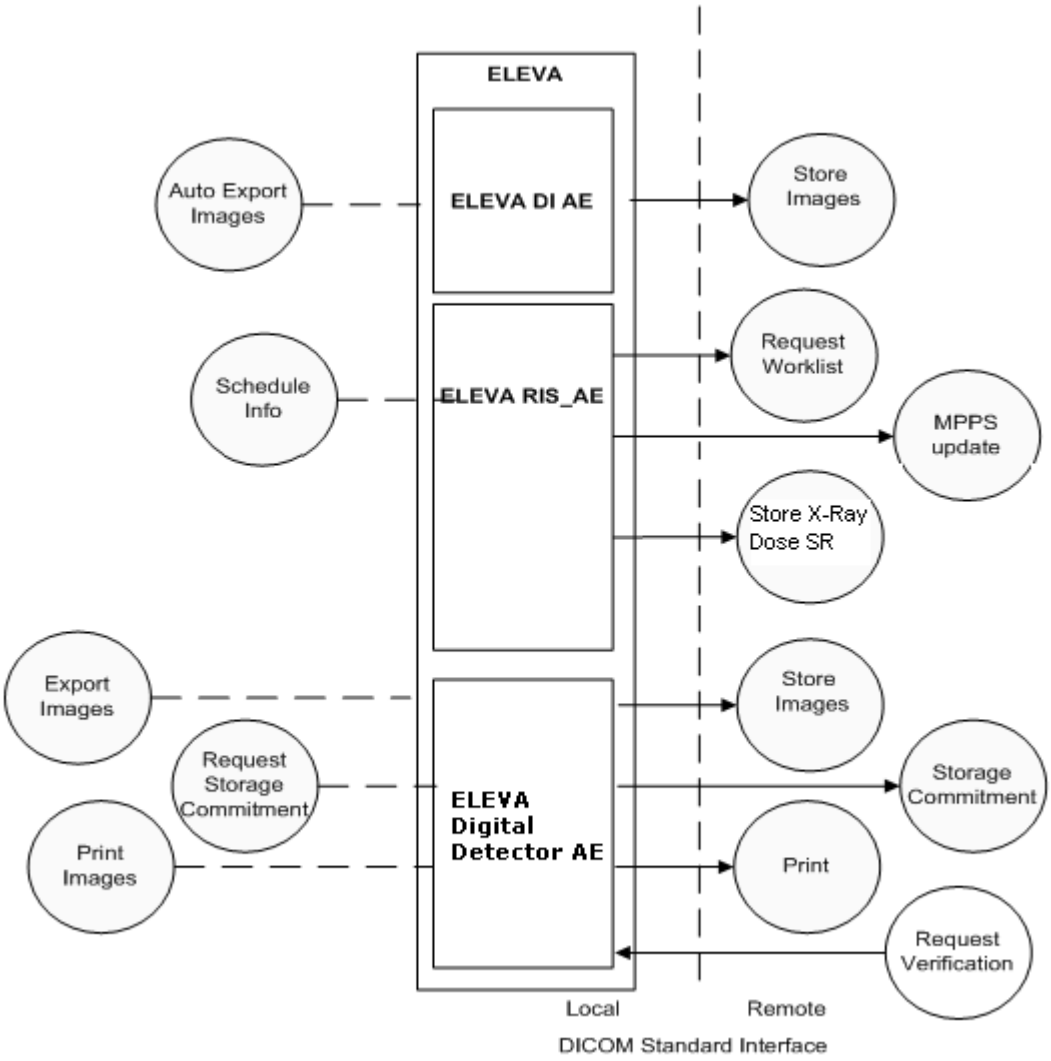

Figure 5: Application Data Flow Diagram (DI Configuration)

4.1.2. Functional Definition of AE's

This section contains a functional definition for each individual local Application Entity.

4.1.2.1. Functional Definition of EasyDiagnost DI AE

The EasyDiagnost Eleva DI AE can perform the Storage service as SCU (RWA Export Images, triggered by operator or retrieve request).
The EasyDiagnost Eleva DI AE shall request an association with the selected remote SCP for all applicable Storage SOP classes. When the association is accepted, the EasyDiagnost Eleva DI AE shall send the Storage requests (including data from local database), receive the Storage responses and act accordingly, and release the association.

4.1.2.2. Functional Definition of EasyDiagnost Eleva ACP AE

Verification Service Class
The EasyDiagnost ELEVA Digital Detector AE can perform the Verification service as SCP (RWA Request Verification).

A remote SCU shall request an association with the EasyDiagnost ELEVA Digital Detector AE for Verification SOP class. After accepting the association, the EasyDiagnost ELEVA Digital Detector AE shall receive and respond to the Verification request, and release the association when requested.

Storage Service Class
The EasyDiagnost ELEVA Digital Detector AE can perform the Storage service as SCP (RWA Import Images).

A remote SCU shall request an association with the EasyDiagnost ELEVA Digital Detector AE for Storage SOP classes. After accepting the association, the EasyDiagnost ELEVA Digital Detector AE shall receive the Storage requests, store the data in the local database, send the applicable Storage responses, and release the association when requested.

The EasyDiagnost ELEVA Digital Detector AE can perform the Storage service as SCU (RWA Export Images, triggered by operator or retrieve request).

The EasyDiagnost ELEVA Digital Detector AE shall request an association with the selected remote SCP for all applicable Storage SOP classes. When the association is accepted, the EasyDiagnost ELEVA Digital Detector AE shall send the Storage requests (including data from local database), receive the Storage responses and act accordingly, and release the association. Finally, if configured, the EasyDiagnost ELEVA Digital Detector AE shall request storage commitment per Storage Commitment service (ref. Storage Commitment service class).

Query/Retrieve Service Class
The EasyDiagnost ELEVA Digital Detector AE can perform the Query/Retrieve service as SCP (RWA Query Local Images and RWA Retrieve Local Images).

A remote SCU shall request an association with the EasyDiagnost ELEVA Digital Detector AE for Query/Retrieve SOP classes. After accepting the association, the EasyDiagnost ELEVA Digital Detector AE shall receive the Query/Retrieve requests. In case of a Retrieve request, the EasyDiagnost ELEVA Digital Detector AE shall request storage per Storage service as SCU (ref. Storage Service Class). Next, the EasyDiagnost ELEVA Digital Detector AE shall send the applicable Query/Retrieve responses, and release the association when requested.

The EasyDiagnost ELEVA Digital Detector AE can perform the Query/Retrieve service as SCU (RWA Find Remote Images and RWA Retrieve Remote Images).

The EasyDiagnost ELEVA Digital Detector AE shall request an association with the selected remote SCP for the applicable (configured) Query/Retrieve SOP class. When the association is accepted, the EasyDiagnost ELEVA Digital Detector AE shall send the Query/Retrieve requests, receive the Query/Retrieve responses and act accordingly, and finally release the association.

The Eleva Easy Diagnost AE fully supports the Cancel functionality, both as SCU and SCP.

Storage Commitment Service Class
The EasyDiagnost Eleva ACP AE can perform the Storage Commitment service as SCU (RWA Request Storage Commitment).

The EasyDiagnost ACP ELEVA Digital Detector AE shall request an association with the selected remote SCP for the Storage Commitment Push Model SOP class. When the association is accepted, the EasyDiagnost Eleva ACP AE shall send the Storage Commitment requests, receive the Storage Commitment responses and act accordingly, and release the association.

When the remote commitment actions have been finished, the remote SCP should request an association with the EasyDiagnost Eleva ACP AE (still SCU). After accepting the association, the EasyDiagnost Eleva ACP AE shall receive the Storage Commitment reports, and release the association when requested.

The Storage Commitment Service can be done Synchronous and Asynchronous.
A detailed specification of the Storage Commitment is described in section RWA Request Storage Commitment.

Print Management Service Class
The EasyDiagnost Eleva ACP AE Print service acts as a Service Class User SCU (RWA Print Images).

The EasyDiagnost Eleva ACP AE shall request an association with the selected remote SCP (printer) for all applicable SOP classes of the applicable Print Management Meta SOP class. When the association is accepted, the EasyDiagnost ELEVA Digital Detector AE shall send the Print requests (including data from local database), receive the Print responses and act accordingly, and finally release the association.

The EasyDiagnost Eleva ACP AE can perform the Printer service as SCU (RWA Request Printer Status)

The EasyDiagnost Eleva ACP AE shall request an association with the selected remote SCP (printer) for the Printer SOP class. When the association is accepted, the EasyDiagnost Eleva ACP AE shall send the Get / Event Report request, receive the Printer responses and act accordingly, and finally release the association.

Media Service Class.
The EasyDiagnost Eleva ACP AE acts also as a File Set Creator (FSC), File Set Reader (FSR) and File Set Updater (FSU) for supported CD-R medium and DVD+R (W) medium

4.1.2.3. Functional Definition of EasyDiagnost Eleva RIS AE

Worklist Service Class
The EasyDiagnost Eleva RIS Application Entity (EasyDiagnost Eleva RIS AE) acts as a Service Class User (SCU) for X-Ray Dose SR, Worklist and MPPS.

4.1.2.4. Functional Definition of EasyDiagnost ELEVA Digital Detector AE

Verification Service Class
The EasyDiagnost Eleva Digital Detector AE can perform the Verification service as SCP (RWA Request Verification).

A remote SCU can an association with the EasyDiagnost ELEVA Digital Detector AE for Verification SOP class. After accepting the association, the EasyDiagnost ELEVA Digital Detector AE can receive and respond to the Verification request, and release the association when requested.

Storage Service Class
The EasyDiagnost ELEVA Digital Detector AE can perform the Storage service as SCU (RWA Export Images, triggered by operator).

The EasyDiagnost ELEVA Digital Detector AE can request an association with the selected remote SCP for all applicable Storage SOP classes. When the association is accepted, the EasyDiagnost ELEVA Digital Detector AE can send the Storage requests (including data from local database), receive the Storage responses and act accordingly, and release the association. Finally, if configured, the EasyDiagnost ELEVA Digital Detector AE can request storage commitment per Storage Commitment service (ref. Storage Commitment service class).

4.1.3. Sequencing of Real World Activities

This section shall contain a description of specific sequencing as well as potential constraints of Real-World Activities, including any applicable user interactions, as performed by the ED ELEVA.

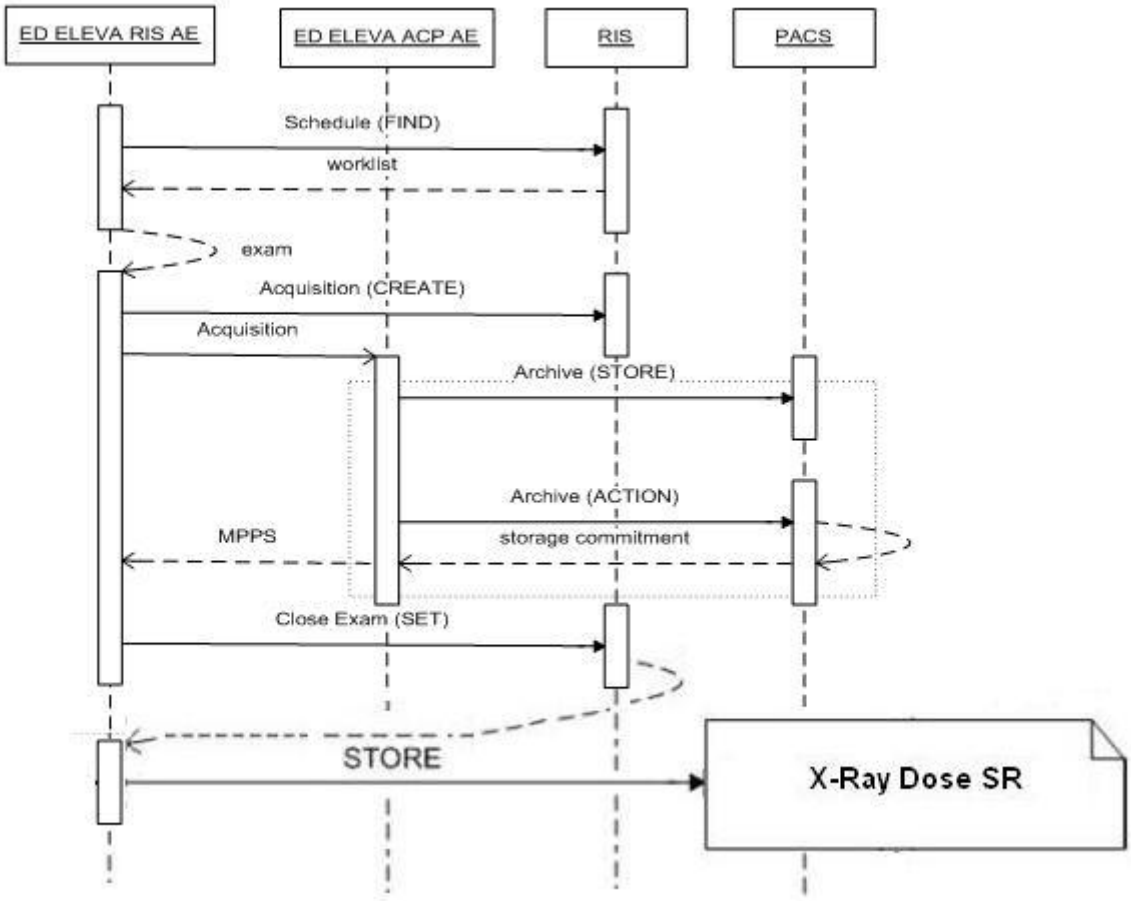

Figure 6: Sequencing of the RWA of ED Eleva (EDI Configuration only)

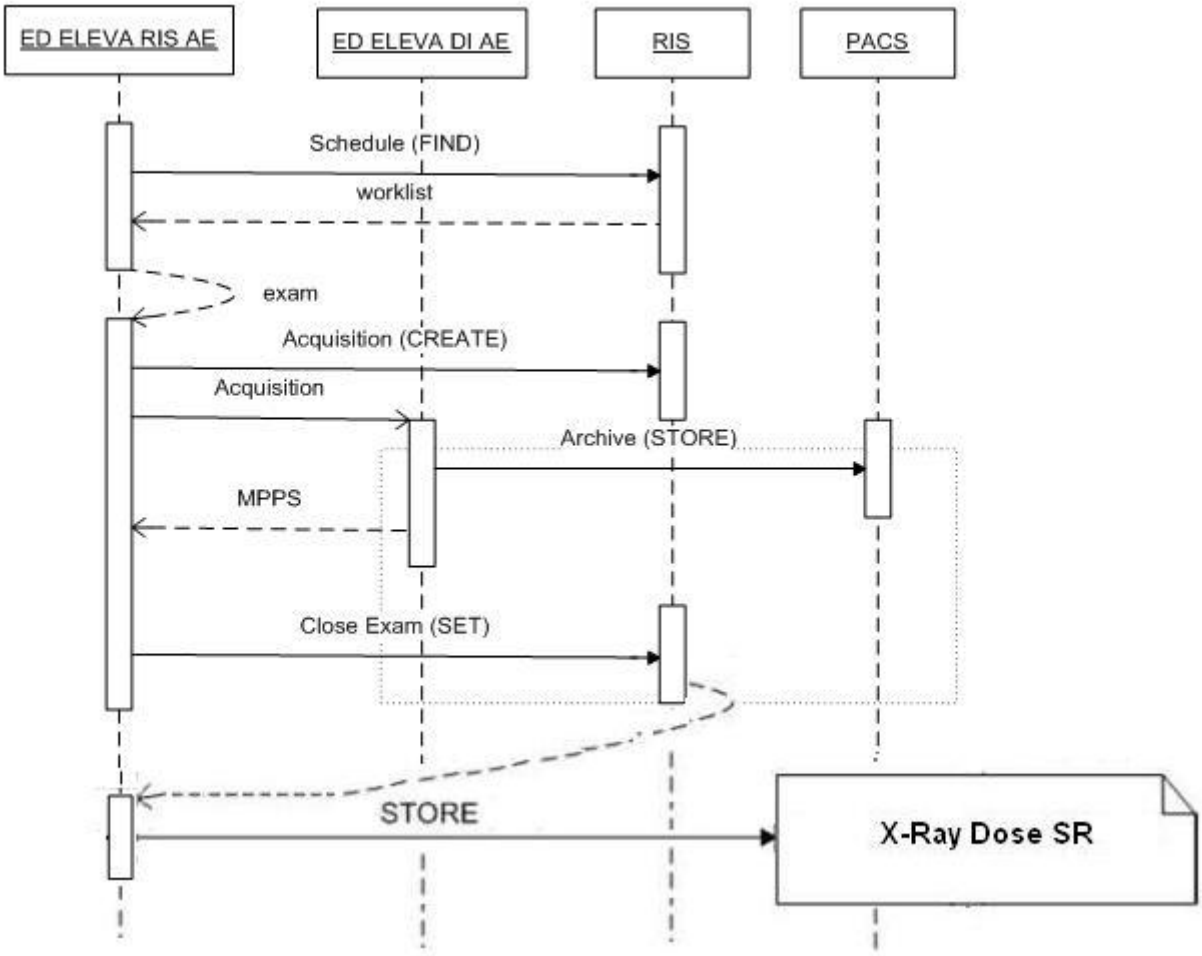

Figure 7: Sequencing of the RWA of ED Eleva (DI Configuration only)

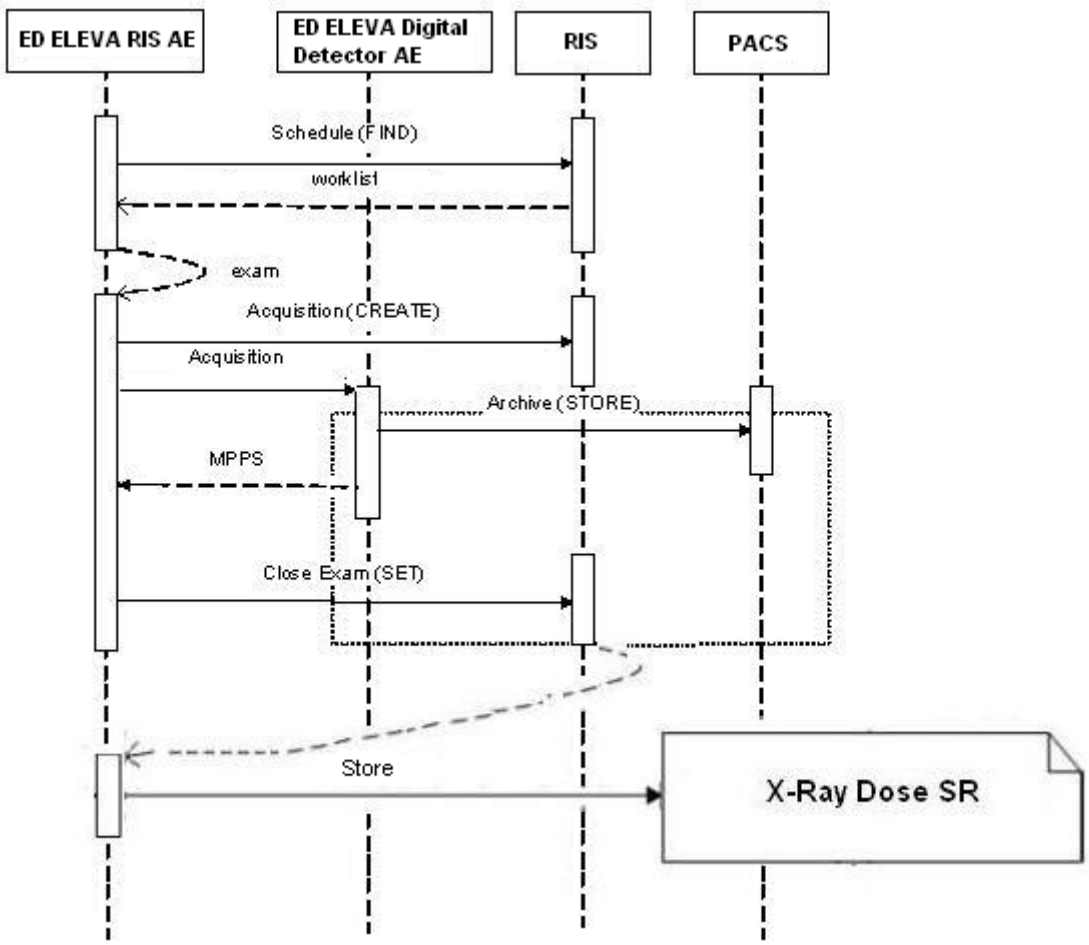

Figure 8: Sequencing of the RWA of ED Eleva Digital Detector AE

Examinations, identified with a new UID, are created inside the EasyDiagnost Eleva RIS AE as result of Worklist Management or on manual scheduling by the clinical user. Once an examination (an equivalent to the DICOM Procedure Step) is created, the clinical user can select this examination for acquisition.

The administration Patient information, put in by the clinical user, and the worklist patient information will be sent together to the EasyDiagnost Eleva ACP AE (in case of EDI) or EasyDiagnost Eleva DI AE (in case of DI).

An Examination, selection for acquisition is synchronized between the EasyDiagnost Eleva RIS AE and the EasyDiagnost Eleva ACP AE (in case of EDI) or EasyDiagnost Eleva DI AE (in case of DI) . Once an acquisition has started, the MPPS CREATED messages are sent from the EasyDiagnost Eleva RIS AE to the RIS.
Acquired images from the EasyDiagnost Eleva ACP AE or EasyDiagnost Eleva DI AE and related data from the clinical user are added to the examination.

When the clinical user has indicated on the EasyDiagnost Eleva ACP AE or EasyDiagnost Eleva DI, that the examination is finished, the Examination will be deleted here, as soon as the automatic export of the images has taken place.

A MPPS “**COMPLETED**” or “**DISCONTINUED**” message is sent from the EasyDiagnost ELEVA RIS AE to the RIS.

4.2. AE Specifications

This section in the DICOM Conformance Statement is a set of Application Entity specifications. There are as many of these subsections as there are different AE's in the implementation.

4.2.1. EasyDiagnost DI AE

Detail of this specific Application Entity is specified in this section.

4.2.1.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

Table 7: SOP Classes for ACP AE

SOP Class Name	SOP Class UID	SCU	SCP
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	No
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Yes	No
Specialized PMS X-Ray Image Store (Private)	1.3.46.670589.2.3.1.1	Yes	No
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Yes	No

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

4.2.1.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

4.2.1.2.1. General

The DICOM standard application context name is specified in below table.

Table 8: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.1.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

Table 9: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	1

Table 10: Number of associations as an Association Acceptor for this AE

Description	Value
Maximum number of simultaneous associations	1

4.2.1.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

Table 11: Asynchronous nature as an Association Initiator for this AE

Description	Value
Maximum number of outstanding asynchronous transactions	Not applicable

4.2.1.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

Table 12: DICOM Implementation Class and Version for EasyDiagnost DI AE

Implementation Class UID	1.3.46.670589.6.1.2.1.1.1
Implementation Version Name	R2.5.2.0208

4.2.1.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in next table.

Table 13: Communication Failure Behavior

Exception	Behavior
ARTIM Timeout	The reason is logged and reported to the user.

4.2.1.3. Association Initiation Policy

EasyDiagnost Eleva DI AE initiates the association when the user exports the selected images from EasyDiagnost Eleva to another system.
The behavior of this Application Entity is summarized as shown in next tables.
The Application Entity will respond on a received reject Association attempts as shown in next table.

Table 14: Association Rejection response

Result	Source	Reason/Diagnosis	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	1 - no-reason-given	The association is rejected. The reason is logged
		2 - application-context-name-not supported	The association is rejected. The reason is logged
		3 - calling-AE-title-not-recognized	The association is rejected. The reason is logged
		7 - called-AE-title-not-recognized	The association is rejected. The reason is logged
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	The association is rejected. The reason is logged
		2 - protocol-version-not-supported	The association is rejected. The reason is logged
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	The association is rejected. The reason is logged
		2 - Local-limit-exceeded	The association is rejected. The reason is logged
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	The association is rejected. The reason is logged
		2 - application-context-name-not-supported	The association is rejected. The reason is logged
		3 - calling-AE-title-not-recognized	The association is rejected. The reason is logged

Result	Source	Reason/Diagnosis	Behavior
		7 - called-AE-title-not-recognized	The association is rejected. The reason is logged
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	The association is rejected. The reason is logged
		2 - protocol-version-not-supported	The association is rejected. The reason is logged
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary congestion	The association is rejected. The reason is logged
		2 - local-limit-exceeded	The association is rejected. The reason is logged

The behavior of the AE on receiving an Association abort is summarized in the next table.

Table 15: Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	The association is rejected. The reason is logged
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	The association is rejected. The reason is logged
	1- unrecognized-PDU	The association is rejected. The reason is logged
	2 - unexpected-PDU	The association is rejected. The reason is logged
	4 - unrecognized-PDU parameter	The association is rejected. The reason is logged
	5 - unexpected-PDU parameter	The association is rejected. The reason is logged
	6 - invalid-PDU-parameter value	The association is rejected. The reason is logged

The behavior of the AE during DICOM communication failure is summarized in the following table.

Table 16: Response Status Handler Behavior

Service Status	Further Meaning	Error code	Reason
Flag	Export Flagged image	e.g. Matching is complete	Examination Flagged for DICOM export
Busy	Export Busy		Examination being exported
Done	Export Done		Examination exported successfully
Error	Export Error		Export Error while exporting examination
Cancel	Export Cancel		Export of Examination being Cancelled
Not Exported Cancel	Examination not exported		Export of examination cancelled

4.2.1.3.1. (Real-World) Activity – Image Export

4.2.1.3.1.1. Description and Sequencing of Activities

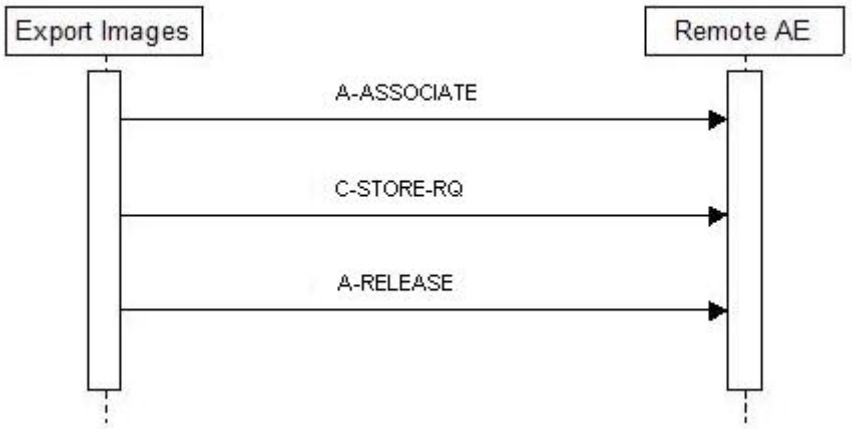

Figure 9: Real World Activity – Image Export

The RWA Export Images involves the storage of images from the local ELEVA DI AE System database to a remote system. There are two ways for the ELEVA DI AE System to initiate Export Images.

1. The operator is able to copy the images selected in a patient folder from the local ELEVA DI AE System database to another database by means of the copy tool in the ELEVA DI AE System data-handling tool. For each selected patient ELEVA DI AE System initiates an association to the selected peer entity, and uses it to send C-STORE requests and receive the associated C-STORE responses. The association is released when all selected images in the selected folder have been transmitted. ELEVA DI AE System handles operator copy requests one after another.
2. The images selected in a patient folder from the local ELEVA DI AE System database are AUTOPUSHED to another database.

Along with the RAW image data the ELEVA DI AE System shall also export presentation state data. If the SCP supports the Grayscale Softcopy Presentation State storage SOP class then the applicable presentation state data will be transferred as such.

Figure above shows the sequence of events after the operator or remote application initiates the RWA Export Images.

4.2.1.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in next table.

Table 17: Proposed Presentation Contexts for (Real-World) Activity – Image Export

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Specialized PMS X-Ray Image Store (Private)	1.3.46.670589.2.3.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

Each time an association is initiated, the association initiator proposes a number of Presentation Contexts to be used on that association. The Presentation Contexts proposed by the ELEVA DI AE for Export Images are defined in table above

4.2.1.3.1.3. SOP Specific Conformance for Storage SOP Classes

Important remarks about the exported images:

- In case the remote system does not support modality specific image storage SOP class, the ELEVA DI AE will convert the images, only in the NON PRO Mode, and exports them via the Secondary Capture image storage SOP class. These Secondary Capture images and additional information (like Shutter information, Graphics, Annotations text and other important attribute information) are burnt-in.
  The original bit depth of the Secondary Capture image is kept.

Note: only the standard DICOM RF images can be converted, the private SOP class cannot be converted.

- Attributes e.g. Study Date and Study Time will be added to images to be exported (if not yet present). This is done because there are imaging systems relying on the existence of these attributes.
- The ELEVA DI AE allows the operator to modify attributes of the stored images. ELEVA DI AE does not modify the pixel values of the stored images. Modified images retain their original Study, Series and Image UID.
- For Secondary Capture images only one Window Width and Window Centre value is exported.
- Please refer to section Coerced/Modified fields, for more information on stored images.
- When the location of a Graphic or text Annotation is specified relatively with regards to the displayed area. (i.e. DICOM attribute: Bounding Box Annotation Units, Anchor Point Annotation Units or Graphic Annotation Units equals “DISPLAY”), the annotation is not displayed.
- Areas occluded by shutter are always black in ELEVA DI AE, whereas it is possible to want it to be white in DICOM.
- On the export of such an image the ELEVA DI AE system first sets up an association to determine if the SCP supports the Grayscale Softcopy Presentation State SOP Class.
- If the SCP does not supports the Grayscale Softcopy Presentation State service the Graphical information is added to the image object additional a new instance UID is generated for this image.
- All kind of Images sending out from the are included with Performed Procedure Step Tags like: (Start Date, Start Time, ID).

Use of optional, private and retired attributes:

The transmitted Storage SOP instances may include all optional elements specified in the DICOM standard, depending on the source of the images.
The transmitted Storage SOP instances may contain Retired and Private data elements, depending on the ELEVA DI AE configuration.
The ELEVA DI AE can convert the transfer syntax when exporting images. The ELEVA DI AE can perform transfer syntax according to the following table.

Table 18: Transfer Syntax Conversion

Syntax	Source	ILE	ELE	EBE
Description				
ILE		+	+	+
ELE		+	+	+
EBE		+	+	+

The Store Response Status is saved in the log file; a user error will be displayed in the GUI. The ELEVA DI AE will stop the transfer of the images and release the association as soon as it receives an unsuccessful Store Response Status.

4.2.1.3.1.3.1. Dataset Specific Conformance for C-STORE-RQ

Detail regarding the Dataset Specific response behavior will be reported in this section.
This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 19: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful stored	-
Failure	A7xx	Refused: Out of Resources	-
	A9xx	Error: Data Set does not match SOP Class	-
	Cxxx	Error: cannot understand	-
Warning	B000	Coercion of Data Elements	-
	B007	Data Set does not match SOP Class	-
	B006	Elements Discarded	-

4.2.1.4. Association Acceptance Policy

EasyDiagnost Eleva DI AE does not accept any incoming associations

4.2.2. EasyDiagnost Eleva ACP AE

Detail of this specific Application Entity is specified in this section.

4.2.2.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

Table 20: SOP Classes for ACP AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	No	Yes
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
Print Job SOP Class	1.2.840.10008.5.1.1.14	Yes	No
Basic Annotation Box SOP Class	1.2.840.10008.5.1.1.15	Yes	No
Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Yes	No
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Yes	No
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Patient Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Yes	Yes
Patient Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Yes	Yes
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	Yes
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes
Specialized PMS X-Ray Image Store (Private)	1.3.46.670589.2.3.1.1	Yes	Yes

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

4.2.2.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

4.2.2.2.1. General

The DICOM standard application context name is specified in below table.

Table 21: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.2.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

Table 22: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	3

Table 23: Number of associations as an Association Acceptor for this AE

Description	Value
Maximum number of simultaneous associations	3

4.2.2.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

Table 24: Asynchronous nature as an Association Initiator for this AE

Description	Value
Maximum number of outstanding asynchronous transactions	Not applicable

4.2.2.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

Table 25: DICOM Implementation Class and Version for Easy Diagnost Eleva ACP AE

Implementation Class UID	1.3.46.670589.5.2.23
Implementation Version Name	ViewForum R6.3

4.2.2.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in next table.

Table 26: Communication Failure Behavior

Exception	Behavior
ARTIM Timeout	The association will be closed and the reason will be logged

4.2.2.3. Association Initiation Policy

The behavior of this Application Entity is summarized as shown in next Table.

Table 27: Response Status Handler Behavior

Service Status	Further Meaning	Result code	Reason
Acceptance		0000	Association Accepted.
Rejected		1, 2	Association rejected.

The Application Entity will response on a received reject Association attempts as shown in next table.

Table 28: Association Rejection response

Result	Source	Reason/Diagnosis	Explanation
1 - rejected-permanent	1 - DICOM UL service-user	1 - no-reason-given	The information is logged
		2 - application-context-name-not supported	The information is logged
		3 - calling-AE-title-not-recognized	The information is logged
		7 - called-AE-title-not-recognized	The information is logged
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	The information is logged
		2 - protocol-version-not-supported	The information is logged
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	The information is logged
		2 - Local-limit-exceeded	The information is logged
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	The information is logged
		2 - application-context-name-not-supported	The information is logged
		3 - calling-AE-title-not-recognized	The information is logged
		7 - called-AE-title-not-recognized	The information is logged
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	The information is logged
		2 - protocol-version-not-supported	The information is logged
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary congestion	The information is logged
		2 - local-limit-exceeded	The information is logged

The behavior of the AE on receiving an association abort is summarized in next table.

Table 29: Association Abort Handling

Source	Reason/Diagnosis	behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	The information is logged
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	The information is logged
	1- unrecognized-PDU	The information is logged
	2 - unexpected-PDU	The information is logged
	4 - unrecognized-PDU parameter	The information is logged
	5 - unexpected-PDU parameter	The information is logged
	6 - invalid-PDU-parameter value	The information is logged

4.2.2.3.1. (Real-World) Activity – FIND as SCU

4.2.2.3.1.1. Description and Sequencing of Activities

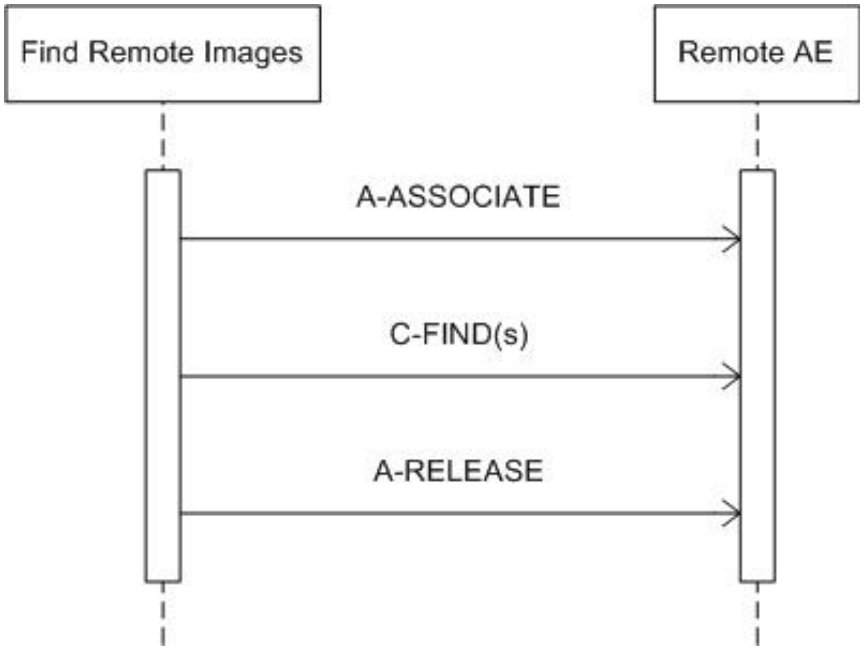

Figure 10: RWA – FIND as SCU

The RWA Find Remote Images involves the query of a remote system to find matching images in the remote database.

The operator queries a remote database by means of the query tool in the ED ELEVA ACP data han-dling facility. The EasyDiagnost Eleva ACP AE initiates an association to the selected peer entity and uses it to send Query (C-FIND) requests (and receive the associated responses). The association is released when the execution of the query completes (the Query/Retrieve dialog on the GUI is closed).

4.2.2.3.1.2. Proposed Presentation Contexts

Each time an association is initiated, the association initiator proposes a number of Presentation Contexts to be used on that association. In this subsection, the Presentation Contexts proposed by the EasyDiagnost Eleva ACP AE for Find Remote Images are defined in next table

Table 30: Proposed Presentation Contexts for (Real-World) Activity – FIND as SCU

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Patient Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.2.3.1.3. SOP Specific Conformance for Patient Root QR Information Model – FIND SOP Class

The EasyDiagnost Eleva ACP AE will not generate queries containing optional keys.
The EasyDiagnost Eleva ACP AE will not generate relational queries.

4.2.2.3.1.3.1. Dataset Specific Conformance for Patient Root Q/R Information Model – FIND SOP Class SCU

In the following table the supported Query Keys for each query level are described. Universal matching shall be supported as default.

Table 31: Supported Query Keys for Patient Root Information Model

Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS	Single	
Specific Character Set	0008,0005	CS	Universal	
Q/R Image level				
Patient ID	0010,0020	LO	Single Value	
Study Instance UID	0020,000D	UI	Single Value	
Series Instance UID	0020,000E	UI	Single Value	
SOP Instance UID	0008,0018	UI	Universal	
Instance Number	0020,0013	IS	Universal	
SOP Class UID	0008,0016	UI	Universal	
Content Date	0008,0023	DA	Universal	
Content Time	0008,0033	TM	Universal	
Q/R Patient level				
Patient ID	0010,0020	LO	Universal, WildCard	
Patient's Name	0010,0010	PN	Universal, WildCard	
Patient's Birth Date	0010,0030	DA	Universal	
Patient's Sex	0010,0040	CS	Universal	
Q/R Series level				
Patient ID	0010,0020	LO	Single Value	
Study Instance UID	0020,000D	UI	Single Value	
Series Instance UID	0020,000E	UI	Universal	
Modality	0008,0060	CS	Universal	
Series Number	0020,0011	IS	Universal	
Performing Physician's Name	0008,1050	PN	Universal	
Body Part Examined	0018,0015	CS	Universal	
Protocol Name	0018,1030	LO	Universal	
Performed Station Name	0040,0242	SH	Universal	
Performed Procedure Step Start Date	0040,0244	DA	Universal	
Performed Procedure Step ID	0040,0253	SH	Universal	
Performed Procedure Type Description	0040,0255	LO	Universal	
Q/R Study level (Patient Root)				
Patient ID	0010,0020	LO	Single Value	
Study Instance UID	0020,000D	UI	Universal	
Study Date	0008,0020	DA	Universal	
Study Time	0008,0030	TM	Universal	
Accession Number	0008,0050	SH	Universal	
Referring Physician's Name	0008,0090	PN	Universal	
Study Description	0008,1030	LO	Universal	
Study ID	0020,0010	SH	Universal	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 32: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	The Find results are displayed.
Refused	A700	Out of Resources	No find results are displayed. The reason is logged
Failure	A900	Identifier does not match SOP Class	No find results are displayed. The reason is logged
	Cxxx	Unable to process	No find results are displayed. The reason is logged
Cancel	FE00	Matching terminated due to Cancel Request	No find results are displayed. The reason is logged
Pending	FF00	Matches are continuing – Current match is supplied and any optional keys were supported in the same manner as required keys	The Find command continues
	FF01	Matches are continuing – Warning that one or more optional keys were not supported for existence and/or matching for this identifier	The Find command continues

4.2.2.3.1.4. SOP Specific Conformance for Study Root QR Information Model - FIND SOP Class

The EasyDiagnost Eleva ACP AE will not generate queries containing optional keys.
The EasyDiagnost Eleva ACP AE will not generate relational queries

4.2.2.3.1.4.1. Dataset Specific Conformance for Study Root Query/Retrieve Information Model – FIND SOP Class SCU

In the following table the supported Query Keys for each query level are described. Universal matching shall be supported as default.

Table 33: Supported Query Keys for Study Root Information Model

Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS	Single Value	
Specific Character Set	0008,0005	CS	Universal	
Q/R Image level				
Study Instance UID	0020,000D	UI	Single Value	
Series Instance UID	0020,000E	UI	Single Value	
SOP Instance UID	0008,0018	UI	Universal	
Instance Number	0020,0013	IS	Universal	
SOP Class UID	0008,0016	UI	Universal	
Content Date	0008,0023	DA	Universal	
Content Time	0008,0033	TM	Universal	
Q/R Series level				
Study Instance UID	0020,000D	UI	Single Value	
Series Instance UID	0020,000E	UI	Universal	
Modality	0008,0060	CS	Universal	
Series Number	0020,0011	IS	Universal	
Performing Physician's Name	0008,1050	PN	Universal	
Body Part Examined	0018,0015	CS	Universal	
Protocol Name	0018,1030	LO	Universal	
Performed Station Name	0040,0242	SH	Universal	
Performed Procedure Step Start Date	0040,0244	DA	Universal	
Performed Procedure Step ID	0040,0253	SH	Universal	
Performed Procedure Type Description	0040,0255	LO	Universal	

Attribute Name	Tag	VR	Type Of Matching	Comment
Q/R Study level (Study Root)				
Study Instance UID	0020,000D	UI	Universal	
Study Date	0008,0020	DA	Universal	
Study Time	0008,0030	TM	Universal	
Accession Number	0008,0050	SH	Universal	
Modalities in Study	0008,0061	CS	Universal	
Referring Physician's Name	0008,0090	PN	Universal	
Study Description	0008,1030	LO	Universal	
Patient's Name	0010,0010	PN	Universal, WildCard	
Patient ID	0010,0020	LO	Universal, WildCard	
Patient's Birth Date	0010,0030	DA	Universal	
Patient's Sex	0010,0040	CS	Universal	
Study ID	0020,0010	SH	Universal	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 34: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	The Find results are displayed.
Refused	A700	Out of Resources	No find results are displayed. The reason is logged
Failure	A900	Identifier does not match SOP Class	No find results are displayed. The reason is logged
	Cxxx	Unable to process	No find results are displayed. The reason is logged
Cancel	FE00	Matching terminated due to Cancel Request	No find results are displayed. The reason is logged
Pending	FF00	Matches are continuing – Current match is supplied and any optional keys were supported in the same manner as required keys	The Find command continues
	FF01	Matches are continuing – Warning that one or more optional keys were not supported for existence and/or matching for this identifier	The Find command continues

4.2.2.3.2. (Real-World) Activity – MOVE as SCU

4.2.2.3.2.1. Description and Sequencing of Activities

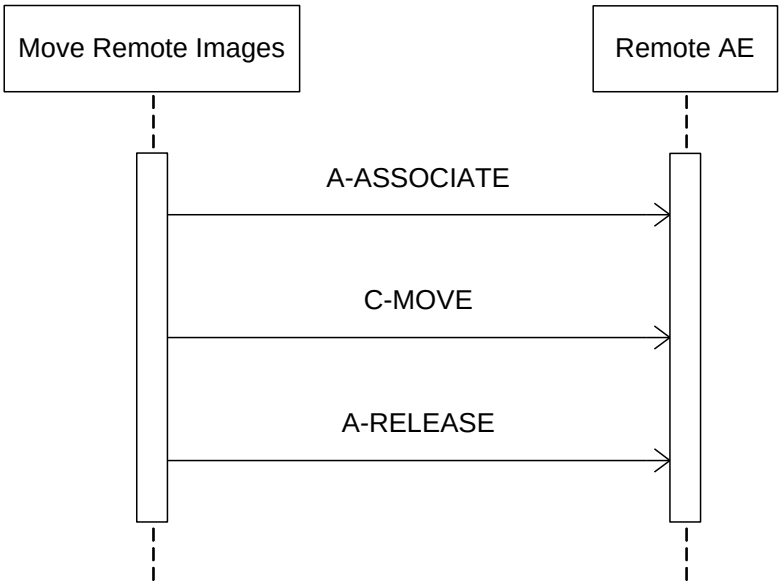

Figure 11: RWA – MOVE as SCU

The RWA Move Remote Images involves the retrieve of images on a remote system by moving matching images from the remote database to another database.

The operator is able to copy the selected images in a patient folder from a remote database to another, local or remote, database by means of the copy tool in the EasyDiagnost Eleva ACP AE data handling facility. The EasyDiagnost Eleva ACP AE initiates for each copy request an association to the selected peer entity (Remote AE) and uses it to send the Retrieve (C-MOVE) request (and receive the associated responses). An examination may contain both images and presentation states. The association is released after the final Retrieve (C-MOVE) response for the related request has been received (no more pending).

4.2.2.3.2.2. Proposed Presentation Contexts

The Presentation Contexts proposed by the EasyDiagnost Eleva ACP AE for Move Remote Images are defined in next table.

Table 35: Proposed Presentation Contexts for (Real-World) Activity – MOVE as SCU

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Patient Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.2.3.2.3. SOP Specific Conformance for Patient Root QR Information Model – MOVE SOP Class

The EasyDiagnost Eleva ACP AE provides standard conformance to MOVE SOP class

4.2.2.3.2.3.1. Dataset Specific Conformance for Patient Root Q/R Information Model – MOVE SOP Class SCU

Following are the details regarding the specific conformance, including response behavior to all status codes, both from an application level and communication errors.

Table 36: Identifiers for MOVE Patient Root Information Model as SCU

Attribute Name	Tag	VR	Comment
Patient Root Information Model			
Query/Retrieve Level	0008,0052	CS	
Q/R Image level			
SOP Instance UID	0008,0018	UI	
Patient ID	0010,0020	LO	
Study Instance UID	0020,000D	UI	
Series Instance UID	0020,000E	UI	
Q/R Patient level			
Patient ID	0010,0020	LO	
Q/R Series level			
Patient ID	0010,0020	LO	
Study Instance UID	0020,000D	UI	
Series Instance UID	0020,000E	UI	
Q/R Study level (Patient Root)			
Patient ID	0010,0020	LO	
Study Instance UID	0020,000D	UI	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 37: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Sub-operations complete – No Failures	The move job is marked as completed. The association is released
Refused	A701	Out of Resources – Unable to calculate number of matches	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Refused	A702	Out of Resources – Unable to perform Sub-operations	The move job is marked as failed. The association is released. The reason is logged and reported to the user
Refused	A801	Move Destination unknown	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Failure	A900	Identifier does not match SOP class	The move job is marked as failed. The association is released. The reason is logged and reported to the user
Failure	Cxxx	Unable to process	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Cancel	FE00	Sub-operations terminated due to Cancel Indication	The move job is marked as failed. The association is released. The reason is logged and reported to the user

4.2.2.3.2.4. SOP Specific Conformance for Study Root QR Information Model – MOVE SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.2.3.2.4.1. Dataset Specific Conformance for Study Root Q/R Information Model – MOVE SOP Class SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 38: Identifiers for MOVE Study Root Information Model as SCU

Attribute Name	Tag	VR	Comment
Study Root Information Model			
Query/Retrieve Level	0008,0052	CS	
Q/R Image level			
SOP Instance UID	0008,0018	UI	
Study Instance UID	0020,000D	UI	
Series Instance UID	0020,000E	UI	
Q/R Series level			
Study Instance UID	0020,000D	UI	
Series Instance UID	0020,000E	UI	
Q/R Study level (Study Root)			
Study Instance UID	0020,000D	UI	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 39: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Sub-operations complete – No Failures	The move job is marked as completed. The association is released
Refused	A701	Out of Resources – Unable to calculate number of matches	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Refused	A702	Out of Resources – Unable to perform Sub-operations	The move job is marked as failed. The association is released. The reason is logged and reported to the user
Refused	A801	Move Destination unknown	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Failure	A900	Identifier does not match SOP class	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Failure	Cxxx	Unable to process	The move job is marked as failed. The association is released. The reason is logged and reported to the user.
Cancel	FE00	Sub-operations terminated due to Cancel Indication	The move job is marked as failed. The association is released. The reason is logged and reported to the user

4.2.2.3.3. (Real-World) Activity – Image Export

4.2.2.3.3.1. Description and Sequencing of Activities

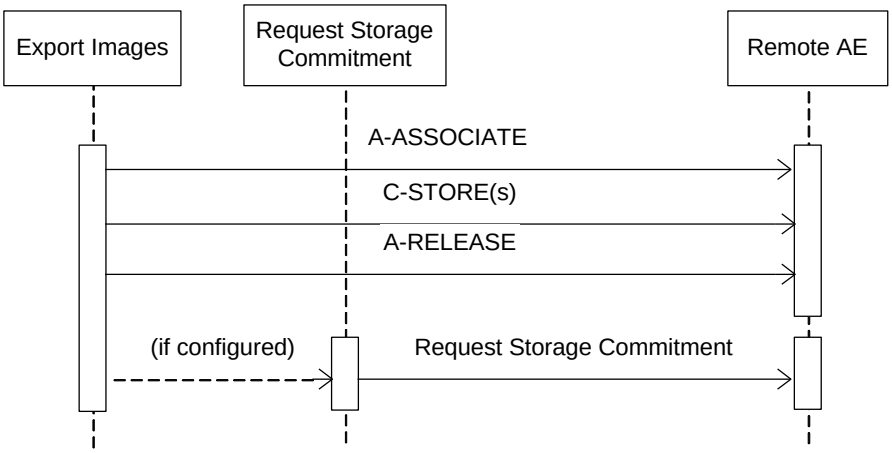

Figure 12: RWA – Image Export

The RWA Export Images involves the storage of images from the local EasyDiagnost Eleva database to a remote system. This export of images can be done as raw data either as processed data, RF.
There are two ways for the EasyDiagnost Eleva ACP AE to initiate Export Images.

The operator is able to copy the images selected in a patient folder from the local EasyDiagnost ACP AE database to another database by means of the copy tool in the EasyDiagnost ACP AE data-handling tool. For each selected patient EasyDiagnost Eleva ACP AE initiates an association to the selected peer entity, and uses it to send C-STORE requests and receive the associated C-STORE responses. The association is released when all selected images in the selected folder have been transmitted. EasyDiagnost Eleva ACP AE handles operator copy requests one after another.

A remote application copies images from the local EasyDiagnost Eleva ACP AE database to another database by sending a C-MOVE request to EasyDiagnost Eleva ACP AE for each received retrieve request EasyDiagnost Eleva ACP AE initiates an association to the requested retrieve/move destination, and uses it to send C-STORE requests and receive associated C-STORE responses. The association is released when all instances, i.e. images and presentation states as selected by the retrieve request identifier, have been stored.
EasyDiagnost Eleva ACP is able to simultaneously handle C-MOVE requests.

Along with the image data the EasyDiagnost Eleva ACP shall also export presentation state data. If the SCP supports the Grayscale Softcopy Presentation State storage SOP class then the applicable presentation state data will be transferred as such, otherwise the presentation state data will be merged with the image data before export.

If configured, the EasyDiagnost Eleva ACP shall also try and initiate a storage commitment of the stored image (after releasing the storage association).

4.2.2.3.3.2. Proposed Presentation Contexts

Each time an association is initiated, the association initiator proposes a number of Presentation Contexts to be used on that association. The Presentation Contexts proposed by the EasyDiagnost Eleva ACP AE for Export Images are defined in table above.

Table 40: Proposed Presentation Contexts for (Real-World) Activity – Image Export

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Secondary Capture Image	1.2.840.10008.5.1.4.1.1.7	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Storage SOP Class		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Specialized PMS X-Ray Image Store (Private)	1.3.46.670589.2.3.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

Note: For performance reasons the ELE transfer syntax is preferred. Extended negotiation is not supported.
Note1: Only for Photometric Interpretation of RGB and YBR_FULL_422. Therefore JPEG Baseline transfer syntax may NOT be configured for SCU systems that are capable of handling storage of monochrome images too.

4.2.2.3.3.3. SOP Specific Conformance for Storage SOP Class

Important remarks about the exported images:
In case the remote system does not support modality specific image storage SOP class, the ED ELEVA ACP AE will convert the images (if configured to do so) and send them via the Secondary Capture image storage SOP class. These Secondary Capture images and additional information (like graphics, text and important attribute information) are burnt-in (if configured). The original bit depth of the Secondary Capture image is kept.

Note: only standard DICOM images can be converted, private SOP classes cannot be converted.

In case of color images, all color-coding schemes are sent as they were received.
Attributes e.g. Study Date and Study Time will be added to images to be exported (if not yet present). This is done because there are imaging systems relying on the existence of these attributes.

The ED ELEVA ACP AE allows the operator to modify attributes of the stored images. ED ELEVA ACP AE does not modify the pixel values of the stored images.

Modified images retain their original Study, Series and Image UID.
On the export of an imported image the ED ELEVA ACP AE adds private attributes to the image.

The exported ED ELEVA ACP AE images do not contain Instance Number if the original images received from modalities do not contain this attribute or provide information in other attributes for ED ELEVA ACP AE to generate it.
Exported CT/MR images relate Scanogram and Slice images in the following way: Attribute 'Referenced Image Sequence' is present in the slice images and points to the related Scanogram image.
Note that Attribute 'Frame of Reference UID' in the Scanogram (Localizer image) and related image slices are not guaranteed to be equal; this depends on the source of the images.
For Secondary Capture images only one Window Width and Window Centre value is exported.
Please refer to section Coerced/ Modified fields, for more information on stored images.

When the location of a graphic or text annotation is specified relatively with regards to the displayed area. (i.e. DICOM attribute: Bounding Box Annotation Units, Anchor Point Annotation Units or Graphic Annotation Units equals “DISPLAY”), the annotation is not displayed.
Areas occluded by Shutter are always black in ED ELEVA ACP AE, whereas it is possible to want it to be white in DICOM.

On the export of such an image the EasyDiagnost Eleva ACP first sets up an association to determine if the SCP supports the Grayscale Softcopy Presentation State SOP Class.
If the SCP doesn't supports the Grayscale Softcopy Presentation State service the Graphical information is added to the image object additional a new instance UID is generated for this image.
All kind of Images sending out, are included with Performed Procedure Step Tags like: (Start Date, Start Time, ID).

Use of optional, private and retired attributes:
The transmitted Storage SOP instances may include all optional elements specified in the DICOM standard, depending on the source of the images.
The transmitted Storage SOP instances may contain Retired and Private data elements, depending on the source of the images and of the ED ELEVA ACP AE configuration.
The ED ELEVA ACP AE can convert the transfer syntax when exporting images. The ED ELEVA ACP AE can perform a transfer syntax according to the following table.

Table 41: Transfer Syntax Conversion

Syntax	Source	ILE	ELE	EBE	JPEG Baseline
Destination					
ILE		+	+	+	-
ELE		+	+	+	-
EBE		+	+	+	-
JPEG Baseline		-	-	-	+

- JPEG Baseline is only supported for images with Photometric Interpretation of YBR_FULL_422.
- As ED ELEVA ACP AE internally stores the images in uncompressed format, the image data shall be compressed to JPEG (RGB to YBR_FULL_422) before export.
- Note that JPEG Baseline transfer syntax may NOT be configured for SCU systems that are capable of handling storage of monochrome images too.

4.2.2.3.3.3.1. Dataset Specific Conformance for C-STORE-RQ

The Store Response Status is saved in the log file; a user error will be displayed in the GUI.
The ED ELEVA ACP AE will stop the transfer of the images and release the association as soon as it receives an unsuccessful Store Response Status.
In case that a remote application requested the transfer (by means of a C-MOVE request), a move response with status unsuccessful is sent to the retrieve requestor.

Table 42: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful stored	Continues with next store until completed thereafter the store job is marked as completed and the association is released.
Failure	A7xx	Refused: Out of Resources	The store job fails and the association is released. The reason is logged and reported to the user
	A9xx	Error: Data Set does not match SOP Class	The store job fails and the association is released. The reason is logged and reported to the user
	Cxxx	Error: cannot understand	The store job fails and the association is released. The reason is logged and reported to the user
Warning	B000	Coercion odd Data Elements	Continues with next store until completed thereafter the store job is marked as completed and the association is released.
	B007	Data Set does not match SOP Class	Continues with next store until completed. Thereafter the store job is marked as completed and the association is released.
	B006	Elements Discarded	Continues with next store until completed. Thereafter the store job is marked as completed and the association is released.

4.2.2.3.4. (Real-World) Activity – Storage Commitment Push Model as SCU

4.2.2.3.4.1. Description and Sequencing of Activities

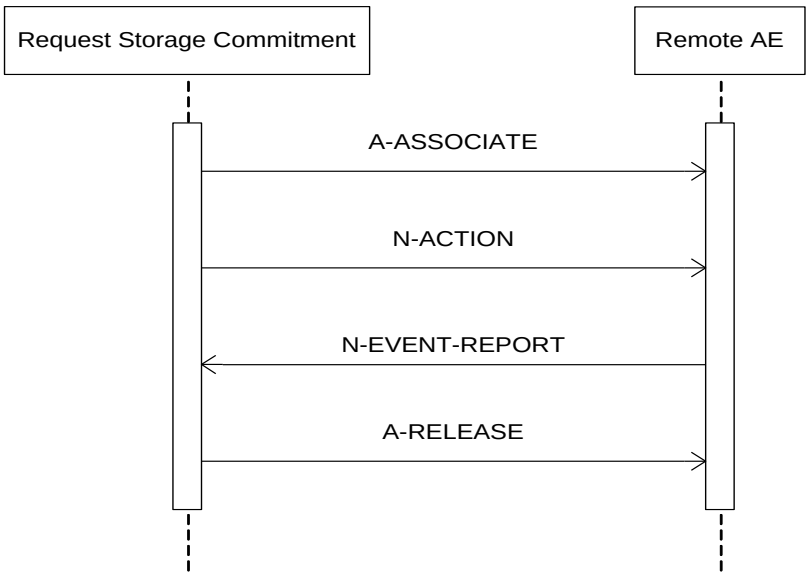

Figure 13: RWA – Synchronous Storage Commitment as SCU

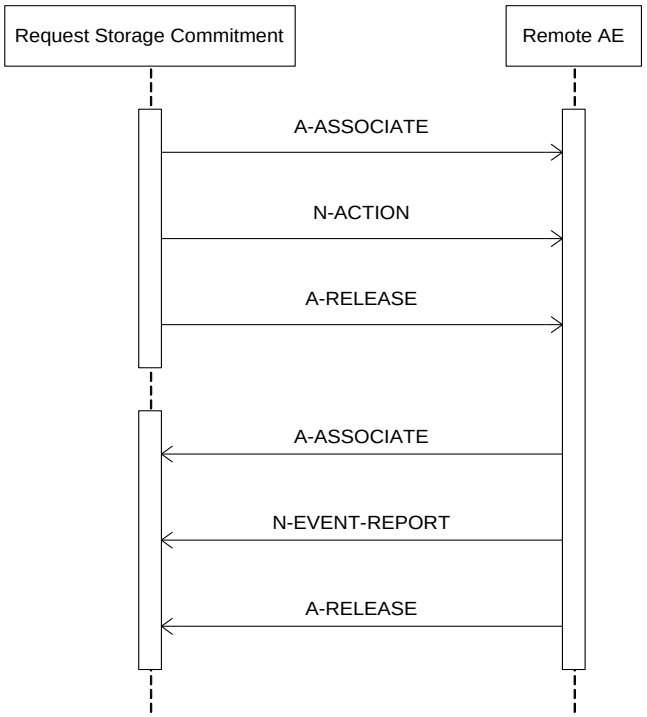

Figure 14: RWA – Asynchronous Storage Commitment as SCU

The RWA Request Storage Commitment involves the storage commitment of images on a remote system.

If configured, Storage Commitment will be initiated in a new association after closing the association of the related image storage (C-STORE). This new association will be open until the remote archive sends a storage commitment report (synchronous) or when the configured maximum time is passed. When this maximum configured period is passed, it is the responsibility of the remote archive to setup a new association with EasyDiagnost Eleva ACP AE and send the storage commitment report (asynchronous)

4.2.2.3.4.2. Proposed Presentation Contexts

Each time an association is initiated, the association initiator proposes a number of Presentation Contexts to be used on that association. In this subsection, the Presentation Contexts proposed by the EasyDiagnost Eleva ACP AE for Request Storage Commitment are defined in next table.

Table 43: Proposed Presentation Contexts for (Real-World) Activity – Storage Commitment Push Model as SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.2.3.4.3. SOP Specific Conformance for Storage Commitment Push Model SOP Class

The EasyDiagnost Eleva ACP AE provides standard conformance. In EasyDiagnost Eleva ACP AE many remote nodes can be configured for storage Images. Per remote node one node can be configured to deliver the Storage Commitment service.

4.2.2.3.4.3.1. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-EVENT-REPORT-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 44: Storage Commitment attribute for N-EVENT-REPORT

Event Type Name	EVENT Type ID	Attribute Name	Tag	Commit
Storage Commitment Request Successful	1	Transaction UID	0008,1195	
		Referenced SOP Sequence	0008,1199	
		>Referenced SOP Class UID	0008,1150	
		>Referenced SOP Instance UID	0008,1155	
Storage Commitment Request Complete Failures Exist	1	Transaction UID	0008,1195	
		Referenced SOP Sequence	0008,1199	
		>Referenced SOP Class UID	0008,1150	
		>Referenced SOP Instance UID	0008,1155	
	2	Transaction UID	0008,1195	
		Failed SOP Sequence	0008,1198	
		>Referenced SOP Class UID	0008,1150	
		>Referenced SOP Instance UID	0008,1155	
		>Failure Reason	0008,1197	

On receiving a storage commitment result with Event Type ID 1 (Storage Commitment Request Successful) the Application Entity will mark these images as committed.
On receiving a storage commitment result with Event Type ID 2 (Storage Commitment Request Complete - Failures Exist) the Application Entity will behave as found in next table.

Table 45: Storage Commitment N-EVENT-REPORT Failure Handling Behavior

Service Status	Error Code	Further Meaning	Description
Success	0000	Operation complete	Continues with waiting for storage commitment.
Failure	xxxx	(any failure)	The reason is logged.

Table 46: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Verification is complete	Successful received

4.2.2.3.4.3.2. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-ACTION-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 47: Storage Commitment attribute for N-ACTION-RQ

Attribute Name	Tag	Comment
Storage Commitment Module		
Transaction UID	0008,1195	
Referenced SOP Sequence	0008,1199	
>Referenced SOP Class UID	0008,1150	
>Referenced SOP Instance UID	0008,1155	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 48: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Operation Complete	Continues with waiting for storage commitment
Failure	xxxx	Error, Failed, Refused	The reason will be logged

Table 49: Command communication Failure Behavior

Exception	Behavior
ARTIM Time out	The reason is logged
Reply Time out	The association is released. Continues with waiting for storage Commitment
Association Time out SCU	The association is released. Continues with waiting for storage Commitment
Association Aborted	Continues with waiting for storage Commitment

4.2.2.3.5. (Real-World) Activity – Print Management as SCU

4.2.2.3.5.1. Description and Sequencing of Activities

The RWA Print Images involves the printing of images by sending the selected images to a Print Management SCP (i.e. printer). After selecting the print destination (out of choice list of configured printers) and some print parameters (depending on the configuration and the selected printer; these values can be configured too), the EasyDiagnost Eleva ACP AE shall initiate an association to the selected printer and use it to send the print job.
EasyDiagnost Eleva ACP AE also has an option for print preview.

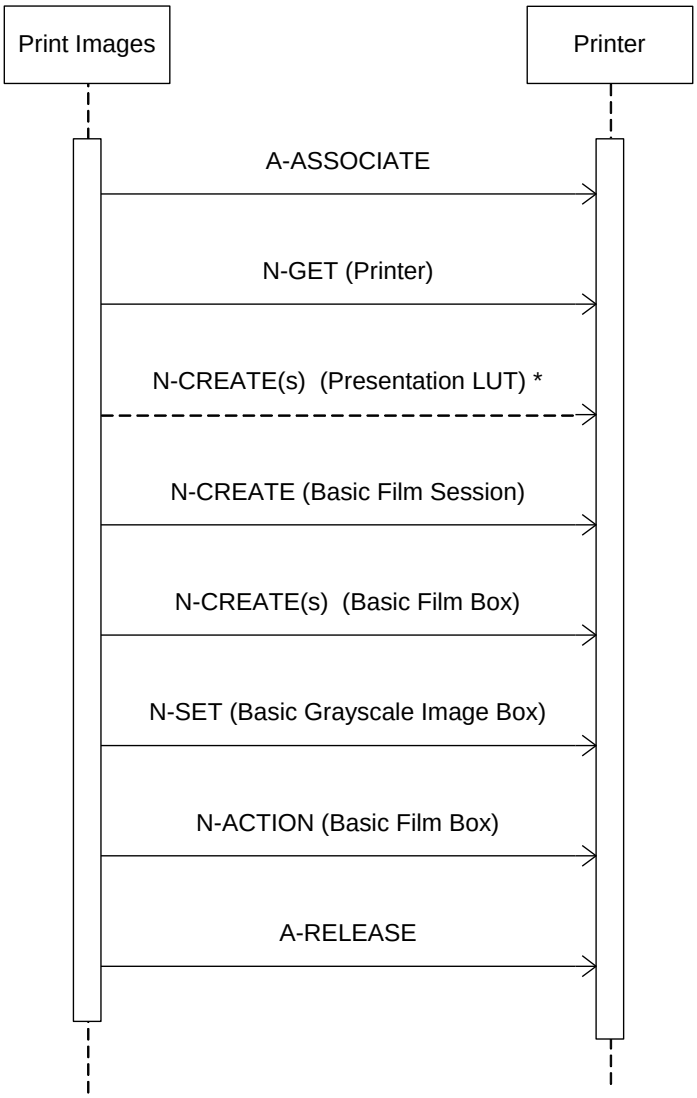

Figure 15: RWA – Print as SCU

Note that the Presentation LUT SOP class is only supported for Grayscale image printing.

4.2.2.3.5.2. Proposed Presentation Contexts

The proposed presentation contexts are defined in next table.

Table 50: Proposed Presentation Contexts for (Real-World) Activity – Print Management as SCU

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Printer SOP Class	1.2.840.10008.5.1.1.16	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

This section specifies each IOD created (including private IOD's).

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS	The attribute is always present with a value
EMPTY	The attribute is always present without any value (attribute sent zero length)
VNAP	The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present)
ANAP	The attribute is present under specified condition – if present then it will always have a value
VNAPCV	The attribute is present under specified condition – if present then its Value is Not Always Present (attribute sent zero length if condition applies and no value is present)
ANAPEV	The attribute is present under specified condition – if present then it will not have any value

The abbreviations used in the Module table for the column "Source" are:

AUTO	The attribute value is generated automatically
CONFIG	The attribute value source is a configurable parameter
COPY	The attribute value source is another SOP instance
FIXED	The attribute value is hard-coded in the application
IMPLICIT	The attribute value source is a user-implicit setting
MPPS	The attribute value is the same as that use for Modality Performed Procedure Step
MWL	The attribute value source is a Modality Worklist
USER	The attribute value source is explicit user input

4.2.2.3.5.3. SOP Specific Conformance for Basic Annotation Box SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.2.3.5.3.1. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-EVENT-REPORT-SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 51: Basic Annotation Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Annotation Position	2030,0010	US		ALWAYS	IMPLICIT, USER	
Text String	2030,0020	LO		ANAPCV	IMPLICIT, USER	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 52: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Image successfully stored in image box	The Print job continues.
Warning	B604	Image size is larger than the image box size-The image has been demagnified	The print job continues and the warning is logged and reported to the user.
Warning	B605	Requested Min Density or Max Density outside of Printer's operating Range	The print job continues and the warning is logged and reported to the user
Warning	B609	Image Size is larger than Image Box Size – The Image has been cropped to fit	The print job continues and the warning is logged and reported to the user.
Warning	B60A	Image Size or combined Print Image Size is larger than Image Box Size – The Image or combined Print Image has been decimated to fit	The print job continues and the warning is logged and reported to the user.
Failure	C603	Image Size is larger than Image Box Size	The print job is marked as failed and the reason is logged and reported to the user.
Failure	C605	Insufficient Memory in Printer to store the Image	The print job is marked as failed and the reason is logged and reported to the user.
Failure	C613	Combined Print Image Size is larger than Image Box Size	The print job is marked as failed and the reason is logged and reported to the user.

4.2.2.3.5.4. SOP Specific Conformance for Basic Color Image Box SOP Class

The EasyDiagnost ACP AE conforms to the Basic Color Image Box Sop Class.
The following DIMSE service element is supported:

4.2.2.3.5.4.1. Dataset Specific Conformance for Basic Color Image Box SOP Class N-SET SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 53: Image Box Pixel Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Box Position	2020,0010	US	Value 1: 1	ALWAYS	AUTO	
Polarity	2020,0020	CS	Value 1: NORMAL	ANAPCV	AUTO	
Basic Color Image Sequence	2020,0111	SQ		ALWAYS	AUTO	
>Bits Allocated	0028,0100	US	Value 1: 8	ALWAYS	IMPLICIT	
>Bits Stored	0028,0101	US	Value 1: 8	ALWAYS	AUTO	
>Columns	0028,0011	US		ALWAYS	IMPLICIT	
>High Bit	0028,0102	US	Value 1: 7	ALWAYS	AUTO	
>Photometric Interpretation	0028,0004	CS	Value 1: RGB	ALWAYS	AUTO	
>Pixel Data	7FE0,0010	O W/ OB	Value 1: OW	ALWAYS	AUTO	
>Pixel Representation	0028,0103	US	Value 1: 0	ALWAYS	AUTO	
>Planar Configuration	0028,0006	US	Value 1: 1, 0	ALWAYS	AUTO	
>Rows	0028,0010	US		ALWAYS	IMPLICIT	
>Samples per Pixel	0028,0002	US	Value 1: 3	ALWAYS	AUTO	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 54: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Image successfully stored in image box	The Print job continues.

Service Status	Error Code	Further Meaning	Behavior
Warning	B604	Image size is larger than the image box size-The image has been demagnified	The print job continues and the warning is logged and reported to the user.
	B605	Requested Min Density or Max Density outside of Printer's operating Range	The print job continues and the warning is logged and reported to the user
	B609	Image Size is larger than Image Box Size – The Image has been cropped to fit	The print job continues and the warning is logged and reported to the user.
	B60A	Image Size or combined Print Image Size is larger than Image Box Size – The Image or combined Print Image has been decimated to fit	The print job continues and the warning is logged and reported to the user.
Failure	C603	Image Size is larger than Image Box Size	The print job is marked as failed and the reason is logged and reported to the user.
	C605	Insufficient Memory in Printer to store the Image	The print job is marked as failed and the reason is logged and reported to the user.
	C613	Combined Print Image Size is larger than Image Box Size	The print job is marked as failed and the reason is logged and reported to the user.

4.2.2.3.5.5. SOP Specific Conformance for Basic Film Session SOP Class

The EasyDiagnost ACP AE conforms to the Basic Film Session Sop Class.
The following DIMSE service elements are supported.

4.2.2.3.5.5.1. Dataset Specific Conformance for Basic Film Session SOP Class N-CREATE SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 55: Basic Film Session Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Film Destination	2000,0040	CS	Value 1: MAGAZINE, PROCESSOR	ALWAYS	IMPLICIT	
Film Session Label	2000,0050	LO	Value 1: Philips Medical Systems	ALWAYS	AUTO	
Medium Type	2000,0030	CS	Value 1: BLUE FILM, CLEAR FILM, PAPER	ALWAYS	IMPLICIT	
Number of Copies	2000,0010	IS	Value 1: 1 to 99	ALWAYS	IMPLICIT , USER	
Print Priority	2000,0020	CS	Value 1: HIGH	ALWAYS	USER	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 56: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Film Session successfully created	The print job continues.
Warning	B600	Memory Allocation not supported	The print job continues and the warning is logged

4.2.2.3.5.6. SOP Specific Conformance for Basic Grayscale Image Box SOP Class

The EasyDiagnost ACP AE conforms to the Image Box SOP class.

4.2.2.3.5.6.1. Dataset Specific Conformance for Basic Grayscale Image Box SOP Class N-SET SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 57: Image Box Pixel Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Box Position	2020,0010	US	Value 1: 1	ALWAYS	AUTO	
Polarity	2020,0020	CS	Value 1: NORMAL	ANAPCV	AUTO	
Basic Grayscale Image Sequence	2020,0110	SQ		ALWAYS	AUTO	
>Bits Allocated	0028,0100	US	Value 1: 8, 16	ALWAYS	AUTO	
>Bits Stored	0028,0101	US	Value 1: 8, 12, 14	ALWAYS	IMPLICIT	
>Columns	0028,0011	US		ALWAYS	AUTO	
>High Bit	0028,0102	US	Value 1: 7, 11, 13	ALWAYS	AUTO	
>Photometric Interpretation	0028,0004	CS	Value 1: MONOCHROME2	ALWAYS	AUTO	
>Pixel Data	7FE0,0010	O W/ OB		ALWAYS	AUTO	
>Pixel Representation	0028,0103	US	Value 1: 0	ALWAYS	AUTO	
>Rows	0028,0010	US		ALWAYS	AUTO	
>Samples per Pixel	0028,0002	US	Value 1: 1	ALWAYS	AUTO	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 58: Status Response

Attribute Name	Tag	VR	Comment
Success	0000	Image Successfully stored in the image box	The Print job continues
Warning	B604	Image Size is larger than Image Box Size – The Image has been de-magnified	The print job continues and the warning is logged and reported to the user.
Warning	B605	Requested Min Density or Max Density outside of Printer's operating Range	The print job continues and the warning is logged and reported to the user.
Warning	B609	Image Size is larger than Image Box Size – The Image has been cropped to fit	The print job continues and the warning is logged and reported to the user.
Warning	B60A	Image Size or combined Print Image Size is larger than Image Box Size – The Image or combined Print Image has been decimated to fit	The print job continues and the warning is logged and reported to the user.
Error	C603	Image Size is larger than Image Box Size	The print job is marked as failed and the reason is logged and reported to the user
Error	C605	Insufficient Memory in Printer to store the Image	The print job is marked as failed and the reason is logged and reported to the user
Error	C613	Combined Print Image Size is larger than Image Box Size	The print job is marked as failed and the reason is logged and reported to the user

4.2.2.3.5.7. SOP Specific Conformance for Presentation LUT SOP Class

The EasyDiagnost ACP AE conforms to the Presentation LUT SOP Class.
The following DIMSE service element is supported:

4.2.2.3.5.7.1. Dataset Specific Conformance for Presentation LUT SOP Class N-CREATE SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 59: Presentation LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Presentation LUT Shape	2050,0020	CS	Value 1: IDENTITY	ALWAYS	AUTO	
Presentation LUT Sequence	2050,0010	SQ		ANAP	AUTO	
>LUT Data	0028,3006	US /SS		ALWAYS	AUTO	
>LUT Descriptor	0028,3002	US /SS		ALWAYS	AUTO	
>LUT Explanation	0028,3003	LO		ALWAYS	AUTO	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 60: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Presentation LUT successfully created	The print job continues.
Warning	B605	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.	The print job continues and the warning is logged.

4.2.2.3.5.8. SOP Specific Conformance for Print Job SOP Class

The EasyDiagnost ACP AE conforms to the Printer Sop Class.
The following DIMSE service element is supported:

4.2.2.3.5.8.1. Dataset Specific Conformance for Print Job N-EVENT-REPORT SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 61: Status Response

Service Status	Error Code	Further Meaning	Behavior
Normal	0000	Successful operation	The print job is marked as completed.
Warning	xxxx	(any warning)	The print job is marked as completed and the warning is logged and reported to the user.
Failure	xxxx	(any failure)	The print job is marked as failed and the reason is logged and reported to the user

4.2.2.3.5.9. SOP Specific Conformance for Printer SOP Class

This section and sub-section includes the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.2.3.5.9.1. Dataset Specific Conformance for Printer SOP Class N-EVENT-REPORT SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 62: Printer Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Printer Status Info	2110,0020	CS		ALWAYS	AUTO	

Table 63: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	The Print job marked as completed
Warning	xxxx	(any warning)	The print job is marked as completed and the warning is logged and reported to the user.
Failure	xxxx	(any failure)	The print job is marked as failed and the reason is logged and reported to the user

Note: ELEVA will ignore the contents of these events. However, the printer status is polled via a separate association.

4.2.2.4. Association Acceptance Policy

The Application Entity may reject Association attempts as shown in the table below.

Table 64: Association Reject Reasons

Result	Source	Reason/Diagnosis	Behavior
1 - rejected permanent	1 - DICOM UL service-user	1 - no-reason-given	
		2 - application-context-name-not-supported	
		3 - calling-AE-title-not-recognized	
		7 - called-AE-title-not-recognized	
	2 - DICOM UL service provider (ACSE related function)	1 - no-reason-given	
		2 - protocol-version-not-supported	
	3 - DICOM UL service provider (Presentation related function)	1 - temporary-congestion	
		2 - local-limit-exceeded	
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	
		2 - application-context-name-not-supported	
		3 - calling-AE-title-not-recognized	
		7 - called-AE-title-not-recognized	
	2 - DICOM UL service provider (ACSE related function)	1 - no-reason-given	
		2 - protocol-version-not-supported	
	3 - DICOM UL service provider (Presentation related function)	1 - temporary-congestion	
		2 - local-limit-exceeded	

The behavior of the AE for sending an association abort is summarized in next table

Table 65: Association Abort Policies

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	
	1 - unrecognized-PDU	
	2 - unexpected-PDU	
	4 - unrecognized-PDU parameter	
	5 - unexpected-PDU parameter	
	6 - invalid-PDU-parameter value	

4.2.2.4.1. (Real-World) Activity – Verification as SCP

4.2.2.4.1.1. Description and Sequencing of Activities

The EasyDiagnost Eleva ACP AE shall accept associations from systems that wish to verify application level communication using the C-ECHO command.

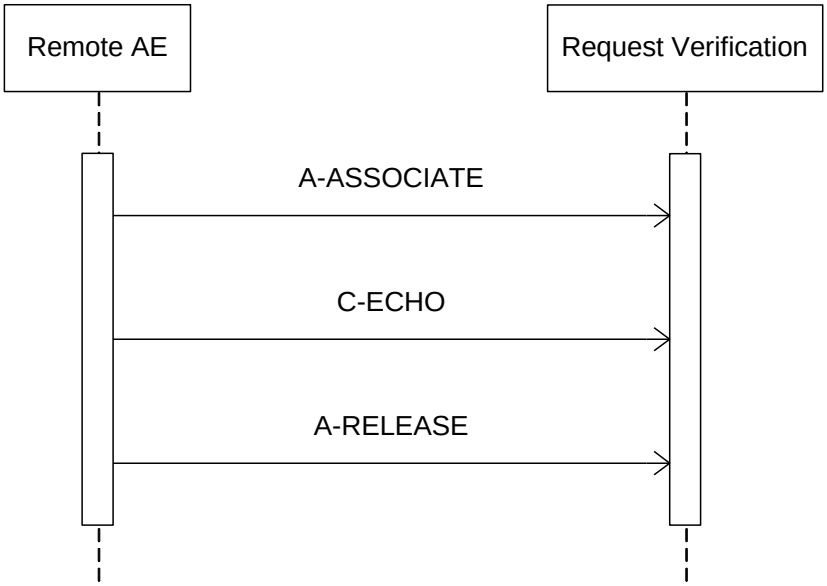

Figure 16: RWA – Verification as SCP

4.2.2.4.1.2. Accepted Presentation Contexts

The presentation contexts are defined in next table.

Table 66: Acceptable Presentation Contexts for (Real-World) Activity – Verification as SCP

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Verification SOP Class	1.2.840.10008.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

The EasyDiagnost Eleva ACP AE shall be able to accept the presentation contexts as specified in the above table.

For performance reasons the ELE transfer syntax is preferred and shall be chosen in case multiple Transfer Syntaxes are proposed in the Association Negotiation.

The EasyDiagnost Eleva ACP AE shall accept all contexts in the intersection of the proposed and acceptable Presentation Contexts. This means that the EasyDiagnost Eleva ACP AE accepts multiple proposed Presentation Contexts with the same SOP class but different Transfer Syntaxes.

There is no check for duplicate contexts, and these will therefore be accepted.

4.2.2.4.1.3. SOP Specific Conformance for Verification SOP Class

The EasyDiagnost Eleva ACP AE provides standard conformance to the Verification service class.

The behavior of an Application Entity shall be summarized as shown in next.
The standard as well as the manufacturer specific status codes and their corresponding behavior shall be specified.

4.2.2.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 67: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Confirmation	Confirm the verification request

4.2.2.4.2. (Real-World) Activity – FIND as SCP

4.2.2.4.2.1. Description and Sequencing of Activities

The EasyDiagnost Eleva ACP AE shall accept associations from systems that wish to query the EasyDiagnost Eleva ACP AE database using the C-FIND command.

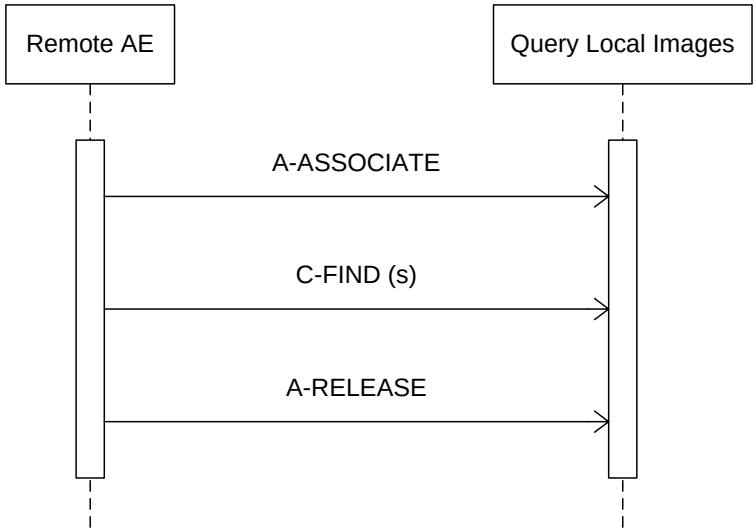

Figure 17: RWA – Find as SCP

4.2.2.4.2.2. Accepted Presentation Contexts

The EasyDiagnost Eleva ACP AE shall be able to accept the presentation contexts as SCP, as specified in the next table.

Table 68: Acceptable Presentation Contexts for (Real-World) Activity – FIND as SCP

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Patient Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Study Root QR Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

Note: For performance reasons the ELE transfer syntax is preferred and shall be chosen in case multiple Transfer Syntaxes are proposed in the Association Negotiation

The EasyDiagnost Eleva ACP AE shall accept all contexts in the intersection of the proposed and acceptable Presentation Contexts. This means that the EasyDiagnost Eleva ACP AE accepts multiple proposed Presentation Contexts with the same SOP class but different Transfer Syntaxes.
There is no check for duplicate contexts, and these will therefore be accepted.

4.2.2.4.2.3. SOP Specific Conformance for Patient Root QR Information Model – FIND SOP Class

The EasyDiagnost Eleva ACP AE provides standard conformance to the Query/Retrieve service class. Relational queries are not supported. The EasyDiagnost Eleva ACP AE shall handle simultaneous C-FIND requests simultaneously.

The EasyDiagnost ACP AE database distinguishes two patients with the same Patient ID but different Patient's Name or Patient's Birth Date. However, the DICOM Query/Retrieve service class has Patient ID as a unique key at Patient level, and thus two patients with the same Patient ID cannot be distinguished via a standard DICOM Query.

When querying optional keys the EasyDiagnost Eleva ACP AE will respond successfully for available keys if queried per universal matching; otherwise it will respond with warning.
Note that when querying optional keys with non-universal matching the EasyDiagnost Eleva ACP AE will return information using universal matching for those keys.
Note that when a query is performed per Patient/Study Only Query/Retrieve Information Model SOP class on Patient Level, the EasyDiagnost Eleva ACP AE always sends back the attribute "Patient's Name" (0010, 0010), also when it was not requested.

4.2.2.4.2.3.1. Dataset Specific Conformance for Patient Root QR Information Model – FIND SOP Class C-FIND SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 69: Requested Query Keys for Patient Root Information Model

Patient Root Information Model				
Attribute Name	**Tag**	**VR**	**Type Of Matching**	**Comment**
Query/Retrieve Level	0008,0052	CS		
Specific Character Set	0008,0005	CS		

The response status behavior of the EasyDiagnost Eleva ACP AE is as described in next table. The standard as well as the manufacturer specific status codes and their corresponding behavior shall be specified

Table 70: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	The C-FIND request handling is completed, no more C-FIND responses are sent.
Refused Failure	A700	Out of Resources	N/A
	A900	Identifier does not match SOP class	N/A
	C000	Unable to process	The C-FIND request cannot be parsed. The ELEVA ACP AE sends notification to the reason. Logs the reason.
Cancel	FE00	Matching terminated due to Cancel Request	The C-FIND request is cancel, no more C-FIND responses are sent.
Pending	FF00	Matches are continuing – Current match is supplied and any optional keys were supported in the same manner as required keys	The C-FIND responses are continuing.
	FF01	Matches are continuing – Warning that one or more optional keys were not supported for existence and/or matching for this identifier	The C-FIND responses are continuing.

4.2.2.4.2.4. SOP Specific Conformance for Study Root QR Information Model – FIND SOP Class

EasyDiagnost ACP AE provides standard conformance to FIND SOP class of Study Root Q/R information model as an SCP.

4.2.2.4.2.4.1. Dataset Specific Conformance for Study Root QR Information Model – FIND SOP Class C-FIND SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 71: Requested Query Keys for Study Root Information Model

Study Root Information Model				
Attribute Name	**Tag**	**VR**	**Type Of Matching**	**Comment**
Query/Retrieve Level	0008,0052	CS		
Retrieve AE Title	0008,0054	AE		
Specific Character Set	0008,0005	CS		
Storage Media File-set ID	0088,0130	SH		
Storage Media File-set UID	0088,0140	UI		

The response status behavior of the EasyDiagnost Eleva ACP AE is as described in next table. The standard as well as the manufacturer specific status codes and their corresponding behavior shall be specified

Table 72: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	The C-FIND request handling is completed, no more C-FIND responses are sent.
Refused Failure	A700	Out of Resources	N/A
	A900	Identifier does not match SOP class	N/A
	C000	Unable to process	The C-FIND request cannot be parsed. Logs the reason.
Cancel	FE00	Matching terminated due to Cancel Request	The C-FIND request is cancel, no more C-FIND responses are sent
Pending	FF00	Matches are continuing – Current match is supplied and any optional keys were supported in the same manner as required keys	The C-FIND responses are continuing.
	FF01	Matches are continuing – Warning that one or more optional keys were not supported for existence and/or matching for this identifier	The C-FIND responses are continuing

4.2.2.4.3. (Real-World) Activity – MOVE as SCP

4.2.2.4.3.1. Description and Sequencing of Activities

The EasyDiagnost Eleva ACP AE shall accept associations from systems that wish to retrieve images from the EasyDiagnost Eleva ACP AE database using the C-MOVE command.

After RWA Retrieve Local Images the RWA Export Images is started.

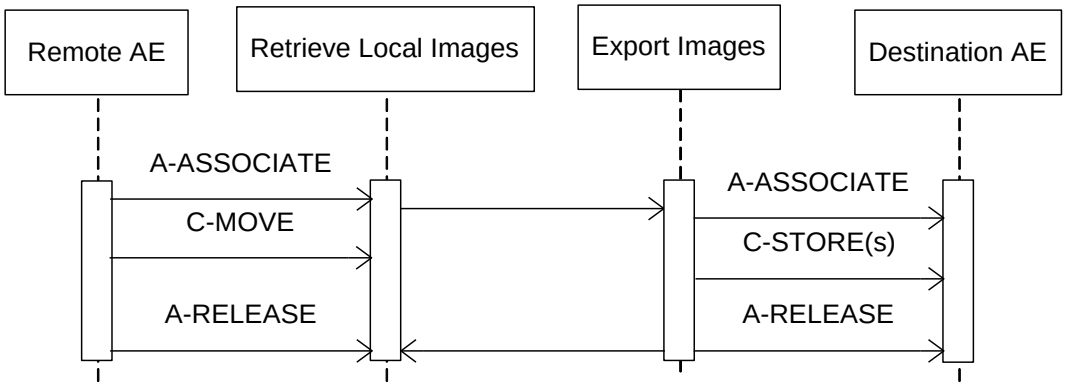

Figure 18: RWA – MOVE as SCP

4.2.2.4.3.2. Accepted Presentation Contexts

The EasyDiagnost Eleva shall be able to accept the presentation contexts as specified in the table below.

Table 73: Acceptable Presentation Contexts for (Real-World) Activity – MOVE as SCP

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Patient Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Study Root QR Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

Note: *For performance reasons the ELE transfer syntax is preferred and shall be chosen in case multiple Transfer Syntaxes are proposed in the Association Negotiation*

The EasyDiagnost Eleva ACP AE shall accept all contexts in the intersection of the proposed and acceptable Presentation Contexts. This means that the EasyDiagnost Eleva ACP AE accepts multiple proposed Presentation Contexts with the same SOP class but different Transfer Syntaxes. There is no check for duplicate contexts, and these will therefore be accepted

4.2.2.4.3.3. SOP Specific Conformance for Patient Root QR Information Model – MOVE SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.2.4.3.3.1. Dataset Specific Conformance for Patient Root QR Information Model – MOVE SOP Class C-MOVE SCP

The response status behavior of the EasyDiagnost Eleva ACP AE is as described in next table. The standard as well as the manufacturer specific status codes and their corresponding behavior shall be specified.

Table 74: Acceptable Presentation Contexts for (Real-World) Activity – MOVE as SCP

Attribute Name	Tag	VR	Comment
Patient Root Information Model			
Query/Retrieve Level	0008,0052	CS	
Q/R Image level			
SOP Instance UID	0008,0018	UI	

Attribute Name	Tag	VR	Comment
Q/R Patient level			
Patient ID	0010,0020	LO	
Q/R Series level			
Series Instance UID	0020,000E	UI	
Q/R Study level (Patient Root)			
Study Instance UID	0020,000D	UI	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 75: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Sub-operations complete – No Failures	The C-MOVE command has been completed.
Refused	A701	Out of Resources – Unable to calculate number of matches	N/A
	A702	Out of Resources – Unable to perform Sub-operations	N/A
	A801	Move Destination unknown	No C-STORE command will be sent. Logs the reason.
Failed	A900	Identifier does not match SOP class	N/A
	C000	Unable to process	The C-MOVE request cannot be parsed. No Store Command will be sent. Logs the reason.
Cancel	FE00	Sub-operations terminated due to Cancel Indication	The C-MOVE request is cancelled, no more C-MOVE responses are sent.
Warning	B000	Sub-operations complete – One or more Failures	N/A
Pending	FF00	Sub-operations are continuing	Approximately every 30 seconds to indicate progress

4.2.2.4.3.4. SOP Specific Conformance for Study Root QR Information Model – MOVE SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.2.4.3.4.1. Dataset Specific Conformance for Study Root QR Information Model – MOVE SOP Class C-MOVE SCP

The response status behavior of the EasyDiagnost Eleva ACP AE is as described in next table. The standard as well as the manufacturer specific status codes and their corresponding behavior shall be specified.

Table 76: Identifiers for MOVE Study Root Information Model as SCP

Attribute Name	Tag	VR	Comment
Study Root Information Model			
Query/Retrieve Level	0008,0052	CS	
Q/R Image level			
SOP Instance UID	0008,0018	UI	
Q/R Series level			
Series Instance UID	0020,000E	UI	
Q/R Study level (Study Root)			
Study Instance UID	0020,000D	UI	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 77: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Sub-operations complete – No Failures	The C-MOVE command has been completed.
Refused	A701	Out of Resources – Unable to calculate number of matches	N/A.
	A702	Out of Resources – Unable to perform Sub-operations	N/A
	A801	Move Destination unknown	No C-STORE command will be sent. Logs the reason
Failed	A900	Identifier does not match SOP class	N/A
	C000	Unable to process	The C-MOVE request cannot be parsed. No Store Command will be sent. logs the reason
Cancel	FE00	Sub-operations terminated due to Cancel Indication	The C-MOVE request is cancelled, no more C-MOVE responses are sent.
Warning	B000	Sub-operations complete – One or more Failures	N/A
Pending	FF00	Sub-operations are continuing	Approximately every 30 seconds to indicate progress.

4.2.2.4.4. (Real-World) Activity – Image Import

4.2.2.4.4.1. Description and Sequencing of Activities

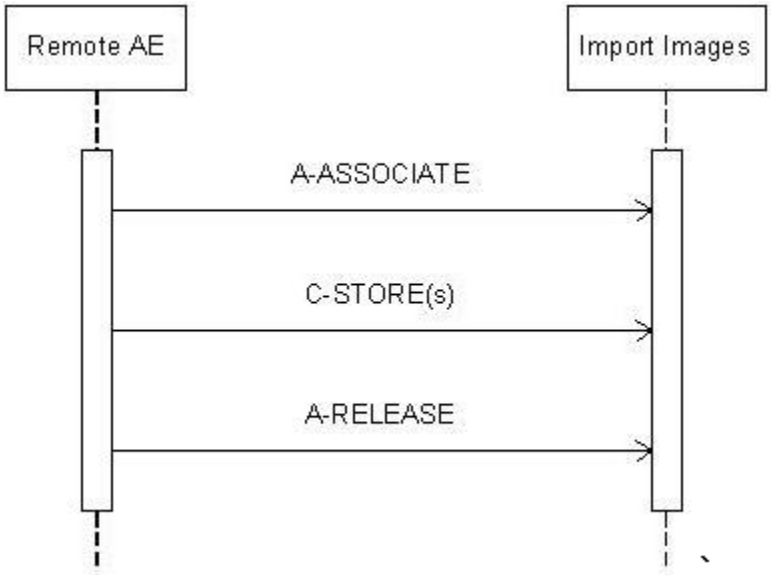

Figure 19: RWA – Import

The EasyDiagnost Eleva ACP AE shall accept associations from systems that wish to store images in the EasyDiagnost Eleva ACP AE database using the C-STORE command.

4.2.2.4.4.2. Accepted Presentation Contexts

The presentation contexts are defined in next table.

Table 78: Acceptable Presentation Contexts for (Real-World) Activity – Image Import

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Specialized PMS X-Ray Image Store (Private)	1.3.46.670589.2.3.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

For performance reasons the ELE transfer syntax is preferred and shall be chosen in case multiple Transfer Syntaxes are proposed in the Association Negotiation

Note 1: Only for Photometric Interpretation of RGB and YBR_FULL_422. Therefore JPEG Baseline transfer syntax may NOT be configured for SCU systems that are capable of handling storage of monochrome images too.

The EasyDiagnost Eleva ACP AE shall accept all contexts in the intersection of the proposed and acceptable Presentation Contexts. This means that the EasyDiagnost Eleva ACP AE accepts multiple proposed Presentation Contexts with the same SOP class but different Transfer Syntaxes.
There is no check for duplicate contexts, and these will therefore be accepted.

4.2.2.4.4.3. SOP Specific Conformance for Storage SOP Classes

The EasyDiagnost Eleva ACP AE provides standard level 1 (Base) conformance to the Storage service class.

If the EasyDiagnost Eleva ACP AE imports an image and during the association negotiation the Presentation State SOP class was not negotiated, then the EasyDiagnost Eleva ACP AE creates a Presentation State instance for the imported image.
The following table gives an overview of the image formats that can be viewed or stored.

If the EasyDiagnost Eleva ACP AE receives improper DICOM, the EasyDiagnost Eleva ACP AE tries as much as possible to make it proper DICOM (if configured to do so).
The EasyDiagnost Eleva ACP AE also tries to remain as transparent as possible on images; on export the images must be changed only to such extend as really necessary. Therefore it is not guaranteed that all DICOM violations of incoming images are repaired (e.g. enumerated values are not changed).
Thus improper DICOM import may result in improper DICOM export from the EasyDiagnost Eleva ACP AE (no checks are available for incorrect UID's, Date/Time formats, etc.).

EasyDiagnost Eleva ACP AE stores all additional standard, private and retired attributes in received images. Retrieval of these attributes VR's is only possible (by means of a C-STORE) if the following conditions are satisfied:

The image was encoded (when EasyDiagnost Eleva ACP AE was C-STORE SCP) using one of the explicit value representations; or
The image was encoded (when EasyDiagnost Eleva ACP AE was C-STORE SCP) using implicit value representation and the destination (i.e. a remote C-STORE SCP) has accepted implicit value representation as the only transfer syntax applicable to the

storage SOP class of the image (with EasyDiagnost Eleva ACP AE as C-STORE SCU). Otherwise the VR shall be set to Unknown (UN).

Important implementation remarks and restrictions:
The DICOM standard does not guarantee that the advanced EasyDiagnost Eleva ACP AE applications can process the received images. This depends on the presence and consistency of a set of attributes in these images. The conditions for running the EasyDiagnost Eleva ACP AE applications shall be spec-ified in separate Annexes. See section Coerced/ Modified fields, for details on Coerced and Modified Attributes. When the location of a Graphic or Text Annotation is specified relatively with regards to the displayed area (i.e. DICOM attribute: Bounding Box Annotation Units (0070,0003), Anchor Point Annotation Units (0070,0004) or Graphic Annotation Units (0070,0005) equals “DISPLAY”),the annotation is not displayed.

Areas occluded by shutter are always black in EasyDiagnost Eleva ACP AE, whereas it is possible to want it to be white in DICOM.
On the export of imported images the EasyDiagnost Eleva ACP AE adds private attributes to the image.
EasyDiagnost Eleva ACP AE does NOT support IVUS (IntraVascular UltraSound) Ultrasound images.
If during the image transfer the Presentation States instances are transferred before the images, the EasyDiagnost Eleva ACP AE changes the content of the Images.

For the following attributes, present in the original images, EasyDiagnost Eleva ACP AE will take the following action:

4.2.2.4.4.3.1. Dataset Specific Conformance for C-STORE-RSP

Detail regarding the Dataset Specific response behavior will be reported in this section.
This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 79: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful stored	The image(s) shall be stored in the EasyDiagnost Eleva ACP AE database
Failed	A700	Refused: Out of Resources	The EasyDiagnost Eleva ACP AE database is full – recovery from this condition is left to the SCU. EasyDiagnost Eleva ACP AE shall send a notification, log the condition, and abort the association.
	A900	Data Set does not match SOP Class	The SOP class of the image(s) does not match the negotiated abstract syntax. EasyDiagnost Eleva ACP AE shall send a notification, log the condition, and abort the association.
	C000	cannot understand	The image(s) cannot be parsed. EasyDiagnost Eleva ACP AE shall send a notification, log the condition, and abort the association.
Warning	B000	Coercion of Data Elements	N/A
	B007	Data Set does not match SOP Class	N/A
	B006	Elements Discarded	N/A

4.2.3. EasyDiagnost Eleva RIS AE

Detail of this specific Application Entity is specified in this section.

4.2.3.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

Table 80: SOP Classes for EasyDiagnost Eleva RIS AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	No	Yes
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Yes	No
X-Ray Radiation Dose SR SOP Class	1.2.840.10008.5.1.4.1.1.88.67	Yes	No

Note: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

4.2.3.2. Association Policies

This section describes the general association establishment and acceptance policies of the EasyDiagnost Eleva RIS AE.

4.2.3.2.1. General

The DICOM standard application context is specified in below table.

Table 81: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.3.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

Table 82: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	Configurable

Table 83: Number of associations as an Association Acceptor for this AE

Description	Value
Maximum number of simultaneous associations	1

4.2.3.2.3. Asynchronous Nature

The implementation does not support negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

Table 84: Asynchronous nature as an Association Initiator for this AE

Description	Value
Maximum number of outstanding asynchronous transactions	Not applicable

4.2.3.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

Table 85: DICOM Implementation Class and Version for EasyDiagnost Eleva RIS AE

Implementation Class UID	1.3.46.670589.30.1.6
Implementation Version Name	PMS_ELEVA_PA_2.4

4.2.3.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in next table.

Table 86: Communication Failure Behavior

Exception	Behavior
ARTIM Timeout	The association is rejected. The reason is logged.

4.2.3.3. Association Initiation Policy

The behavior of this Application Entity is summarized in the next Table.

Table 87: Response Status Handler Behavior

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Association Accepted	Association Accepted
Rejection	1	See table below	See table below

The Application Entity will respond on a received reject Association attempt as shown in next table.

Table 88: Association Rejection response

Result	Source	Reason/Diagnosis	Behavior
1 - rejected-permanent	1 - DICOM UL service-user	1 - no-reason-given	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 1: REJECT_SOURCE_dul_user, 1: REJECT_REASON _no_reason_given)
		2 - application-context-name-not supported	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 1: REJECT_SOURCE_dul_user, 2: REJECT_REASON _application_context_not_support)
		3 - calling-AE-title-not-recognized	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 1: REJECT_SOURCE_dul_user, 3: REJECT_REASON _calling_aetitle_not_recognized)
		7 - called-AE-title-not-recognized	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 1: REJECT_SOURCE_dul_user, 7: REJECT_REASON _called_aetitle_not_recognized)
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	Association is not established. The following error is logged. Error: UserRecoverable: impl.dicom.access.PEER: Associationrejected by peer (1: REJECT_RESULT _permanent, 2: REJECT_SOURCE _dul_provider (acse), 1: REJECT_REASON _no_reason_given)

Result	Source	Reason/Diagnosis	Behavior
		2 - protocol-version-not-supported	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 2: REJECT_SOURCE _dul_provider (acse), 2: REJECT_REASON _application_context_not_support)
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 3: REJECT_SOURCE _dul_provider (presentation), 1: REJECT_REASON _no_reason_given)
		2 - local-limit-exceeded	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 3: REJECT_SOURCE _dul_provider (presentation), 2: REJECT_REASON _application_context_not_support)
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 1: REJECT_SOURCE_dul_user, 1: REJECT_REASON _no_reason_given)
		2 - application-context-name-not-supported	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 1: REJECT_SOURCE_dul_user, 2: REJECT_REASON _application_context_not_support)
		3 - calling-AE-title-not-recognized	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 1: REJECT_SOURCE_dul_user, 3: REJECT_REASON _calling_aetitle_not_recognized
		7 - called-AE-title-not-recognized	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 1: REJECT_SOURCE_dul_user, 7: REJECT_REASON _called_aetitle_not_recognized)
	2 - DICOM UL service-provider (ACSE related function)	1 - no-reason-given	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 2: REJECT_SOURCE _dul_provider (acse), 1: REJECT_REASON _no_reason_given)
		2 - protocol-version-not-supported	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 2: REJECT_SOURCE _dul_provider (acse), 2: REJECT_REASON _application_context_not_support)
	3 - DICOM UL service-provider (Presentation related function)	1 - temporary-congestion	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 3: REJECT_SOURCE _dul_provider (presentation), 1: REJECT_REASON _no_reason_given)
		2 - local-limit-exceeded	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 3: REJECT_SOURCE _dul_provider (presentation), 2: REJECT_REASON _application_context_not_support)

The behavior of the AE on receiving an Association abort is summarized in the next table.

Table 89: Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	The ED Eleva terminates the connection with the following log: Association ABORTED by peer (0: ABORT_SOURCE_dul_user, 0: ABORT_REASON_not_specified).
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	The ED Eleva terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 0: ABORT_REASON_not_specified).
	1 - unrecognized-PDU	The ED Eleva terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 1: ABORT_REASON_unrecognized_pdu).
	2 - unexpected-PDU	The ED Eleva terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 2: ABORT_REASON_unexpected_pdu).
	4 - unrecognized-PDU-parameter	The ED Eleva terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 4: ABORT_REASON _unrecognized_pdu_parameter).
	5 - unexpected-PDU-parameter	The ED Eleva terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 5: ABORT_REASON _unexpected_pdu_parameter).
	6 - invalid-PDU-parameter-value	The ED Eleva terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 6: ABORT_REASON _invalid_pdu_parameter).

4.2.3.3.1. (Real-World) Activity – Modality Worklist as SCU

4.2.3.3.1.1. Description and Sequencing of Activities

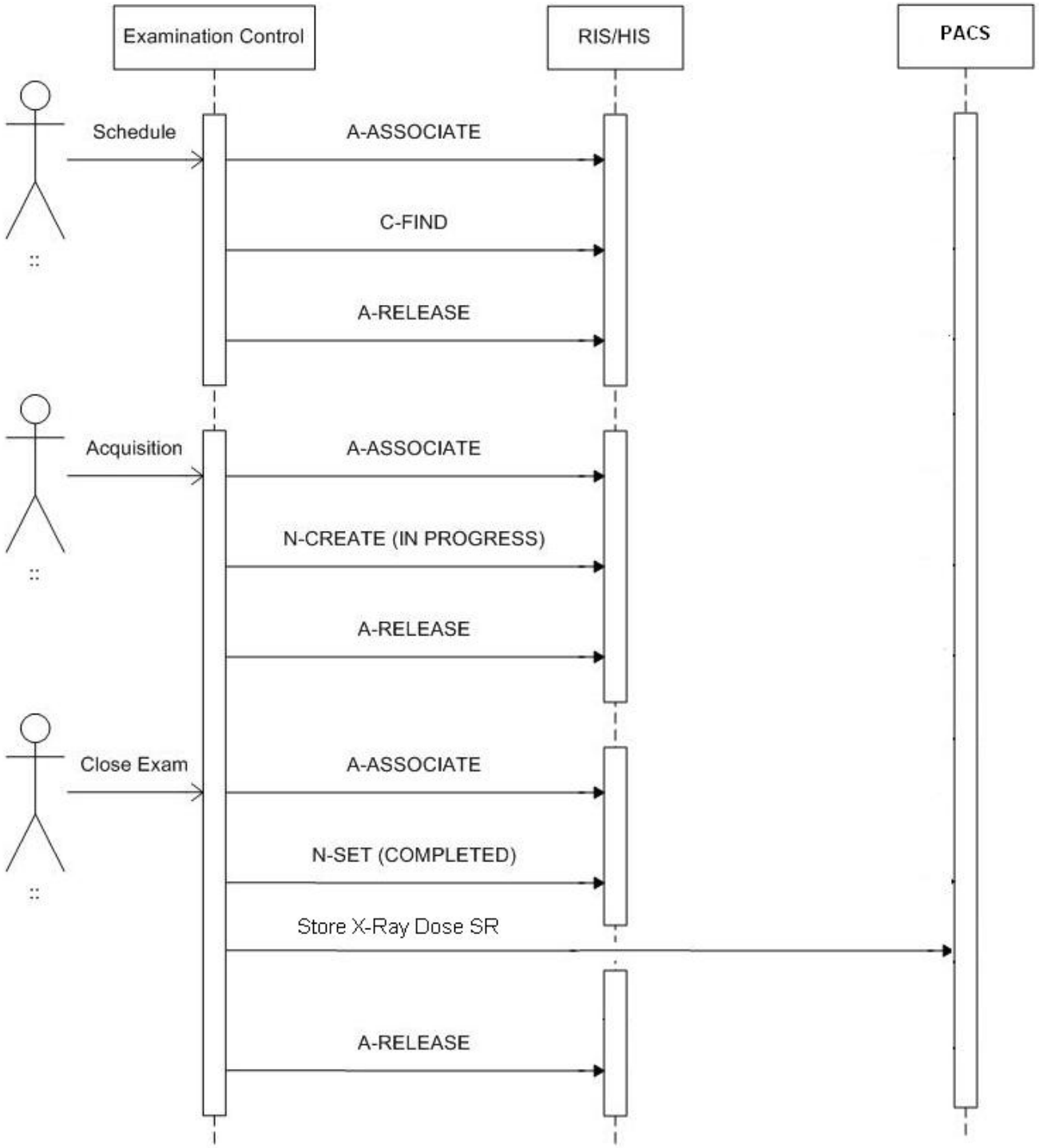

Figure 20: RWA – Examination Workflow (MWL and MPPS)

The RWA Schedule distinguishes two queries:

Broad query: At a configured time interval or after clicking the “RIS Query” button the EasyDiagnost Eleva RIS AE requests an association with the configured remote Basic Worklist Management SCP to perform a broad query. When the association is accepted the EasyDiagnost Eleva RIS AE sends the MWL query request containing the configured matching key values. After the final response the EasyDiagnost Eleva RIS AE releases the association. The MWL query results are displayed and selected results can be added to the patient list.

Patient query: After clicking the “Search RIS” button the operator may modify matching key values. When clicking the “Search now”

button the EasyDiagnost Eleva RIS AE requests an association with the configured remote Basic Worklist Management SCP to perform a patient query. When the association is accepted the EasyDiagnost Eleva RIS AE also generates MPPS messages for unscheduled sends the MWL query request containing the specified matching key values. After the final response the EasyDiagnost Eleva RIS AE releases the association. The MWL query results are displayed and selected results can be added to the patient list.

The search option is typically triggered by the operator when a patient arrives at the system for examination.

Manually initiated queries can be cancelled by pressing the “Cancel” button on the user interface. In that case the DICOM association will be aborted immediately. As the query is performed asynchronously, intermediate results may be displayed in the mean time.

Now the operator may select a patient examination using the Assisted Acquisition Protocol Setting option.
The EasyDiagnost Eleva RIS AE by default derives the specific acquisition protocol from the Scheduled Protocol Code Sequence items. Furthermore the EasyDiagnost Eleva RIS AE supports 3 more configurable mapping relations. Thus the examination may be selected from:

- Scheduled Protocol Code items->Code Value (0040,0008) (default);
- Scheduled Procedure Step Description (0040,0007);
- Requested Procedure Code items->Code Value (0032,1064);
- Requested Procedure Description (0032,1060).

The EasyDiagnost Eleva RIS AE does not evaluate the attributes Coding Scheme Designator (0008,0102), Coding Scheme Version (0008,0103), Code Meaning (0008,0104), but only the Code Value (0008,0100) for mapping the examination settings. Consequently the EasyDiagnost Eleva RIS AE assumes that any used Code Value is unambiguous within the actual RIS domain.
The EasyDiagnost Eleva RIS AE has no limit for the number of items in the Scheduled Protocol Code Sequence.
Any single item results in one or more examinations (depending on the configured mapping). If a sequence contains more than one protocol code, these codes will be displayed as separate examinations on the UI but will be handled by one common MPPS instance.

When sending examinations to DI, only the First Scheduled Action Code is sent and therefore attached to the images processed by DI The clinical user.
When an examination is initiated the EasyDiagnost Eleva RIS AE will create an MPPS entry by sending the MPPS N-CREATE message with status IN PROGRESS to the RIS.
When an examination is performed the scheduled protocol code of the examination will be appended to the Performed Protocol Code Sequence of the MPPS.

Each time an acquisition is archived the EasyDiagnost Eleva RIS AE will keep a record of the related MPPS details. When the operator closes the exam the EasyDiagnost Eleva RIS AE will update the RIS by sending the MPPS N-SET message with status COMPLETED and store the X-Ray Dose SR in PACS.

The operator may cancel an unclosed examination at any time. Depending on the state of the examination and MPPS related system configuration, and the MPPS IN PROGRESS message already may have been sent (discontinued case) or not (abandoned case).
If not (abandoned case), the system EasyDiagnost Eleva RIS AE first generates and the MPPSMPPS N-CREATE IN PROGRESS message. In both cases the system EasyDiagnost Eleva RIS AE sends the MPPS DICONTINUED N-SET DISCONTINUED message.

4.2.3.3.1.2. Proposed Presentation Contexts

The presentation context proposed by the EasyDiagnost Eleva RIS AE is defined in the following table.

Table 90: Proposed Presentation Contexts for (Real-World) Activity – Modality worklist as SCU

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

Note: ELE is preferred Transfer Syntax.

4.2.3.3.1.3. SOP Specific Conformance for Modality Worklist Information Model - FIND SOP Class

When date matching is configured, the date value is continuously generated from local system time, including nightshift tolerance in the morning hours taking the schedule from “yesterday”.

If the query response contains inconsistent values then the query is retried. Then if the inconsistency still exists the EasyDiagnost Eleva RIS AE expects the operator to enter the value(s) of the search key(s).

The patient query can be cancelled after the user has pressed a “Cancel” button on the user interface. In this case the DICOM association will be aborted immediately. As the query is performed asynchronously, intermediate results are displayed in the meantime.

When date matching is configured, the date value is continuously generated from local system time, including nightshift tolerance in the morning hours taking the steps from “<Yesterday”.
The modality type query may be used for environments that do not schedule per individual modality’s AE Title, but for a modality pool.

The Table in next section provides a description of the EasyDiagnost Eleva RIS AE Worklist Request Identifier and specifies the attributes that are copied into the images.

4.2.3.3.1.3.1. Dataset Specific Conformance for Modality Worklist Information Model - FIND SOP Class C-FIND SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

The table below should be read as follows:
Attribute Name: Attributes supported to build a Modality Worklist Request Identifier.
Tag: DICOM tag for this attribute.
VR: DICOM VR for this attribute.
M: Matching Keys for (automatic) Worklist Update.
R: Return Keys. An “X” will indicate that this attribute as Return Key with zero length for Universal Matching.
Q: Interactive Query Key. An “X” will indicate that this attribute as matching key can be used.
D: Displayed Keys. An “X” indicates that this Worklist attribute is displayed to the user during a patient registration dialog.
IOD: An “X” indicates that this Worklist attribute is included into all object Instances created during performance of the related Procedure Step.

Type of matching: The following types of matching exists:
Single Value Matching
List of UID Matching
Wild Card Matching
Range Matching
Sequence Matching
Universal Matching

Table 91: Worklist Request Identifier

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
Patient Identification Module									
Issuer of Patient ID	0010,0021	LO		X					
Other Patient IDs	0010,1000	LO		X		X			
Patient ID	0010,0020	LO		X	X	X	X	Single Value, Universal,	optional matching key for patient query
Patient's Name	0010,0010	PN		X	X	X	X	Single Value,	Optional matching key for

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
								Universal, WildCard	patient query
Patient Demographic Module									
Confidentiality Constraint on Patient Data Description	0040,3001	LO		X					
Ethnic Group	0010,2160	SH		X		X			
Patient Comments	0010,4000	LT		X		X			
Patient's Age	0010,1010	AS		X		X	X		
Patient's Birth Date	0010,0030	DA		X		X	X		used to determine patient type
Patient's Sex	0010,0040	CS		X					
Patient's Size	0010,1020	DS		X		X			used to determine patient type
Occupation	0010,2180			X					
Patient's Weight	0010,1030	DS		X		X			used to determine patient type
Patient Medical Module									
Additional Patient History	0010,21B0	LT		X		X			
Allergies	0010,2110	LO		X		X			
Medical Alerts	0010,2000	LO		X		X			
Pregnancy Status	0010,21C0	US		X		X			
Special Needs	0038,0050	LO		X					
Visit Status Module									
Current Patient Location	0038,0300	LO	X						
Scheduled Procedure Step Module									
Scheduled Procedure Step Sequence	0040,0100	SQ		X					
>Comments on the Scheduled Procedure Step	0040,0400	LT		X					
>Modality	0008,0060	CS	X	X	X			Single Value, Universal	Modality. Configurable matching Key Values: "*", "RF", "CR", "DX", OT, US, MG, XA, PX, NM
>Pre-Medication	0040,0012	LO		X					
>Requested Contrast Agent	0032,1070	LO		X					
>Scheduled Performing Physician's Name	0040,0006	PN		X		X			
>Scheduled Procedure Step Description	0040,0007	LO		X		X	X		
>Scheduled Procedure Step End Date	0040,0004	DA		X					
>Scheduled Procedure Step End Time	0040,0005	TM		X					
>Scheduled Procedure Step Location	0040,0011	SH		X					
>Scheduled Procedure Step Start Date	0040,0002	DA	X	X	X	X		“All”, “Today”, “Tomorrow”, “Yesterday”	
>Scheduled Procedure Step Start Time	0040,0003	TM		X		X			
>Scheduled Procedure Step Status	0040,0020	CS		X					
>Scheduled Station AE Title	0040,0001	AE	X	X	X			Single Value, Universal, wildcard	
>Scheduled Station Name	0040,0010	SH		X					
>Scheduled Protocol Code Sequence	0040,0008	SQ							
>>Code Meaning	0008,0104	LO							I
>>Code Value	0008,0100	SH							

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
>>Coding Scheme Designator	0008,0102	SH							
>>Coding Scheme Version	0008,0103	SH							
Requested Procedure Module									
Study Instance UID	0020, 000D			X					
Names of Intended Recipients of Results	0040,1010	PN		X		X			
Patient Transport Arrangements	0040,1004	LO		X		X			
Reason for the Requested Procedure	0040,1002	LO		X		X			
Requested Procedure Comments	0040,1400	LT		X		X			
Requested Procedure Description	0032,1060	LO							
Requested Procedure ID	0040,1001	SH		X	X	X	X	Single Value, Universal, WildCard	Request ID. Optional matching Key for Patient Query
Requested Procedure Priority	0040,1003	SH		X		X			
Referenced Study Sequence	0008,1110	SQ		X			X		
>Referenced SOP Class UID	0008,1150	UI		X			X		
>Referenced SOP Instance UID	0008,1155	UI		X			X		
Requested Procedure Code Sequence	0032,1064	SQ							
>Code Meaning	0008,0104	LO		X		X			
>Code Value	0008,0100	SH		X		X			
>Coding Scheme Designator	0008,0102	SH		X					
>Coding Scheme Version	0008,0103	SH		X					
Imaging Service Request Module									
Accession Number	0008,0050	SH		X	X	X	X	Single Value, Universal, WildCard	Optional matching key for patient query.
Imaging Service Request Comments	0040,2400	LT		X		X			
Issue Date of Imaging Service Request	0040,2004	DA		X		X			
Referring Physician's Name	0008,0090	PN		X		X	X		
Requesting Physician	0032,1032	PN		X		X			
Requesting Service	0032,1033	LO		X		X			
SOP Common Module									
Specific Character Set	0008,0005	CS	X				X		

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 92: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	The worklist is updated.
Failure	A700	Refused – Out of resources	The association is released. The reason is logged.
	A900	Failed – Identifier does not match SOP class	The association is released. The reason is logged.
	Cxxx	Failed – Unable to process	The association is released. The reason is logged.
Cancel	FE00	Matching terminated due to Cancel request	The association is released. The reason is logged

Service Status	Error Code	Further Meaning	Behavior
Pending	FF00	Matches are continuing – Current match is supplied and any optional keys were supported in the same manner as required keys	The MWL query job continues.
	FF01	Matches are continuing – Warning that one or more optional keys were not supported for existence and/or matching for this identifier	The MWL query job continues.

4.2.3.3.2. (Real-World) Activity – Modality Performed Procedure Step as SCU

4.2.3.3.2.1. Description and Sequencing of Activities

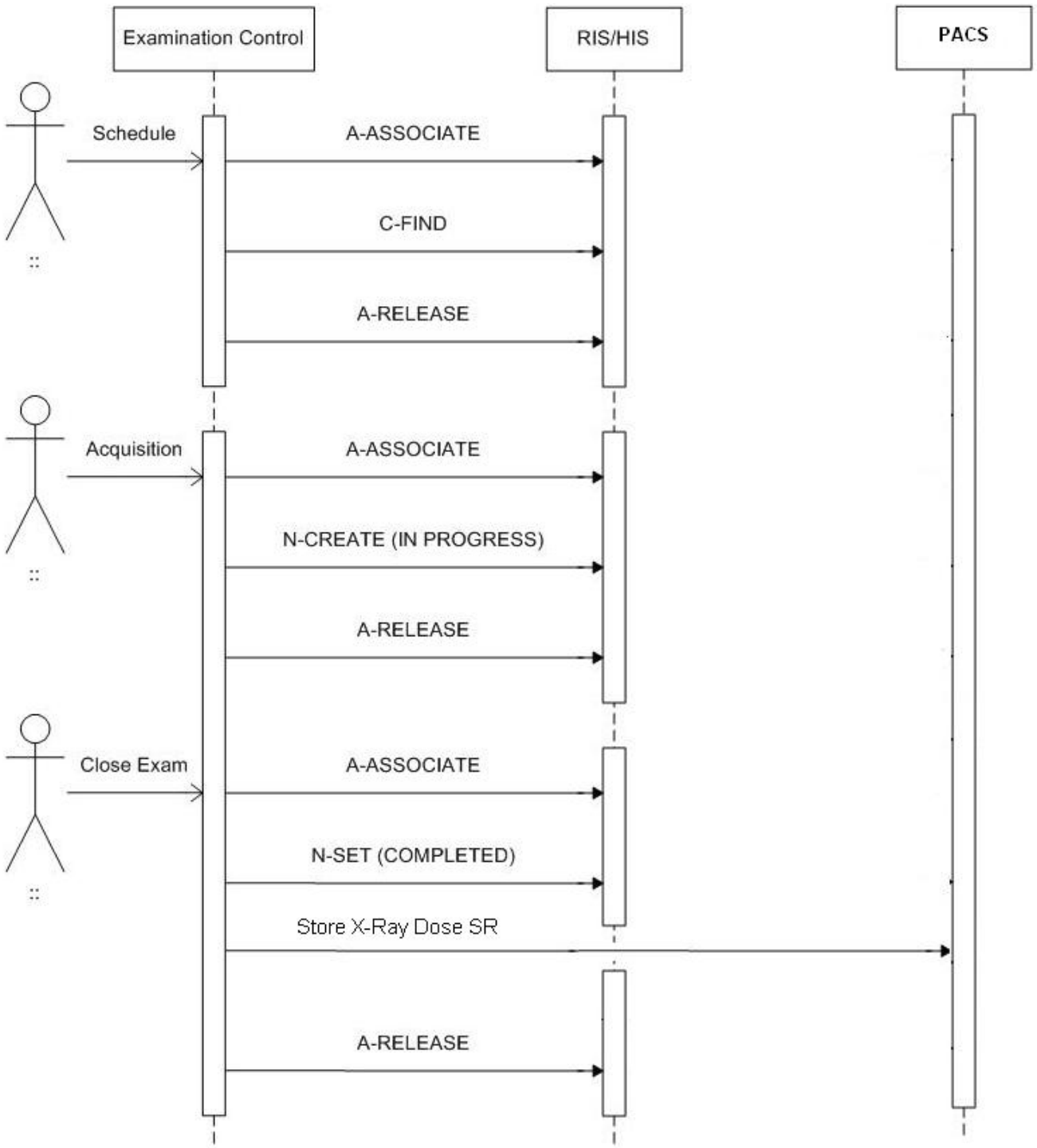

Figure 21: RWA – Examination Workflow

When an examination is initiated the EasyDiagnost Eleva RIS AE will create an MPPS entry by sending the MPPS N-CREATE message with status IN PROGRESS to the RIS.
When an examination is performed the scheduled protocol code of the examination will be appended to the Performed Protocol Code Sequence of the MPPS.

Each time an acquisition is archived the EasyDiagnost Eleva RIS AE will keep a record of the related MPPS details. When the operator closes the exam the EasyDiagnost Eleva RIS AE will update the RIS by sending the MPPS N-SET message with status COMPLETED and store the X-Ray Dose SR in PACS.

The operator may cancel an unclosed examination at any time. Depending on the state of the examination and MPPS related system configuration, and the MPPS IN PROGRESS message already may have been sent (discontinued case) or not (abandoned case). If not (abandoned case), the system EasyDiagnost Eleva RIS AE first generates and the MPPSMPPS N-CREATE IN PROGRESS message. In both cases the system EasyDiagnost Eleva RIS AE sends the MPPS DICONTINUEDN-SET DISCONTINUED message.

4.2.3.3.2.2. Proposed Presentation Contexts

The presentation contexts are defined in next table.

Table 93: Proposed Presentation Contexts for (Real-World) Activity – MPPS as SCU

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.3.3.2.3. SOP Specific Conformance for Modality Performed Procedure Step SOP Class

If scheduled by the RIS, each examination is the result of one Scheduled Procedure Step. Since an exam may not be re-opened after having been closed, and each exam workflow context is enclosed in one MPPS, one exam may result in 0:1 MPPS instances. However, images that are archived after examination's closure will not be reported to the RIS. No additional instances will be reported.

When the exam is initiated, at first acquisition the EasyDiagnost Eleva RIS AE by default derives the specific acquisition protocol from the Scheduled Protocol Code Sequence Items. If this Sequence contains more than one Protocol Code, these codes will be displayed as separate examinations on the UI, but will be handled by one common MPPS instance. Generates MPPS N-SET message with status IN PROGRESS. The EasyDiagnost Eleva RIS AE supports 3 more (configurable) mapping relations, as shown below

That is, the does not generate any intermediate MPPS IN PROGRESS messages for subsequent acquisitions of this examination. When closing the exam, the EasyDiagnost Eleva RIS AE expects, that any used Code Value is unique (unambiguous) within a given RIS domain.

The number of items in the Scheduled Protocol Code Sequence accepted by the generates an MPPS N-SET message with status COMPLETED. If the MPPS contains multiple examinations then the operator will be notified to confirm closure of current examination or all examinations. The exam cannot be reopened.
The EasyDiagnost Eleva RIS AE is not limited also generates MPPS messages for unscheduled exams.

4.2.3.3.2.3.1. Dataset Specific Conformance for Modality Performed Procedure Step SOP Class N-CREATE SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 94: MPPS Request Identifiers for N-CREATE-RQ

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step Relationship Module				
Patient ID	0010,0020	LO		Copied from MWL or entered by operator
Patient's Birth Date	0010,0030	DA		Copied from MWL or entered by operator
Patient's Name	0010,0010	PN		Copied from MWL or entered by operator
Patient's Sex	0010,0040	CS		Copied from MWL or entered by operator
Referenced Patient Sequence	0008,1120	SQ		ALWAYS EMPTY

Attribute Name	Tag	VR	Value	Comment
>Referenced SOP Class UID	0008,1150	UI		
>Referenced SOP Instance UID	0008,1155	UI		
Scheduled Step Attributes Sequence	0040,0270	SQ		
>Accession Number	0008,0050	SH		
>Requested Procedure Description	0032,1060	LO		
>Requested Procedure ID	0040,1001	SH		
>Scheduled Procedure Step Description	0040,0007	LO		
>Scheduled Procedure Step ID	0040,0009	SH		
>Study Instance UID	0020,000D	UI		
>Referenced Study Sequence	0008,1110	SQ		
>>Referenced SOP Class UID	0008,1150	UI		
>>Referenced SOP Instance UID	0008,1155	UI		
>Scheduled Protocol Code Sequence	0040,0008	SQ		Contents copied from MWL
>>Code Meaning	0008,0104	LO		
>>Code Value	0008,0100	SH		
>>Coding Scheme Designator	0008,0102	SH		
Performed Procedure Step Information Module				
Performed Location	0040,0243	SH		Always empty
Performed Procedure Step Description	0040,0254	LO		Copied from MWL
Performed Procedure Step End Date	0040,0250	DA		Always empty
Performed Procedure Step End Time	0040,0251	TM		Always empty
Performed Procedure Step ID	0040,0253	SH		
Performed Procedure Step Start Date	0040,0244	DA		
Performed Procedure Step Start Time	0040,0245	TM		
Performed Procedure Step Status	0040,0252	CS	Value : IN PROGRESS	
Performed Procedure Type Description	0040,0255	LO		Always empty
Performed Station AE Title	0040,0241	AE		As configured
Performed Station Name	0040,0242	SH		Always empty
Procedure Code Sequence	0008,1032	SQ		Contents copied from MWL - Requested procedure code sequence
>Code Meaning	0008,0104	LO		
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
>Coding Scheme Version	0008,0103	SH		
Image Acquisition Results Module				
Modality	0008,0060	CS	Value : RF	
Study ID	0020,0010	SH		If scheduled, then copied from Requested Procedure ID, else equipment generated study ID.
Performed Protocol Code Sequence	0040,0260	SQ		Always Empty
>Code Meaning	0008,0104	LO		
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
>Coding Scheme Version	0008,0103	SH		
Performed Series Sequence	0040,0340	SQ		Always Empty
>Operators' Name	0008,1070	PN		
>Performing Physician's Name	0008,1050	PN		
>Protocol Name	0018,1030	LO		

Attribute Name	Tag	VR	Value	Comment
>Retrieve AE Title	0008,0054	AE		
>Series Description	0008,103E	LO		
>Series Instance UID	0020,000E	UI		
>Referenced Image Sequence	0008,1140	SQ		
>>Referenced SOP Class UID	0008,1150	UI		
>>Referenced SOP Instance UID	0008,1155	UI		
Radiation Dose Module				
Entrance Dose	0040,0302	US		Not sent in case of appended MPPS instances.
Image and Fluoroscopy Area Dose Product	0018,115E	DS		Not sent in case of appended MPPS instances.
Total Number of Exposures	0040,0301	US		Not sent in case of appended MPPS instances.
Total Time of Fluoroscopy	0040,0300	US		Not sent in case of appended MPPS instances.
Exposure Dose Sequence	0040,030E	SQ		Not sent in case of appended MPPS instances.
>Comments on Radiation Dose	0040,0310	ST		
>Exposure Time	0018,1150	IS		
>Filter Material	0018,7050	CS		
>Filter Type	0018,1160	SH		
>KVP	0018,0060	DS		
>Radiation Mode	0018,115A	CS		
>X-Ray Tube Current in mA	0018,8151	DS		
SOP Common Module				
Specific Character Set	0008,0005	CS	Value : ISO_IR 100	

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 95: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	The SCP has successfully received the modality performed procedure step create request. Log entry.
Failure	0213	Resource limitation	The command is reported to the user as failed. The reason is logged. After a configured period of time the command will be retried up to a configured number of times.
	xxxx	(any other failure)	The command is reported to the user as failed. The reason is logged. No retry.

4.2.3.3.2.3.2. Dataset Specific Conformance for Modality Performed Procedure Step SOP Class N-SET SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.

Table 96: MPPS Request Identifiers for N-SET-RQ

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step Information Module				
Performed Procedure Step Description	0040,0254	LO		Copied from MWL
Performed Procedure Step End Date	0040,0250	DA		
Performed Procedure Step End Time	0040,0251	TM		

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step Status	0040,0252	CS	Value : COMPLETED,DISCONTINUED	
Procedure Code Sequence	0008,1032	SQ		Contents copied from MWL - Requested Procedure code sequence
>Code Meaning	0008,0104	LO		
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
Image Acquisition Results Module				
Performed Protocol Code Sequence	0040,0260	SQ		All Scheduled Protocol Code Sequence items from MWL, for which radiation has been released.
>Code Meaning	0008,0104	LO		
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
Performed Series Sequence	0040,0340	SQ		One item per series or dummy value.
>Operators' Name	0008,1070	PN		
>Performing Physician's Name	0008,1050	PN		The current physician name as selected on DAM
>Protocol Name	0018,1030	LO	Value : Unknown	
>Retrieve AE Title	0008,0054	AE		Always empty
>Series Description	0008,103E	LO		Always empty
>Series Instance UID	0020,000E	UI		
>Referenced Image Sequence	0008,1140	SQ		
>>Referenced SOP Class UID	0008,1150	UI	Value : 1.2.840.10008.5.1.4.1.1.12.2	
>>Referenced SOP Instance UID	0008,1155	UI		
>Referenced Non-Image Composite SOP Instance Sequence	0040,0220	SQ		
>>Referenced SOP Class UID	0008,1150	UI	Value : 1.2.840.10008.5.1.4.1.1.11.1	
>>Referenced SOP Instance UID	0008,1155	UI		
Radiation Dose Module				
Distance Source to Detector	0018,1110	DS		
Distance Source to Entrance	0040,0306	DS		
Entrance Dose	0040,0302	US		
Entrance Dose in mGy	0040,8302	DS		
Exposed Area	0040,0303	US		
Total Number of Exposures	0040,0301	US		
Total Time of Fluoroscopy	0040,0300	US		Not sent in case of Appended MPPS
Exposure Dose Sequence	0040,030E	SQ		Limited to 400 elements

This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 97: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	The SCP has successfully received the MPPS Set request. Log entry
Failure	0110	Processing failure - performed procedure step object may no longer be updated	The reason is logged
	xxxx		The reason is logged

4.2.3.3.3. (Real-World) Activity – Structured Dose Report Export

4.2.3.3.3.1. Description and Sequencing of Activities

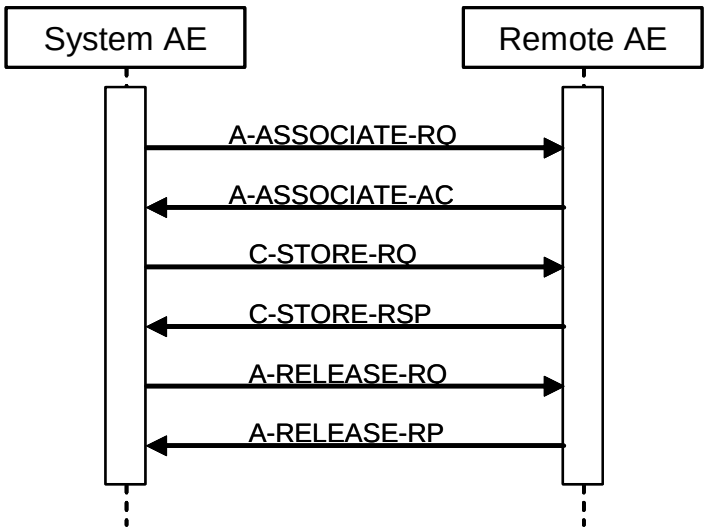

Figure 22: RWA – Structured Dose Report Export

The ELEVA RIS AE will request an association with the remote Storage SCP for the applicable Storage SOP classes. After accepting the association, the ELEVA RIS AE will sends the store request, wait for response, and then release the association. The store response status may be inspected on the UI.

4.2.3.3.3.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 98: Proposed Presentation Contexts for (Real-World) Activity – Image Export

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
X-Ray Radiation Dose SR SOP Class	1.2.840.10008.5.1.4.1.1.88.67	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.3.3.3.3. SOP Specific Conformance for Storage SOP Class

Behavior of an Application Entity SOP class is summarized as shown in next Table. The standard as well as the manufacturer specific status codes and their corresponding behavior are specified.

4.2.3.3.3.3.1. Dataset Specific Conformance for C-STORE-RQ

Detail regarding the Dataset Specific response behavior will be reported in this section.
This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 99: C-STORE-RQ Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Storage is complete	UI status is updated
Refused	A7xx	Out of resources	The association is released. The reason is logged. The user is informed.
Error	A9xx	Data set does not match SOP class	The association is released. The reason is logged. The user is informed.
	Cxxx	Cannot understand	The association is released. The reason is logged. The user is informed.
Warning	B000	Coercion of data elements	The association is released. The reason is logged. The user is informed.
	B006	Elements discarded	The association is released. The reason is logged. The user is informed.
	B007	Data set does not match SOP class	The association is released. The reason is logged. The user is informed.

Table 100: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and command marked as failed. The reason is logged and reported to the user.
Association aborted	The command is marked as failed. The reason is logged and reported to the user.

4.2.3.4. Association Acceptance Policy

The Application Entity may reject Association attempts as shown in the table below.

Table 101: Association Reject Reasons

Result	Source	Reason/Diagnosis	Behavior
1 - rejected permanent	1 - DICOM UL service-user	1 - no-reason-given	
		2 - application-context-name-not-supported	
		3 - calling-AE-title-not-recognized	
		7 - called-AE-title-not-recognized	
	2 - DICOM UL service provider ACSE related function)	1 - no-reason-given	
		2 - protocol-version-not-supported	
	3 - DICOM UL service provider (Presentation related function)	1 - temporary-congestion	
		2 - local-limit-exceeded	
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	
		2 - application-context-name-not-supported	
		3 - calling-AE-title-not-recognized	
		7 - called-AE-title-not-recognized	
	2 - DICOM UL service provider (ACSE related function)	1 - no-reason-given	
		2 - protocol-version-not-supported	
	3 - DICOM UL service provider (Presentation related function)	1 - temporary-congestion	
		2 - local-limit-exceeded	

The behavior of the AE for sending an association abort is summarized in next table

Table 102: Association Abort Policies

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	

Source	Reason/Diagnosis	Behavior
	1 - unrecognized-PDU	
	2 - unexpected-PDU	
	4 - unrecognized-PDU parameter	
	5 - unexpected-PDU parameter	
	6 - invalid-PDU-parameter value	

4.2.3.4.1. (Real-World) Activity – Verification as SCP

4.2.3.4.1.1. Description and Sequencing of Activities

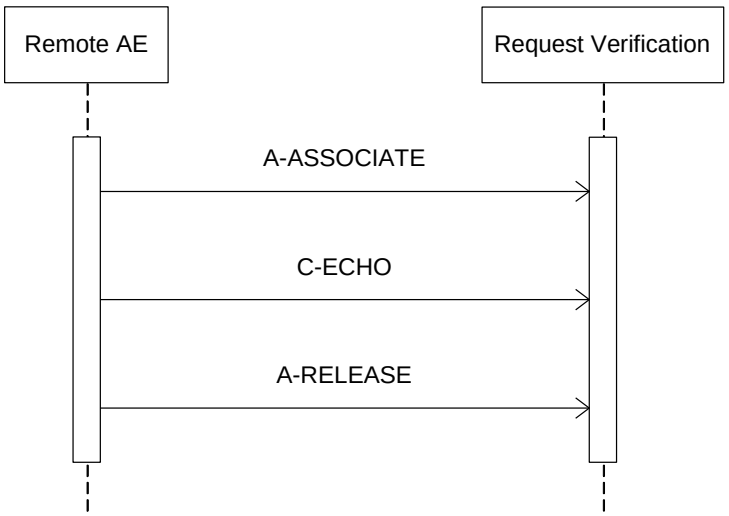

Figure 23: RWA - Verification as SCP

The EasyDiagnost Eleva RIS AE shall accept associations from systems that wish to verify application level communication using the C-ECHO command

4.2.3.4.1.2. Accepted Presentation Contexts

The following are the accepted Presentation Contexts by EasyDiagnost Eleva RIS AE.

Table 103: Acceptable Presentation Contexts for (Real-World) Activity – Verification as SCP

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification SOP Class	1.2.840.10008.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.3.4.1.3. SOP Specific Conformance for Verification SOP Class

This section and sub-section includes the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.3.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 104: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Confirmation	Confirm the verification request

4.2.4. EasyDiagnost ELEVA Digital Detector AE

Detail of this specific Application Entity is specified in this section.

4.2.4.1. SOP Classes

This Application Entity provides Standard Conformance to the following SOP Classes.

Table 105: SOP Classes for EasyDiagnost ELEVA Digital Detector AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	No	Yes
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Yes	No
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	Yes	No
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	No
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	No
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No

Note:

1) Eleva Digital Detector AE is Optional if a Fixed DR detector and/or a WPD and or a CR-Reader are available in the system configuration.
2) Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

4.2.4.2. Association Policies

Each AE specification contains a description of the general association establishment and acceptance policies of the AE.

4.2.4.2.1. General

The DICOM standard application context name is specified in below table.

Table 106: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.4.2.2. Number of Associations

The number of simultaneous associations that an Application Entity may support as an Initiator or Acceptor is specified here.

Table 107: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	2

Table 108: Number of associations as an Association Acceptor for this AE

Description	Value
Maximum number of simultaneous associations	1

4.2.4.2.3. Asynchronous Nature

The implementation supports negotiation of multiple outstanding transactions, along with the maximum number of outstanding transactions supported.

Table 109: Asynchronous nature as an Association Initiator for this AE

Description	Value
Maximum number of outstanding asynchronous transactions	0

4.2.4.2.4. Implementation Identifying Information

The value supplied for Implementation Class UID and version name are documented here.

Table 110: DICOM Implementation Class and Version for EasyDiagnost ELEVA Digital Detector AE (For optional Wall Stand)

Implementation Class UID	1.3.46.670589.30.1.6
Implementation Version Name	PMS_ELEVA_PA_2.4

4.2.4.2.5. Communication Failure Handling

The behavior of the AE during communication failure is summarized in next table.

Table 111: Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and command marked as failed. The reason is logged and reported to the user.
Association aborted	The command is marked as failed. The reason is logged and reported to the user.

4.2.4.3. Association Initiation Policy

This describes the conditions under which the AE will initiate an association.

The behavior of the AE during association rejection is summarized in next table

Table 112: Association Rejection response

Result	Source	Reason/Diagnosis	Explanation
1 – rejected-permanent	1 – DICOM UL service-user	1 – no-reason-given	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 1: REJECT_SOURCE_dul_user, 1: REJECT_REASON _no_reason_given)

Result	Source	Reason/Diagnosis	Explanation
		2 – application-context-name-not-supported	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 1: REJECT_SOURCE_dul_user, 2: REJECT_REASON _application_context_not_support)
		3 – calling-AE-title-not-recognized	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 1: REJECT_SOURCE_dul_user, 3: REJECT_REASON _calling_aetitle_not_recognized)
		7 – called-AE-title-not-recognized	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 1: REJECT_SOURCE_dul_user, 7: REJECT_REASON _called_aetitle_not_recognized)
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	Association is not established. The following error is logged. Error: UserRecoverable: impl.dicom.access.PEER: Associationrejected by peer (1: REJECT_RESULT _permanent, 2: REJECT_SOURCE _dul_provider (acse), 1: REJECT_REASON _no_reason_given)
		2 – protocol-version-not-supported	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 2: REJECT_SOURCE _dul_provider (acse), 2: REJECT_REASON _application_context_not_support)
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 3: REJECT_SOURCE _dul_provider (presentation), 1: REJECT_REASON _no_reason_given)
		2 – local-limit-exceeded	Association is not established. The following error is logged. Association rejected by peer (1: REJECT_RESULT _permanent, 3: REJECT_SOURCE _dul_provider (presentation), 2: REJECT_REASON _application_context_not_support)
2 – rejected-transient	1 – DICOM UL service-user	1 – no-reason-given	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 1: REJECT_SOURCE_dul_user, 1: REJECT_REASON _no_reason_given)
		2 – application-context-name-not-supported	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 1: REJECT_SOURCE_dul_user, 2: REJECT_REASON _application_context_not_support)

Result	Source	Reason/Diagnosis	Explanation
		3 – calling-AE-title-not-recognized	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 1: REJECT_SOURCE_dul_user, 3: REJECT_REASON _calling_aetitle_not_recognized)
		7 – called-AE-title-not-recognized	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 1: REJECT_SOURCE_dul_user, 7: REJECT_REASON _called_aetitle_not_recognized)
	2 – DICOM UL service-provider (ACSE related function)	1 – no-reason-given	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 2: REJECT_SOURCE _dul_provider (acse), 1: REJECT_REASON _no_reason_given)
		2 – protocol-version-not-supported	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 2: REJECT_SOURCE _dul_provider (acse), 2: REJECT_REASON _application_context_not_support)
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 3: REJECT_SOURCE _dul_provider (presentation), 1: REJECT_REASON _no_reason_given)
		2 – local-limit-exceeded	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 3: REJECT_SOURCE _dul_provider (presentation), 2: REJECT_REASON _application_context_not_support)

The behavior of the AE on receiving an association abort is summarized in next table.

Table 113: Association Abort Handling

Source	Reason/Diagnosis	behavior
0 – DICOM UL service-user	0 – reason-not-specified	When received, the Eleva Workspot terminates the connection with the following log: Association ABORTED by peer (0: ABORT_SOURCE_dul_user, 0: ABORT_REASON_not_specified).
2 – DICOM UL service-provider	0 – reason-not-specified	When received, the Eleva Workspot terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 0: ABORT_REASON_not_specified).
	1 – unrecognized-PDU	When received, theEleva Workspot terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 1: ABORT_REASON_unrecognized_pdu).

Source	Reason/Diagnosis	behavior
	2 – unexpected-PDU	When received, the Eleva Workspot terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 2: ABORT_REASON_unexpected_pdu).
	4 – unrecognized-PDU parameter	When received, the Eleva Workspot terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 4: ABORT_REASON _unrecognized_pdu_parameter).
	5 – unexpected-PDU parameter	When received, the Eleva Workspot terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 5: ABORT_REASON_unexpected_pdu_parameter).
	6 – invalid-PDU-parameter value	When received, the Eleva Workspot terminates the connection with the following log: Association ABORTED by peer (2: ABORT_SOURCE_dul_provider, 6: ABORT_REASON_invalid_pdu_parameter).

4.2.4.3.1. (Real-World) Activity – Image Export

4.2.4.3.1.1. Description and Sequencing of Activities

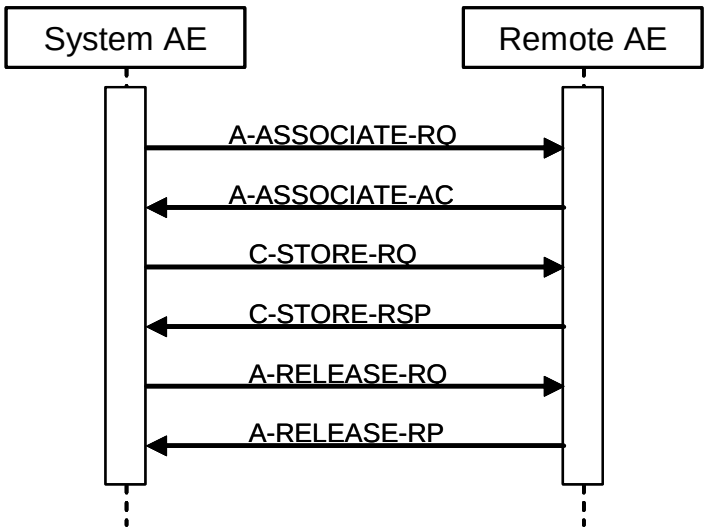

Figure 24: RWA – Image Export

Export means that Eleva Workspot stores images without Storage Commitment.
This RWA may be initiated in two ways:

- Manually in the viewer, after clicking the Store button the ELEVA Digital Detector AE will Store the selected images at the selected Storage SCP.

- Automatically during an examination, after clicking the Confirm button the ELEVA Digital Detector AE will automatically store the related images of the performed procedure step at the configured Storage SCP.

The ELEVA Digital Detector AE will request an association with the remote Storage SCP for the applicable Storage SOP classes. After accepting the association, the ELEVA Digital Detector AE will send the store request, wait for response, and then release the association. The store response status may be inspected on the UI.

Depending on the status of the store the ELEVA Digital Detector AE may queue store requests for retries. The queued store requests can be cancelled from the UI.

4.2.4.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 114: Proposed Presentation Contexts for (Real-World) Activity – Image Export

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

By default, all images are DICOM Stored according to the SOP Class Digital X-Ray.

CR Image attributes that are undefined for DX Images are stored in private attributes.

As a configurable choice, Images can be stored as Computed Radiology SOP Class. This capability is required to be compatible with installed radiology equipment. DX Image attributes that are undefined for CR Images are then stored in private attributes.

Another choice can be DICOM Stored according to Secondary Capture SOP Class. This capability is required to be compatible with installed radiology equipment. Optionally only the attributes defined for Secondary Capture Images or all attributes are stored.

For DICOM CR images there is a constraint that a change in position, detector, body part or laterality implies a new series. This has been relaxed for DX images through the use of the 'DX Anatomy Imaged' and 'DX Positioning' Modules, which define attributes at image level.

The DX Image IOD is used in two SOP Classes as defined in the DICOM Standard, a SOP Class for storage of images intended for Presentation, and a SOP Class for storage of images intended for further Processing before presentation.
These are distinguished by their SOP Class UID and by the Enumerated Value of the mandatory Attribute in the DX Series Module, Presentation Intent Type (0008,0068).

It is possible to export / store one single image first as a DICOM CR object and secondly as a DICOM DX object, therefore the SOP Instance UIDs of both DICOM image instances have to be different.

The Numbering Scheme shall support ‘Hanging Protocols’ of PACS systems & Viewing Stations, in case of the CR as well as the DX model:
1. The Series Number starts with 1 for the first Series of every Study Instance, identified by Study Instance UID.
2. The Series Number increases by 1 for every new Series Instance within the same Study Instance, by the timely order, the Series Instances are created.
3. The Image Number starts with 1 for every new Series Instance.
4. The Image Number increases by 1 for every new Image Instance within the same Series Instance, by the timely order, the Images are created.

For DX SOP Class is in the DICOM Standard defined:
The Digital X-Ray (DX) Image Information Object Definition (IOD) specifies an image that has been created by a digital projection radiography imaging device.
Notes:

- This includes but is not limited to: chest radiography, linear and multi-directional tomography, orthopantomography and skeletal radiography. Acquisition of image data may include but is not limited to: CCD-based sensors, stimulable phosphor imaging plates, amorphous selenium, and scintillation based amorphous silicon and Secondary Capture of film-based images.
- Specific IODs are defined for intra-oral radiography and mammography that further specialize the DX IOD.

A DX image consists of the result of a single X-Ray exposure, in order to ensure that the anatomical and orientation attributes are meaningful for the image, permitting safe annotation, appropriate image processing and appropriate dissemination.
Notes:

- The requirement for the Eleva Workspot specifically deprecates the common film/screen and Computed Radiography practice of making multiple exposures on different areas of a cassette or plate by using lead occlusion between exposures. Such acquisitions could be separated and transformed into multiple DX images during an appropriate quality assurance step by an operator.
- The requirement for the Eleva Workspot does not deprecate the acquisition of multiple paired structures during a single exposure, provided that they can be described by the relevant orientation attributes.
  For example, an AP or PA projection of both hands side by side is typically obtained in a single exposure, and can be described by a Patient Orientation (0020,0020) of R\H or L\H since both hands are in the same traditional Anatomical Position.

4.2.4.3.1.3. SOP Specific Conformance for Storage SOP Class

Behavior of an Application Entity SOP class is summarized as shown in next Table. The standard as well as the manufacturer specific status codes and their corresponding behavior are specified.

4.2.4.3.1.3.1. Dataset Specific Conformance for C-STORE-RQ

Detail regarding the Dataset Specific response behavior will be reported in this section.
This includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 115: C-STORE-RQ Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Storage is complete	UI status is updated
Refused	A7xx	Out of resources	The association is released. The reason is logged. The user is informed.
Error	A9xx	Data set does not match SOP class	The association is released. The reason is logged. The user is informed.
	Cxxx	Cannot understand	The association is released. The reason is logged. The user is informed.
Warning	B000	Coercion of data elements	The association is released. The reason is logged. The user is informed.
	B006	Elements discarded	The association is released. The reason is logged. The user is informed.
	B007	Data set does not match SOP class	The association is released. The reason is logged. The user is informed.

Table 116: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and command marked as failed. The reason is logged and reported to the user.
Association aborted	The command is marked as failed. The reason is logged and reported to the user.

4.2.4.3.2. (Real-World) Activity – Storage Commitment Push Model as SCU

4.2.4.3.2.1. Description and Sequencing of Activities

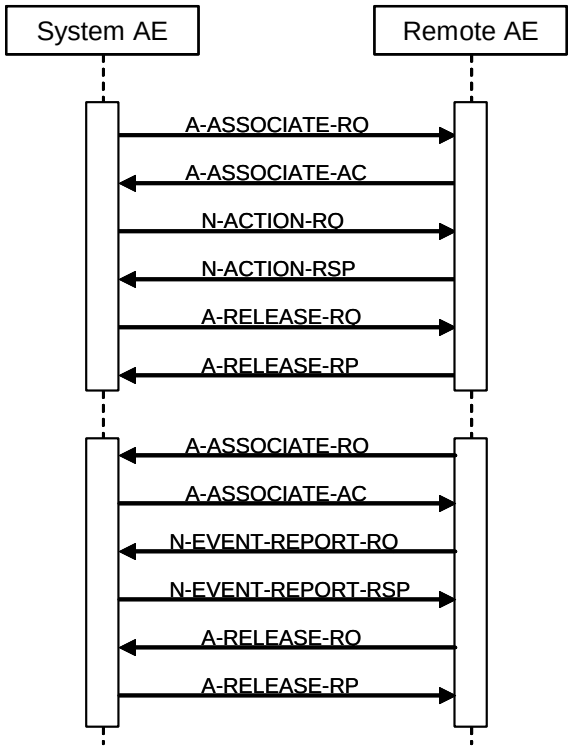

Figure 25: RWA – Asynchronous Storage Commitment as SCU

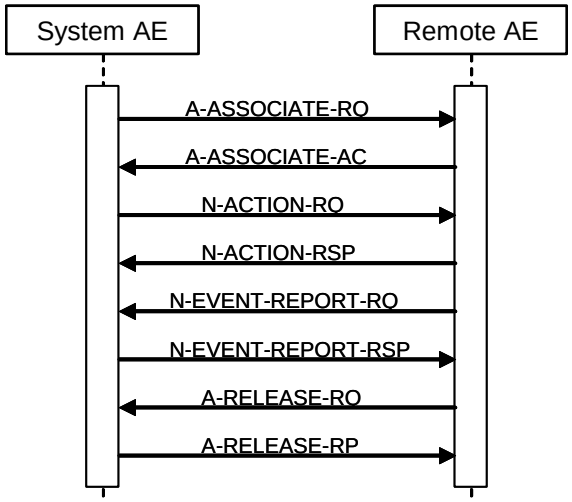

Figure 26: RWA – Synchronous Storage Commitment as SCU

Archive means that Eleva Workspot stores images with Storage Commitment.
This RWA may be initiated in two ways.

- Manually in the viewer, after clicking the Store button the ELEVA Digital Detector AE will store the selected images at the selected Storage SCP.
- Automatically during an examination, after clicking the Confirm button the ELEVA Digital Detector AE will automatically store the related images of the performed procedure step at the configured Storage SCP.

The ELEVA Digital Detector AE will request an association with the remote Storage SCP for the applicable Storage SOP classes. After accepting the association the ELEVA Digital Detector AE will send the store request, wait for response, and then release the association. The store response status may be inspected on the UI. The transferred image shall not be deleted from the system until the Storage Commit N-EVENT is received.

Depending on the status of the store the ELEVA Digital Detector AE may queue store requests for retries. The queued store requests can be cancelled from the UI.

When an archive supports DICOM Storage Commitment, this node can be configured for it. For each image that is sent to this node, also a Storage Commitment Request is sent. The image is delete-protected until the Storage Commit Response has been received. The current status is shown in the Image Info Panel.
In case of a wrong configuration (an archive is configured to support Storage Commitment, but does not really do so), the system recognizes this, and our application sees a successful Storage Commitment.

4.2.4.3.2.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 117: Proposed Presentation Contexts for (Real-World) Activity – Storage Commitment Push Model as SCU

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.4.3.2.3. SOP Specific Conformance for Storage Commitment Push Model SOP Class

This section includes the SOP specific behavior, i.e. error codes, error and exception handling, time-outs, etc.
Behavior of an Application Entity SOP class is summarized as shown in next Table. The standard as well as the manufacturer specific status codes and their corresponding behavior are specified.

4.2.4.3.2.3.1. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-EVENT-REPORT-SCP

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 118: Storage Commitment Attributes for N-EVENT-REPORT

Attribute Name	Tag	Comment
Storage Commitment Module		
Transaction UID	0008,1195	
Referenced SOP Sequence	0008,1199	
> Referenced SOP Class UID	0008,1150	UID from SOP Class
> Referenced SOP Instance UID	0008,1155	

Table 119: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged and reported to the user.
Association aborted	The command is marked as failed. The reason is logged and reported to the user.

4.2.4.3.2.3.2. Dataset Specific Conformance for Storage Commitment Push Model SOP Class N-ACTION-SCU

Table 120: Storage Commitment attribute for N-ACTION-RQ

Attribute Name	Tag	Comment
Storage Commitment Module		
Transaction UID	0008,1195	
Referenced SOP Sequence	0008,1199	
> Referenced SOP Class UID	0008,1150	UID from SOP Class
> Referenced SOP Instance UID	0008,1155	

Table 121: N-ACTION-RQ Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Storage is complete	UI status is updated
Refused	A7xx	Out of resources	The association is released. The reason is logged. The user is informed.
Error	A9xx	Data set does not match SOP class	The association is released. The reason is logged. The user is informed.
	Cxxx	Cannot understand	The association is released. The reason is logged. The user is informed.
Warning	B000	Coercion of data elements	The association is released. The reason is logged. The user is informed.
	B006	Elements discarded	The association is released. The reason is logged. The user is informed.
	B007	Data set does not match SOP class	The association is released. The reason is logged. The user is informed.

Table 122: DICOM Command communication Failure Behavior

Exception	Behavior
Association aborted	The command is marked as failed. The reason is logged and reported to the user.

4.2.4.3.3. (Real-World) Activity – Print Management as SCU

4.2.4.3.3.1. Description and Sequencing of Activities

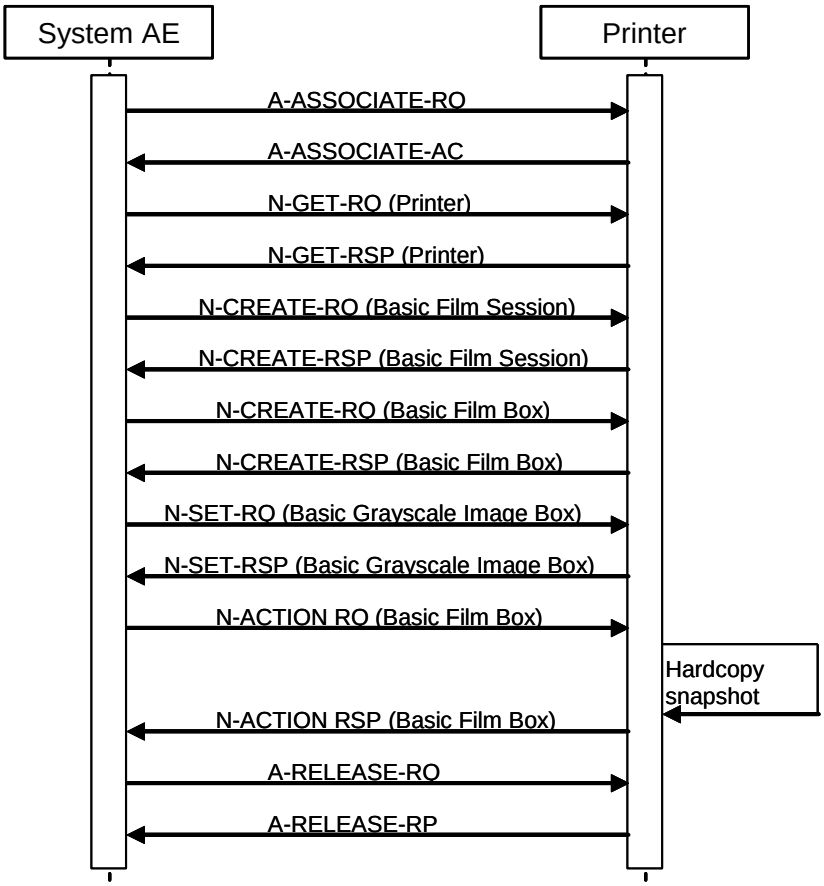

Figure 27: RWA – Print Management as SCU

The ELEVA Digital Detector AE cannot handle any N-EVENT-REPORT messages.
A print job (film session) comprises one single film box with one single image (that is composed of 1..N modality images).

The print component in Eleva Workspot supports a highly automated print from acquisition operation mode, that does not interrupt the clinical acquisition workflow.
Supplementary to that is the manual print operation mode that is to be used as advanced interactive print preview and as reprint facility.

There are two modes of configuration for automatic printing: auto and easy print.

- In auto print mode conflicting and incomplete print jobs are either printed “as is” or must be manually corrected and confirmed.
- In easy print mode all automatically started print jobs have to be confirmed manually.

The behavior of the print GUI on entry is dependent on the configuration not on the workflow context.
The three different print modes are:

- Manual Printing: No auto print jobs active: Screen is empty.
- Auto print configured: All uncompleted pages and conflict jobs are seen for that patient.
- Easy print configured: All current print jobs are seen for that patient.

By **Manual Printing** the basic composition of films is possible with click and point functions.
To allow for more automation, auto-arranging (AA) is required.
AA takes the configured defaults (2x1P, 14Inx17In) and loads the images automatically.
User can make multiple selections of images or all images select/deselect and pressed "arrange". Images are taken for AA in the order they have been selected, if this is relevant for the Templates if ALL images are selected, then they are taken in order from top left to lower right in rows.
After AA the result can be modified manually.

By **Auto Print** the operation mode the handling of conflicts between configuration and operation is configurable. This means:
If the collimation and thus the image is larger as originally configured it can be configured if the image shall be cut, scaled or the print job with the conflict shall be manually corrected and confirmed.
If the operator omits one of the routine views configured and a page is thus left half-filled it can be configured if the page is going to be printed half-filled, if a layout suitable for the number of available images is chosen instead or if the page must be manually changed and confirmed.
In case of a manual check configured conflict jobs are sent to the print GUI and handled like the Easy Print. Outstanding jobs are shown to the user by:

- An icon in the patient list at every affected patient / study
- User guidance giving patient name of unprinted film at the time the film ready to be printed

By **Easy Print** all print jobs are sent to the Print UI for checking first.
The user is not forced to go there, but outstanding jobs are shown to the user by:

- An icon in the patient list at every affected patient / study
- User guidance giving patient name of unprinted film at the time the film ready to be printed

Depending on the response status of set and the configuration the ELEVA Digital Detector AE may perform a retry.

4.2.4.3.3.2. Proposed Presentation Contexts

The proposed presentation contexts are defined in next table.

Table 123: Proposed Presentation Contexts for (Real-World) Activity – Print Management as SCU

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Printer SOP Class	1.2.840.10008.5.1.1.16	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9				
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
>Printer SOP Class	1.2.840.10008.5.1.1.16	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

This section described the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 124: Proposed Presentation Contexts for (Real-World) Activity – Print Management as SCU

Service Status	Code	Further Meaning	Behavior
Success	0000	Successful operation	The print job continues.
Failure	xxxx	Any failure	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).
Warning	xxxx	Any warning	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).

The behavior of the AE during communication failure is summarized next table.

Table 125: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using A-ABORT and the command is marked as failed. The reason is logged. After a maximum number of retries the user is notified via pop-up (in preview mode only).
Association aborted	The command is marked as failed. The reason is logged. After a maximum number of retries the user is notified via pop-up (in preview mode only).
Failed to connect	Log entry. After a maximum number of retries the user is notified via pop-up (in preview mode only).

This section specifies each IOD created (including private IOD's).

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS	The attribute is always present with a value
EMPTY	The attribute is always present without any value (attribute sent zero length)
VNAP	The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present)
ANAP	The attribute is present under specified condition – if present then it will always have a value
VNAPCV	The attribute is present under specified condition – if present then its Value is Not Always Present (attribute sent zero length if condition applies and no value is present)
ANAPEV	The attribute is present under specified condition – if present then it will not have any value

The abbreviations used in the Module table for the column "Source" are:

AUTO	The attribute value is generated automatically
CONFIG	The attribute value source is a configurable parameter
COPY	The attribute value source is another SOP instance
FIXED	The attribute value is hard-coded in the application
IMPLICIT	The attribute value source is a user-implicit setting
MPPS	The attribute value is the same as that use for Modality Performed Procedure Step
MWL	The attribute value source is a Modality Worklist
USER	The attribute value source is explicit user input

4.2.4.3.3.3. SOP Specific Conformance for Basic Film Box SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.4.3.3.1. Dataset Specific Conformance for Basic Film Box SOP Class N-CREATE-SCU

Table 126: Basic Film Box Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Display Format	2010,0010	ST		ALWAYS	AUTO	Config in Definition File
Film Orientation	2010,0040	CS		ALWAYS	AUTO	Config in Definition File
Film Size ID	2010,0050	CS		ALWAYS	AUTO	Config in Definition File
Magnification Type	2010,0060	CS		ALWAYS	AUTO	Config in Definition File
Max Density	2010,0130	US		ALWAYS	AUTO	Config in Definition File
Trim	2010,0140	CS		ALWAYS	AUTO	Config in Definition File
Configuration Information	2010,0150	ST		ALWAYS	AUTO	Config in Definition File

Table 127: Basic Film Box Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Film Session Sequence	2010,0500	SQ		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

4.2.4.3.3.4. SOP Specific Conformance for Basic Film Session SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.4.3.3.4.1. Dataset Specific Conformance for Basic Film Session SOP Class N-CREATE-SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 128: Basic Film Session Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Copies	2000,0010	IS		ALWAYS	USER	Default = 1
Print Priority	2000,0020	CS		ALWAYS	AUTO	
Medium Type	2000,0030	CS		ALWAYS	USER	
Film Destination	2000,0040	CS		ALWAYS	CONFIG	
Film Session Label	2000,0050	LO		ALWAYS	AUTO	

4.2.4.3.3.5. SOP Specific Conformance for Basic Grayscale Image Box SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.4.3.3.5.1. Dataset Specific Conformance for Basic Grayscale Image Box SOP Class N-SET SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 129: Image Box Pixel Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Position	2020,0010	US		ALWAYS	AUTO	
Polarity	2020,0020	CS		ALWAYS	AUTO	
Basic Grayscale Image Sequence	2020,0110	SQ		ALWAYS	AUTO	
>Samples per Pixel	0028,0002	US	1, 1	ALWAYS	AUTO	
>Photometric Interpretation	0028,0004	CS	MONOCHROME1, MONOCHROME2	ALWAYS	CONFIG	DEFAULT: MONOCHROME2
>Rows	0028,0010	US		ALWAYS	IMPLICIT	Depending on the selected printer type and film size.
>Columns	0028,0011	US		ALWAYS	IMPLICIT	Depending on the selected printer type and film size.
>Bits Allocated	0028,0100	US	16, 8	ALWAYS	AUTO	
>Bits Stored	0028,0101	US	12, 8	ALWAYS	IMPLICIT	
>High Bit	0028,0102	US	11, 7	ALWAYS	AUTO	
>Pixel Representation	0028,0103	US	0x0000	ALWAYS	AUTO	
>Pixel Data	7FE0,0010	O W/ OB		ALWAYS	AUTO	

4.2.4.3.3.6. SOP Specific Conformance for Printer SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.4.3.3.6.1. Dataset Specific Conformance for Printer SOP Class N-EVENT-REPORT SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 130: Status Response

Service Status	Code	Further Meaning	Behavior
Success	0000	Successful operation	The print job continues.
Failure	xxxx	Any failure	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).
Warning	xxxx	Any warning	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).

4.2.4.3.3.7. SOP Specific Conformance for Basic Film Box SOP Class of Basic Grayscale Print Management Meta SOP Class

This section and sub-section include the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.4.3.3.7.1. Dataset Specific Conformance for Basic Film Box SOP Class N-CREATE SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 131: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	The print job continues.
Failure	xxxx	Any failure	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).
Warning	xxxx	Any warning	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).

4.2.4.3.3.7.2. Dataset Specific Conformance for Basic Film Box SOP Class N-ACTION SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 132: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	The print job continues.
Failure	xxxx	Any failure	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).
Warning	xxxx	Any warning	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).

4.2.4.3.3.8. SOP Specific Conformance for Basic Film Session SOP Class of Basic Grayscale Print Management Meta SOP Class

This section and sub-section includes the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.4.3.3.8.1. Dataset Specific Conformance for Basic Film Session SOP Class N-CREATE SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 133: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	The print job continues.
Failure Warning	xxxx	Any failure	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).
	xxxx	Any warning	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).

4.2.4.3.3.9. SOP Specific Conformance for Basic Grayscale Image Box SOP Class of Basic Grayscale Print Management Meta SOP Class

This section and sub-section includes the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.4.3.3.9.1. Dataset Specific Conformance for Basic Grayscale Image Box SOP Class N-SET SCU

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 134: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	The print job continues.
Failure Warning	xxxx	Any failure	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).
	xxxx	Any warning	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).

4.2.4.3.3.10. SOP Specific Conformance for Printer SOP Class of Basic Grayscale Print Management Meta SOP Class

This section and sub-section includes the manufacturer SOP and Dataset specific information as well the status codes and their corresponding behavior.

4.2.4.3.3.10.1. Dataset Specific Conformance for Printer SOP Class N-EVENT-REPORT SCP

Detail regarding the Dataset Specific response behavior will be reported in this section.
This part of the section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 135: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful operation	The print job continues.
Failure Warning	xxxx	Any failure	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).
	xxxx	Any warning	In the AutoPrint mode a GUI is invoked. The status panel of this GUI displays a message based on the 'Further Meaning'. The warning or failure response of a print request that is invoked by the Manual Print Composer GUI will be displayed by a pop-up window (if the user has not closed the GUI before the printer status was delivered).

4.2.4.4. Association Acceptance Policy

The Application Entity may reject Association attempts as shown in the table below.

Table 136: Association Reject Reasons

Result	Source	Reason/Diagnosis	Behavior
1 - rejected permanent	1 - DICOM UL service-user	1 - no-reason-given	
		2 - application-context-name-not-supported	
		3 - calling-AE-title-not-recognized	
		7 - called-AE-title-not-recognized	
	2 - DICOM UL service provider (ACSE related function)	1 - no-reason-given	
		2 - protocol-version-not-supported	
	3 - DICOM UL service provider (Presentation related function)	1 - temporary-congestion	
		2 - local-limit-exceeded	
2 - rejected-transient	1 - DICOM UL service-user	1 - no-reason-given	
		2 - application-context-name-not-supported	
		3 - calling-AE-title-not-recognized	
		7 - called-AE-title-not-recognized	
	2 - DICOM UL service provider (ACSE related function)	1 - no-reason-given	
		2 - protocol-version-not-supported	
	3 - DICOM UL service provider (Presentation related function)	1 - temporary-congestion	
		2 - local-limit-exceeded	

The behavior of the AE for sending an association abort is summarized in next table

Table 137: Association Abort Policies

Source	Reason/Diagnosis	Behavior
0 - DICOM UL service-user (initiated abort)	0 - reason-not-specified	
2 - DICOM UL service-provider (initiated abort)	0 - reason-not-specified	
	1 - unrecognized-PDU	
	2 - unexpected-PDU	
	4 - unrecognized-PDU parameter	
	5 - unexpected-PDU parameter	
	6 - invalid-PDU-parameter value	

4.2.4.4.1. (Real-World) Activity – Verification as SCP

4.2.4.4.1.1. Description and Sequencing of Activities

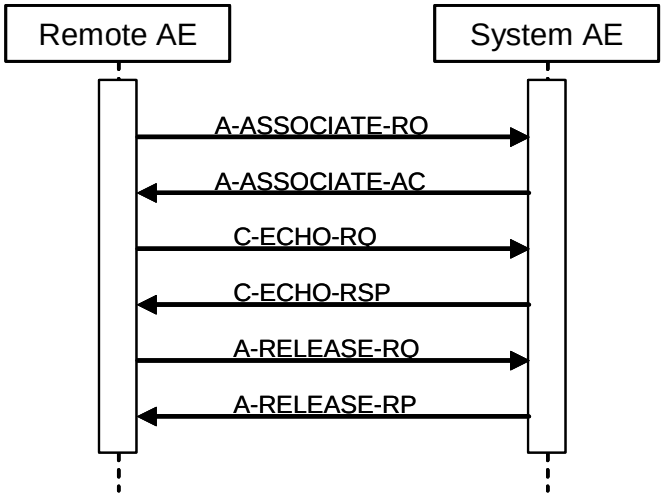

Figure 28: RWA – Verification as SCP

The ELEVA Digital Detector AE accepts associations from systems that wish to verify application level communication using the C-ECHO command.

4.2.4.4.1.2. Accepted Presentation Contexts

The presentation contexts are defined in next table.

Table 138: Acceptable Presentation Contexts for (Real-World) Activity – Verification as SCP

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Verification SOP Class	1.2.840.10008.1.1	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.4.4.1.3. SOP Specific Conformance for Verification SOP Class

This section includes the SOP specific behavior, i.e. error codes, error and exception handling, time-outs, etc.
Behavior of an Application Entity SOP class is summarized as shown in next Table. The standard as well as the manufacturer specific status codes and their corresponding behavior are specified.

4.2.4.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

This section includes the dataset specific behavior, i.e. error codes, error and exception handling, time-outs, etc.

Table 139: C-ECHO-RSP Status Response

Service Status	Code	Further Meaning	Behavior
Success	0000	Verification is complete	The Eleva Workspot has successfully received the verification request.

Table 140: DICOM Command Communication Failure Behavior

Exception	Behavior
Timeout	The Association is aborted using AP-ABORT and command marked as failed. The reason is logged and reported to the user.
Association aborted	The command is marked as failed. The reason is logged and reported to the user.

4.3. Network Interfaces

4.3.1. Physical Network Interfaces

The System provides only DICOM V3.0 TCP/IP Network Communication Support as defined in PS 3.8 of the standard.
TCP/IP is the only protocol stack supported.
Supported physical medium include:
IEEE 802.3-1995, 10BASE-T
IEEE 802.3-1995, 100BASE-TX (Fast Ethernet)
IEEE 802.3, 1000BASE-X (Fiber Optic Gigabit Ethernet).

The TCP/IP Stack as supported by the underlying Operating System.
The API is the WinSock 2 interface as supported by the underlying Operating System.

4.3.2. Additional Protocols

Not applicable

4.4. Configuration

Any implementation's DICOM conformance may be dependent upon configuration, which takes place at the time of installation. Issues concerning configuration are addressed in this section.

4.4.1. AE Title/Presentation Address Mapping

An important installation issue is the translation from AE title to presentation address. How this is to be performed is described here.

4.4.1.1. Local AE Titles

The local AE title mapping and configuration are specified as:

Table 141: AE Title configuration table

Application Entity	Default AE Title	Default TCP/IP Port
EasyDiagnost Eleva ACP AE	<IP host name EasyDiagnost Eleva ACP>	3010
EasyDiagnost Eleva RIS AE	<IP host name EasyDiagnost Eleva RIS >	Configurable

4.4.1.2. Remote AE Title/Presentation Address Mapping

The configuration of the remote application is specified here.

4.4.2. Parameters

The specification of important operational parameters, and if configurable, their default value and range, are specified here.

Table 142: Configuration Parameters table

Parameter	Configurable	Default Value
General Parameter		
Time-out waiting for acceptance or rejection Response to an Association Open Request (Application Level timeout)	Yes	0 (unlimited)
General Dimse level time-out values (Verification, Storage, Storage Commitment)		
Time-out for response to TCP/IP connect request. (Low-level timeout)		
Time-out waiting for acceptance of a TCP/IP message over the network (Low-level timeout)		

Parameter	Configurable	Default Value
Time-out for waiting for data between TCP/IP packets. (Low-level timeout)		
Any changes to default TCP/IP settings, such as configurable stack parameters.		
AE Specific Parameters		
Size constraint in maximum object size		
Maximum PDU size the ED Eleva RIS AE and ED Eleva Digital Detector AE can receive		16384
Maximum PDU size the ED Eleva RIS AE and ED Eleva Digital Detector AE can send		16384
Maximum PDU size the EasyDiagnost DI AE can receive		28672
Maximum PDU size the EasyDiagnost DI AE can send		28672
Maximum PDU size the EasyDiagnost Eleva ACP AE and Media AE can receive		32768
Maximum PDU size the EasyDiagnost Eleva ACP AE and Media AE can send		32768
AE specific DIMSE level time-out values		
GUI user readable string for remote AE titles		
Storage Specific Parameters		
Automatic Transfer (on, off)		
Export Filter		
Confidentiality		
Export private Attributes		
Storage Commitment Specific Parameters		
Storage Commitment N-Event Timeout		
Storage Commitment Retry Count		
Storage Commitment N-Action Delay		
Storage Commitment Retry Timeout		
Basic Worklist Management Specific Parameters		
Date Range		
Background Query		
Wildcard Query		
Maximum items Query (Limit before Cancellation)		
Query Modality Type		
Print Management Specific Parameters		
Retries		
Delay between retries		

5. Media Interchange

5.1. Implementation model

The implementation model identifies the DICOM Application Entities for Media in specific implementation and relates the Application Entities to Real-World Activities.

5.1.1. Application Data Flow Diagram

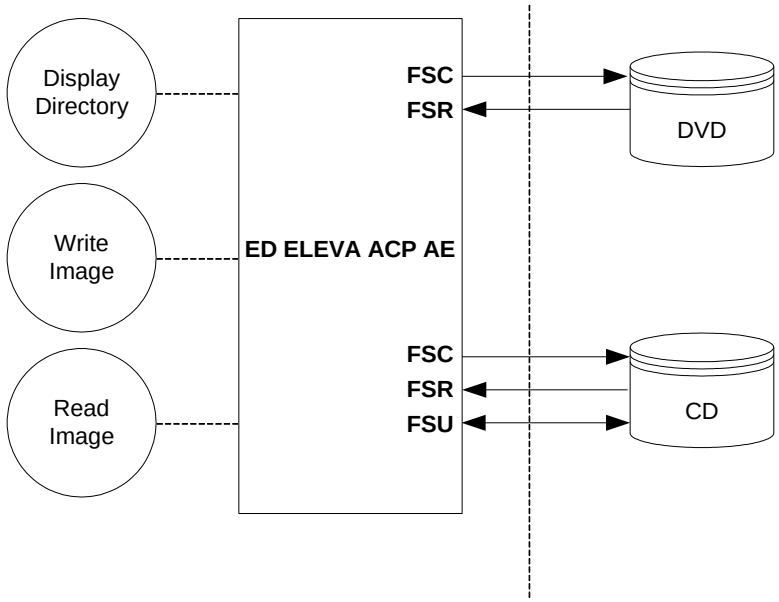

Figure 29: Application Data Flow Diagram Media

The EasyDiagnost Eleva ACP will act as a FSR, for CD-R and DVD, when reading the directory of the medium

Table 143: Media Services Table

Ma Storage Application	Write Files (FSC / FSU)	Read Files (FSR)
General Purpose CD-R	YES / YES	YES
General Purpose DVD-JPEG	YES / NO	YES

The EasyDiagnost Eleva ACP will act as a FSC / FSU for a CD-R and as FSC for DVD, when writing the selected images in a patient folder onto the medium.
EasyDiagnost Eleva ACP AE supports the media profiles as shows in the next Table.

Table 144: Media Profiles supported by ED Eleva

Application Profile	CD	DVD+RW / DVD+R
General Purpose	STD-GEN-CD	STD-GEN-DVD

Note; DVD-R and DVD-RW can be read but are not supported for writing.

Supported Photometric Interpretations
The ED ELEVA supports images with the following DICOM Photometric Interpretations as shows in the Table below:

Table 145: Photometric interpretations supported by ED Eleva

Photometric Interpretation	Read	Write	Viewing
MONOCHROME1	YES	YES	YES
MONOCHROME2	YES	YES	YES
PALETTE COLOR	YES	YES	NO
RGB	YES	YES	YES
YBR_FULL	YES	YES	NO
YBR_FULL_422 (see note)	YES	YES	NO
YBR_PARTIAL_422	YES	YES	NO
YBR_RCT	YES	YES	NO
YBR_ICT	YES	YES	NO

Note: if the photometric interpretation YBR_FULL_422 is used in combination with transfer syntax JPEG-lossy then the pixel data is converted to RGB on import.
The system proposes the transfer syntaxes mentioned in Table below.

Table 146: Tranfer Syntaxes of DVD/CD supported by ED Eleva

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List (note)	UID List		
See Note	See Note	ILE ELE EBE	1.2.840.10008.1.2 1.2.840.10008.1.2.1 1.2.840.10008.1.2.2	SCU	None

Note: any of the standard image storage and private SOP classes mentioned before. The preferred transfer syntax is ELE.

ED ELEVA supports images with Lossy image compression via JPEG as described as shows in the Table below.

Table 147: JPEG coding supported by EasyDiagnost Eleva ACP AE

DICOM Transfer Syntax UID	JPEG coding process	JPEG description
1.2.840.10008.1.2.4.50	1	Lossy, Baseline (JPEG 8 Bit Image Compression)

Note: Lossy Compression is only supported for images with photometric interpretation RGB and YBR_FULL_422 and therefore EasyDiagnost Eleva ACP AE supports this only for Ultrasound Images.

5.1.2. Functional Definitions of AE's

This session contains a functional definition for each local Application Entity. It describes in general terms the functions to be performed by the AE, and the DICOM services used to accomplish these functions.

The EasyDiagnost Eleva ACP is the one and only application entity within ED ELEVA. It includes the following service class.

Media Storage Service Class for CD and DVD.

The EasyDiagnost Eleva ACP can perform the CD-R media Storage service as SCU, with capabilities for:
RWA Display Directory (as FSR),
RWA Write Images (as FSC / FSU), and
RWA Read Images (as FSR).
For DVD the EasyDiagnost Eleva ACP can perform the media Storage service as SCU, with capabilities for:
RWA Display Directory (as FSR),

RWA Write Images (as FSC), and
RWA Read Images (as FSR).

5.1.3. Sequencing of Real World Activities

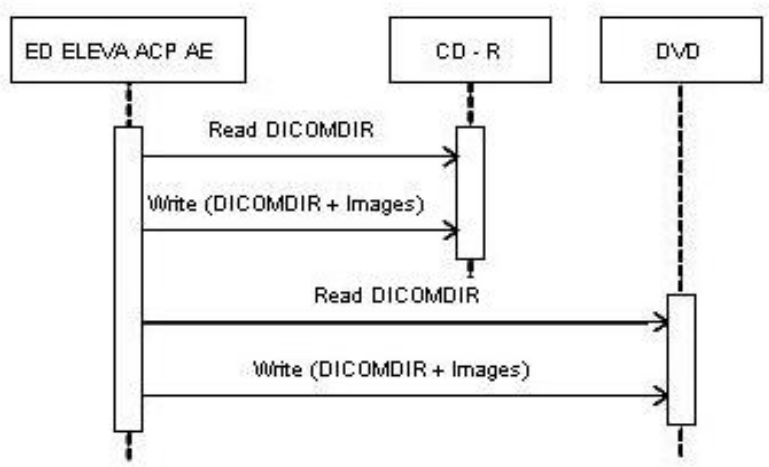

Figure 30: RWA – Media Interchange

Whenever a CD or DVD has to written the EasyDiagnost Eleva ACP first tries to read the DICOMDIR. The EasyDiagnost Eleva ACP will compile the updated DICOMDIR and any required DICOM images into a CD or DVD session image; this CD or DVD session image will be written to CD or DVD disk

5.2. AE Specifications

This section in the DICOM Conformance Statement specifies a set of Media Application Entities.

5.2.1. ED Eleva ACP AE Media - Specification

Table 148: AE ED Eleva ACP AE related Application Profiles, RWA activities and roles

Supported Application Profile	Identifier	Real-World Activities	Roles
General Purpose CD-R Interchange	STD-GEN-CD	Update File-set	FSU
		Create File-set	FSC
		Read File-set	FSR
General Purpose DVD Interchange with JPEG	STD-GEN-DVD-JPEG	Update File-set	FSU
		Create File-set	FSC
		Read File-set	FSR
General Purpose USB Media Interchange with JPEG	STD-GEN-USB-JPEG	Update File-set	FSU
		Create File-set	FSC
		Read File-set	FSR

5.2.1.1. File Meta Information for the ACP AE

This next table specified the list of values assigned to the File Meta Information attributes that pertain to the Implementation Class and Version

Table 149: File Meta Information for the ED Eleva ACP AE

Implementation Class UID	1.3.46.670589.5.2.23
Implementation Version Name	ViewForum R6.3

5.2.1.2. Real-World Activities

The AE specification contains a description of the Real-World Activities, which invoke the particular AE.

5.2.1.2.1. RWA - Read File-set

This Media Application Entity has a File-set Reader functionality which is describe here.

When an image transfer from CD-R or DVD is initiated then the EasyDiagnost Eleva ACP acts as an FSR using the interchange option to import SOP Instances from the CD-R / DVD medium.

5.2.1.2.1.1. Media Storage Application Profile

The EasyDiagnost Eleva ACP supports the RWA Read Images for the STD-GEN-CD and STD-GEN-DVD-JPEG Application Profile.

5.2.1.2.1.1.1. Options

The mandatory attributes of the DICOM images are required for the correct storage of the images in the EasyDiagnost Eleva ACP internal image database.

Optional attributes and Retired / Private attributes are stored too – if present; this is equivalent with the level 2 (Full) conformance for the Storage service class in the Network support.

The same remarks as in section imported images about the storage of images and about requirements to process read images via the dictated EasyDiagnost Eleva ACP application functions are applicable

5.2.1.2.2. RWA - Create File-set

This Media Application Entity has a File-set Creator functionality which is described here.

When an image transfer to CD-R or DVD is initiated then the EasyDiagnost Eleva ACP acts as an FSC or FSU (CD-R only) use the interchange option to export SOP Instances from the local database to a CD-R or DVD medium

5.2.1.2.2.1. Media Storage Application Profile

The Application Profile that is used by this Media Application Entity is specified in this section.

5.2.1.2.2.1.1. Options

The DICOMDIR file will be extended when new images are written. In case some attributes are not present in an image but are specified as mandatory in the DICOMDIR definition in DICOM media, a generated value will be filled in.

5.2.1.2.3. RWA - Update File-set

When an image transfer to CD-R or DVD is initiated then the EasyDiagnost Eleva ACP acts as an FSC or FSU (CD-R only) use the interchange option to export SOP Instances from the local database to a CD-R or DVD medium.

5.2.1.2.3.1. Media Storage Application Profile

The Application Profile that is used by this Media Application Entity is specified in this section.

5.2.1.2.3.1.1. Options

The DICOMDIR file will be extended when new images are written. In case some attributes are not present in an image but are specified as mandatory in the DICOMDIR definition in DICOM media, a generated value will be filled in.

5.3. Augmented and Private Application Profiles

Not applicable.

5.4. Media Configuration

Any implementation's DICOM conformance may be dependent upon configuration that takes place at the time of installation. Issues concerning configuration are addressed in this section.

6. Support of Character Sets

Any support for character sets beyond the default character repertoire in Network and Media services is described here.

Table 150: Supported DICOM Character Sets of Easy Diagnost Eleva

Character Set Description	Defined Term	ESC Sequence	ISO Registration Number	Code Element	Character Set
Latin alphabet No. 1	ISO 2022 IR 100	ESC 02/08 04/02	ISO-IR 6	G0	ISO 646
		ESC 02/13 04/01	ISO-IR 100	G1	Supplementary set of ISO 8859
Latin alphabet No. 1	ISO_IR 100	-	ISO-IR 6	G0	ISO 646
		-	ISO-IR 100	G1	Supplementary set of ISO 8859

When the ELEVA EDI System receives images with undefined character set then the import will be terminated with error status code.
The default factory settings for the WLM query request attribute "Specific Character Set" (0008,0005) is "NO" and should be configured to "YES" for support of the "" (27H) character.
The following notes apply for II-TV acquisitions only.

Note that character with hexadecimal value B6 is supported, but on acquisition monitor it is shown as the pi character.

The characters with following hexadecimal values are partly supported. For display on acquisition monitor such values are translated into upside down question marks "¿". For DICOM export the original values are used.

A0, A6, A8, A9, AD, AE, AF,
B1, B4, B8, B9, BE,
C0, C1, C2, C3, C8, CA, CB, CC, CD, CE, CF,
D0, D2, D3, D4, D5, D9, DA, DB, DD, DE,
E3,
F0, F5, FD, FE

The characters in the following range of hexadecimal values are not supported. Initiation of an acquisition using any of these characters will be rejected and logged.

00..1F, 7F..9F

7. Security

7.1. Security Profiles

EasyDiagnost Eleva 5.0 conforms to the IHE Basic Security Integration Profile.

EasyDiagnost Eleva 5.0 allows the use of either a conventional (non-secure) DICOM communication or a secure DICOM communication based on the Transport Layer Security (TLS) protocol. If configured EasyDiagnost Eleva 5.0 supports the following security measures:

- secure authentication of a node
- integrity and confidentiality of transmitted data
- confidentiality of data on DICOM Media
- generation of audit trail records access control and user authentication

Note:

Security profiles are applicable to EasyDiagnost Eleva EDI and EasyDiagnost Eleva optional wall stand configurations only.

For EasyDiagnost Eleva DI Configuration security profiles are not supported

7.1.1. Security use Profiles

Not applicable

7.1.2. Security Transport Connection Profiles

EasyDiagnost Eleva 5.0 conforms to the Basic TLS Secure Transport Connection Profile.

EasyDiagnost Eleva 5.0 initiates TLS Connections and accepts TLS Connections with Storage Commitment. TLS ports are configurable.

EasyDiagnost Eleva 5.0 provides a service accessible tool to configure private keys and certificates of the local and remote DICOM nodes.

Secure communication is a “mode of operation” of EasyDiagnost Eleva 5.0 supported by the implementation of the DICOM Basic TLS Secure Transport Connection Profile. This functionality will be used by the nodes that can authenticate each other before they exchange DICOM information. For secure communication the TLS protocol v1.0 is used which provides message authentication, integrity, and confidentiality. Confidentiality is optional and can be controlled by the encryption settings.

EasyDiagnost Eleva 5.0 may communicate using the following Cipher Suites:
TLS_RSA_WITH_NULL_SHA (Node authentication without encryption)
TLS_RSA_WITH_3DES_SHA (Node authentication with encryption)

EasyDiagnost Eleva 5.0 supports X.509 certificates. The following TLS Certification checks will be done (TLS Handshake). The machine (either server or client) that will send its certificate will:

- Choose the certificate according to Common Name (CN) value in the Subject-field. This name is case-sensitive. All present certificates should have unique CN names.

- The server verifies
    - that the client certificate is a X.509 certificate which is not tampered with
    - that the client certificate is in the list of trusted certificates
    - that the client certificate is not expired (present time is between "Valid From" and "Valid To" fields of the X.509 certificate)
    - that the client certificate has the correct purpose (at least the Client Authentication purpose)

- The client verifies
  - that the server certificate is a X.509 certificate which is not tampered with
  - that the server certificate is in the list of trusted certificates
  - that the server certificate is not expired (present time is between "Valid From" and "Valid To" fields of the X.509 certificate)
  - that the server certificate has the correct purpose (at least Server Authentication purpose)

No verification is done on:
- revocation of certificates
- limiting the connection to a limited set of IP-addresses

Node authentication with or without encryption is only possible when both nodes have:
- an access to their own private keys
- an access to a copy of the certificate of the other node containing its public key

Figure below presents the message flow of TLS handshake supported by EasyDiagnost Eleva 5.0

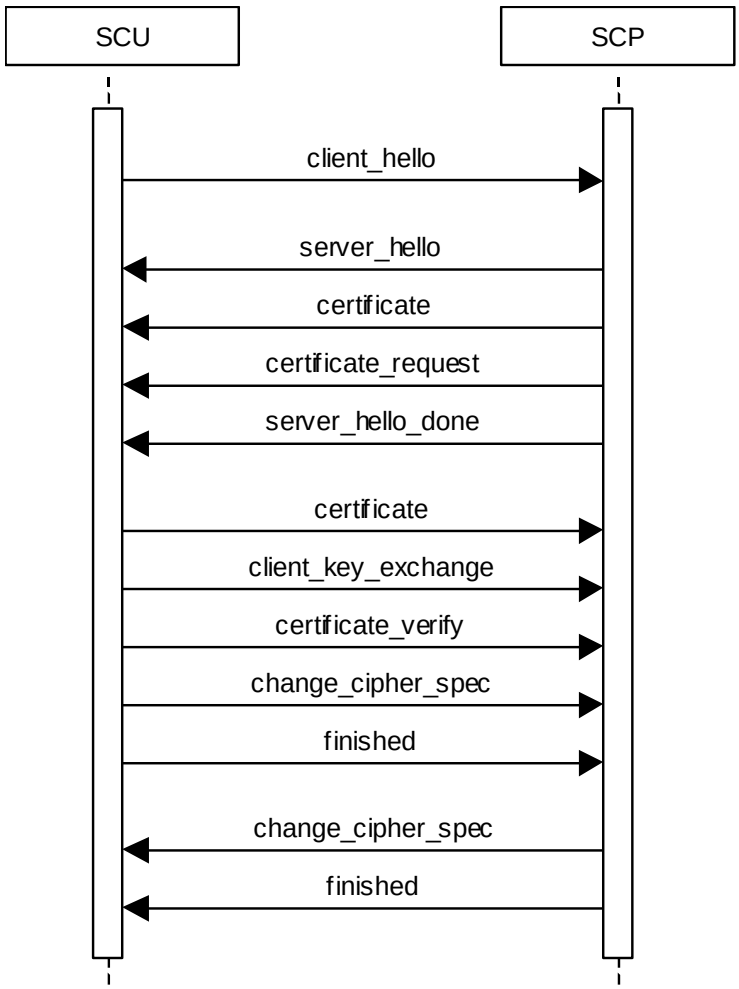

Figure 31: Message flow of TLS handshake

7.1.3. Digital Signature Profiles

Not applicable

7.1.4. Media Storage Security Profiles

Not applicable

7.1.5. Attribute Confidentiality Profiles

EasyDiagnost Eleva 5.0 conforms to the Basic Application Level Confidentiality Profile as de-identifier.

De-identified SOP Instances will be created on DICOM Media if specified by the user.

No instances of the Encrypted Attributes Data Set are created. No Transfer Syntaxes are supported for encoding/decoding of Encrypted Attributes Data Sets.

Table 14958 lists the protected attributes as defined in [DICOM], Part 15. It may contain attributes which are currently not part of images created by EasyDiagnost Eleva 5.0. The terms used to describe the replacement value can be read as follows:

empty	The attribute will have a value of zero length.
n. a.	Not applicable, the attribute is not contained in the standard IOD of EasyDiagnost Eleva 5.0
anon string	The original value is mapped onto a string with a length of max 12 characters UID using the procedure described below.
anon UID	The original value is mapped onto a syntactically valid DICOM UID using the procedure described below.

The above mentioned mapping procedure works as follows:

- The original value is taken as a string of arbitrary length.
- This string is mapped onto a 16-byte value using MD5 hash.
- From this value only the first 8 bytes are used further.
    - To create an anon string these first 8 bytes are mapped onto a 12 characters long string using base 64.
    - To create an anon UID the 8 bytes are read as two integers which are used together with the Implementation Class UID and the device serial number to create a valid DICOM UID: (ImplClassUID).(DevSerialNu).2.Integer(byte[0-3]).Integer(byte[4-7])

MD5 hash makes practically sure that different strings are mapped to different 16-byte values. So the whole procedure ensures that the relationship between SOP Instances by the means of their UIDs remains consistent.

Table 151: Basic Application Level Confidentiality Profile Attributes

Attribute Name	Tag	Replacement Value
Instance Creator UID	0008,0014	anon UID
SOP Instance UID	0008,0018	anon UID
Accession Number	0008,0050	empty
Institution Name	0008,0080	empty
Institution Address	0008,0081	empty
Referring Physician's Name	0008,0090	empty
Station Name	0008,1010	empty
Study Description	0008,1030	empty
Series Description	0008,103E	empty
Institutional Department Name	0008,1040	empty
Physician(s) of Record	0008,1048	empty
Performing Physicians' Name	0008,1050	empty
Name of Physician(s) Reading Study	0008,1060	empty
Operators' Name	0008,1070	empty
Admitting Diagnoses Description	0008,1080	empty
Referenced SOP Instance UID	0008,1155	anon UID
Derivation Description	0008,2111	empty

Attribute Name	Tag	Replacement Value
Patient's Name	0010,0010	empty
Patient ID	0010,0020	anon ID
Patient's Birth Date	0010,0030	empty
Patient's Birth Time	0010,0032	empty
Patient's Sex	0010,0040	empty
Other Patient Ids	0010,1000	empty
Other Patient Names	0010,1001	empty
Patient's Age	0010,1010	empty
Patient's Size	0010,1020	empty
Patient's Weight	0010,1030	empty
Ethnic Group	0010,2160	empty
Occupation	0010,2180	empty
Additional Patient's History	0010,21B0	empty
Patient Comments	0010,4000	empty
Device Serial Number	0018,1000	anon string
Protocol Name	0018,1030	empty
Study Instance UID	0020,000D	anon UID
Series Instance UID	0020,000E	anon UID
Study ID	0020,0010	anon string
Frame of Reference UID	0020,0052	anon UID
Image Comments	0020,4000	empty
Requesting Physician	0032,1032	empty
Requested Attributes Sequence	0040,0275	empty Sequence
Requested Procedure ID	0040,1001	anon ID
UID	0040,A124	anon UID
Content Sequence	0040,A730	empty
Storage Media File-set UID	0088,0140	anon UID

No attributes or attribute values are inserted.

7.1.6. Network Address Management Profiles

Not applicable

7.1.7. Time Synchronization Profiles

EasyDiagnost Eleva 5.0 conforms to the Basic Time Synchronization Profile as NTP Client.

EasyDiagnost Eleva 5.0 does support secure transactions.

7.1.8. Application Configuration Management Profiles

Not applicable

7.1.9. Audit Trail Profiles

EasyDiagnost Eleva 5.0 creates audit messages according to the IHE Basic Security Integration Profile. These messages may contain information that identifies the patient. The following messages will be created and sent to a central Audit Record Repository:

- ActorConfig (when security or networking configuration of the EasyDiagnost Eleva 5.0 is modified via the field service functionality).

- ActorStartStop (when EasyDiagnost Eleva 5.0 starts or shuts down).
- BeginStoringInstances (when an examination is transferred from the EasyDiagnost Eleva 5.0 to a remote network node).
- DICOMInstancesDeleted (when an examination is deleted for the internal database).
- DICOMInstancesUsed (when an examination is selected in the patient list).
- UserAuthenticated (when the user logs in or logs out).
- SecurityAlert (when an authentication of a secure node during TLS negotiation fails, e.g. due to an invalid certificate).
- Export (when printing job is started).

The time that is part of the audit message is the time provided by the NTP Server.

7.2. Association Level Security

Not applicable.

7.3. Application Level Security

EasyDiagnost Eleva 5.0 does not support any specific application level security measures.

The Application which gives access to Patient records and DICOM communication requires Login with Username and Password.

The system is used within a secured environment. It is assumed that a secured environment includes at a minimum:

- Firewall or router protections to ensure that only approved external hosts have network access to Essenta DR Compact 1.0.
- Firewall or router protections to ensure that EasyDiagnost Eleva 5.0 only has network access to approved external hosts and services.
- Any communication with external hosts outside the locally secured environment can be configured to use secure network channels.
- A local Anti Virus client should be installed to protect against malicious software.

Other network security procedures such as automated intrusion detection may be appropriate in some environments.

Additional security features may be established by the local security policy and are beyond the scope of this conformance statement.

8. Annexes of "EASYDIAGNOST ELEVA DI APPLICATION ENTITY (ED ELEVA DI AE)"

8.1. IOD Contents

8.1.1. Created SOP Instance

This section specifies each IOD created by this application.

This section specifies each IOD created (including private IODs). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

ALWAYS	The module is always present
CONDITIONAL	The module is used under specified condition

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS	The attribute is always present with a value
EMPTY	The attribute is always present without any value (attribute sent zero length)
VNAP	The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present)
ANAP	The attribute is present under specified condition – if present then it will always have a value
ANAPCV	The attribute is present under specified condition – if present then its Value is Not Always Present (attribute sent zero length if condition applies and no value is present)
ANAPEV	The attribute is present under specified condition – if present then it will not have any value

The abbreviations used in the Module table for the column "Source" are:

AUTO	The attribute value is generated automatically
CONFIG	The attribute value source is a configurable parameter
COPY	The attribute value source is another SOP instance
FIXED	The attribute value is hard-coded in the application
IMPLICIT	The attribute value source is a user-implicit setting
MPPS	The attribute value is the same as that use for Modality Performed Procedure Step
MWL	The attribute value source is a Modality Worklist
USER	The attribute value source is explicit user input

8.1.1.1. List of created SOP Classes

Table 152: List of created SOP Classes

SOP Class Name	SOP Class UID
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1
Specialized PMS X-Ray Image Store (Private)	1.3.46.670589.2.3.1.1
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2

8.1.1.2. Secondary Capture Image Storage SOP Class

Table 153: IOD of Created Secondary Capture Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Equipment	SC Equipment Module	ALWAYS
Image	SC Image Module	ALWAYS
Image	VOI LUT Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 154: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient ID	0010,0020	LO		VNAP	AUTO, MWL	Received from RIS or Entered by Operator
Patient's Birth Date	0010,0030	DA		VNAP	AUTO, MWL	Received from RIS or Entered by Operator
Patient's Name	0010,0010	PN		VNAP	AUTO, MWL	Received from RIS or Entered by Operator
Patient's Sex	0010,0040	CS		VNAP	AUTO, MWL	Received from RIS or Entered by Operator

Table 155: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Accession Number	0008,0050	SH		VNAP	AUTO	0 length if not received from RIS
Referring Physician's Name	0008,0090	PN		VNAP	AUTO	0 length if not received from RIS
Study Date	0008,0020	DA		VNAP	AUTO	
Study Description	0008,1030	LO		ANAP	AUTO	
Study ID	0020,0010	SH		VNAP	AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	Generated at the creation of the study or received from RIS
Study Time	0008,0030	TM		VNAP	AUTO	

Table 156: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Laterality	0020,0060	CS		ANAPCV	AUTO	0 Length, if value not present.
Modality	0008,0060	CS		ALWAYS	AUTO	
Performing Physician's Name	0008,1050	PN		VNAP	MWL, USER	Received from RIS, entered by user or is empty if not known

Series Date	0008,0021	DA		ANAP	AUTO	
Series Description	0008,103E	LO		ANAP	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Series Time	0008,0031	TM		ANAP	AUTO	
Performed Procedure Step Description	0040,0254	LO		ANAP	AUTO	From MPPS
Performed Procedure Step Start Date	0040,0244	DA		ANAP	AUTO	From MPPS
Performed Procedure Step Start Time	0040,0245	TM		ANAP	AUTO	From MPPS

Table 157: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Device Serial Number	0018,1000	LO		ANAPCV	AUTO	
Manufacturer	0008,0070	LO	Philips Medical Systems	VNAP	AUTO	
Manufacturer's Model Name	0008,1090	LO	Extended Digital Imaging	ANAPCV	AUTO	
Software Version(s)	0018,1020	LO	DSI 2.4.3 LUT 08-04-08 R6.1.8.0126	ANAPCV	AUTO	
Station Name	0008,1010	SH	Eleva	ANAPCV	AUTO, MWL	

Table 158: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		ANAPCV	AUTO	
Acquisition Number	0020,0012	IS		ANAPCV	AUTO	
Acquisition Time	0008,0032	TM		ANAPCV	AUTO	
Content Date	0008,0023	DA		ANAPCV	AUTO	
Content Time	0008,0033	TM		ANAPCV	AUTO	
Image Comments	0020,4000	LT		ANAPCV	AUTO	Contains also the DI image annotations on normal (i.e. non zoomed) images in the format --(x,y) text --. This attribute is not present if not entered by user and if no annotations are present.
Image Type	0008,0008	CS		ANAPCV	AUTO	
Instance Number	0020,0013	IS		VNAP	AUTO	
Patient Orientation	0020,0020	CS		ANAPCV	AUTO	0 length value, if value not present.

Table 159: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Bits Allocated	0028,0100	US	Value 1: 8	ALWAYS	AUTO	
Bits Stored	0028,0101	US	Value 1: 8	ALWAYS	AUTO	
Columns	0028,0011	US	Value 1: 512, 1024	ALWAYS	AUTO	
High Bit	0028,0102	US	Value 1: 7	ALWAYS	AUTO	

Photometric Interpretation	0028,0004	CS	Value 1: MONOCHROME2	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW /OB		ALWAYS	AUTO	
Pixel Representation	0028,0103	US	Value 1: 0	ALWAYS	AUTO	
Rows	0028,0010	US	Value 1: 512,1024	ALWAYS	AUTO	
Samples per Pixel	0028,0002	US	Value 1: 1	ALWAYS	AUTO	

Table 160: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Conversion Type	0008,0064	CS		ALWAYS	AUTO	
Modality	0008,0060	CS		VNAP	AUTO	
Secondary Capture Device Manufacturer	0018,1016	LO		VNAP	AUTO	
Secondary Capture Device Manufacturer's Model Name	0018,1018	LO		VNAP	AUTO	
Secondary Capture Device Software Version(s)	0018,1019	LO		VNAP	AUTO	

Table 161: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA		ANAPCV	AUTO	
Time of Secondary Capture	0018,1014	TM		ANAPCV	AUTO	

Table 162: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS		ANAP	AUTO	
Window Width	0028,1051	DS		ANAP	AUTO	

Table 163: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Specific Character Set	0008,0005	CS		ANAP	AUTO	

8.1.1.3. Softcopy Presentation State Storage SOP Class

Table 164: IOD of Created Softcopy Presentation State Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Presentation State	Display Shutter Module	CONDITIONAL
Presentation State	Displayed Area Module	ALWAYS
Presentation State	Graphic Annotation Module	CONDITIONAL

Presentation State	Graphic Layer Module	CONDITIONAL
Presentation State	Softcopy Presentation LUT Module	ALWAYS
Presentation State	Softcopy VOI LUT Module	CONDITIONAL
Series	Presentation Series Module	ALWAYS
Presentation State	Presentation State Identification Module	ALWAYS
Presentation State	Presentation State Relationship Module	ALWAYS
Presentation State	SOP Common Module	ALWAYS

Table 165: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient ID	0010,0020	LO		VNAP	MWL, USER	Primary hospital identification number or code for the patient
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	Birth date of the patient
Patient's Name	0010,0010	PN		VNAP	MWL, USER	Patient’s full name
Patient's Sex	0010,0040	CS		VNAP	MWL, USER	Received by RIS or entered by the operator

Table 166: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Accession Number	0008,0050	SH		VNAP	AUTO	
Referring Physician's Name	0008,0090	PN		VNAP	AUTO	
Study Date	0008,0020	DA		VNAP	AUTO, MWL, USER	
Study Description	0008,1030	LO		VNAP	USER	
Study ID	0020,0010	SH		VNAP	AUTO, MWL, USER	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO, MWL	
Study Time	0008,0030	TM		VNAP	AUTO, MWL, USER	

Table 167: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Laterality	0020,0060	CS		ANAPCV	AUTO	
Modality	0008,0060	CS		ALWAYS	AUTO, MWL	
Performing Physician's Name	0008,1050	PN		ANAPCV	MWL, USER	
Protocol Name	0018,1030	LO		ANAPCV	AUTO, MWL	
Series Date	0008,0021	DA		ANAPCV	AUTO	
Series Description	0008,103E	LO		ANAPCV	AUTO, MWL	

Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Series Time	0008,0031	TM		ANAPCV	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAPCV	AUTO, MWL	
Performed Procedure Step Start Date	0040,0244	DA		ANAPCV	AUTO, MWL	
Performed Procedure Step Start Time	0040,0245	TM		ANAPCV	AUTO, MWL	

Table 168: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Device Serial Number	0018,1000	LO		ANAPCV	AUTO	
Manufacturer	0008,0070	LO	Philips Medical Systems	VNAP	AUTO	
Manufacturer's Model Name	0008,1090	LO	Extended Digital Imaging	ANAPCV	AUTO	
Software Version(s)	0018,1020	LO	DSI 2.4.3 LUT 08-04-08 R6.1.8.0126	ANAPCV	AUTO	
Station Name	0008,1010	SH	Eleva	ANAPCV	AUTO, MWL	

Table 169: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Center of Circular Shutter	0018,1610	IS		ANAP	AUTO	
Radius of Circular Shutter	0018,1612	IS		ANAP	AUTO	
Shutter Left Vertical Edge	0018,1602	IS		ANAP	AUTO	
Shutter Lower Horizontal Edge	0018,1608	IS		ANAP	AUTO	
Shutter Right Vertical Edge	0018,1604	IS		ANAP	AUTO	
Shutter Shape	0018,1600	CS		ALWAYS	AUTO	
Shutter Upper Horizontal Edge	0018,1606	IS		ANAP	AUTO	

Table 170: Displayed Area Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Displayed Area Selection Sequence	0070,005A	SQ		ALWAYS	AUTO	
>Displayed Area Bottom Right Hand Corner	0070,0053	SL	Value 1: 1024, Value 2: 1024	ALWAYS	AUTO	
>Displayed Area Top Left Hand Corner	0070,0052	SL	Value 1: 1, Value 2: 1	ALWAYS	AUTO	
>Presentation Pixel Aspect Ratio	0070,0102	IS		ANAP	AUTO	
>Presentation Pixel Spacing	0070,0101	DS	Value 1: 1,1	ANAP	AUTO	
>Presentation Size Mode	0070,0100	CS	Value 1: MAGNIFY, SCALE TO FIT, TRUE SIZE	ALWAYS	AUTO	

Table 171: Graphic Annotation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Graphic Annotation Sequence	0070,0001	SQ		ALWAYS		
>Graphic Layer	0070,0002	CS		ALWAYS		

>Graphic Object Sequence	0070,0009	SQ		ANAP		
>>Graphic Annotation Units	0070,0005	CS		ALWAYS		
>>Graphic Data	0070,0022	FL		ALWAYS		
>>Graphic Dimensions	0070,0020	US		ALWAYS		
>>Graphic Filled	0070,0024	CS		ANAP		
>>Graphic Type	0070,0023	CS		ALWAYS		
>>Number of Graphic Points	0070,0021	US		ALWAYS		
>Referenced Image Sequence	0008,1140	SQ		ANAP		
>>Referenced SOP Class UID	0008,1150	UI		ALWAYS		
>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS		
>Text Object Sequence	0070,0008	SQ		ANAP		
>>Anchor Point	0070,0014	FL		ANAP		
>>Anchor Point Annotation Units	0070,0004	CS		ANAP		
>>Anchor Point Visibility	0070,0015	CS		ANAP		
>>Bounding Box Annotation Units	0070,0003	CS		ANAP		
>>Bounding Box Bottom Right Hand Corner	0070,0011	FL		ANAP		
>>Bounding Box Text Horizontal Justification	0070,0012	CS		ANAP		
>>Bounding Box Top Left Hand Corner	0070,0010	FL		ANAP		
>>Unformatted Text Value	0070,0006	ST		ALWAYS		

Table 172: Graphic Layer Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Graphic Layer Sequence	0070,0060	SQ		ALWAYS	AUTO	
>Graphic Layer	0070,0002	CS		ALWAYS	AUTO	

Table 173: Softcopy Presentation LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Presentation LUT Shape	2050,0020	CS		ANAP	AUTO	
Presentation LUT Sequence	2050,0010	SQ		ANAP	AUTO	
>LUT Data	0028,3006	US/ SS		ALWAYS		
>LUT Descriptor	0028,3002	US/ SS		ALWAYS		

Table 174: Softcopy VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Softcopy VOI LUT Sequence	0028,3110	SQ		ALWAYS	AUTO	
>Window Center	0028,1050	DS		ANAP	AUTO	
>Window Width	0028,1051	DS		ANAP	AUTO	

Table 175: Presentation Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS		ALWAYS	AUTO	

Table 176: Presentation State Identification Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Presentation Creation Date	0070,0082	DA		ALWAYS	AUTO	
Presentation Creation Time	0070,0083	TM		ALWAYS	AUTO	
Content Creator's Name	0070,0084	PN		VNAP	AUTO	
Content Description	0070,0081	LO		VNAP	AUTO	
Content Label	0070,0080	CS		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	

Table 177: Presentation State Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment

Table 178: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Specific Character Set	0008,0005	CS		ANAP	AUTO	

8.1.1.4. Specialized PMS X-Ray Image Store (Private)

Table 179: IOD of Created Specialized PMS X-Ray Image Storage Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	Multi-Frame Module	ALWAYS
Image	Display Shutter Module	ALWAYS
Image	X-Ray Image Module	ALWAYS
Image	X-Ray Acquisition Module	ALWAYS
Image	XRF Positioner Module	
Image	VOI LUT Module	
Image	SOP Common Module	

Table 180: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient ID	0010,0020	LO		VNAP	MWL, USER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Name	0010,0010	PN		VNAP	MWL, USER	

Patient's Sex	0010,0040	CS		VNAP	MWL, USER	

Table 181: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Accession Number	0008,0050	SH		VNAP	AUTO	
Referring Physician's Name	0008,0090	PN		VNAP	AUTO	
Study Date	0008,0020	DA		VNAP	AUTO	
Study Description	0008,1030	LO		ANAPCV	AUTO	
Study ID	0020,0010	SH		VNAP	AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study Time	0008,0030	TM		VNAP	AUTO	
Referenced Study Sequence	0008,1110	SQ		ANAPCV	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS		
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS		

Table 182: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Laterality	0020,0060	CS		ANAPCV	AUTO	
Modality	0008,0060	CS		ALWAYS	AUTO	
Performing Physician's Name	0008,1050	PN		ANAPCV	AUTO	
Protocol Name	0018,1030	LO		ANAPCV	AUTO	
Series Date	0008,0021	DA		ANAPCV	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Series Time	0008,0031	TM		ANAPCV	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAPCV	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS		
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS		
Performed Procedure Step Description	0040,0254	LO		ANAPCV	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAPCV	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		ANAPCV	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ANAPCV	AUTO	

Table 183: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Device Serial Number	0018,1000	LO		ANAPCV	AUTO	
Institution Name	0008,0080	LO		ANAPCV	AUTO	
Manufacturer	0008,0070	LO	Philips Medical Systems	VNAP	AUTO	
Manufacturer's Model Name	0008,1090	LO	Extended Digital Imaging	ANAPCV	AUTO	
Software Version(s)	0018,1020	LO	DSI 2.4.3 LUT 08-04-08 R6.1.8.0126	ANAPCV	AUTO	
Station Name	0008,1010	SH	Eleva	ANAPCV	AUTO	

Table 184: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		ANAPCV	AUTO	
Acquisition Number	0020,0012	IS		ANAPCV	AUTO	
Acquisition Time	0008,0032	TM		ANAPCV	AUTO	
Content Date	0008,0023	DA		ANAPCV	AUTO	
Content Time	0008,0033	TM		ANAPCV	AUTO	
Image Comments	0020,4000	LT		ANAPCV	AUTO	
Instance Number	0020,0013	IS		VNAP	AUTO	
Patient Orientation	0020,0020	CS		ANAPCV	AUTO	

Table 185: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Columns	0028,0011	US		ALWAYS		
Pixel Data	7FE0,0010	OW /OB		ANAP		
Rows	0028,0010	US		ALWAYS		

Table 186: Multi-Frame Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame Increment Pointer	0028,0009	AT		ALWAYS		
Number of Frames	0028,0008	IS		ALWAYS		

Table 187: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Center of Circular Shutter	0018,1610	IS		ANAP		
Radius of Circular Shutter	0018,1612	IS		ANAP		
Shutter Left Vertical Edge	0018,1602	IS		ANAP		
Shutter Lower Horizontal Edge	0018,1608	IS		ANAP		
Shutter Right Vertical Edge	0018,1604	IS		ANAP		
Shutter Shape	0018,1600	CS		ALWAYS		
Shutter Upper Horizontal Edge	0018,1606	IS		ANAP		

Table 188: X-Ray Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Bits Allocated	0028,0100	US		ALWAYS		
Bits Stored	0028,0101	US		ALWAYS		
High Bit	0028,0102	US		ALWAYS		
Image Type	0008,0008	CS		ALWAYS		
Photometric Interpretation	0028,0004	CS		ALWAYS		
Pixel Intensity Relationship	0028,1040	CS		ALWAYS		
Pixel Representation	0028,0103	US		ALWAYS		
Samples per Pixel	0028,0002	US		ALWAYS		

Table 189: X-Ray Acquisition Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Exposure	0018,1152	IS		ANAPCV		
Exposure Time	0018,1150	IS		ANAPCV		
Exposure Time in mS	0018,8150	DS		ANAPCV		
KVP	0018,0060	DS		VNAP		
Radiation Setting	0018,1155	CS		ALWAYS		
X-ray Tube Current	0018,1151	IS		ANAPCV		

Table 190: XRF Positioner Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Distance Source to Detector	0018,1110	DS		ANAPCV		

Table 191: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS		ANAP		
Window Width	0028,1051	DS		ANAP		

Table 192: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
SOP Class UID	0008,0016	UI		ALWAYS		
SOP Instance UID	0008,0018	UI		ALWAYS		
Specific Character Set	0008,0005	CS		ANAP		

8.1.1.5. Radiofluoroscopic Image Storage SOP Class

Table 193: IOD of Created Radiofluoroscopic Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	Display Shutter Module	
Image	X-Ray Image Module	ALWAYS
Image	X-Ray Acquisition Module	ALWAYS
Image	VOI LUT Module	
Image	SOP Common Module	

Table 194: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient ID	0010,0020	LO		VNAP	MWL, USER	Received from RIS or entered by operator

Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	Received from RIS or entered by operator
Patient's Name	0010,0010	PN		VNAP	MWL, USER	Received from RIS or entered by operator
Patient's Sex	0010,0040	CS		VNAP	MWL, USER	Received from RIS or entered by operator

Table 195: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Accession Number	0008,0050	SH		VNAP	AUTO, MWL	0 Length, if not received from RIS
Referring Physician's Name	0008,0090	PN		VNAP	AUTO, MWL	0 Length, if not received from RIS
Study Date	0008,0020	DA		VNAP	AUTO	
Study ID	0020,0010	SH		VNAP	AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study Time	0008,0030	TM		VNAP	AUTO	

Table 196: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Laterality	0020,0060	CS		ANAPCV	AUTO	0 Length, if value not present.
Modality	0008,0060	CS		ALWAYS	AUTO	
Performing Physician's Name	0008,1050	PN		ANAPCV	MWL	Received from RIS, entered by user or is empty if not known.
Protocol Name	0018,1030	LO		ANAPCV	AUTO	
Series Date	0008,0021	DA		ANAPCV	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Series Time	0008,0031	TM		ANAPCV	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAPCV	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS		
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS		
Request Attributes Sequence	0040,0275	SQ		ANAPCV	AUTO	
>Requested Procedure ID	0040,1001	SH		ANAP	AUTO	
>Scheduled Procedure Step Description	0040,0007	LO		ANAPCV	AUTO	
>Scheduled Procedure Step ID	0040,0009	SH		ANAP	AUTO	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAPCV	AUTO	
>>Code Meaning	0008,0104	LO		ALWAYS		
>>Code Value	0008,0100	SH		ALWAYS		
>>Coding Scheme Designator	0008,0102	SH		ALWAYS		
Performed Procedure Step Description	0040,0254	LO		ANAPCV	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAPCV	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		ANAPCV	AUTO	

Performed Procedure Step Start Time	0040,0245	TM		ANAPCV	AUTO	

Table 197: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Device Serial Number	0018,1000	LO		ANAPCV	AUTO	
Institution Name	0008,0080	LO		ANAPCV	AUTO	
Manufacturer	0008,0070	LO	Value 1: Philips Medical System	VNAP	AUTO	
Manufacturer's Model Name	0008,1090	LO	Value 1: Extended Digital Imaging	ANAPCV	AUTO	
Software Version(s)	0018,1020	LO	DSI 2.4.3 LUT 08-04-08 R6.1.8.0126	ANAPCV	AUTO	
Station Name	0008,1010	SH	Value 1: Eleva	ANAPCV	AUTO	

Table 198: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		ANAPCV	AUTO	
Acquisition Number	0020,0012	IS		ANAPCV	AUTO	
Acquisition Time	0008,0032	TM		ANAPCV	AUTO	
Content Date	0008,0023	DA		ANAPCV	AUTO	
Content Time	0008,0033	TM		ANAPCV	AUTO	
Image Comments	0020,4000	LT		ANAPCV	AUTO	
Instance Number	0020,0013	IS		VNAP	AUTO	
Patient Orientation	0020,0020	CS		ANAPCV	AUTO	

Table 199: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Columns	0028,0011	US	Value 1: 512, 1024	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW /OB		ALWAYS	AUTO	
Rows	0028,0010	US	Value 1: 512,1024	ALWAYS	AUTO	

Table 200: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Center of Circular Shutter	0018,1610	IS		VNAP	AUTO	
Radius of Circular Shutter	0018,1612	IS		VNAP	AUTO	
Shutter Left Vertical Edge	0018,1602	IS		VNAP	AUTO	
Shutter Lower Horizontal Edge	0018,1608	IS		VNAP	AUTO	
Shutter Right Vertical Edge	0018,1604	IS		VNAP	AUTO	
Shutter Shape	0018,1600	CS	Value 1: CIRCULAR, RECTANGULAR	ALWAYS	AUTO	
Shutter Upper Horizontal Edge	0018,1606	IS		VNAP	AUTO	

Table 201: X-Ray Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Bits Allocated	0028,0100	US	Value 1: 8	ALWAYS	AUTO	
Bits Stored	0028,0101	US	Value 1: 8	ALWAYS	AUTO	
High Bit	0028,0102	US	Value 1: 7	ALWAYS	AUTO	
Image Type	0008,0008	CS	Value 1: ORIGINAL, Value 2: PRIMARY, Value 3: SINGLE PLANE	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	Value 1: MONOCHROME2	ALWAYS	AUTO	
Pixel Intensity Relationship	0028,1040	CS	Value 1: DISP	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	Value 1: 0	ALWAYS	AUTO	
Samples per Pixel	0028,0002	US	Value 1: 1	ALWAYS	AUTO	

Table 202: X-Ray Acquisition Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Exposure	0018,1152	IS		ANAPCV	AUTO	
KVP	0018,0060	DS		VNAP	AUTO	Always 0 Lenth Value
Radiation Setting	0018,1155	CS	Value 1: GR, SC	ALWAYS	AUTO	

Table 203: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS		ANAP		
Window Width	0028,1051	DS		ANAP		

Table 204: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
SOP Class UID	0008,0016	UI		ALWAYS		
SOP Instance UID	0008,0018	UI		ALWAYS		
Specific Character Set	0008,0005	CS		ANAP		

8.1.2. Usage of Attributes from Received IOD

Not Applicable.

8.1.3. Attribute Mapping

The following table shows the relation between BWLM and MPPS and image storage attributes.

Table 205: Attribute Mapping during Modality Workflow

Name	BWLM Tag	MPPS		Image IOD Tag
		Create Tag	Set Tag	
Specific Character Set	0008,0005	-	-	0008,0005
Accession Number	0008,0050	0008,0050	-	0008,0050
Modality	0008,0060	0008,0060	-	0008,0060
Referring Physician's Name	0008,0090	-	-	0008,0090
Operators' Name	-	-	0008,1070	0008,1070

Name	BWLM Tag	MPPS		Image IOD Tag
		Create Tag	Set Tag	
Referenced Study Sequence	0008,1110	0008,1110	-	0008,1110
Referenced Image Sequence	0008,1150	0008,1140	0008,1140	0008,1140
> Referenced SOP Class UID SOP Class UID	-	0008,1150	0008,1150	0008,1150
> Referenced SOP Instance UID SOP Instance UID	-	0008,1155	0008,1155	0008,1155
Patient's Name	0010,0010	0010,0010	-	0010,0010
Patient ID	0010,0020	0010,0020	-	0010,0020
Patient's Birth Date	0010,0030	0010,0030	-	0010,0030
Patient's Sex	0010,0040	0010,0040	-	0010,0040
Other Patient IDs	0010,1000	-	-	0010,1000
Patient's Size	0010,1020	-	-	0010,1020
Patient's Weight	0010,1030	-	-	0010,1030
Patient's Telephone Numbers	0010,2154	-	-	0010,2154
Medical Alerts	0010,2000	-	-	0010,2000
Contrast Allergies	0010,2110	-	-	0010,2110
Ethnic group	0010,2160	-	-	0010,2160
Additional Patient History	0010,21B0	-	-	0010,21B0
Patient Comments	0010,4000	-	-	0010,4000
KVP	-	-	0018,0060	0018,0060
Protocol Name	-	-	0018,1030	0018,1030
Image Area Dose Product	-	-	0018,115E	0018,115E
Study Instance UID	0020,000D	0020,000D	-	0020,000D
Series Instance UID	-	-	0020,000E	0020,000E
Study ID	-	0020,0010	-	0020,0010
Requested Procedure Description	0032,1060	0032,1060	-	-
Scheduled Procedure Step Description	0040,0007	0040,0007	-	0040,0007
Performed Procedure Step Description	-	0040,0254	0040,0254	0040,0254
Scheduled Protocol Code Sequence	0040,0008	0040,0008	-	0040,0008
Performed Protocol Code Sequence	-	0040,0260	0040,0260	0040,0260
Scheduled Procedure Step ID	0040,0009	0040,0009	-	0040,0009
Performed Procedure Step Start Date	-	0040,0244	-	0040,0244
Performed Procedure Step Start Time	-	0040,0245	-	0040,0245
Performed Procedure Step ID	-	0040,0253	-	0040,0253
Requested Procedure ID	0040,1001	0040,1001	-	0040,1001

8.1.4. Coerced/Modified fields

In general, EasyDiagnost Eleva will try and optimize the imported image data. This may involve the removal of redundant data, either or not due to the creation of a Grayscale Softcopy Presentation State object for the image data. This may also involve the creation of extra attributes. As it is not the intention of EasyDiagnost Eleva (DI) to export this data as such, the SOP Instance UID shall not be changed.

If not available at import then EasyDiagnost Eleva will create the additional attributes as listed in the Table below.

Table 206: Additional Attributes for EasyDiagnost Eleva

Name	Tag	VR	Generated Value
Performed Procedure Step Start Date	0040,0244	DA	Copied from (0008,0020) Study Date.
Performed Procedure Step Start Time	0040,0245	TM	Copied from (0008,0030) Study Time.

Name	Tag	VR	Generated Value
Performed Procedure Step ID	0040,0253	SH	Copied from (0020,0010) Study ID.
Performed Procedure Step Description	0040,0254	LO	Copied from (0008,1030) Study Description.

Table 207: Omitted Attributes for EasyDiagnost Eleva

Attribute Name	Tag	VR	Comment
Patient Module			
Referenced Patient Sequence	0008,1120	SQ	
Patient's Birth Time	0010,0032	TM	
Other Patient's Id's	0010,1000	LO	
Other Patient's Names	0010,1001	PN	
Ethnic Group	0010,2160	SH	
Patient Comments	0010,4000	LT	
General Study Module			
Referring Physician Identification Sequence	0008,0096	SQ	
Study Description	0008,1030	LO	
Procedure Code Sequence	0008,1032	SQ	
Physician(s) of Record	0008,1048	PN	
Physician(s) of Record Identification Sequence	0008,1049	SQ	
Name of Physician(s) Reading Study	0008,1060	PN	
Physician(s) Reading Study Identification Sequence	0008,1062	SQ	
Referenced Study Sequence	0008,1110	SQ	
Patient Study Module			
Admitting Diagnoses Description	0008,1080	UI	
Admitting Diagnoses Code Sequence	0008,1084	SQ	
Patient's Age	0010,1010	AS	
Patient's Size	0010,1020	DS	
Patient's Weight	0010,1030	DS	
Occupation	0010,2180	SH	
Additional Patient's History	0010,21B0	LT	
Clinical Trial Study Module			
Clinical Trial Time Point Description	0012,0051	ST	
General Series Module			
Series Date	0008,0021	DA	
Series Time	0008,0031	TM	
Series Description	0008,103E	LO	
Performing Physicians' Name	0008,1050	PN	
Performing Physician Identification Sequence	0008,1052	SQ	
Operators' Name	0008,1070	PN	
Operators Identification Sequence	0008,1072	SQ	
Referenced Performed Procedure Step Sequence	0008,1111	SQ	
Body Part Examined	0018,0015	CS	
Protocol Name	0018,1030	LO	
Smallest Pixel Value in Series	0028.0108	US/SS	
Largest Pixel Value in Series	0028.0109	US/SS	
Performed Procedure Step Start Date	0040,0244	DA	

Attribute Name	Tag	VR	Comment
Performed Procedure Step Start Time	0040,0245	TM	
Performed Procedure Step ID	0040,0253	SH	
Performed Procedure Step Description	0040,0254	LO	
Performed Protocol Code Sequence	0040,0260	SQ	
Request Attributes Sequence	0040,0275	SQ	
Comments on the Performed Procedure Step	0040,0280	ST	
General Equipment Module			
Institution Name	0008,0080	LO	
Institution Address	0008,0081	SH	
Station Name	0008,1010	SH	
Institutional Department Name	0008,1040	LO	
Manufacturer's Model Name	0008,1090	LO	
Device Serial Number	0018,1000	LO	
Software Versions	0018,1020	LO	
Spatial Resolution	0018,1050	DS	
Date of Last Calibration	0018,1200	DA	
Time of Last Calibration	0018,1201	TM	
Pixel Padding Value	0028,0120	US/SS	
Display Shutter Module			
Shutter Presentation Value	0018,1622	US	
Overlay Plane Module			
Overlay Description	60xx,0022	LO	
Overlay Subtype	60xx,0045	LO	
ROI Area	60xx,1301	IS	
ROI Mean	60xx,1302	DS	
ROI Standard Deviation	60xx,1303	DS	
Overlay Label	60xx,1500	LO	
SOP Common Module			
Instance Creation Date	0008,0012	DA	
Instance Creation Time	0008,0013	TM	
Instance Creator UID	0008,0014	UI	
Coding Scheme Identification Sequence	0008,0110	SQ	
Timezone Offset From UTC	0008,0201	SH	
Contributing Equipment Sequence	0018,A001	SQ	
Instance Number	0020,0013	IS	
SOP Instance Status	0100,0410	CS	
SOP Authorization Date and Time	0100,0420	DT	
SOP Authorization Comment	0100,0424	LT	
Authorization Equipment Certification Number	0100,0426	LO	
MAC Parameters Sequence	4FFE,0001	SQ	
Digital Signatures Sequence	FFFA,FFFA	SQ	

Table 208: Cleared Attributes for EasyDiagnost Eleva

Attribute Name	Tag	VR	Comment
Patient Module			
Patient's Name	0010,0010	PN	
Patient ID	0010,0020	LO	
Patient's Birth Date	0010,0030	DA	
Patient's Sex	0010,0040	CS	
Clinical Trial Subject Module			
Clinical Trial Protocol Name	0012,0021	LO	
Clinical Trial Site ID	0012,0030	LO	
Clinical Trial Site Name	0012,0031	LO	
General Study Module			
Study Date	0008,0020	DA	
Study Time	0008,0030	TM	
Accession Number	0008,0050	SH	
Referring Physician's Name	0008,0090	PN	
Study ID	0020,0010	SH	
Clinical Trial Study Module			
Clinical Trial Time Point ID	0012,0050	LO	
General Series Module			
Patient Position	0018,5100	CS	
Series Number	0020,0011	IS	
Laterality	0020,0060	CS	
Clinical Trial Series Module			
Clinical Trial Coordinating Center Name	0012,0060	LO	
General Equipment Module			
Manufacturer	0008,0070	LO	
Mask Module			
Recommended Viewing Mode	0028,1090	CS	
Overlay/Curve Activation Module			
Curve Activation Layer	50xx,1001	CS	
Overlay Activation Layer	60xx,1001	CS	

EasyDiagnost Eleva allows the operator to modify attributes of the stored images.
EasyDiagnost Eleva does not modify the pixel values of the stored images.
Modified images retain their original Study, Series and Image UID.

Table 209: Modifiable Attributes

Attribute Name	Tag	VR	Comment
Patient			
Patient's Name	0010,0010	PN	
Patient ID	0010,0020	LO	
Patient's Birth Date	0010,0030	DA	
Patient's Sex	0010,0040	CS	
Medical Alerts	0010,2000	LO	
Contrast Allergies	0010,2110	LO	
Patient Comments	0010,4000	LT	
Study			

Attribute Name	Tag	VR	Comment
Accession Number	0008,0050	SH	
Referring Physician's Name	0008,0090	PN	
Study Description	0008,1030	LO	
Physician(s) of Record	0008,1048	PN	
Name of Physician(s) Reading Study	0008,1060	PN	
Admitting Diagnoses Description	0008,1080	LO	
Patient's Age	0010,1010	AS	
Occupation	0010,2180	SH	
Additional Patient History	0010,21B0	LT	
Examination			
Performed Station Name	0040,0242	SH	
Performed Location	0040,0243	SH	
Performed Procedure Step Description	0040,0254	LO	
Performed Procedure Type Description	0040,0255	LO	
Comments on the Performed Procedure Step	0040,0280	ST	
Series			
-	-		

8.2. Data Dictionary of Private Attributes

Not applicable.

8.3. Coded Terminology and Templates

Not applicable.

8.3.1. Context Groups

Not applicable.

8.3.2. Template Specifications

Not applicable.

8.3.3. Private code definitions

Not applicable.

8.4. Grayscale Image consistency

The high-resolution display monitor attached to the product can be calibrated by using the service tool together with a light probe. See the [VFRB] for details on the calibration procedure.

8.5. Standard Extended/Specialized/Private SOPs/Structure Report Templates

The Standard DICOM SOP Classes may be extended with additional attributes:

Standard attributes of other SOP Classes; the presence of these attributes in exported images can be configured

Retired (from ACR NEMA 1.0 or 2.0) attributes; the presence of these attributes in exported images can be configured,
Private attributes; the presence of these attributes in exported images can be configured,

The usages of the Private SOP Classes are in the ELEVA DI Systems domain only.
However instances of these Private SOP Classes may be exported towards a PACS environment and stored in a (central) DICOM archive and should be configured in order to make this possible.

Table 210: Private SOP Classes of ELEVA DI System

SOP Class Name	SOP Class UID
Specialized X-Ray (Private SOP Class)	1.3.46.670589.2.3.1.1

8.6. Private Transfer Syntaxes

Not Applicable.

9. Annexes of "EASYDIAGNOST ELEVA ACP APPLICATION ENTITY (ED ELEVA ACP AE)"

9.1. IOD Contents

9.1.1. Created SOP Instance

This section specifies each IOD created by this application.

This section specifies each IOD created (including private IOD's). It should specify the attribute name, tag, VR, and value. The value should specify the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values should be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:
ALWAYS The module is always present
CONDITIONAL The module is used under specified condition

Abbreviations used in the Module table for the column "Presence of Value" are:
ALWAYS The attribute is always present with a value
EMPTY The attribute is always present without any value (attribute sent zero length)
VNAP The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present)
ANAP The attribute is present under specified condition – if present then it will always have a value
ANAPCV The attribute is present under specified condition – if present then its Value is Not Always Present (attribute sent zero length if condition applies and no value is present)
ANAPEV The attribute is present under specified condition – if present then it will not have any value

The abbreviations used in the Module table for the column "Source" are:
AUTO The attribute value is generated automatically
CONFIG The attribute value source is a configurable parameter
COPY The attribute value source is another SOP instance
FIXED The attribute value is hard-coded in the application
IMPLICIT The attribute value source is a user-implicit setting
MPPS The attribute value is the same as that use for Modality Performed Procedure Step
MWL The attribute value source is a Modality Worklist
USER The attribute value source is explicit user input

9.1.1.1. List of created SOP Classes

Table 211: List of created SOP Classes

SOP Class Name	SOP Class UID
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1
Spatial Fiducials Storage	1.2.840.10008.5.1.4.1.1.66.2
Specialized PMS X-Ray Image Store (Private)	1.3.46.670589.2.3.1.1
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2

9.1.1.2. X-Ray Radiofluoroscopic Image Storage SOP Class

Table 212: IOD of Created X-Ray Radiofluoroscopic Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	
Study	General Study Module	
Series	General Series Module	
Equipment	General Equipment Module	
Image	General Image Module	
	Image Pixel Module	
	Multi-Frame Module	
	X-Ray Image Module	
	X-Ray Acquisition Module	
	Additional Module	

Table 213: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient ID	0010,0020	LO		VNAP		
Patient's Birth Date	0010,0030	DA		VNAP		
Patient's Name	0010,0010	PN		VNAP		
Patient's Sex	0010,0040	CS		VNAP		

Table 214: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Accession Number	0008,0050	SH		VNAP		
Referring Physician's Name	0008,0090	PN		VNAP		
Study Date	0008,0020	DA		VNAP		
Study Description	0008,1030	LO		ANAPCV		
Study ID	0020,0010	SH		VNAP		
Study Instance UID	0020,000D	UI		ALWAYS		
Study Time	0008,0030	TM		VNAP		
Referenced Study Sequence	0008,1110	SQ		ANAPCV		
>Referenced SOP Class UID	0008,1150	UI		ALWAYS		
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS		

Table 215: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Laterality	0020,0060	CS		ANAPCV		
Modality	0008,0060	CS		ALWAYS		
Protocol Name	0018,1030	LO		ANAPCV		
Series Date	0008,0021	DA		ANAPCV		
Series Instance UID	0020,000E	UI		ALWAYS		
Series Number	0020,0011	IS		VNAP		
Series Time	0008,0031	TM		ANAPCV		
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAPCV		

>Referenced SOP Class UID	0008,1150	UI		ALWAYS		
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS		
Request Attributes Sequence	0040,0275	SQ		ANAPCV		
>Scheduled Procedure Step Description	0040,0007	LO		ANAPCV		
>Scheduled Procedure Step ID	0040,0009	SH		ANAP		
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAPCV		
>>Code Meaning	0008,0104	LO		ALWAYS		
>>Code Value	0008,0100	SH		ALWAYS		
>>Coding Scheme Designator	0008,0102	SH		ALWAYS		
Performed Procedure Step Description	0040,0254	LO		ANAPCV		
Performed Procedure Step ID	0040,0253	SH		ANAPCV		
Performed Procedure Step Start Date	0040,0244	DA		ANAPCV		
Performed Procedure Step Start Time	0040,0245	TM		ANAPCV		

Table 216: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Device Serial Number	0018,1000	LO		ANAPCV		
Institution Name	0008,0080	LO		ANAPCV		
Manufacturer	0008,0070	LO	Philips Medical Systems	VNAP		
Manufacturer's Model Name	0008,1090	LO	ViewForum	ANAPCV		
Software Version(s)	0018,1020	LO	ViewForum 6.3	ANAPCV		
Station Name	0008,1010	SH		ANAPCV		

Table 217: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		ANAPCV		
Acquisition Number	0020,0012	IS		ANAPCV		
Acquisition Time	0008,0032	TM		ANAPCV		
Content Date	0008,0023	DA		ANAPCV		
Content Time	0008,0033	TM		ANAPCV		
Image Type	0008,0008	CS		ANAPCV		
Instance Number	0020,0013	IS		VNAP		
Patient Orientation	0020,0020	CS		ANAPCV		
Presentation LUT Shape	2050,0020	CS		ANAPCV		

Table 218: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Pixel Data	7FE0,0010	OW /OB		ANAP		
Rows	0028,0010	US		ALWAYS		

Table 219: Multi-Frame Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame Increment Pointer	0028,0009	AT		ALWAYS		
Number of Frames	0028,0008	IS		ALWAYS		

Table 220: X-Ray Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Bits Allocated	0028,0100	US		ALWAYS		
Bits Stored	0028,0101	US		ALWAYS		
High Bit	0028,0102	US		ALWAYS		
Image Type	0008,0008	CS		ALWAYS		
Photometric Interpretation	0028,0004	CS		ALWAYS		
Pixel Intensity Relationship	0028,1040	CS		ALWAYS		
Pixel Representation	0028,0103	US		ALWAYS		
Samples per Pixel	0028,0002	US		ALWAYS		

Table 221: X-Ray Acquisition Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Exposure	0018,1152	IS		ANAPCV		
KVP	0018,0060	DS		VNAP		
Radiation Setting	0018,1155	CS		ALWAYS		
X-ray Tube Current	0018,1151	IS		ANAPCV		

Table 222: Additional Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS				
SOP Class UID	0008,0016	UI				
SOP Instance UID	0008,0018	UI				

9.1.1.3. Secondary Capture Image Storage SOP Class for the processed mode

Table 223: IOD of Created Secondary Capture Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
	SC Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
	Image Pixel Module	ALWAYS
	SC Image Module	ALWAYS
	SOP Common Module	ALWAYS

Table 224: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	AUTO	
Patient ID	0010,0020	LO		VNAP	AUTO	
Patient's Birth Date	0010,0030	DA		VNAP	AUTO	
Patient's Sex	0010,0040	CS	F, M, O	VNAP	AUTO	

Table 225: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study Date	0008,0020	DA		ALWAYS	AUTO	Date on which this study was created
Study Time	0008,0030	TM		ALWAYS	AUTO	Time on which this study was created
Accession Number	0008,0050	SH		VNAP	AUTO	
Referring Physician's Name	0008,0090	PN		VNAP	AUTO	
Study ID	0020,0010	SH		ALWAYS	AUTO	
Study Description	0008,1030	LO		VNAP	AUTO	Examination Type (for DI/VF)
Referenced Study Sequence	0008,1110	SQ		VNAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		VNAP	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		VNAP	AUTO	
Modality	0008,0060	CS	RF	ALWAYS	AUTO	
Conversion Type	0008,0064	CS	WSD	ALWAYS	AUTO	

Table 226: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	
Laterality	0020,0060	CS	L, R	VNAP	AUTO	
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Protocol Name	0018,1030	LO	Examination Type (for DI/VF)	ANAP	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		ALWAYS	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ALWAYS	AUTO	
Performed Procedure Step ID	0040,0253	SH		ALWAYS	AUTO	
Performed Procedure Step Description	0040,0254	LO		ANAP	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	Required if Referenced Study Component Sequence (0008:1111) is sent

>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	Required if Referenced Study Component Sequence (0008:1111) is sent
Request Attributes Sequence	0040,0275	SQ		ANAP	AUTO	
>Scheduled Procedure Step ID	0040,0009	SH		ANAPEV	AUTO	
>Requested Procedure ID	0040,1001	SH		ANAP	AUTO	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	AUTO	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	AUTO	
>>Code Value	0008,0100	SH		ANAP	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ANAP	AUTO	
>>Code Meaning	0008,0104	LO		ANAP	AUTO	

Table 227: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO	Service- Configurable values	ALWAYS	AUTO	
Station Name	0008,1010	SH	Service - Configurable values	ALWAYS	AUTO	
Manufacturer's Model Name	0008,1090	LO	ViewForum	ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	
Software Version(s)	0018,1020	LO	ViewForum 6.3, PMS1.1 MIMIT, EVIIMDictionary	ALWAYS	AUTO	

Table 228: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Conversion Type	0008,0064	CS	WSD	ALWAYS	AUTO	
Modality	0008,0060	CS	RF	ALWAYS	AUTO	

Table 229: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		ALWAYS	AUTO	0 Length, if value is not present.
Image Type	0008,0008	CS	DERIVED, SECONDARY	ALWAYS	AUTO	
Acquisition Date	0008,0022	DA		ANAP	AUTO	
Acquisition Time	0008,0032	TM		ALWAYS	AUTO	
Acquisition Number	0020,0012	IS		ALWAYS	AUTO	

Table 230: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	

Rows	0028,0010	US	512, 1024	ALWAYS	AUTO	
Columns	0028,0011	US	512, 1024	ALWAYS	AUTO	
Bits Allocated	0028,0100	US	8	ALWAYS	AUTO	
Bits Stored	0028,0101	US	8	ALWAYS	AUTO	
High Bit	0028,0102	US	7	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0000	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW /OB		ALWAYS	AUTO	

Table 231: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA		ALWAYS	AUTO	
Time of Secondary Capture	0018,1014	TM		ALWAYS	AUTO	

Table 232: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100,	ANAP	CONFIG	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.7	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

9.1.1.4. Softcopy Presentation State Storage SOP Class (AS LAST SEEN) for the processed mode

When Eleva EasyDiagnost imports a storage object without Presentation State object then it will create a presentation state object for this storage object, which it then can use to export with the Presentation Label “NEW AT IMPORT” (If negotiated)

If private Presentation State information exists, then this will be used to create the Presentation State Object. Depending on the setup, the EasyDiagnost Eleva may or may not add this Private Presentation State information on export with the Presentation Label “AS LAST SEEN”.

Table 233: IOD of Created Softcopy Presentation State Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module,	ALWAYS
	Presentation Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Presentation State	Displayed Area Module	ALWAYS
	Presentation State Identification Module	ALWAYS
	Softcopy Presentation LUT Module	ALWAYS
	Softcopy VOI LUT Module	ALWAYS
	Graphic Annotation Module	ALWAYS
	Graphic Layer Module	ALWAYS
	Presentation State Relationship Module	ALWAYS
	Display Shutter Module	ALWAYS
	SOP Common Module	ALWAYS

Table 234: Displayed Area Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Displayed Area Selection Sequence	0070,005A	SQ		ALWAYS	AUTO	
>Displayed Area Top Left Hand Corner	0070,0052	SL	1,1	ALWAYS	AUTO	
>Displayed Area Bottom Right Hand Corner	0070,0053	SL	1024,1024	ALWAYS	AUTO	
>Presentation Size Mode	0070,0100	CS	SCALE TO FIT	ALWAYS	AUTO	
>Presentation Pixel Spacing	0070,0101	DS	Required if Presentation Size Mode (0070,0100) is TRUE SIZE. May be present if Presentation Size Mode (0070,0100) is SCALE TO FIT or MAGNIFY.	ANAPEV	AUTO	
>Presentation Pixel Aspect Ratio	0070,0102	IS	N,N	ANAPEV	AUTO	

Table 235: Presentation Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	PR = Presentation State	ALWAYS	AUTO	

Table 236: Presentation State Identification Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Content Label	0070,0080	CS	AS LAST SEEN, NEW AT IMPORT	ALWAYS	AUTO	
Presentation Creation Date	0070,0082	DA		ALWAYS	AUTO	
Presentation Creation Time	0070,0083	TM		ALWAYS	AUTO	
Content Description	0070,0081	LO		VNAP	AUTO	
Content Creator's Name	0070,0084	PN		VNAP	AUTO	

Table 237: Softcopy Presentation LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Presentation LUT Shape	2050,0020	CS	INVERSE	ANAPC	AUTO	
Presentation LUT Sequence	2050,0010	SQ		ANAP	AUTO	
>LUT Descriptor	0028,3002	US/SS		ALWAYS	AUTO	
>LUT Data	0028,3006	US/SS		ALWAYS	AUTO	

Table 238: Softcopy VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Softcopy VOI LUT Sequence	0028,3110	SQ		ALWAYS	AUTO	
>Referenced Image Sequence	0008,1140	SQ		ANAPEV	AUTO	
>>Referenced SOP Class UID	0008, 1150	UI		ANAPAC	AUTO	

>>Referenced SOP Instance UID	0008, 1155	UI		ANAPC	AUTO	
>>Referenced Frame Number	0008, 1160	IS		ANAPC	AUTO	
>Window Center	0028,1050	DS		ANAPEV	AUTO	
>Window Width	0028,1051	DS		ANAPEV	AUTO	

Table 239: Graphic Annotation Module

Attribute Name	Tag	VR		Presence of Value	Source	Comment
Graphic Annotation Sequence	0070,0001	SQ		ALWAYS	AUTO	
>Graphic Layer	0070,0002	CS	Layer created on import VFGFX	ALWAYS	AUTO	
>Referenced Image Sequence	0008,1140	SQ		ANAPEV	AUTO	
>> Referenced SOP Class UID	0008,1150	UI	1.3.46.670589.2.3.1.1, 1.2.840.10008.5.1.4.1.1.12.2	ALWAYS	AUTO	
>> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>Text Object Sequence	0070,0008	SQ		ANAPEV	USER	
>>Bounding Box Annotation Units	0070,0003	CS	PIXEL	ANAPEV	USER	
>>Anchor Point Annotation Units	0070,0004	CS	PIXEL	ANAPEV	USER	
>> Unformatted Text Value	0070,0006	ST		ANAP	USER	
>>Bounding Box Top Left Hand Corner	0070,0010	FL		ANAPEV	USER	
>>Bounding Box Bottom Right Hand Corner	0070,0011	FL		ANAPEV	USER	
>>Bounding Box Text Horizontal Justification	0070,0012	CS	CENTER, LEFT, RIGHT	ANAPEV	USER	
>>Anchor Point	0070,0014	FL		ANAPEV	MWL/USER	
>>Anchor Point Visibility	0070,0015	CS	N, Y	ANAPEV	USER	
>Graphic Object Sequence	0070,0009	SQ		ANAPEV	MWL/USER	
>>Graphic Annotation Units	0070,0005	CS	PIXEL	ALWAYS	USER	
>>Graphic Dimensions	0070,0020	US		ALWAYS	USER	
>>Number of Graphics Points	0070,0021	US		ALWAYS	USER	
>>Graphic Data	0070,0022	FL		ALWAYS	USER	
>>Graphic Type	0070,0023	CS	CIRCLE, ELLIPSE, INTERPOLATED, POINT, POLYLINE	ALWAYS	USER	
>>Graphic Filled	0070,0024	CS	N, Y	ANAPEV	USER	

Table 240: Graphic Layer Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Graphic Layer Sequence	0070,0060	SQ		ANAP	AUTO	
>Graphic Layer	0070,0002	CS	VFGFX	ANAP	AUTO	
>Graphic Layer Order	0070,0062	IS		ANAP	AUTO	
>Graphic Layer Recommended Display Grayscale Value	0070,0066	US		ANAP	AUTO	

>Graphic Layer Description	0070,0068	LO	ViewForum Graphics	ANAP	AUTO	

Table 241: Presentation State Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Series Sequence	0008,1115	SQ		ALWAYS	AUTO	
>Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
>Referenced Image Sequence	0008,1140	SQ		ALWAYS	AUTO	
>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 242: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MWL, USER	
Patient ID	0010,0020	LO		VNAP	MWL, USER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Sex	0010,0040	CS	F, M, O	VNAP	MWL, USER	

Table 243: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Instance UID	0020,000D	UI		ALWAYS	MWL, USER	
Study Date	0008,0020	DA	Date on which study was created	ALWAYS	MWL, USER	
Study Time	0008,0030	TM	Time on which study was created.	ALWAYS	MWL, USER	
Accession Number	0008,0050	SH		VNAP	MWL, USER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL, USER	
Study ID	0020,0010	SH		VNAP	MWL, USER	
Study Description	0008,1030	LO	Examination Type (for DI/VF)	VNAP	MWL, USER	
Referenced Study Sequence	0008,1110	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 244: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	MWL, USER	

Laterality	0020,0060	CS	L, R	ANAP	MWL, USER	
Series Date	0008,0021	DA	Date the Series started	ALWAYS	AUTO	
Series Time	0008,0031	TM	Time the Series started	ALWAYS	AUTO	
Performing Physician's Name	0008,1050	PN		VNAP	USER	
Protocol Name	0018,1030	LO	Examination type (for DI/VF)	ANAP	MWL, USER	
Performed Procedure Step Start Date	0040,0244	DA		ALWAYS	MWL, USER	
Performed Procedure Step Start Time	0040,0245	TM		ALWAYS	COPY	
Performed Procedure Step ID	0040,0253	SH		ANAP	MWL/USER	
Performed Procedure Step Description	0040,0254	LO		VNAP	MWL/USER	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Request Attributes Sequence	0040,0275	SQ		ANAP	AUTO	
>Scheduled Procedure Step ID	0040,0009	SH		ANAP	AUTO	
>Requested Procedure ID	0040,1001	SH		ANAP	AUTO	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	AUTO	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	AUTO	
>>Code Value	0008,0100	SH		ANAP	AUTO	
>>Coding Scheme Designator	0008,0102	SH		ANAP	AUTO	
>>Code Meaning	0008,0104	LO		ANAP	AUTO	

Table 245: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO	Service- Configurable values	ALWAYS	USER	
Station Name	0008,1010	SH	Service - Configurable values	ANAP	AUTO	
Manufacturer's Model Name	0008,1090	LO	ViewForum	ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ANAP	AUTO	
Software Version(s)	0018,1020	LO	ViewForum 6.3, PMS1.1 MIMIT, EVIIMDictionary	ANAP	AUTO	

Table 246: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS	CIRCULAR, RECTANGULAR	ALWAYS	COPY	
Shutter Left Vertical Edge	0018,1602	IS		ANAP	USER	
Shutter Right Vertical Edge	0018,1604	IS		ANAP	USER	
Shutter Upper Horizontal Edge	0018,1606	IS		ANAP	USER	
Shutter Lower Horizontal Edge	0018,1608	IS		ANAP	USER	
Center of Circular Shutter	0018,1610	IS		ANAP	AUTO	
Radius of Circular Shutter	0018,1612	IS		ANAP	AUTO	

Table 247: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ANAP	CONFIG	
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		ALWAYS	AUTO	

9.1.1.5. Softcopy Presentation State Storage SOP Class (AS AQUIRED) for the Processed Mode

Table 248: IOD of Created Softcopy Presentation State Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
	Presentation Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Presentation State	Displayed Area Module	ALWAYS
	Presentation State Identification Module	ALWAYS
	Softcopy Presentation LUT Module	ALWAYS
	Softcopy VOI LUT Module	ALWAYS
	Presentation State Relationship Module	ALWAYS
	Presentation State Shutter Module	ALWAYS
	Display Shutter Module	ALWAYS
	SOP Common Module	ALWAYS

Table 249: Displayed Area Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Displayed Area Selection Sequence	0070,005A	SQ		ALWAYS	AUTO	
>Displayed Area Top Left Hand Corner	0070,0052	SL	1, 1	ALWAYS	AUTO	
>Displayed Area Bottom Right Hand Corner	0070,0053	SL	1024, 1024	ALWAYS	AUTO	
>Presentation Size Mode	0070,0100	CS	MAGNIFY, SCALE TO FIT, TRUE SIZE	ALWAYS	AUTO	

>Presentation Pixel Spacing	0070,0101	DS		ANAPEV	AUTO	
>Presentation Pixel Aspect Ratio	0070,0102	IS	1, 1	ANAPEV	AUTO	

Table 250: Presentation Series Module

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

Table 251: Presentation State Identification Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Content Label	0070,0080	CS	“AS ACQUIRED”	ALWAYS	USER	
Presentation Creation Date	0070,0082	DA		ALWAYS	AUTO	
Presentation Creation Time	0070,0083	TM		ALWAYS	AUTO	
Content Description	0070,0081	LO		VNAP	AUTO	
Content Creator's Name	0070,0084	PN		VNAP	AUTO	

Table 252: Softcopy Presentation LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Presentation LUT Shape	2050,0020	CS		ANAPC	AUTO	
Presentation LUT Sequence	2050,0010	SQ		ANAP	AUTO	
>LUT Descriptor	0028,3002	US/ SS		ALWAYS	AUTO	
>LUT Data	0028,3006	US/ SS		ALWAYS	AUTO	

Table 253: Softcopy VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Softcopy VOI LUT Sequence	0028,3110	SQ		ALWAYS	AUTO	
>Referenced Image Sequence	0008,1140	SQ		ALWAYS	AUTO	
>> References SOP Class UID	0008,1150	UI	1.3.46.670589.2.3.1.1	ALWAYS	AUTO	
>> References SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>Window Center	0028,1050	DS		ALWAYS	AUTO	
>Window Width	0028,1051	DS		ALWAYS	AUTO	

Table 254: Presentation State Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Series Sequence	0008,1115	SQ		ALWAYS	AUTO	
>Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
>Referenced Image Sequence	0008,1140	SQ		ALWAYS	AUTO	
>>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.5.1.4.1.1.12.2, 1.3.46.670589.2.3.1.1	ALWAYS	AUTO	
>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 255: Presentation State Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Presentation Value	0018,1622	US		ANAPC	AUTO	

Table 256: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MWL, USER	
Patient ID	0010,0020	LO		VNAP	MWL, USER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Sex	0010,0040	CS	F, M, O	VNAP	MWL, USER	

Table 257: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study Date	0008,0020	DA	Date on which this Presentation was created	ALWAYS	AUTO	
Study Time	0008,0030	TM	Time on which this Presentation was created.	ALWAYS	AUTO	
Accession Number	0008,0050	SH		ANAP	MWL/AUTO	
Referring Physician's Name	0008,0090	PN		ANAP	MWL/USER	
Study ID	0020,0010	SH		ALWAYS	AUTO	
Study Description	0008,1030	LO	Examination Type (for DI/VF)	ANAP	MWL/USER	
Referenced Study Sequence	0008,1110	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 258: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	MWL/ USER	
Laterality	0020,0060	CS		ANAP	AUTO	
Series Date	0008,0021	DA	Date the series started	VNAP	AUTO	
Series Time	0008,0031	TM	Time the series started	VNAP	AUTO	
Performing Physician's Name	0008,1050	PN		VNAP	USER	
Protocol Name	0018,1030	LO	Examination Type (for DI/VF)	ANAP	AUTO	
Performed Procedure Step Start Date	0040,0244	DA		ANAP	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAP	AUTO	

Performed Procedure Step Description	0040,0254	LO		ANAP	MWL/ USER	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 259: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO	Service- Configurable values	ALWAYS	USER	
Station Name	0008,1010	SH	Service-Configurable values	ALWAYS	AUTO	
Manufacturer's Model Name	0008,1090	LO	Extended Digital Imaging	ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	
Software Version(s)	0018,1020	LO	"DSI R2.4.1 LUT 05-11-15 R6.1.7.0122"	ALWAYS	AUTO	

Table 260: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS	CIRCULAR, RECTANGULAR	ALWAYS	AUTO	
Shutter Left Vertical Edge	0018,1602	IS		ANAP	USER	
Shutter Right Vertical Edge	0018,1604	IS		ANAP	USER	
Shutter Upper Horizontal Edge	0018,1606	IS		ANAP	USER	
Shutter Lower Horizontal Edge	0018,1608	IS		ANAP	USER	
Center of Circular Shutter	0018,1610	IS		ALWAYS	AUTO	
Radius of Circular Shutter	0018,1612	IS		ALWAYS	AUTO	

Table 261: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	CONFIG	
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		ANAP	AUTO	

9.1.1.6. Specialized PMS X-Ray object for the unprocessed mode

The following tables give a detailed overview of all supported attributes of the Specialized PMS X-Ray Storage SOP Class. The list of possible values is given. The situation that an attribute is present conditionally / optionally or that an attribute may contain a zero length value, is indicated too. Conditions and Defined / Enumerated Values of DICOM 3.0 are applicable but are not shown in the tables.

Table 262: Modules of the Created Specialized PMS X-Ray SOP Class by the EasyDiagnost Eleva

Information Entity	Module Name	Reference	Presence of Module
Patient	Patient Module		ALWAYS
Study	General Study Module		ALWAYS

	Patient Study Module		OPTIONAL
Series	General Series Module		ALWAYS
Equipment	General Equipment Module		OPTIONAL
	Specialized PMS X-Ray Equipment Module		OPTIONAL
Image	General Image Module		ALWAYS
	Image Pixel Module		ALWAYS
	Specialized PMS X-Ray Image Module		ALWAYS
	X-Ray Acquisition		ALWAYS
	Multi-Frame (Only if Multi-frame)		ALWAYS
	Frame Pointers (Only if Multi-frame)		OPTIONAL
	Mask		OPTIONAL
	Overlay Plane Module		OPTIONAL
	Modality LUT Module (Only if Pixel Intensity Relationship is LOG)		OPTIONAL
	VOI LUT Module		ALWAYS
	SOP Common Module		ALWAYS
	XRF POSITIONER Module		ALWAYS
	Display Shutter Module		ALWAYS

Table 263: Specialized PMS X-Ray Image Store – Patient Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	AUTO	Received From RIS or Entered by Operator.
Patient ID	0010,0020	LO		VNAP	AUTO	Received From RIS or Entered by Operator.
Patient's Birth Date	0010,0030	DA		VNAP	AUTO	Received From RIS or Entered by Operator.
Patient's Sex	0010,0040	CS		VNAP	AUTO	Received From RIS or Entered by Operator. F,M,O

Table 264: Specialized PMS X-Ray Image Store – General Study Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	PN		VNAP	AUTO	
Study Time	0008,0030	LO		VNAP	AUTO	
Accession Number	0008,0050	DA		VNAP	AUTO	Zero length if not received from RIS.
Referring Physician's Name	0008,0090	CS		VNAP	AUTO	Zero length if not received from RIS.
Study Description	0008,1030	LO		VNAP	AUTO	Examination Type (for DI/VF)
Referenced Study Sequence	0008,1110	SQ		ANAP	SPEC	
> Referenced SOP Class UID	0008,1150	UI		ALWAYS	SPEC	
> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Referenced Study Sequence	0008,1110	SQ		VNAP	AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	Generated at the creation of the study or received from RIS.
Study ID	0020,0010	SH		VNAP	AUTO	Always zero.

Table 265: Specialized PMS X-Ray Image Store – General Series Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		VNAP	AUTO	
Series Time	0008,0031	TM		ANAP	AUTO	
Modality	0008,0060	CS		ALWAYS	AUTO	RF
Performing Physician's Name	0008,1050	PN		VNAP	AUTO	Received from RIS, entered by user or is empty if not known.
Referenced Study Component Sequence	0008,1111	SQ		VNAP	AUTO	
> Referenced SOP Class UID	0008,1150	UI		ALWAYS	SPEC	
> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Protocol Name	0018,1030	LO		VNAP	AUTO	Examination Type (for DI/VF)
Series Instance UID	0020,000E	UI		ALWAYS	CONF	
Series Number	0020,0011	IS		VNAP	AUTO	
Laterality	0020,0060	CS		MAYBE	AUTO	Always zero length value.
Performed Procedure Step Start Date	0040,0244	DA		VNAP	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		VNAP	AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAP	AUTO	
Performed Procedure Step Description	0040,0254	LO		VNAP	AUTO	
Request Attributes Sequence	0040,0275	SQ		VNAP	AUTO	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	AUTO	
>Scheduled Procedure Step ID	0040,0009	SH		ANAPC	AUTO	
>Requested Procedure ID	0040,1001	SH		ANAPC	AUTO	

Table 266: Specialized PMS X-Ray Image Store – General Equipment Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO		ALWAYS	AUTO	Philips Medical Systems
Institution Name	0008,0080	LO		ALWAYS	AUTO	Service-configurable values
Station Name	0008,1010	SH		ANAP	AUTO	Service-configurable values
Manufacturer's Model Name	0008,1090	LO		ALWAYS	AUTO	Extended Digital Imaging
Device Serial Number	0018,1000	LO		ALWAYS	AUTO	
Software Version(s)	0018,1020	LO		ALWAYS	AUTO	"DSI R2.4.1 LUT 05-11-15 R6.1.7.0122"

Table 267: Specialized PMS X-Ray Image Store – Multi-Frame Module Attribute (C)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Frames	0028,0008	IS		ALWAYS	AUTO	
Frame Increment Pointer	0028,0009	AT		ALWAYS	AUTO	

Table 268: Specialized PMS X-Ray Image Store – Display Shutter Module (O)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS		ALWAYS	AUTO	CIRCULAR RECTANGULAR

Shutter Left Vertical Edge	0018,1602	IS		ANAPCV	AUTO	Required if Shutter Shape is RECTANGULAR.
Shutter Right Vertical Edge	0018,1604	IS		ANAPCV	AUTO	Required if Shutter Shape is RECTANGULAR.
Shutter Upper Horizontal Edge	0018,1606	IS		ANAPCV	AUTO	Required if Shutter Shape is RECTANGULAR.
Shutter Lower Horizontal Edge	0018,1608	IS		ANAPCV	AUTO	Required if Shutter Shape is RECTANGULAR.
Center of Circular Shutter	0018,1610	IS		ANAPCV	AUTO	Required if Shutter Shape is CIRCULAR.
Radius of Circular Shutter	0018,1612	IS		ANAPCV	AUTO	Required if Shutter Shape is CIRCULAR.

Table 269: Specialized PMS X-Ray Image Store – General Image Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		VNAP	AUTO	
Content Date	0008,0023	DA		MAYBE	AUTO	
Acquisition Time	0008,0032	TM		VNAP	AUTO	
Content Time	0008,0033	TM		MAYBE	AUTO	
Acquisition Number	0020,0012	IS		VNAP	AUTO	
Instance Number	0020,0013	IS		VNAP	AUTO	Applied Value(s): 1-n
Patient Orientation	0020,0020	CS		MAYBE	AUTO	Always zero length value.
Image Comments	0020,4000	LT		ANAP	USER	Contains also the DI image annotations on normal (i.e. non zoomed) images in the format --(x,y) text --. This attribute is not present if not entered by user and if no annotations are present.

Table 270: Specialized PMS X-Ray Image Store – Image Pixel Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rows	0028,0010	US	1024	ALWAYS	AUTO	
Columns	0028,0011	US	1024	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW		ALWAYS	AUTO	

Table 271: Specialized PMS X-Ray Image Store – X-Ray Image Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	US	ORIGINAL, PRIMARY, SINGLE PLANE	ALWAYS	AUTO	
Samples per Pixel	0028,0002	CS	0x0001=1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	US	MONOCHROME2	ALWAYS	AUTO	
Bits Allocated	0028,0100	US	16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	14	ALWAYS	AUTO	
High Bit	0028,0102	US	13	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	
Pixel Intensity Relationship	0028,1040	US	DISP	ALWAYS	AUTO	

Table 272: Specialized PMS X-Ray Image Store – XRF Positioner Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Distance Source to Detector	0018,1110	DS		ANAP	AUTO	

Table 273: Specialized PMS X-Ray Image Store – X-Ray Acquisition Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
KVP	0018,0060	DS		VNAP	AUTO	Always zero length value.
Exposure Time	0018,1150	IS		ALWAYS	AUTO	Required if Exposure (0018,1152) is not present.
X-Ray Tube Current	0018,1151	IS		ALWAYS	AUTO	Required if Exposure (0018,1152) is not present.
Exposure	0018,1152	IS		ALWAYS	AUTO	Required if either Exposure Time (0018,1150) or X-Ray Tube Current (0018,1151) are not present.
Radiation Setting	0018,1155	CS		ALWAYS	AUTO	GR, SC

Note: In this system up to 3 attributes are sent out together, namely the attributes (0018,1150) "Exposure Time", attributes (0018,1151) "X-Ray Tube Current" and "Exposure " (0018,1152).

Table 274: Specialized PMS X-Ray Image Store – SOP Common Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO	
SOP Class UID	0008,0016	UI	1.3.46.670589.2.3.1.1	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

Table 275: Specialized PMS X-Ray Image Store – VOI LUT Module (O)

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS		ANAP	AUTO	This attribute is related to the DI Contrast / Brightness.
Window Width	0028,1051	DS		ALWAYS	AUTO	This Attribute is related to the DI Contrast / Brightness. Required if (0028,1050) is sent

9.1.1.7. Captured Image as Photo(s)

Table 276: Modules of Captured Image as Photo

Information Entity	Module	Usage
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
	SC Image Equipment Module	ALWAYS
Image	General Image Module	ALWAYS

	Image Pixel Module	ALWAYS
	SOP Common Module	ALWAYS

Table 277: Attributes of Captured Image as Photo

Name	Tag	VR	Presence of Value	Source	Comment
Patient Module (M)					
Patient's Name	0010,0010	PN	ALWAYS	COPY	-
Patient ID	0010,0020	LO	VNAP	COPY	-
Patient's Birth Date	0010,0030	DA	VNAP	COPY	-
Patient's Sex	0010,0040	CS	VNAP	COPY	-
General Study Module (M)					
Study Date	0008,0020	DA	VNAP	COPY	Date on which this Study was created.
Study Time	0008,0030	TM	VNAP	COPY	Time on which this Study was created.
Accession Number	0008,0050	SH	VNAP	COPY	-
Referring Physician's Name	0008,0090	PN	VNAP	COPY	-
Study Description	0008,1030	LO	ALWAYS	USER	Examination Type (for DI/VF)
Study Instance UID	0020,000D	UI	ALWAYS	COPY	-
Study ID	0020,0010	SH	ALWAYS	AUTO	ReviewFolder
General Series Module (M)					
Series Date	0008,0021	DA	ALWAYS	AUTO	-
Series Time	0008,0031	TM	ALWAYS	AUTO	-
Protocol Name	0018,1030	LO	ALWAYS	USER	Examination Type (for DI/VF)
Series Instance UID	0020,000E	UI	ALWAYS	AUTO	-
Series Number	0020,0011	IS	ALWAYS	AUTO	-
Performed Procedure Step Start Date	0040,0244	DA	ALWAYS	COPY	-
Performed Procedure Step Start Time	0040,0245	TM	ALWAYS	COPY	-
General Equipment Module (M)					
Manufacturer	0008,0070	LO	ALWAYS	COPY	Philips Medical Systems
Institution Name	0008,0080	LO	ANAP	COPY	Service-configurable values
Manufacturer's Model Name	0008,1090	LO	ALWAYS	AUTO	ViewForum
Software Version(s)	0018,1020	LO	ALWAYS	AUTO	ViewForum 6.3 PMS1.1 MIMIT EVIIMDictionary
SC Image Equipment Module (M)					
Modality	0008,0060	CS	ALWAYS	AUTO	OT
Conversion Type	0008,0064	CS	ALWAYS	AUTO	WSD
General Image Module (M)					
Image Type	0008,0008	CS	ALWAYS	AUTO	DERIVED, SECONDARY
Acquisition Date	0008,0022	DA	ALWAYS	AUTO	-
Content Date	0008,0023	DA	ALWAYS	AUTO	-

Name	Tag	VR	Presence of Value	Source	Comment
Acquisition Time	0008,0032	TM	ALWAYS	AUTO	-
Content Time	0008,0033	TM	ALWAYS	AUTO	-
Image Pixel Module (M)					
Samples per Pixel	0028,0002	US	ALWAYS	AUTO	3
Photometric Interpretation	0028,0004	CS	ALWAYS	AUTO	RGB
Planar Configuration	0028,0006	US	ALWAYS	AUTO	0
Rows	0028,0010	US	ALWAYS	AUTO	1024
Columns	0028,0011	US	ALWAYS	AUTO	1024
Bits Allocated	0028,0100	US	ALWAYS	AUTO	8
Bits Stored	0028,0101	US	ALWAYS	AUTO	8
High Bit	0028,0102	US	ALWAYS	AUTO	7
Pixel Representation	0028,0103	US	ALWAYS	AUTO	0
Pixel Data	7FE0,0010	OW	ALWAYS	AUTO	-
SOP Common Module (M)					
Specific Character Set	0008,0005	CS	ALWAYS	COPY	-
SOP Class UID	0008,0016	UI	ALWAYS	AUTO	1.2.840.10008.5.1.4.1.1.7 (SC Image)
SOP Instance UID	0008,0018	UI	ALWAYS	AUTO	-

9.1.1.8. Captured Image(s) as Original

The Captured Images contains the following Modules:

Table 278: Modules of Captured Image as Original

Information Entity	Module	Usage
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
	Multi-Frame Module	ALWAYS
Image	General Image Module	ALWAYS
	Image Pixel Module	ALWAYS
	X-ray Image Module	ALWAYS
	X-ray Acquisition Module	ALWAYS
	SOP Common Module	ALWAYS

Table 279: Attributes of Captuted Image as Original

Name	Tag	VR	Presence of Value	Source	Comment
Patient Module (M)					
Patient's Name	0010,0010	PN	ALWAYS	COPY	-
Patient ID	0010,0020	LO	VNAP	COPY	-
Patient's Birth Date	0010,0030	DA	VNAP	COPY	-
Patient's Sex	0010,0040	CS	VNAP	COPY	-
General Study Module (M)					
Study Date	0008,0020	DA	VNAP	COPY	Date on which this Study was created.

Name	Tag	VR	Presence of Value	Source	Comment
Study Time	0008,0030	TM	VNAP	COPY	Time on which this Study was created.
Accession Number	0008,0050	SH	VNAP	COPY	-
Referring Physician's Name	0008,0090	PN	VNAP	COPY	-
Study Description	0008,1030	LO	ALWAYS	USER	Examination Type (for DI/VF)
Study Instance UID	0020,000D	UI	ALWAYS	COPY	-
Study ID	0020,0010	SH	VNAP	COPY	ReviewFolder
General Series Module (M)					
Series Date	0008,0021	DA	ANAP	AUTO	-
Series Time	0008,0031	TM	ANAP	AUTO	-
Protocol Name	0018,1030	LO	ALWAYS	USER	Examination Type (for DI/VF)
Series Instance UID	0020,000E	UI	ALWAYS	AUTO	-
Series Number	0020,0011	IS	VNAP	AUTO	-
Performed Procedure Step Start Date	0040,0244	DA	ANAP	COPY	-
Performed Procedure Step Start Time	0040,0245	TM	ANAP	COPY	-
General Equipment Module (M)					
Manufacturer	0008,0070	LO	ALWAYS	COPY	Philips Medical Systems
Institution Name	0008,0080	LO	VNAP	COPY	Service-configurable values
Manufacturer's Model Name	0008,1090	LO	ALWAYS	AUTO	ViewForum
Software Version(s)	0018,1020	LO	ALWAYS	AUTO	ViewForum 6.3 PMS1.1 MIMIT EVIIMDictionary
Multi-Frame Module (M)					
Number of Frames	0028,0008	IS	ALWAYS	AUTO	-
Frame Increment Pointer	0028,0009	AT	ALWAYS	AUTO	-
General Image Module (M)					
Acquisition Date	0008,0022	DA	ALWAYS	AUTO	-
Content Date	0008,0023	DA	ALWAYS	AUTO	-
Acquisition Time	0008,0032	TM	ALWAYS	AUTO	-
Content Time	0008,0033	TM	ALWAYS	AUTO	-
Instance Number	0020,0013	IS	ALWAYS	AUTO	-
Image Pixel Module (M)					
Rows	0028,0010	US	ALWAYS	AUTO	1024
Columns	0028,0011	US	ALWAYS	AUTO	1024
Pixel Data	7FE0,0010	OW	ALWAYS	AUTO	-
X-ray Image Module (M)					
Image Type	0008,0008	CS	ALWAYS	AUTO	ORIGIONAL PRIMARY SINGLE PLANE
Samples per Pixel	0028,0002	US	ALWAYS	AUTO	1
Photometric Interpretation	0028,0004	CS	ALWAYS	AUTO	MONOCHROME2
Bits Allocated	0028,0100	US	ALWAYS	AUTO	16
Bits Stored	0028,0101	US	ALWAYS	AUTO	12

Name	Tag	VR	Presence of Value	Source	Comment
High Bit	0028,0102	US	ALWAYS	AUTO	11
Pixel Representation	0028,0103	US	ALWAYS	AUTO	0
Pixel Intensity Relationship	0028,1040	CS	ALWAYS	AUTO	DISP
X-ray Acquisition Module (M)					
Radiation Setting	0018,1155	CS	ALWAYS	AUTO	GR
SOP Common Module (M)					
Specific Character Set	0008,0005	CS	ALWAYS	COPY	-
SOP Class UID	0008,0016	UI	ALWAYS	AUTO	1.2.840.10008.5.1.4.1.1.12.2 (XRF Image)
SOP Instance UID	0008,0018	UI	ALWAYS	AUTO	-

9.1.2. Usage of Attributes from Received IOD

Not Applicable.

9.1.3. Attribute Mapping

The following table shows the relation between BWLM and MPPS and image storage attributes.

Table 280: Attribute Mapping during Modality Workflow

Name	BWLM Tag	MPPS		Image IOD Tag
		Create Tag	Set Tag	
Specific Character Set	0008,0005	-	-	0008,0005
Accession Number	0008,0050	0008,0050	-	0008,0050
Modality	0008,0060	0008,0060	-	0008,0060
Referring Physician's Name	0008,0090	-	-	0008,0090
Operators' Name	-	-	0008,1070	0008,1070
Referenced Study Sequence	0008,1110	0008,1110	-	0008,1110
Referenced Image Sequence	0008,1150	0008,1140	0008,1140	0008,1140
> Referenced SOP Class UID SOP Class UID	-	0008,1150	0008,1150	0008,1150
> Referenced SOP Instance UID SOP Instance UID	-	0008,1155	0008,1155	0008,1155
Patient's Name	0010,0010	0010,0010	-	0010,0010
Patient ID	0010,0020	0010,0020	-	0010,0020
Patient's Birth Date	0010,0030	0010,0030	-	0010,0030
Patient's Sex	0010,0040	0010,0040	-	0010,0040
Other Patient IDs	0010,1000	-	-	0010,1000
Patient's Size	0010,1020	-	-	0010,1020
Patient's Weight	0010,1030	-	-	0010,1030
Patient's Telephone Numbers	0010,2154	-	-	0010,2154
Medical Alerts	0010,2000	-	-	0010,2000
Contrast Allergies	0010,2110	-	-	0010,2110

Name	BWLM Tag	MPPS		Image IOD Tag
		Create Tag	Set Tag	
Ethnic group	0010,2160	-	-	0010,2160
Additional Patient History	0010,21B0	-	-	0010,21B0
Patient Comments	0010,4000	-	-	0010,4000
KVP	-	-	0018,0060	0018,0060
Protocol Name	-	-	0018,1030	0018,1030
Image Area Dose Product	-	-	0018,115E	0018,115E
Study Instance UID	0020,000D	0020,000D	-	0020,000D
Series Instance UID	-	-	0020,000E	0020,000E
Study ID	-	0020,0010	-	0020,0010
Requested Procedure Description	0032,1060	0032,1060	-	-
Scheduled Procedure Step Description	0040,0007	0040,0007	-	0040,0007
Performed Procedure Step Description	-	0040,0254	0040,0254	0040,0254
Scheduled Protocol Code Sequence	0040,0008	0040,0008	-	0040,0008
Performed Protocol Code Sequence	-	0040,0260	0040,0260	0040,0260
Scheduled Procedure Step ID	0040,0009	0040,0009	-	0040,0009
Performed Procedure Step Start Date	-	0040,0244	-	0040,0244
Performed Procedure Step Start Time	-	0040,0245	-	0040,0245
Performed Procedure Step ID	-	0040,0253	-	0040,0253
Requested Procedure ID	0040,1001	0040,1001	-	0040,1001

9.1.4. Coerced/Modified fields

In general, EasyDiagnost Eleva will try and optimize the imported image data. This may involve the removal of redundant data, either or not due to the creation of a Grayscale Softcopy Presentation State object for the image data. This may also involve the creation of extra attributes. As it is not the intention of EasyDiagnost Eleva (DI) to export this data as such, the SOP Instance UID shall not be changed.

If not available at import then EasyDiagnost Eleva will create the additional attributes as listed in the Table below.

Table 281: Additional Attributes for EasyDiagnost Eleva

Name	Tag	VR	Generated Value
Performed Procedure Step Start Date	0040,0244	DA	Copied from (0008,0020) Study Date.
Performed Procedure Step Start Time	0040,0245	TM	Copied from (0008,0030) Study Time.
Performed Procedure Step ID	0040,0253	SH	Copied from (0020,0010) Study ID.
Performed Procedure Step Description	0040,0254	LO	Copied from (0008,1030) Study Description.

Table 282: Omitted Attributes for EasyDiagnost Eleva

Attribute Name	Tag	VR	Comment
Patient Module			
Referenced Patient Sequence	0008,1120	SQ	
Patient's Birth Time	0010,0032	TM	

Attribute Name	Tag	VR	Comment
Other Patient's Id's	0010,1000	LO	
Other Patient's Names	0010,1001	PN	
Ethnic Group	0010,2160	SH	
Patient Comments	0010,4000	LT	
General Study Module			
Referring Physician Identification Sequence	0008,0096	SQ	
Study Description	0008,1030	LO	
Procedure Code Sequence	0008,1032	SQ	
Physician(s) of Record	0008,1048	PN	
Physician(s) of Record Identification Sequence	0008,1049	SQ	
Name of Physician(s) Reading Study	0008,1060	PN	
Physician(s) Reading Study Identification Sequence	0008,1062	SQ	
Referenced Study Sequence	0008,1110	SQ	
Patient Study Module			
Admitting Diagnoses Description	0008,1080	UI	
Admitting Diagnoses Code Sequence	0008,1084	SQ	
Patient's Age	0010,1010	AS	
Patient's Size	0010,1020	DS	
Patient's Weight	0010,1030	DS	
Occupation	0010,2180	SH	
Additional Patient's History	0010,21B0	LT	
Clinical Trial Study Module			
Clinical Trial Time Point Description	0012,0051	ST	
General Series Module			
Series Date	0008,0021	DA	
Series Time	0008,0031	TM	
Series Description	0008,103E	LO	
Performing Physicians' Name	0008,1050	PN	
Performing Physician Identification Sequence	0008,1052	SQ	
Operators' Name	0008,1070	PN	
Operators Identification Sequence	0008,1072	SQ	
Referenced Performed Procedure Step Sequence	0008,1111	SQ	
Body Part Examined	0018,0015	CS	
Protocol Name	0018,1030	LO	
Smallest Pixel Value in Series	0028.0108	US/SS	
Largest Pixel Value in Series	0028.0109	US/SS	
Performed Procedure Step Start Date	0040,0244	DA	
Performed Procedure Step Start Time	0040,0245	TM	
Performed Procedure Step ID	0040,0253	SH	
Performed Procedure Step Description	0040,0254	LO	
Performed Protocol Code Sequence	0040,0260	SQ	
Request Attributes Sequence	0040,0275	SQ	
Comments on the Performed Procedure Step	0040,0280	ST	
General Equipment Module			
Institution Name	0008,0080	LO	
Institution Address	0008,0081	SH	
Station Name	0008,1010	SH	
Institutional Department Name	0008,1040	LO	

Attribute Name	Tag	VR	Comment
Manufacturer's Model Name	0008,1090	LO	
Device Serial Number	0018,1000	LO	
Software Versions	0018,1020	LO	
Spatial Resolution	0018,1050	DS	
Date of Last Calibration	0018,1200	DA	
Time of Last Calibration	0018,1201	TM	
Pixel Padding Value	0028,0120	US/SS	
Display Shutter Module			
Shutter Presentation Value	0018,1622	US	
Overlay Plane Module			
Overlay Description	60xx,0022	LO	
Overlay Subtype	60xx,0045	LO	
ROI Area	60xx,1301	IS	
ROI Mean	60xx,1302	DS	
ROI Standard Deviation	60xx,1303	DS	
Overlay Label	60xx,1500	LO	
SOP Common Module			
Instance Creation Date	0008,0012	DA	
Instance Creation Time	0008,0013	TM	
Instance Creator UID	0008,0014	UI	
Coding Scheme Identification Sequence	0008,0110	SQ	
Timezone Offset From UTC	0008,0201	SH	
Contributing Equipment Sequence	0018,A001	SQ	
Instance Number	0020,0013	IS	
SOP Instance Status	0100,0410	CS	
SOP Authorization Date and Time	0100,0420	DT	
SOP Authorization Comment	0100,0424	LT	
Authorization Equipment Certification Number	0100,0426	LO	
MAC Parameters Sequence	4FFE,0001	SQ	
Digital Signatures Sequence	FFFA,FFFA	SQ	

Table 283: Cleared Attributes for EasyDiagnost Eleva

Attribute Name	Tag	VR	Comment
Patient Module			
Patient's Name	0010,0010	PN	
Patient ID	0010,0020	LO	
Patient's Birth Date	0010,0030	DA	
Patient's Sex	0010,0040	CS	
Clinical Trial Subject Module			
Clinical Trial Protocol Name	0012,0021	LO	
Clinical Trial Site ID	0012,0030	LO	
Clinical Trial Site Name	0012,0031	LO	
General Study Module			
Study Date	0008,0020	DA	
Study Time	0008,0030	TM	
Accession Number	0008,0050	SH	
Referring Physician's Name	0008,0090	PN	

Attribute Name	Tag	VR	Comment
Study ID	0020,0010	SH	
Clinical Trial Study Module			
Clinical Trial Time Point ID	0012,0050	LO	
General Series Module			
Patient Position	0018,5100	CS	
Series Number	0020,0011	IS	
Laterality	0020,0060	CS	
Clinical Trial Series Module			
Clinical Trial Coordinating Center Name	0012,0060	LO	
General Equipment Module			
Manufacturer	0008,0070	LO	
Mask Module			
Recommended Viewing Mode	0028,1090	CS	
Overlay/Curve Activation Module			
Curve Activation Layer	50xx,1001	CS	
Overlay Activation Layer	60xx,1001	CS	

EasyDiagnost Eleva allows the operator to modify attributes of the stored images.
EasyDiagnost Eleva does not modify the pixel values of the stored images.
Modified images retain their original Study, Series and Image UID.

Table 284: Modifiable Attributes

Attribute Name	Tag	VR	Comment
Patient			
Patient's Name	0010,0010	PN	
Patient ID	0010,0020	LO	
Patient's Birth Date	0010,0030	DA	
Patient's Sex	0010,0040	CS	
Medical Alerts	0010,2000	LO	
Contrast Allergies	0010,2110	LO	
Patient Comments	0010,4000	LT	
Study			
Accession Number	0008,0050	SH	
Referring Physician's Name	0008,0090	PN	
Study Description	0008,1030	LO	
Physician(s) of Record	0008,1048	PN	
Name of Physician(s) Reading Study	0008,1060	PN	
Admitting Diagnoses Description	0008,1080	LO	
Patient's Age	0010,1010	AS	
Occupation	0010,2180	SH	
Additional Patient History	0010,21B0	LT	
Examination			
Performed Station Name	0040,0242	SH	
Performed Location	0040,0243	SH	
Performed Procedure Step Description	0040,0254	LO	
Performed Procedure Type Description	0040,0255	LO	

Attribute Name	Tag	VR	Comment
Comments on the Performed Procedure Step	0040,0280	ST	
Series			
-	-		

9.2. Data Dictionary of Private Attributes

Not applicable.

9.3. Coded Terminology and Templates

Not applicable.

9.3.1. Context Groups

Not applicable.

9.3.2. Template Specifications

Not applicable.

9.3.3. Private code definitions

Not applicable.

9.4. Grayscale Image consistency

The high-resolution display monitor attached to the product can be calibrated by using the service tool together with a light probe. See the [VFRB] for details on the calibration procedure.

9.5. Standard Extended/Specialized/Private SOPs/Structure Report Templates

The Standard DICOM SOP Classes may be extended with additional attributes:

Standard attributes of other SOP Classes; the presence of these attributes in exported images can be configured

Retired (from ACR NEMA 1.0 or 2.0) attributes; the presence of these attributes in exported images can be configured,
Private attributes; the presence of these attributes in exported images can be configured,
The usages of the Private SOP Classes are in the ELEVA DI Systems domain only.
However instances of these Private SOP Classes may be exported towards a PACS environment and stored in a (central) DICOM archive and should be configured in order to make this possible.

Table 285: Private SOP Classes of ELEVA DI System

SOP Class Name	SOP Class UID
Specialized X-Ray (Private SOP Class)	1.3.46.670589.2.3.1.1

9.6. Private Transfer Syntaxes

Not Applicable.

10. Annexes of "EasyDiagnost Eleva Digital Detector Application Entity (ED ELEVA DIGITAL DETECTOR AE)"

10.1. IOD Contents

10.1.1. Created SOP Instance

This section specifies each IOD created (including private IOD's). It specifies the attribute name, tag, VR, and value. The value specifying the range and source (e.g. user input, Modality Worklist, automatically generated, etc.). For content items in templates, the range and source of the concept name and concept values shall be specified. Whether the value is always present or not shall be specified.

Abbreviations used in the IOD tables for the column "Presence of Module" are:

ALWAYS	The module is always present
CONDITIONAL	The module is used under specified condition

Abbreviations used in the Module table for the column "Presence of Value" are:

ALWAYS	The attribute is always present with a value
EMPTY	The attribute is always present without any value (attribute sent zero length)
VNAP	The attribute is always present and its Value is Not Always Present (attribute sent zero length if no value is present)
ANAP	The attribute is present under specified condition – if present then it will always have a value
ANAPCV	The attribute is present under specified condition – if present then its Value is Not Always Present (attribute sent zero length if condition applies and no value is present)
ANAPEV	The attribute is present under specified condition – if present then it will not have any value

The abbreviations used in the Module table for the column "Source" are:

AUTO	The attribute value is generated automatically
CONFIG	The attribute value source is a configurable parameter
COPY	The attribute value source is another SOP instance
FIXED	The attribute value is hard-coded in the application
IMPLICIT	The attribute value source is a user-implicit setting
MPPS	The attribute value is the same as that use for Modality Performed Procedure Step
MWL	The attribute value source is a Modality Worklist
USER	The attribute value source is explicit user input

10.1.1.1. List of created SOP Classes

Table 286: List of created SOP Classes

SOP Class Name	SOP Class UID
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Digital X-Ray Image Storage - For Pres. SOP Class	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage - For Proc. SOP Class	1.2.840.10008.5.1.4.1.1.1.1.1
X-Ray Radiation Dose SR SOP Class	1.2.840.10008.5.1.4.1.1.88.67

10.1.1.2. Computed Radiography Image Storage SOP Class

Table 287: IOD of Created Computed Radiography Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
	Patient Study Module	CONDITIONAL
Series	General Series Module	ALWAYS
	CR Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
	Image Pixel Module	ALWAYS
	Contrast/Bolus Module	CONDITIONAL
	Display Shutter Module	CONDITIONAL
	CR Image Module	ALWAYS
	Overlay Plane Module	CONDITIONAL
	Modality LUT Module	CONDITIONAL
	VOI LUT Module	CONDITIONAL
	SOP Common Module	ALWAYS
	Additional Module	ALWAYS

Table 288: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MWL, USER	
Patient ID	0010,0020	LO		ALWAYS	MWL, AUTO	
Issuer of Patient ID	0010,0021	LO		ANAP	MWL, USER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Sex	0010,0040	CS	F, M, O	ALWAYS	MWL, USER	
Other Patient IDs	0010,1000	LO		ANAP	MWL, USER	
Ethnic Group	0010,2160	SH		VNAP	AUTO	
Patient Comments	0010,4000	LT		VNAP	MWL, USER	

Table 289: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	AUTO	
Study Time	0008,0030	TM		ALWAYS	AUTO	
Accession Number	0008,0050	SH		VNAP	MWL, USER	

Referring Physician's Name	0008,0090	PN		VNAP	MWL, USER	
Study Description	0008,1030	LO		ALWAYS	MWL, USER	
Procedure Code Sequence	0008,1032	SQ		ANAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Referenced Study Sequence	0008,1110	SQ		ANAP	MWL	
>Referenced SOP Class UID	0008,1150	UI		ANAPEV	MWL	
>Referenced SOP Instance UID	0008,1155	UI		ANAPEV	MWL	
Study ID	0020,0010	SH		ALWAYS	MWL, AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	MWL, AUTO	

Table 290: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	MWL, USER	
Patient's Size	0010,1020	DS		ALWAYS	MWL, USER	Default 0.0
Patient's Weight	0010,1030	DS		ALWAYS	MWL, USER	Default 0.0
Occupation	0010,2180	SH		ANAP	MWL, USER	
Additional Patient History	0010,21B0	LT		VNAP	MWL, USER	

Table 291: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	CR	ALWAYS	CONFIG	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	MPPS, USER	
Performing Physician's Name	0008,1050	PN		VNAP	MPPS, USER	
Operators' Name	0008,1070	PN		ALWAYS	MPPS, USER, AUTO	Default Emergency

Protocol Name	0018,1030	LO		ALWAYS	MWL, USER	
Series Instance UID	0020,000E	UI		ALWAYS	MPPS, AUTO	
Series Number	0020,0011	IS		ALWAYS	MPPS, AUTO	
Laterality	0020,0060	CS		ANAP	CONFIG	Required if the body part examined is a paired structure.
Performed Procedure Step Start Date	0040,0244	DA		ALWAYS	MPPS, AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ALWAYS	MPPS, AUTO	
Performed Procedure Step ID	0040,0253	SH		ALWAYS	MPPS, AUTO	
Performed Procedure Step Description	0040,0254	LO		ALWAYS	MPPS, AUTO	
Performed Protocol Code Sequence	0040,0260	SQ		ANAP	MWL	
> Code Value	0008,0100	SH		ALWAYS	MWL	
> Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
> Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
> Code Meaning	0008,0104	LO		ALWAYS	MWL	
Request Attributes Sequence	0040,0275	SQ		ANAP	MWL	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	MWL	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	MWL	
>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	
>Scheduled Procedure Step ID	0040,0009	SH		ANAPEV	MWL	
>Requested Procedure ID	0040,1001	SH		ANAPEV	MWL	

Table 292: CR Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Body Part Examined	0018,0015	CS		ALWAYS	MPPS, USER	
Plate Type	0018,2160	SH		ALWAYS	AUTO, USER	
View Position	0018,5101	CS		ALWAYS	AUTO, USER	

Table 293: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO		VNAP	CONFIG	
Institution Address	0008,0081	ST		VNAP	CONFIG	
Station Name	0008,1010	SH		ALWAYS	CONFIG	
Institutional Department Name	0008,1040	LO		ALWAYS	CONFIG	
Manufacturer's Model Name	0008,1090	LO	Easy Diagnost Eleva	ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	CONFIG	
Software Version(s)	0018,1020	LO	PMS 81.101.1.1 GXR GXRIM5.0	ALWAYS	AUTO	
Spatial Resolution	0018,1050	DS		ALWAYS	AUTO	

Table 294: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	ORIGINAL, PRIMARY	ALWAYS	AUTO	
Acquisition Date	0008,0022	DA		ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Acquisition Time	0008,0032	TM		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Referenced Image Sequence	0008,1140	SQ		ALWAYS	AUTO	EMPTY
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		ALWAYS	AUTO/ CONFIG	Configurable in EVA tool
Burned In Annotation	0028,0301	CS	NO, YES	ALWAYS	AUTO, USER	
Lossy Image Compression	0028,2110	CS	00	ANAP	AUTO	
Presentation LUT Shape	2050,0020	CS	IDENTITY	ALWAYS	AUTO	ALWAYS: IDENTITY

Table 295: Contrast/Bolus Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Contrast/Bolus Agent	0018,0010	LO		VNAP	AUTO	

Table 296: CR Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
KVP	0018,0060	DS		ANAP	AUTO	
Plate ID	0018,1004	LO		ALWAYS	AUTO	
Distance Source to Detector	0018,1110	DS		ANAP	AUTO	
Exposure Time	0018,1150	IS		ANAP	AUTO	
X-ray Tube Current	0018,1151	IS		ANAP	AUTO	
Exposure	0018,1152	IS		ANAP	AUTO	
Imager Pixel Spacing	0018,1164	DS		ALWAYS	AUTO	
Acquisition Device Processing Description	0018,1400	LO		ALWAYS	AUTO	
Cassette Size	0018,1403	CS		ALWAYS	AUTO	
Relative X-ray Exposure	0018,1405	IS		ALWAYS	AUTO	
Sensitivity	0018,6000	DS		ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	ALWAYS: MONOCHROME2

Table 297: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1, 1	ALWAYS	AUTO	
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Bits Allocated	0028,0100	US	16, 16, 16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	15, 10, 12	ALWAYS	AUTO	
High Bit	0028,0102	US	14, 9, 11	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0x0000	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW /OB		ALWAYS	AUTO	
Pixel Aspect Ratio	0028,0034	IS	1, 1	ANAP	AUTO	Required if the aspect ratio is not 1\1 and the Image Plane Module is not applicable to this Image

Table 298: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ANAPCV	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.1	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

Table 299: Overlay Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Overlay Rows	6000,0010	US		ANAP	AUTO	
Overlay Columns	6000,0011	US		ANAP	AUTO	

Overlay Type	6000,0040	CS	G	ANAP	AUTO	
Overlay Origin	6000,0050	SS	1,1	ANAP	AUTO	
Overlay Bits Allocated	6000,0100	US	0x0001=1	ANAP	AUTO	
Overlay Bit Position	6000,0102	US	0x0000=0	ANAP	AUTO	
Overlay Data	6000,3000	OW /OB		ANAP	AUTO	

Table 300: Modality LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rescale Intercept	0028,1052	DS	0.0	ALWAYS	AUTO	
Rescale Slope	0028,1053	DS	1.0	ALWAYS	AUTO	
Rescale Type	0028,1054	LO	US	ALWAYS	AUTO	

Table 301: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS	2047.0	ALWAYS	AUTO	
Window Width	0028,1051	DS	4095.0	ALWAYS	AUTO	

Table 302: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS	POLYGONAL, RECTANGULAR	ALWAYS	CONFIG, USER	
Shutter Left Vertical Edge	0018,1602	IS		ANAPEV	AUTO	Required if Shutter Shape (0018,1600) is RECTANGULAR
Shutter Right Vertical Edge	0018,1604	IS		ANAPEV	AUTO	Required if Shutter Shape (0018,1600) is RECTANGULAR
Shutter Upper Horizontal Edge	0018,1606	IS		ANAPEV	AUTO	Required if Shutter Shape (0018,1600) is RECTANGULAR
Shutter Lower Horizontal Edge	0018,1608	IS		ANAPEV	AUTO	Required if Shutter Shape (0018,1600) is RECTANGULAR
Vertices of the Polygonal Shutter	0018,1620	IS		ANAPEV	AUTO	Required if Shutter Shape (0018,1600) is POLYGONAL

Table 303: Additional Attributes for CR image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		VNAP	MWL/ USER	
Allergies	0010,2110	LO		VNAP	MWL/ USER	

Pregnancy Status	0010,21C0	US		VNAP	MWL/ USER	Enumerated Values: 0001 = not pregnant 0002 = possibly pregnant 0003 = definitely pregnant 0004 = unknown
Image Area Dose Product	0018,115E	DS		ALWAYS	AUTO	
Frame of Reference UID	0020,0052	UI		ALWAYS	AUTO	
Pixel Spacing	0028,0030	DS		ANAP	AUTO	
Recommended Viewing Mode	0028.1090	CS		ANAP	AUTO	
Pixel Padding Range Limit	0028,0121	US/ SS	0X0000=0	ANAP	AUTO	
Details of Coefficients (RET)	0028,0404	LO		ANAP	AUTO	
Mask Subtraction Sequence	0028,6100	SQ		ANAP	AUTO	
Requesting Physician	0032,1032	PN		VNAP	MWL/ USER	
Requesting Service	0032,1033	LO		VNAP	MWL/ USER	
Requested Procedure Description	0032,1060	LO		VNAP	MWL/ USER	
Requested Procedure Code Sequence	0032,1064	SQ		ANAP	MWL/ USER	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Special Needs	0038,0050	LO		VNAP	MWL/ USER	
Patient State	0038,0500	LO		VNAP	MWL/ USER	
Performed Station AE Title	0040,0241	AE		ALWAYS	USER/ CONFIG	
Performed Procedure Step Status	0040,0252	CS		VNAP	AUTO	
Total Time of Fluoroscopy	0040,0300	US		VNAP	AUTO	
Total Number of Exposures	0040,0301	US		ALWAYS	AUTO	
Entrance Dose	0040,0302	US		VNAP	AUTO	
Exposure Dose Sequence	0040,030E	SQ		VNAP	AUTO	
Film Consumption Sequence	0040,0321	SQ		ANAP	AUTO	
Requested Procedure ID	0040,1001	SH		VNAP	AUTO	
Reason for the Requested Procedure	0040,1002	LO		VNAP	AUTO	
Requested Procedure Priority	0040,1003	SH		VNAP	AUTO	
Patient Transport Arrangements	0040,1004	LO		VNAP	AUTO	
Names of Intended Recipients of Results	0040,1010	PN		VNAP	AUTO	
Requested Procedure Comments	0040,1400	LT		VNAP	AUTO	
Reason for the Imaging Service Request (RETIRED)	0040,2001	TM		VNAP	AUTO	
Issue Date of Imaging Service Request	0040,2004	DA		VNAP	AUTO	
Imaging Service Request Comments	0040,2400	LT		VNAP	MWL/ USER	
Issue Date of Imaging Service Request	0040,2004	DA		VNAP	MWL/ USER	

Performed Station AE Title	0040,0241	AE		VNAP	MPPS/ AUTO	
Performed Procedure Step End Date	0040,0250	DA		VNAP	MPPS/ AUTO	
Performed Procedure Step End Time	0040,0251	TM		VNAP	MPPS/ AUTO	
Performed Procedure Step Status	0040,0252	CS	IN PROGRESS, DISCONTINUED, COMPLETED	VNAP	MPPS/ AUTO	
Requested Procedure ID	0040,1001	SH		VNAP	MWL/ USER	
Film Consumption Sequence	0040,0321	SQ		VNAP	AUTO	
Encrypted Attributes Sequence	0400,0500	SQ		ANAP	AUTO	
HL7 Structured Document Reference Sequence	0040,A390	SQ		ANAP	AUTO	
Private Sequence	2001,9000	SQ		ALWAYS	AUTO	
> SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.1 1.1	ALWAYS	AUTO	
> SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
> Referenced Series Sequence	0008,1115	SQ		ALWAYS	AUTO	
>> Referenced Image Sequence	0008,1140	SQ		ALWAYS	AUTO	
>>> Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.5.1.4.1.1.1	ALWAYS	AUTO	
>>> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>> Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
> Shutter Presentation Color CIELab Value	0018,1624	US		ANAP	AUTO	
> Instance Number	0020,0013	IS		ALWAYS	AUTO	
> Recommended Viewing Mode	0028,1090	CS		ANAP	USER	
> Mask Subtraction Sequence	0028,6100	SQ		ANAP	USER	
> HL7 Structured Document Reference Sequence	0040,A390	SQ		ANAP	USER	
> Graphic Annotation Sequence	0070,0001	SQ		ANAP	USER	
>> Graphic Layer	0070,0002	CS	ANNOTATION_LAYER	ALWAYS	USER/ AUTO	
>> Text Object Sequence	0070,0008	SQ		ANAP	AUTO	
>>> Anchor Point Annotation Units	0070,0004	CS	PIXEL	ALWAYS	AUTO	
>>> Unformatted Text Value	0070,0006	ST		ALWAYS	USER	
>>> Bounding Box Top Left Hand Corner	0070,0010	FL		ALWAYS	AUTO	
>>> Bounding Box Bottom Right Hand Corner	0070,0011	FL		ALWAYS	AUTO	
>>> Bounding Box Text Horizontal Justification	0070,0012	FL	LEFT, RIGHT, CENTER	ANAP	AUTO	
>> Anchor Point	0070,0014	FL		ALWAYS	AUTO	
>> Anchor Point Visibility	0070,0015	CS	N, Y	ALWAYS	AUTO	
>> Graphic Object Sequence	0070,0009	SQ		ANAP	AUTO	
>>> Graphic Annotation Units	0070,0005	CS	PIXEL	ALWAYS	AUTO	
>>> Graphic Dimensions	0070,0020	US		ALWAYS	AUTO	
>>> Number of Graphics Points	0070,0021	US		ALWAYS	AUTO	
>>> Graphic Data	0070,0022	FL		ALWAYS	AUTO	

> Displayed Area Selection Sequence	0070,005A	SQ		ANAP	USER/ AUTO	
>> Displayed Area Top Left Hand Corner	0070,0052	SL		ALWAYS	AUTO	
>> Displayed Area Bottom Right Hand Corner	0070,0053	SL		ALWAYS	AUTO	
>> Presentation Size Mode	0070,0100	CS	SCALE TO FIT	ALWAYS	AUTO	
> Content Label	0070,0080	CS	AS_EXPORTED	ALWAYS	AUTO	
> Content Description	0070,0081	LO		VNAP	USER	
> Presentation Creation Date	0070,0082	DA		ALWAYS	AUTO	
> Presentation Creation Time	0070,0083	TM		ALWAYS	AUTO	
> Content Creator's Name	0070,0084	PN		VNAP	USER	
> Shutter Sequence	2001,1069	SQ		ANAP	USER	
>> Shutter Shape	0018,1600	CS	RECTANGULAR, POLYGONAL	ALWAYS	AUTO/ USER / CONFIG	
>> Vertices of the Polygonal Shutter	0018,1620	IS		ALWAYS	AUTO /USER	Present If Shutter Shape is POLYGONAL
> Presentation LUT Shape	2050,0020	CS	IDENTITY	ALWAYS	AUTO	ALWAYS: IDENTITY

10.1.1.3. Secondary Capture Image Storage SOP Class

Table 304: IOD of Created Secondary Capture Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
	Patient Study Module	OPTIONAL
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	OPTIONAL
	SC Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
	Image Pixel Module	ALWAYS
	SC Image Module	ALWAYS
	Overlay Plane Module	OPTIONAL
	Modality LUT Module	OPTIONAL
	VOI LUT Module	OPTIONAL
	SOP Common Module	ALWAYS
	Additional Module	ALWAYS

Table 305: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MWL, USER, AUTO	
Patient ID	0010,0020	LO		ALWAYS	MWL, USER, AUTO	
Issuer of Patient ID	0010,0021	LO		VNAP	MWL, CONFIG	

Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Sex	0010,0040	CS	F, M, O	ALWAYS	MWL, USER, AUTO	Default “O”
Other Patient IDs	0010,1000	LO		VNAP	MWL, CONFIG	
Ethnic Group	0010,2160	SH		VNAP	MWL, USER	
Patient Comments	0010,4000	LT		VNAP	MWL, CONFIG	

Table 306: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	AUTO	
Study Time	0008,0030	TM		ALWAYS	AUTO	
Accession Number	0008,0050	SH		VNAP	MWL, USER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL, USER	
Study Description	0008,1030	LO		ALWAYS	MWL, USER	
Procedure Code Sequence	0008,1032	SQ		ANAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Referenced Study Sequence	0008,1110	SQ		ANAP	MWL	
>Referenced SOP Class UID	0008,1150	UI		ANAPEV	MWL	
>Referenced SOP Instance UID	0008,1155	UI		ANAPEV	MWL	
Study ID	0020,0010	SH		ALWAYS	MWL, AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	MWL, AUTO	

Table 307: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	MWL, USER	
Patient's Size	0010,1020	DS		ALWAYS	MWL, USER, AUTO	Default 0.0
Patient's Weight	0010,1030	DS		ALWAYS	MWL, USER, AUTO	Default 0.0
Occupation	0010,2180	SH		ANAP	MWL, USER	
Additional Patient History	0010,21B0	LT		VNAP	MWL, USER	

Table 308: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	MPPS, USER	
Performing Physician's Name	0008,1050	PN		VNAP	MPPS, USER	
Operators' Name	0008,1070	PN		ALWAYS	MPPS, USER, AUTO	Default Emergency
Body Part Examined	0018,0015	CS		ALWAYS	USER, AUTO	
Protocol Name	0018,1030	LO		ALWAYS	MWL, USER	
Series Instance UID	0020,000E	UI		ALWAYS	MPPS, AUTO	
Series Number	0020,0011	IS		ALWAYS	MPPS, AUTO	
Laterality	0020,0060	CS		ANAP	CONFIG	Required if the body part examined is a paired structure.
Performed Procedure Step Start Date	0040,0244	DA		ALWAYS	MPPS, AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ALWAYS	MPPS, AUTO	
Performed Procedure Step ID	0040,0253	SH		ALWAYS	MPPS, AUTO	
Performed Procedure Step Description	0040,0254	LO		ALWAYS	MPPS, AUTO	

Performed Protocol Code Sequence	0040,0260	SQ		ANAP	MWL	
> Code Value	0008,0100	SH		ALWAYS	MWL	
> Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
> Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
> Code Meaning	0008,0104	LO		ALWAYS	MWL	
Request Attributes Sequence	0040,0275	SQ		ANAP	MWL	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	MWL	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	MWL	
>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	
>Scheduled Procedure Step ID	0040,0009	SH		ANAPEV	MWL	
>Requested Procedure ID	0040,1001	SH		ANAPEV	MWL	

Table 309: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO		VNAP	CONFIG	
Institution Address	0008,0081	ST		VNAP	CONFIG	
Station Name	0008,1010	SH		ALWAYS	CONFIG	
Institutional Department Name	0008,1040	LO		ALWAYS	CONFIG	
Manufacturer's Model Name	0008,1090	LO	Easy Diagnost Eleva	ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	CONFIG	
Software Version(s)	0018,1020	LO	PMS 81.101.1.1 GXR GXRIM5.0	ALWAYS	AUTO	
Spatial Resolution	0018,1050	DS		ALWAYS	AUTO	

Table 310: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	CR	ALWAYS	AUTO	
Conversion Type	0008,0064	CS	WSD	ALWAYS	AUTO	

Table 311: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	ORIGINAL, PRIMARY	ALWAYS	AUTO	
Acquisition Date	0008,0022	DA		ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Acquisition Time	0008,0032	TM		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Referenced Image Sequence	0008,1140	SQ		ANAP	AUTO	If present then EMPTY
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		ALWAYS	AUTO/ CONFIG	Configurable in EVA tool
Burned In Annotation	0028,0301	CS	NO, YES	ALWAYS	AUTO/ USER	
Lossy Image Compression	0028,2110	CS	00	ANAP	AUTO	

Table 312: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	ALWAYS: MONOCHROME2
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Bits Allocated	0028,0100	US	16, 16, 16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	15, 12, 10	ALWAYS	AUTO	
High Bit	0028,0102	US	14, 11, 9	ALWAYS	AUTO	
Pixel Representation	0028,0103	US	0x0000=0	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW /OB		ALWAYS	AUTO	
Planar Configuration	0028,0006	US		ANAPCV	AUTO	
Pixel Spacing	0028,0030	DS		ANAPCV	AUTO	
Pixel Aspect Ratio	0028,0034	IS	1,1	ANAPCV	AUTO	

Table 313: SC Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Date of Secondary Capture	0018,1012	DA		ALWAYS	AUTO	
Time of Secondary Capture	0018,1014	TM		ALWAYS	AUTO	

Table 314: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ANAPCV	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI	1.2.840.10008.5.1.4.1.1.7	ALWAYS	AUTO	

Table 315: Modality LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rescale Intercept	0028,1052	DS	0.0	ALWAYS	AUTO	
Rescale Slope	0028,1053	DS	1.0	ALWAYS	AUTO	
Rescale Type	0028,1054	LO	US	ALWAYS	AUTO	

Table 316: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS	2047.0	ALWAYS	AUTO	
Window Width	0028,1051	DS	4095.0	ALWAYS	AUTO	

Table 317: Overlay Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Overlay Rows	6000,0010	US		ANAP	AUTO	
Overlay Columns	6000,0011	US		ANAP	AUTO	
Overlay Type	6000,0040	CS	G	ANAP	AUTO	
Overlay Origin	6000,0050	SS	1,1	ANAP	AUTO	
Overlay Bits Allocated	6000,0100	US	0x0001=1	ANAP	AUTO	
Overlay Bit Position	6000,0102	US	0x0000=0	ANAP	AUTO	
Overlay Data	6000,3000	OW /OB		ANAP	AUTO	

Table 318: Additional Attributes for SC image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Presentation Intent Type	0008,0068	CS	PROCESSING	VNAP	AUTO	
Medical Alerts	0010,2000	LO		VNAP	MWL, USER	
Allergies	0010,2110	LO		VNAP	MWL, USER	
Pregnancy Status	0010,21C0	US		ALWAYS	MWL, USER	Enumerated Values: 0001 = not pregnant 0002 = possibly pregnant 0003 = definitely pregnant 0004 = unknown
Contrast/Bolus Agent	0018,0010	LO		VNAP	AUTO	
KVP	0018,0060	DS		VNAP	AUTO	
Plate ID	0018,1004	LO		ALWAYS	AUTO	
Distance Source to Detector	0018,1110	DS		VNAP	AUTO	
Exposure Time	0018,1150	IS		VNAP	AUTO	
X-ray Tube Current	0018,1151	IS		VNAP	AUTO	
Exposure	0018,1152	IS		VNAP	AUTO	
Radiation Setting	0018,1155	CS		VNAP	AUTO	
Image and Fluoroscopy Area Dose Product	0018,115E	DS		VNAP	AUTO	
Imager Pixel Spacing	0018,1164	DS		ALWAYS	AUTO	
Plate Type	0018,1260	SH		ALWAYS	AUTO	
Acquisition Device Processing Description	0018,1400	LO		ALWAYS	AUTO	

Cassette Size	0018,1403	CS		ALWAYS	AUTO	
Relative X-ray Exposure	0018,1405	IS		ALWAYS	AUTO	
Tomo Layer Height	0018,1460	DS		ANAP	AUTO	
Positioner Motion	0018,1500	CS		ANAP	AUTO	
Positioner Type	0018,1508	CS		ANAP	AUTO	
Positioner Primary Angle	0018,1510	DS		ANAP	AUTO	
Positioner Secondary Angle	0018,1511	DS		ANAP	AUTO	
Positioner Primary Angle Increment	0018,1520	DS		ANAP	AUTO	
Positioner Secondary Angle Increment	0018,1521	DS		ANAP	AUTO	
Collimator Shape	0018,1700	CS	RECTANGULAR, POLYGONAL	ANAP	AUTO	Configurable in EVA Tool
Collimator Left Vertical Edge	0018,1702	IS		ANAPCV	AUTO	Present if Collimator Shape RECTANGULAR
Collimator Right Vertical Edge	0018,1704	IS		ANAPCV	AUTO	Present if Collimator Shape RECTANGULAR
Collimator Upper Horizontal Edge	0018,1706	IS		ANAPCV	AUTO	Present if Collimator Shape RECTANGULAR
Collimator Lower Horizontal Edge	0018,1708	IS		ANAPCV	AUTO	Present if Collimator Shape RECTANGULAR
Vertices of the Polygonal Collimator	0018,1720	IS		ANAPCV	AUTO	Present if Collimator Shape POLYGONAL
View Position	0018,5101	CS		ALWAYS	AUTO	
Sensitivity	0018,6000	DS		ALWAYS	AUTO	
Detector Type	0018,7004	CS		ANAP	AUTO	
Date of Last Detector Calibration	0018,700C	DA		ANAP	AUTO	
Time of Last Detector Calibration	0018,700E	TM		ANAP	AUTO	
Field of View Origin	0018,7030	DS		ANAP	AUTO	
Field of View Rotation	0018,7032	DS		ANAP	AUTO	
Field of View Horizontal Flip	0018,7034	CS		ANAP	AUTO	
Frame of Reference UID	0020, 0052	UI		ALWAYS	AUTO	
Image Laterality	0020,0062	CS		ANAP	AUTO	
Pixel Spacing	0028,0030	DS		ANAP	AUTO	
Pixel Padding Range Limit	0028,0121	US	0x0000=0	ANAP	AUTO	
Details of Coefficients (RET)	0028,0404	US		ANAP	AUTO	
Pixel Intensity Relationship	0028,1040	CS		ANAP	AUTO	
Pixel Intensity Relationship Sign	0028,1041	SS		ANAP	AUTO	
Requesting Physician	0032,1032	PN		VNAP	MWL, USER	
Requesting Service	0032,1033	LO		VNAP	MWL, USER	
Requested Procedure Description	0032,1060	LO		VNAP	MWL, USER	
Requested Procedure Code Sequence	0032,1064	SQ		VNAP	MWL	
> Code Value	0008,0100	SH		ALWAYS	MWL	
> Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
> Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
> Code Meaning	0008,0104	LO		ALWAYS	MWL	
Special Needs	0038,0050	LO		VNAP	MWL, USER	

Patient State	0038,0500	LO		VNAP	MWL, USER	
Total Time of Fluoroscopy	0040,0300	US		VNAP	AUTO	
Total Number of Exposures	0040,0301	US		VNAP	AUTO	
Exposure Dose Sequence	0040,030E	SQ		VNAP	AUTO	
Performed Station AE Title	0040,0241	AE		ALWAYS	MPPS, AUTO, CONFIG	
Performed Procedure Step End Date	0040,0250	DA		ANAP	MPPS, AUTO	
Performed Procedure Step End Time	0040,0251	TM		ANAP	MPPS, AUTO	
Performed Procedure Step Status	0040,0252	CS		VNAP	MPPS, AUTO	
Total Number	0040,0301	US		ALWAYS	AUTO	
Entrance Dose	0040,0302	US		VNAP	AUTO	
Organ Dose	0040,0316	DS		VNAP	AUTO	
Film Consumption Sequence	0040,0321	SQ	EMPTY	VNAP	AUTO	
> Medium Type	2000,0030	CS	BLUE FILM	ANAPCV	AUTO	
> Film Size ID	2010,0050	CS		ANAPCV	AUTO	
> Number of Films	2100,0170	IS		ANAPCV	AUTO	
Requested Procedure ID	0040,1001	SH		VNAP	MWL, AUTO	
Reason for the Requested Procedure	0040,1002	LO		VNAP	MWL, AUTO	
Requested Procedure Priority	0040,1003	SH		VNAP	MWL, AUTO	
Patient Transport Arrangements	0040,1004	LO		VNAP	MWL, USER	
Names of Intended Recipients of Results	0040,1010	PN		VNAP	AUTO	
Requested Procedure Comments	0040,1400	LT		VNAP	MWL, AUTO	
Reason for the Imaging Service Request (RETIRED)	0040,2001	LO		VNAP	MWL, AUTO	
Issue Date of Imaging Service Request	0040,2004	DA		VNAP	MWL, AUTO	
Imaging Service Request Comments	0040,2400	LT		VNAP	MWL, AUTO	
Film Consumption Sequence	0040,0321	SQ		ANAP	AUTO	
Acquisition Context Sequence	0040,0555	SQ		ANAP	AUTO	
HL7 Structured Document Reference Sequence	0040,A390	SQ		ANAP	AUTO	
Encrypted Attributes Sequence	0040,0500	SQ		ANAP	AUTO	

10.1.1.4. Digital X-Ray Image Storage - For Presentation SOP Class

Table 319: IOD of Created Digital X-Ray Image Storage - For Pres. SOP Instances

Information Entity	Module	Presence Of Module
Image	General Image Module	ALWAYS
	Image Pixel Module	ALWAYS
	Contrast/Bolus Module	CONDITIONAL

	Display Shutter Module	CONDITIONAL
	DX Anatomy Imaged Module	ALWAYS
	DX Image Module	ALWAYS
	DX Detector Module	ALWAYS
	X-Ray Collimator Module	CONDITIONAL
	DX Positioning Module	CONDITIONAL
	X-Ray Tomography Acquisition Module	CONDITIONAL
	X-Ray Acquisition Dose Module	CONDITIONAL
	Overlay Plane Module	CONDITIONAL
	VOI LUT Module	CONDITIONAL
	Modality LUT	CONDITIONAL
	Acquisition Context Module	ALWAYS
	SOP Common Module	ALWAYS
	Frame of Reference	CONDITIONAL
Series	General Series Module	CONDITIONAL
	DX Series Module	ALWAYS
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
	Patient Study Module	CONDITIONAL
Equipment	General Equipment Module	CONDITIONAL
	Additional Module	ALWAYS

Table 320: Frame of Reference Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame of Reference UID	0020,0052	UI		ALWAYS	AUTO	
Position Reference Indicator	0020,1040	LO		ALWAYS	AUTO	

Table 321: DX Anatomy Imaged Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Anatomic Region Sequence	0008,2218	SQ		VNAP	AUTO	
Image Laterality	0020,0062	CS		ALWAYS	AUTO	

Table 322: DX Detector Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Imager Pixel Spacing	0018,1164	DS		ALWAYS	AUTO	
Sensitivity	0018,6000	DS		ALWAYS	AUTO	
Detector Temperature	0018,7001	DS		ANAP	AUTO	
Detector Type	0018,7004	CS		VNAP	AUTO	
Date of Last Detector Calibration	0018,700C	DA		ANAP	AUTO	
Time of Last Detector Calibration	0018,700E	TM		ANAP	AUTO	
Field of View Origin	0018,7030	DS	Default 0.0 / 0.0	ALWAYS	AUTO	
Field of View Rotation	0018,7032	DS	Default 0	ALWAYS	AUTO	
Field of View Horizontal Flip	0018,7034	CS	NO, YES	ALWAYS	AUTO	

Table 323: DX Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	ORIGINAL, PRIMARY	ALWAYS	AUTO	
Acquisition Device Processing Description	0018,1400	LO		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		ALWAYS	AUTO	
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	ALWAYS: MONOCHROME2
Bits Allocated	0028,0100	US	16, 16, 16	ALWAYS	CONFIG	
Bits Stored	0028,0101	US	15, 10, 12	ALWAYS	CONFIG	
High Bit	0028,0102	US	14, 9, 11	ALWAYS	CONFIG	
Pixel Representation	0028,0103	US	0x0000	ALWAYS	AUTO	
Burned In Annotation	0028,0301	CS	NO, YES	ALWAYS	USER	
Pixel Intensity Relationship	0028,1040	CS	LOG	ALWAYS	AUTO	
Pixel Intensity Relationship Sign	0028,1041	SS	1	ALWAYS	AUTO	
Window Center	0028,1050	DS	2047.0	ANAPEV	AUTO	
Window Width	0028,1051	DS	4095.0	ANAPEV	AUTO	
Rescale Intercept	0028,1052	DS	0.0	ALWAYS	AUTO	
Rescale Slope	0028,1053	DS	1.0	ALWAYS	AUTO	
Rescale Type	0028,1054	LO	US	ALWAYS	AUTO	
Lossy Image Compression	0028,2110	CS	00	ALWAYS	AUTO	
Presentation LUT Shape	2050,0020	CS	IDENTITY	ALWAYS	AUTO	ALWAYS: IDENTITY

Table 324: DX Positioning Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Distance Source to Detector	0018,1110	DS		ANAP	AUTO	
Positioner Type	0018,1508	CS		VNAP	AUTO	
Positioner Primary Angle	0018,1510	DS		ANAP	AUTO	
Positioner Secondary Angle	0018,1511	DS		ANAP	AUTO	
View Position	0018,5101	CS		VNAP	AUTO	
Estimated Radiographic Magnification Factor	0018,1114	DS		ANAP	AUTO	

Table 325: DX Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	DX	ALWAYS	CONFIG	
Presentation Intent Type	0008,0068	CS	FOR PRESENTATION	ALWAYS	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ALWAYS	AUTO	
> Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 326: X-Ray Acquisition Dose Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
KVP	0018,0060	DS		ANAP	AUTO	

Exposure Time	0018,1150	IS		ANAP	AUTO	
X-ray Tube Current	0018,1151	IS		ANAP	AUTO	
Exposure	0018,1152	IS		ANAP	AUTO	
Image Area Dose Product	0018,115E	DS		ALWAYS	AUTO	
Relative X-ray Exposure	0018,1405	IS		ALWAYS	AUTO	
Filter Material	0018,7050	CS		ANAP	AUTO	
Organ Dose	0018,0316	DS	0.0	ANAP	AUTO	
Entrance Dose	0040,0302	US	0x0000=0	ANAP	AUTO	

Table 327: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MWL/ USER/ AUTO	
Patient ID	0010,0020	LO		ALWAYS	MWL/ USER/ AUTO	
Issuer of Patient ID	0010,0021	LO		VNAP	WLM/ CONFIG	
Patient's Birth Date	0010,0030	DA		VNAP	MWL/ USER	
Patient's Sex	0010,0040	CS	F, M, O	ALWAYS	MWL/ USER/ AUTO	Default “O”
Other Patient IDs	0010,1000	LO		VNAP	MWL/ CONFIG	
Ethnic Group	0010,2160	SH		VNAP	MWL/ USER	
Patient Comments	0010,4000	LT		VNAP	MWL/ CONFIG	

Table 328: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	AUTO	
Study Time	0008,0030	TM		ALWAYS	AUTO	
Accession Number	0008,0050	SH		VNAP	MWL/ USER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL/ USER	
Study Description	0008,1030	LO		ALWAYS	MWL/ USER	
Procedure Code Sequence	0008,1032	SQ		ANAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Referenced Study Sequence	0008,1110	SQ		ANAP	MWL	
>Referenced SOP Class UID	0008,1150	UI		ANAPEV	MWL	
>Referenced SOP Instance UID	0008,1155	UI		ANAPEV	MWL	
Study ID	0020,0010	SH		ALWAYS	MWL/ AUTO	

Study Instance UID	0020,000D	UI		ALWAYS	MWL/ AUTO	

Table 329: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	MWL/ USER	
Patient's Size	0010,1020	DS		ALWAYS	MWL/ USER	Default 0.0
Patient's Weight	0010,1030	DS		ALWAYS	MWL/ USER	Default 0.0
Occupation	0010,2180	SH		ANAP	MWL/ USER	
Additional Patient History	0010,21B0	LT		VNAP	MWL/ USER	

Table 330: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Body Part Examined	0008,0015	CS		ALWAYS	USER	
Modality	0008,0060	CS	CR	ALWAYS	CONFIG	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	MPPS/ USER	
Performing Physician's Name	0008,1050	PN		VNAP	MPPS/ USER	
Operators' Name	0008,1070	PN		ALWAYS	MPPS/ USER/ AUTO	Default Emergency
Protocol Name	0018,1030	LO		ALWAYS	MWL/ USER	
Series Instance UID	0020,000E	UI		ALWAYS	MPPS/ AUTO	
Series Number	0020,0011	IS		ALWAYS	MPPS/ AUTO	
Laterality	0020,0060	CS		ANAP	CONFIG	Required if the body part examined is a paired structure.
Performed Procedure Step Start Date	0040,0244	DA		ALWAYS	MPPS/ AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ALWAYS	MPPS/ AUTO	
Performed Procedure Step ID	0040,0253	SH		ALWAYS	MPPS/ AUTO	
Performed Procedure Step Description	0040,0254	LO		ALWAYS	MPPS/ AUTO	
Performed Protocol Code Sequence	0040,0260	SQ		ANAP	MWL	

> Code Value	0008,0100	SH		ALWAYS	MWL	
> Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
> Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
> Code Meaning	0008,0104	LO		ALWAYS	MWL	
Request Attributes Sequence	0040,0275	SQ		ANAP	MWL	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	MWL	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	MWL	
>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	

Table 331: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO		VNAP	CONFIG	
Institution Address	0008,0081	ST		VNAP	CONFIG	
Station Name	0008,1010	SH		ALWAYS	CONFIG	
Institutional Department Name	0008,1040	LO		ALWAYS	CONFIG	
Manufacturer's Model Name	0008,1090	LO	Easy Diagnost Eleva	ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	CONFIG	
Software Version(s)	0018,1020	LO	PMS 81.101.1.1 GXR GXRIM5.0	ALWAYS	AUTO	
Spatial Resolution	0018,1050	DS		ALWAYS	AUTO	

Table 332: Contrast/Bolus Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Contrast/Bolus Agent	0018,0010	LO		VNAP	AUTO	

Table 333: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS	RECTANGULAR POLYGONAL	ALWAYS	AUTO/ CONFIG	
Shutter Left Vertical Edge	0018,1602	IS		ANAPCV	AUTO/ USER	Present If Shutter Shape RECTANGULAR
Shutter Right Vertical Edge	0018,1604	IS		ANAPCV	AUTO/ USER	Present If Shutter Shape RECTANGULAR
Shutter Upper Horizontal Edge	0018,1606	IS		ANAPCV	AUTO/ USER	Present If Shutter Shape RECTANGULAR
Shutter Lower Horizontal Edge	0018,1608	IS		ANAPCV	AUTO/ USER	Present If Shutter Shape RECTANGULAR
Vertices of the Polygonal Shutter	0018,1620	IS		ANAPCV	AUTO/ USER	Present If Shutter Shape is POLYGONAL

Table 334: Acquisition Context Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Context Sequence	0040,0555	SQ	EMPTY	ALWAYS	AUTO	

Table 335: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	ORIGINAL, PRIMARY	ALWAYS	AUTO	
Acquisition Date	0008,0022	DA		ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Acquisition Time	0008,0032	TM		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Referenced Image Sequence	0008,1140	SQ		ANAP	AUTO	EMPTY
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		ANAP	AUTO/ CONFIG	Configurable in EVA tool
Burned In Annotation	0028,0301	CS	NO, YES	ANAP	AUTO/ USER	
Lossy Image Compression	0028,2110	CS	00	ANAP	AUTO	
Presentation LUT Shape	2050,0020	CS	IDENTITY	ANAP	AUTO	ALWAYS: IDENTITY

Table 336: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Pixel Aspect Ratio	0028,0034	IS	1 , 1	ANAPCV	AUTO	Required if the aspect ratio is not 1\1 and the Image Plane Module is not applicable to this Image
Pixel Data	7FE0,0010	OB/ OW		ALWAYS	AUTO	

Table 337: X-Ray Tomography Acquisition Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Tomo Layer Height	0018,1460	DS		ALWAYS	AUTO	

Table 338: X-Ray Collimator Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Collimator Shape	0018,1700	CS	RECTANGULAR, POLYGONAL	ALWAYS	AUTO/ CONFIG	Configurable in EVA Tool
Collimator Left Vertical Edge	0018,1702	IS		ANAPEV	AUTO	Present If Collimator Shape is RECTANGULAR
Collimator Right Vertical Edge	0018,1704	IS		ANAPEV	AUTO	Present If Collimator Shape is RECTANGULAR
Collimator Upper Horizontal Edge	0018,1706	IS		ANAPEV	AUTO	Present If Collimator Shape is RECTANGULAR

Collimator Lower Horizontal Edge	0018,1708	IS		ANAPEV	AUTO	Present If Collimator Shape is RECTANGULAR
Vertices of the Polygonal Collimator	0018,1720	IS		ANAPEV	AUTO	Present If Collimator Shape is POLYGONAL

Table 339: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ANAPCV	CONFIG	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI	1.2.840.10008.5.1.4.1.1.1.1	ALWAYS	AUTO	

Table 340: Overlay Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Overlay Rows	6000,0010	US		ALWAYS	AUTO	
Overlay Columns	6000,0011	US		ALWAYS	AUTO	
Overlay Type	6000,0040	CS	G	ALWAYS	AUTO	
Overlay Origin	6000,0050	SS	1, 1	ALWAYS	AUTO	
Overlay Bits Allocated	6000,0100	US	0x0001=1	ALWAYS	AUTO	
Overlay Bit Position	6000,0102	US	0x0000=0	ALWAYS	AUTO	
Overlay Data	6000,3000	OW/ OB		ANAPEV	AUTO	

Table 341: Additional Attributes for DX-for Presentation image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		VNAP	MWL/ USER	
Allergies	0010,2110	LO		VNAP	MWL/ USER	
Pregnancy Status	0010,21C0	US		ALWAYS	MWL/ USER	Enumerated Values: 0001 = not pregnant 0002 = possibly pregnant 0003 = definitely pregnant 0004 = unknown
Radiation Setting	0018,1155	CS		ANAP	AUTO	
Positioner Motion	0018,1500	CS		ANAP	AUTO	
Positioner Primary Angle Increment	0018,1520	DS		ANAP	AUTO	
Pixel Spacing	0028,0030	DS		ANAP	AUTO	
Pixel Padding Range Limit	0028,0121	US / SS	0X0000=0	ANAP	AUTO	
Details of Coefficients (RET)	0028,0404	LO		ANAP	AUTO	
Requesting Physician	0032,1032	PN		VNAP	MWL/ USER	
Requesting Service	0032,1033	LO		VNAP	MWL/ USER	
Requested Procedure Description	0032,1060	LO		VNAP	MWL/ USER	
Requested Procedure Code Sequence	0032,1064	SQ	EMPTY	ANAP	MWL	
Requesting Physician	0032,1032	PN		VNAP	MWL/ USER	

Requesting Service	0032,1033	LO		ANAP	MWL/ USER	
Requested Procedure Description	0032,1060	LO		ANAP	MWL/ USER	
Requested Procedure Code Sequence	0032,1064	SQ		ANAP	MWL/ USER	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Special Needs	0038,0050	LO		VNAP	MWL/ USER	
Patient State	0038,0500	LO		VNAP	MWL/ USER	
Performed Station AE Title	0040,0241	AE		ALWAYS	MPPS/ AUTO	
Performed Procedure Step End Date	0040,0250	DA		ANAP	MPPS/ AUTO	
Performed Procedure Step End Time	0040,0251	TM		ANAP	MPPS/ AUTO	
Performed Procedure Step Status	0040,0252	CS		VNAP	MPPS/ AUTO	
Total Time of Fluoroscopy	0040,0300	US		ANAP	AUTO	
Total Number of Exposures	0040,0301	US		ALWAYS	AUTO	
Exposure Dose Sequence	0040,030E	SQ		ANAP	AUTO	
Entrance Dose	0040,0302	US		VNAP	AUTO	
Organ Dose	0040,0316	DS		VNAP	AUTO	
Film Consumption Sequence	0040,0321	SQ		ALWAYS	AUTO	Default EMPTY
> Medium Type	2000,0030	CS		ANAP	AUTO	
> Film Size ID	2010,0050	CS		ANAP	AUTO	
> Number of Films	2100,0170	IS		ANAP	AUTO	
Encrypted Attributes Sequence	0400,0500	SQ		ANAP	AUTO	
HL7 Structured Document Reference Sequence	0040,A390	SQ		ANAP	AUTO	
Film Consumption Sequence	0040,0321	SQ		VNAP	AUTO	
Requested Procedure ID	0040,1001	SH		VNAP	MWL/ USER	
Reason for the Requested Procedure	0040,1002	LO		VNAP	MWL/ USER	
Requested Procedure Priority	0040,1003	SH		VNAP	MWL/ USER	
Patient Transport Arrangements	0040,1004	LO		VNAP	MWL/ USER	
Names of Intended Recipients of Results	0040,1010	PN		VNAP	AUTO	
Requested Procedure Comments	0040,1400	LT		VNAP	MWL	
Reason for the Imaging Service Request (RETIRED)	0040,2001	LO		VNAP	AUTO	
Issue Date of Imaging Service Request	0040,2004	DA		VNAP	AUTO	
Imaging Service Request Comments	0040,2400	LT		VNAP	MWL/ USER	
Displayed Area Selection Sequence	0070,005a	SQ		ANAP	USER	

Private Sequence	2001,9000	SQ		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		ALWAYS	AUTO	
> Referenced Series Sequence	0008,1115	SQ		ALWAYS	AUTO	
>> Referenced Image Sequence	0008,1140	UI		ALWAYS	AUTO	
>>> Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.5.1.4.1.1.1.1	ALWAYS	AUTO	
>>> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
> Shutter Presentation Color CIELab Value	0018,1624	US		ALWAYS	AUTO	
> Instance Number	0020,0013	IS		ANAP	AUTO	
> Recommended Viewing Mode	0028,1090	CS		ANAP	USER	
> Mask Subtraction Sequence	0028,6100	SQ		ANAP	USER	
> HL7 Structured Document Reference Sequence	0040,A390	SQ		ANAP	USER	
> Graphic Annotation Sequence	0070,0001	SQ		ANAP	USER	
>> Graphic Layer	0070,0002	CS	Graphic Layer, ANNOTATION_LAYER	ALWAYS	AUTO	
>> Text Object Sequence	0070,0008	SQ		ANAP	USER	
>>> Anchor Point Annotation Units	0070,0004	CS	PIXEL	ALWAYS	AUTO	
>>> Unformatted Text Value	0070,0006	ST		ALWAYS	AUTO	
>>> Bounding Box Top Left Hand Corner	0070,0010	FL		ALWAYS	AUTO	
>>> Bounding Box Bottom Right Hand Corner	0070,0011	FL		ALWAYS	AUTO	
>>> Bounding Box Text Horizontal Justification	0070,0012	FL	LEFT, RIGHT, CENTER	ANAP	AUTO	
>>> Anchor Point	0070,0014	FL		ALWAYS	AUTO	
>>> Anchor Point Visibility	0070,0015	CS	N,Y	ALWAYS	AUTO	
>> Graphic Object Sequence	0070,0009	SQ		ANAP	AUTO	
>>> Graphic Annotation Units	0070,0005	CS	PIXEL	ALWAYS	AUTO	
>>> Graphic Dimensions	0070,0020	US		ALWAYS	AUTO	
>>> Number of Graphics Points	0070,0021	US		ALWAYS	AUTO	
>>> Graphic Data	0070,0022	FL		ALWAYS	AUTO	
> Displayed Area Selection Sequence	0070,005A	SQ		ANAP	USER	
>> Displayed Area Top Left Hand Corner	0070,0052	SL		ALWAYS	AUTO	
>> Displayed Area Bottom Right Hand Corner	0070,0053	SL		ALWAYS	AUTO	
>> Presentation Size Mode	0070,0100	CS	SCALE TO FIT	ALWAYS	AUTO	
> Content Label	0070,0080	CS	AS_EXPORTED	ALWAYS	AUTO	
> Content Description	0070,0081	LO		ALWAYS	USER	
> Presentation Creation Date	0070,0082	DA		ALWAYS	AUTO	
> Presentation Creation Time	0070,0083	TM		ALWAYS	AUTO	
> Content Creator's Name	0070,0084	PN		VNAP	USER	
> Encrypted Attributes Sequence	0400,0500	SQ		ANAP	AUTO	
> Shutter Sequence	2001,1069	SQ		ANAP	USER	

>> Shutter Shape	0018,1600	CS	POLYGONAL	ALWAYS	AUTO	
>> Vertices of the Polygonal Shutter	0018,1620	IS		ALWAYS	AUTO	
> Presentation LUT Sequence	2050,0010	SQ		ANAP	USER	
> Presentation LUT Shape	2050,0020	CS	IDENTITY	ALWAYS	AUTO	ALWAYS: IDENTITY
> Displayed Area Top Left Hand Corner	0070,0052	SL		ALWAYS	USER	
> Displayed Area Bottom Right Hand Corner	0070,0053	SL		ALWAYS	USER	
> Presentation Size Mode	0070,0100	CS	SCALE TO FIT	ALWAYS	USER	
Content Label	0070,0080	CS	AS_EXPORTED	ALWAYS	AUTO	
Content Description	0070,0081	LO		ALWAYS	USER	
Presentation Creation Date	0070,0082	DA		ALWAYS	AUTO	
Presentation Creation Time	0070,0083	TM		ALWAYS	AUTO	
Content Creator's Name	0070,0084	PN		ANAP	USER	

10.1.1.5. Digital X-Ray Image Storage - For Processing SOP Class

Table 342: IOD of Created Digital X-Ray Image Storage - For Proc. SOP Class Instances

Information Entity	Module	Presence Of Module
Image	DX Anatomy Imaged Module	ALWAYS
	DX Detector Module	ALWAYS
	DX Image Module	ALWAYS
	DX Positioning Module	CONDITIONAL
	X-Ray Acquisition Dose Module	CONDITIONAL
	Contrast/Bolus Module	CONDITIONAL
	Display Shutter Module	CONDITIONAL
	General Image Module	ALWAYS
	Image Pixel Module	ALWAYS
	X-Ray Tomography Acquisition Module	CONDITIONAL
	X-Ray Collimator Module	CONDITIONAL
	SOP Common Module	ALWAYS
	Overlay Plane Module	CONDITIONAL
	Acquisition Context Module	ALWAYS
	Frame of Reference Module	CONDITIONAL
Series	DX Series Module	ALWAYS
	General Series Module	ALWAYS
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
	Patient Study Module	CONDITIONAL
Equipment	General Equipment Module	ALWAYS
	Additional Module	ALWAYS

Table 343: DX Anatomy Imaged Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Anatomic Region Sequence	0008,2218	SQ		VNAP	AUTO	
Image Laterality	0020,0062	CS		ALWAYS	AUTO	

Table 344: DX Detector Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Imager Pixel Spacing	0018,1164	DS		ALWAYS	AUTO	Default 0.2, 0.2
Sensitivity	0018,6000	DS		ALWAYS	AUTO	Default 158.0
Field of View Origin	0018,7030	DS		ALWAYS	AUTO	Default 0.0 / 0.0
Field of View Rotation	0018,7032	DS		ALWAYS	AUTO	Default 0
Field of View Horizontal Flip	0018,7034	CS	NO, YES	ALWAYS	AUTO	
Detector Type	0018,7004	CS		VNAP	AUTO	
Date of Last Detector Calibration	0018,700C	DA		ANAP	AUTO	
Time of Last Detector Calibration	0018,700E	TM		ANAP	AUTO	

Table 345: DX Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	ORIGINAL, PRIMARY	ALWAYS	AUTO	
Acquisition Device Processing Description	0018,1400	LO		VNAP	AUTO	
Patient Orientation	0020,0020	CS		ALWAYS	AUTO	
Samples per Pixel	0028,0002	US		ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME1, MONOCHROME2	ALWAYS	AUTO	DEFAULT: MONOCHROME1
Bits Allocated	0028,0100	US	16, 16, 16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	15, 12, 10	ALWAYS	CONFIG	
High Bit	0028,0102	US	14, 11, 9	ALWAYS	AUTO	
Pixel Representation	0028,0103	US		ALWAYS	AUTO	
Burned In Annotation	0028,0301	CS	NO, YES	ALWAYS	CONFIG	
Pixel Intensity Relationship	0028,1040	CS	LOG	ALWAYS	AUTO	
Pixel Intensity Relationship Sign	0028,1041	SS	1	ALWAYS	AUTO	
Window Center	0028,1050	DS		ANAPEV	AUTO	
Window Width	0028,1051	DS		ANAPEV	AUTO	
Rescale Intercept	0028,1052	DS		ALWAYS	AUTO	Default 0.0
Rescale Slope	0028,1053	DS		ALWAYS	AUTO	Default 1.0
Rescale Type	0028,1054	LO	US	ALWAYS	AUTO	
Lossy Image Compression	0028,2110	CS	00	ALWAYS	AUTO	
Lossy Image Compression Ratio	0028,2112	DS		ANAPCV	AUTO	Required if Lossy Compression has been used.
Presentation LUT Shape	2050,0020	CS	INVERSE, IDENTITY	ALWAYS	AUTO	DEFAULT: INVERSE for (MONOCHROME1), IDENTITY for (MONOCHROME2).

Table 346: DX Positioning Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Distance Source to Detector	0018,1110	DS		ANAP	AUTO	
Positioner Type	0018,1508	CS		ALWAYS	AUTO	Default zero length
Positioner Primary Angle	0018,1510	DS		ANAP	AUTO	
Positioner Secondary Angle	0018,1511	DS		ANAP	AUTO	

View Position	0018,5101	CS		ALWAYS	AUTO	

Table 347: DX Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	DX	ALWAYS	CONFIG	
Presentation Intent Type	0008,0068	CS	FOR PROCESSING	ALWAYS	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 348: X-Ray Acquisition Dose Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
KVP	0018,0060	DS		ANAP	AUTO	
Exposure Time	0018,1150	IS		ANAP	AUTO	
X-ray Tube Current	0018,1151	IS		ANAP	AUTO	
Exposure	0018,1152	IS		ANAP	AUTO	
Image and Fluoroscopy Area Dose Product	0018,115E	DS		ALWAYS	AUTO	
Relative X-ray Exposure	0018,1405	IS		ALWAYS	AUTO	
Entrance Dose	0040,0302	US		ANAP	AUTO	

Table 349: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MWL/ USER/ AUTO	
Patient ID	0010,0020	LO		ALWAYS	MWL/ USER/ AUTO	
Issuer of Patient ID	0010,0021	LO		VNAP	WLM/ CONFIG	
Patient's Birth Date	0010,0030	DA		VNAP	MWL/ USER	
Patient's Sex	0010,0040	CS	F, M, O	ALWAYS	MWL/ USER/ AUTO	Default “O”
Other Patient IDs	0010,1000	LO		VNAP	MWL/ CONFIG	
Ethnic Group	0010,2160	SH		VNAP	MWL/ USER	
Patient Comments	0010,4000	LT		VNAP	MWL/ CONFIG	

Table 350: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	AUTO	
Study Time	0008,0030	TM		ALWAYS	AUTO	
Accession Number	0008,0050	SH		VNAP	MWL/ USER	

Referring Physician's Name	0008,0090	PN		VNAP	MWL/ USER	
Study Description	0008,1030	LO		ALWAYS	MWL/ USER	
Procedure Code Sequence	0008,1032	SQ		ANAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Referenced Study Sequence	0008,1110	SQ		ANAP	MWL	
>Referenced SOP Class UID	0008,1150	UI		ANAPEV	MWL	
>Referenced SOP Instance UID	0008,1155	UI		ANAPEV	MWL	
Study ID	0020,0010	SH		ALWAYS	MWL/ AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	MWL/ AUTO	

Table 351: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	MWL/ USER	
Patient's Size	0010,1020	DS		ALWAYS	MWL/ USER	Default 0.0
Patient's Weight	0010,1030	DS		ALWAYS	MWL/ USER	Default 0.0
Occupation	0010,2180	SH		ANAP	MWL/ USER	
Additional Patient History	0010,21B0	LT		VNAP	MWL/ USER	

Table 352: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	CR	ALWAYS	CONFIG	
Series Date	0008,0021	DA		ALWAYS	AUTO	
Series Time	0008,0031	TM		ALWAYS	AUTO	
Series Description	0008,103E	LO		ALWAYS	MPPS/ USER	
Performing Physician's Name	0008,1050	PN		VNAP	MPPS/ USER	
Operators' Name	0008,1070	PN		ALWAYS	MPPS/ USER/ AUTO	Default Emergency
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.3	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Protocol Name	0018,1030	LO		ALWAYS	MWL/ USER	
Body Part Examined	0018,0015	CS		ALWAYS	MWL/ USER	

Series Instance UID	0020,000E	UI		ALWAYS	MPPS/ AUTO	
Series Number	0020,0011	IS		ALWAYS	MPPS/ AUTO	
Laterality	0020,0060	CS		ANAP	CONFIG	Required if the body part examined is a paired structure.
Performed Procedure Step Start Date	0040,0244	DA		ALWAYS	MPPS/ AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ALWAYS	MPPS/ AUTO	
Performed Procedure Step ID	0040,0253	SH		ALWAYS	MPPS/ AUTO	
Performed Procedure Step Description	0040,0254	LO		ALWAYS	MPPS/ AUTO	
Performed Protocol Code Sequence	0040,0260	SQ		ANAP	MWL	
> Code Value	0008,0100	SH		ALWAYS	MWL	
> Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
> Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
> Code Meaning	0008,0104	LO		ALWAYS	MWL	
Request Attributes Sequence	0040,0275	SQ		ANAP	MWL	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	MWL	
>Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	MWL	
>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	

Table 353: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ALWAYS	AUTO	
Institution Name	0008,0080	LO		VNAP	CONFIG	
Institution Address	0008,0081	ST		VNAP	CONFIG	
Station Name	0008,1010	SH		ALWAYS	CONFIG	
Institutional Department Name	0008,1040	LO		ALWAYS	CONFIG	
Manufacturer's Model Name	0008,1090	LO	Easy Diagnost Eleva	ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	CONFIG	
Software Version(s)	0018,1020	LO	PMS 81.101.1.1 GXR GXRIM5.0	ALWAYS	AUTO	
Spatial Resolution	0018,1050	DS		ALWAYS	AUTO	

Table 354: Contrast/Bolus Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Contrast/Bolus Agent	0018,0010	LO		VNAP	AUTO	

Table 355: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS	POLYGONAL, RECTANGULAR	ALWAYS	AUTO	
Shutter Left Vertical Edge	0018,1602	IS		ANAPEV	AUTO	
Shutter Right Vertical Edge	0018,1604	IS		ANAPEV	AUTO	
Shutter Upper Horizontal Edge	0018,1606	IS		ANAPEV	AUTO	
Shutter Lower Horizontal Edge	0018,1608	IS		ANAPEV	AUTO	
Center of Circular Shutter	0018,1610	IS		ANAPEV	AUTO	
Radius of Circular Shutter	0018,1612	IS		ANAPEV	AUTO	
Vertices of the Polygonal Shutter	0018,1620	IS		ANAPEV	AUTO	

Table 356: Acquisition Context Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Context Sequence	0040,0555	SQ		VNAP	AUTO	

Table 357: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	ORIGINAL, PRIMARY	ALWAYS	AUTO	
Acquisition Date	0008,0022	DA		ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Acquisition Time	0008,0032	TM		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Referenced Image Sequence	0008,1140	SQ		ALWAYS	AUTO	EMPTY
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		ALWAYS	AUTO/ CONFIG	Configurable in EVA tool
Burned In Annotation	0028,0301	CS	NO, YES	ALWAYS	AUTO/ USER	
Lossy Image Compression	0028,2110	CS	00	ANAP	AUTO	
Presentation LUT Shape	2050,0020	CS	IDENTITY	ALWAYS	AUTO	ALWAYS: IDENTITY

Table 358: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW/ OB		ALWAYS	AUTO	
Pixel Aspect Ratio	0028,0034	IS	1, 1	ANAPEV	AUTO	

Table 359: X-Ray Tomography Acquisition Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Tomo Layer Height	0018,1460	DS		ALWAYS	AUTO	

Table 360: X-Ray Collimator Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Collimator Shape	0018,1700	CS	RECTANGULAR, POLYGONAL	ALWAYS	AUTO	Configurable
Collimator Left Vertical Edge	0018,1702	IS		ANAPEV	AUTO	
Collimator Right Vertical Edge	0018,1704	IS		ANAPEV	AUTO	
Collimator Upper Horizontal Edge	0018,1706	IS		ANAPEV	AUTO	
Collimator Lower Horizontal Edge	0018,1708	IS		ANAPEV	AUTO	
Center of Circular Collimator	0018,1710	IS		ANAPEV	AUTO	
Radius of Circular Collimator	0018,1712	IS		ANAPEV	AUTO	
Vertices of the Polygonal Collimator	0018,1720	IS		ANAPEV	AUTO	

Table 361: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ANAPCV	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.1.1.1	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

Table 362: Overlay Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Overlay Rows	6000,0010	US		ALWAYS	AUTO	
Overlay Columns	6000,0011	US		ALWAYS	AUTO	
Overlay Type	6000,0040	CS	G	ALWAYS	AUTO	
Overlay Origin	6000,0050	SS	1 , 1	ALWAYS	AUTO	
Overlay Bits Allocated	6000,0100	US	1	ALWAYS	AUTO	
Overlay Bit Position	6000,0102	US	0	ALWAYS	AUTO	
Overlay Data	6000,3000	OW/ OB		ANAPEV	AUTO	

Table 363: Frame of Reference Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame of Reference UID	0020,0052	UI		ALWAYS	AUTO	
Position Reference Indicator	0020,1040	LO		ALWAYS	AUTO	

Table 364: X-Ray Collimator Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Collimator Shape	0018,1700	CS	RECTANGULAR, POLYGONAL	ALWAYS	AUTO/ CONFIG	Configurable in EVA Tool
Collimator Left Vertical Edge	0018,1702	IS		ANAPEV	AUTO	Present If Collimator Shape is RECTANGULAR
Collimator Right Vertical Edge	0018,1704	IS		ANAPEV	AUTO	Present If Collimator Shape is RECTANGULAR

Collimator Upper Horizontal Edge	0018,1706	IS		ANAPEV	AUTO	Present If Collimator Shape is RECTANGULAR
Collimator Lower Horizontal Edge	0018,1708	IS		ANAPEV	AUTO	Present If Collimator Shape is RECTANGULAR
Vertices of the Polygonal Collimator	0018,1720	IS		ANAPEV	AUTO	Present If Collimator Shape is POLYGONAL

Table 365: Additional DX- For Proccessing Module ATTRIBUTES

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		VNAP	MWL/ USER	
Allergies	0010,2110	LO		VNAP	MWL/ USER	
Pregnancy Status	0010,21C0	US		VNAP	MWL/ USER	Enumerated Values: 0001 = not pregnant 0002 = possibly pregnant 0003 = definitely pregnant 0004 = unknown
Radiation Setting	0018,1155	CS		ANAP	AUTO	
Positioner Motion	0018,1500	CS		ANAP	AUTO	
Positioner Primary Angle Increment	0018,1520	DS		ANAP	AUTO	
Positioner Secondary Angle Increment	0018,1521	DS		ANAP	AUTO	
Pixel Padding Range Limit	0028,0121	US / SS	0X0000=0	ANAP	AUTO	
Details of Coefficients (RET)	0028,0404	LO		ANAP	AUTO	
Requesting Physician	0032,1032	PN		VNAP	MWL/ USER	
Requesting Service	0032,1033	LO		VNAP	MWL/ USER	
Requested Procedure Description	0032,1060	LO		VNAP	MWL/ USER	
Requested Procedure Code Sequence	0032,1064	SQ		VNAP	MWL	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Coding Scheme Version	0008,0103	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	
Special Needs	0038,0050	LO		VNAP	MWL/ USER	
Patient State	0038,0500	LO		VNAP	MWL/ USER	
Total Time of Fluoroscopy	0040,0300	US		ANAP	AUTO	
Total Number of Exposures	0040,0301	US		ALWAYS	AUTO	
Exposure Dose Sequence	0040,030E	SQ		ANAP	AUTO	
Performed Station AE Title	0040,0241	AE		ALWAYS	MPPS/ AUTO	

Performed Procedure Step End Date	0040,0250	DA		VNAP	MPPS/ AUTO	
Performed Procedure Step End Time	0040,0251	TM		VNAP	MPPS/ AUTO	
Performed Procedure Step Status	0040,0252	CS	IN PROGRESS, DISCONTINUED, COMPLETED	VNAP	MPPS/ AUTO	
Film Consumption Sequence	0040,0321	SQ		VNAP	AUTO	
Requested Procedure ID	0040,1001	SH		VNAP	MWL/ AUTO	
Reason for the Requested Procedure	0040,1002	LO		VNAP	MWL	
Requested Procedure Priority	0040,1003	SH		VNAP	MWL	
Patient Transport Arrangements	0040,1004	LO		VNAP	MWL/ USER	
Names of Intended Recipients of Results	0040,1010	PN		VNAP	AUTO	
Requested Procedure Comments	0040,1400	LT		VNAP	MWL	
Reason for the Imaging Service Request (RETIRED)	0040,2001	LO		VNAP	MWL	
Issue Date of Imaging Service Request	0040,2004	DA		ANAP	AUTO	
Imaging Service Request Comments	0040,2400	LT		VNAP	MWL/ USER	
Requested Procedure ID	0040,1001	SH		VNAP	MWL/ USER	
Reason for the Requested Procedure	0040,1002	LO		VNAP	MWL/ USER	
Requested Procedure Priority	0040,1003	SH		VNAP	MWL/ USER	
Patient Transport Arrangements	0040,1004	LO		VNAP	MWL/ USER	
Names of Intended Recipients of Results	0040,1010	PN		ANAP	AUTO	
Requested Procedure Comments	0040,1400	LT		VNAP	MWL	
Reason for the Imaging Service Request (RETIRED)	0040,2001	LO		VNAP	MWL	
Imaging Service Request Comments	0040,2400	LT		VNAP	MWL/ USER	
HL7 Structured Document Reference Sequence	0040,A390	SQ		ANAP	AUTO	
Displayed Area Selection Sequence	0070,005a	SQ		ANAP	USER	
> Displayed Area Top Left Hand Corner	0070,0052	SL		ALWAYS	USER	
> Displayed Area Bottom Right Hand Corner	0070,0053	SL		ALWAYS	USER	
> Presentation Size Mode	0070,0100	CS	SCALE TO FIT	ALWAYS	USER	
Content Label	0070,0080	CS	AS_EXPORTED	ALWAYS	AUTO	
Content Description	0070,0081	LO		ALWAYS	USER	
Presentation Creation Date	0070,0082	DA		ALWAYS	AUTO	

Presentation Creation Time	0070,0083	TM		ALWAYS	AUTO	
Content Creator's Name	0070,0084	PN		ANAP	USER	
Encrypted Attributes Sequence	0400,0500	SQ		ANAP	AUTO	
Private Sequence	2001,9000	SQ		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		ALWAYS	AUTO	
> Referenced Series Sequence	0008,1115	SQ		ALWAYS	AUTO	
>> Referenced Image Sequence	0008,1140	UI		ALWAYS	AUTO	
>>> Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.5.1.4.1.1.1.1	ALWAYS	AUTO	
>>> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>> Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
> Shutter Presentation Color CIELab Value	0018,1624	US		ANAP	AUTO	
> Instance Number	0020,0013	IS		ALWAYS	AUTO	
> Recommended Viewing Mode	0028,1090	CS		ANAP	USER	
> Mask Subtraction Sequence	0028,6100	SQ		ANAP	USER	
> HL7 Structured Document Reference Sequence	0040,A390	SQ		VNAP	USER	
> Graphic Annotation Sequence	0070,0001	SQ		ANAP	USER	
>> Graphic Layer	0070,0002	CS	ANNOTATION_LAYER	ALWAYS	AUTO	
>> Text Object Sequence	0070,0008	SQ		VNAP	USER	
>>> Anchor Point Annotation Units	0070,0004	CS	PIXEL	ALWAYS	AUTO	
>>> Unformatted Text Value	0070,0006	ST		VNAP	USER	
>>> Bounding Box Top Left Hand Corner	0070,0010	FL		ALWAYS	AUTO	
>>> Bounding Box Bottom Right Hand Corner	0070,0011	FL		ALWAYS	AUTO	
>>> Bounding Box Text Horizontal Justification	0070,0012	FL	LEFT, RIGHT, CENTER	ANAP	AUTO	
>>> Anchor Point	0070,0014	FL		ALWAYS	AUTO	
>>> Anchor Point Visibility	0070,0015	CS	N,Y	ALWAYS	AUTO	
>> Graphic Object Sequence	0070,0009	SQ		ANAP	AUTO	
>>> Graphic Annotation Units	0070,0005	CS	PIXEL	ALWAYS	AUTO	
>>> Graphic Dimensions	0070,0020	US		ALWAYS	AUTO	
>>> Number of Graphics Points	0070,0021	US		ALWAYS	AUTO	
>>> Graphic Data	0070,0022	FL		ALWAYS	AUTO	
> Displayed Area Selection Sequence	0070,005A	SQ		ANAP	USER	
>> Displayed Area Top Left Hand Corner	0070,0052	SL		ALWAYS	AUTO	
>> Displayed Area Bottom Right Hand Corner	0070,0053	SL		ALWAYS	AUTO	

>> Presentation Size Mode	0070,0100	CS	SCALE TO FIT	ALWAYS	AUTO	
> Content Label	0070,0080	CS	AS_EXPORTED	ALWAYS	AUTO	
> Content Description	0070,0081	LO		ALWAYS	USER	
> Presentation Creation Date	0070,0082	DA		ALWAYS	AUTO	
> Presentation Creation Time	0070,0083	TM		ALWAYS	AUTO	
> Content Creator's Name	0070,0084	PN		VNAP	USER	
> Encrypted Attributes Sequence	0400,0500	SQ		ANAP	AUTO	
> Shutter Sequence	2001,1069	SQ		ANAP	USER	
>> Shutter Shape	0018,1600	CS	POLYGONAL, RECTANGULAR	ANAP	AUTO	
>> Vertices of the Polygonal Shutter	0018,1620	IS		ALWAYS	AUTO	
> Presentation LUT Sequence	2050,0010	SQ		ANAP	USER	
> Presentation LUT Shape	2050,0020	CS	INVERSE, IDENTITY	ALWAYS	AUTO	DEFAULT: INVERSE (MONOCHROME1), IDENTITY (MONOCHROME2).

10.1.1.6. X-Ray Radiation Dose SR

Table 366: IOD of Created X-Ray Radiation Dose SR Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Study	Patient Study Module	ALWAYS
Series	SR Document Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Document	SR Document General Module	ALWAYS
Document	SR Document Content Module	ALWAYS
Document	SOP Common Module	ALWAYS

Table 367: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Patient Sequence	0008,1120	SQ		VNAP	MWL	
> Referenced SOP Class UID	0008,1150	UI		ALWAYS	MWL	
> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	MWL	
Patient's Name	0010,0010	PN		VNAP	MWL, USER	
Patient ID	0010,0020	LO		VNAP	MWL, USER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Sex	0010,0040	CS	F, M, O	VNAP	MWL, USER	
Other Patient IDs	0010,1000	LO		ANAPCV	MWL	
Ethnic Group	0010,2160	SH		ANAPCV	MWL	

Patient Comments	0010,4000	LT		ANAPCV	MWL, USER	

Table 368: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		VNAP	AUTO	
Study Time	0008,0030	TM		VNAP	AUTO	
Accession Number	0008,0050	SH		VNAP	MWL, USER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL	
Study Description	0008,1030	LO		ANAPCV	AUTO, MWL	
Referenced Study Sequence	0008,1110	SQ		ANAPCV	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	
Study ID	0020,0010	SH		VNAP	MWL	

Table 369: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Weight	0010,1030	DS		VNAP	MWL, USER	

Table 370: SR Document Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAPCV	AUTO	
Series Time	0008,0031	TM		ANAPCV	AUTO	
Modality	0008,0060	CS	SR	ALWAYS	FIXED	
Series Description	0008,103E	LO		ANAPCV	CONFIG	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		VNAP	COPY	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	FIXED	

Table 371: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	VNAP	AUTO	Philips Medical Systems
Institution Name	0008,0080	LO		ANAPCV	AUTO	
Station Name	0008,1010	SH		ANAPCV	CONFIG	
Manufacturer's Model Name	0008,1090	LO		ANAPCV	AUTO	
Device Serial Number	0018,1000	LO		ANAPCV	AUTO	
Software Version(s)	0018,1020	LO		ANAPCV	AUTO	

Table 372: SR Document General Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Time	0008,0033	TM		ALWAYS	AUTO	

Instance Number	0020,0013	IS		ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Completion Flag	0040,A491	CS	COMPLETE	ALWAYS	FIXED	
Completion Flag Description	0040,A492	LO		ANAPCV	FIXED	Complete X-Ray Radiation Dose Structured Report"
Verification Flag	0040,A493	CS	UNVERIFIED	ALWAYS	FIXED	UNVERIFIED
Referenced Request Sequence	0040,A370	SQ		ANAP	MWL	
>Requested Procedure Description	0032,1060	LO		VNAP	MWL	
>Accession Number	0008,0050	SH		VNAP	MWL	
>Study Instance UID	0020,000D	UI		ALWAYS	MWL	
>Requested Procedure ID	0040,1001	SH		VNAP	MWL	
>Requested Procedure Code Sequence	0032,1064	SQ		VNAP	MWL	
>>Code Value	0008,0100	SH		ALWAYS	MWL	
>>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>>Code Meaning	0008,0104	LO		ALWAYS	MWL	
>Referenced Study Sequence	0008,1110	SQ		VNAP	MWL	
>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	MWL	
>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	MWL	
Performed Procedure Code Sequence	0040,A372	SQ		VNAP	AUTO	
>Code Value	0008,0100	SH		ALWAYS	MWL	
>Coding Scheme Designator	0008,0102	SH		ALWAYS	MWL	
>Code Meaning	0008,0104	LO		ALWAYS	MWL	

Table 373: SR Document Content Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Value Type	0040,A040	CS	CONTAINER	ALWAYS	FIXED	
Concept Name Code Sequence	0040,A043	SQ		ANAP	AUTO	
>Code Value	0008,0100	SH	113701	ALWAYS	FIXED	
>Coding Scheme Designator	0008,0102	SH	DCM	ALWAYS	FIXED	
>Code Meaning	0008,0104	LO	X-ray radiation Dose Report	ALWAYS	FIXED	
Continuity Of Content	0040,A050	CS	SEPARATE	ALWAYS	FIXED	
Content Template Sequence	0040,A504	SQ		ALWAYS	AUTO	
>Mapping Resource	0008,0105	CS	DCMR	ALWAYS	FIXED	
>Template Identifier	0040,DB00	CS	TID 10001	ALWAYS	FIXED	
Content Sequence	0040,A730	SQ		ANAP	AUTO	
>Relationship Type	0040,A010	CS	HAS CONCEPT MOD	ALWAYS	FIXED	

Table 374: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP	COPY	
Instance Creation Date	0008,0012	DA		ANAPCV	AUTO	
Instance Creation Time	0008,0013	TM		ANAPCV	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.88.67	ALWAYS	FIXED	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

10.1.2. Usage of Attributes from Received IOD

The Eleva Workspot has only an export side. The modality cannot read/view images from a CD or by import.

10.1.3. Attribute Mapping

The following table shows the relation between BWLM and MPPS and image storage attributes.

Table 375: Attribute Mapping during Modality Workflow

Name	BWLM Tag	MPPS		Image IOD Tag
		Create Tag	Set Tag	
Accession Number	0008,0050	0008,0050	-	0008,0050
Modality	-	0008,0060	-	0008,0060
Referring Physician's Name	0008,0090	-	-	0008,0090
Operators' Name	-	-	0008,1070	0008,1070
Referenced Study Sequence	0008,1110	0008,1110	-	0008,1110
Referenced Image Sequence	-	-	(0008,1140)	-
> Referenced SOP Class UID SOP Class UID	-	-	0008,1150	0008,0016
> Referenced SOP Instance UID SOP Instance UID	-	-	0008,1155	0008,0018
Patient's Name	0010,0010	0010,0010	-	0010,0010
Patient ID	0010,0020	0010,0020	-	0010,0020
Issuer of Patient ID	0010,0021	0010,0021	-	0010,0021
Patient's Birth Date	0010,0030	0010,0030	-	0010,0030
Patient's Sex	0010,0040	0010,0040	-	0010,0040
Other Patient IDs	0010,1000	0010,1000	-	0010,1000
Medical Alerts	0010,2000	-	-	0010,2000
Contrast Allergies	0010,2110	-	-	0010,2110
Ethnic group	0010,2160	-	-	0010,2160
Additional Patient History	0010,21B0	-	-	0010,21B0
Pregnancy Status	0010,21C0	-	-	0010,21C0
Patient Comments	0010,4000	-	-	0010,4000
Protocol Name	-	-	0018,1030	0018,1030
Study Instance UID	0020,000D	0020,000D	-	0020,000D
Series Instance UID			0020,000E	0020,000E
Study ID	-	0020,0010	-	0020,0010
Requesting Service	0032,1033	-	-	0032,1033
Requested Procedure Description	0032,1060	0032,1060	-	-
Requested Procedure Code Sequence[3] Performed Procedure Code Sequence	0032,1064	0008,1032	0008,1032	0008,1032
Special Needs	0038,0050	-	-	0038,0050
Patient State	0038,0500	-	-	0038,0500
Scheduled Procedure Step Description[4]	0040,0007	0040,0007	-	0040,0007
Performed Procedure Step Description		0040,0254	-	0040,0254
Scheduled Protocol Code Sequence[4]	0040,0008	0040,0260	0040,0260	0040,0008
Performed Protocol Code Sequence				0040,0260
Scheduled Procedure Step ID	0040,0009	0040,0009	-	0040,0009
Performed Procedure Step Start Date	-	0040,0244	-	0040,0244
Performed Procedure Step Start Time	-	0040,0245	-	0040,0245
Performed Procedure Step ID	-	0040,0253	-	0040,0253
Requested Procedure ID	0040,1001	0040,1001	-	0040,1001

Note 1: Value accumulated from all performed acquisitions including dropped (repeated) acquisitions.
Note 2: Image related specific value.
Note 3: If procedure is performed as requested.
Note 4: If protocol is performed as scheduled.

10.1.4. Coerced/Modified fields

Not applicable.

10.2. Data Dictionary of Private Attributes

Not applicable.

10.3. Coded Terminology and Templates

Not applicable.

10.3.1. Context Groups

Not applicable.

10.3.2. Template Specifications

EasyDiagnost Eleva R5.0 can optionally create and store, upon completion of the study, a DICOM X-Ray Radiation DOSE SR object.

X-RAY RADIATION DOSE SR IOD TEMPLATES

The templates that comprise the X-Ray Radiation Dose SR are interconnected as indicated in the figure below:

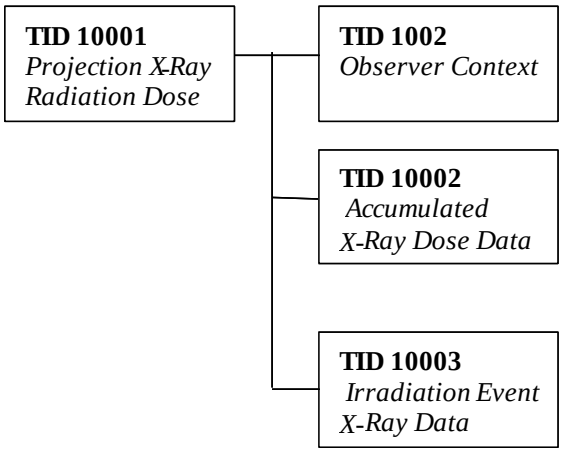

Figure 32: X-Ray Radiation Dose SR IOD Template Structure

This section describes the content of all the templates used in the X-Ray Radiation Dose Reporting SR.

Table 376: Used Templates for X-Ray Radiation Dose Reporting

Template Name	Template ID
Projection X-Ray Radiation Dose	TID 10001
Accumulated X-Ray Dose	TID 10002
Irradiation Event X-Ray Data	TID 10003
Accumulated Projection X-Ray Dose	TID 10004
Observer Context	TID 1002
Device Observer Identifying Attributes	TID 1004
Person Participant	TID 1020

10.3.2.1.1. TID 10001 Projection X-Ray Radiation Dose

Table 377: Projection X-Ray Radiation Dose

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		X-Ray Radiation Dose Report		1	ALWAYS	
>	HAS CONCEPT MOD	Procedure reported	CODE	1	ALWAYS	Projection X-Ray
>>	HAS CONCEPT MOD	Has Intent	CODE	1	ALWAYS	Combined Diagnostic and Therapeutic Procedure
>		DTID (1002) Observer Context		1	ALWAYS	
>	HAS OBS CONTEXT	Scope of Accumulation	CODE	1	ALWAYS	Performed Procedure Step
>>	HAS PROPERTIES	DCID (10001) UID Types	UIDREF	1	ALWAYS	Performed Procedure Step SOP Instance UID
>	CONTAINS	DTID (10002) Accumulated X-Ray Dose	INCLUDE	1	ALWAYS	
>	CONTAINS	DTID (10003) Irradiation Event X-Ray Data	INCLUDE	1-n	ALWAYS	
>	CONTAINS	Source of Dose Information	CODE	1	ALWAYS	Automated Data Collection
>	CONTAINS	Comment	TEXT	1	CONDITIONAL	X-Ray Radiation Dose Structured Report related to the Performed Procedure Step

10.3.2.1.2. TID 10002 Accumulated X-Ray Dose

Table 378: Accumulated X-Ray Dose

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
>	CONTAINS, CONTINUOUS	Accumulated X-Ray Dose Data	CONTAINER	1	ALWAYS	
>>	HAS CONCEPT MOD	Acquisition Plane	CODE	1	ALWAYS	Single Plane
>>	CONTAINS	DTID (10004) Accumulated Projection X-Ray Dose	CONTAINER	1	ALWAYS	

10.3.2.1.3. TID 10003 Irradiation Event X-Ray Data

Table 379: Irradiation Event X-Ray Data

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
>	CONTAINS, CONTINUOUS	Irradiation Event X-Ray Data	CONTAINER	1	ALWAYS	
>>	HAS CONCEPT MOD	Acquisition Plane	CODE	1	ALWAYS	Single Plane
>>	CONTAINS	DateTime Started	DATETIME	1	ALWAYS	
>>	CONTAINS	Irradiation Event Type	CODE	1	ALWAYS	Fluoroscopy
>>	CONTAINS	Acquisition Protocol	TEXT	1	CONDITIONAL	Digital Exposure
>>	CONTAINS	Reference Point Definition	CODE	1	ALWAYS	15cm from Isocenter toward Source
>>	CONTAINS	Irradiation Event UID	UIDREF	1	ALWAYS	
>>	CONTAINS	Dose Area Product	NUM	1	ALWAYS	Dose area product (Gy.m2)
>>	CONTAINS	Dose (RP)	NUM	1	ALWAYS	Gy
>>	CONTAINS	Positioner Primary Angle	NUM	1	CONDITIONAL	Angle in Degrees
>>	CONTAINS	Positioner Secondary Angle	NUM	1	CONDITIONAL	Angle in Degrees
>>	CONTAINS	Positioner Primary End Angle	NUM	1	CONDITIONAL	Angle in Degrees
>>	CONTAINS	Positioner Secondary End Angle	NUM	1	CONDITIONAL	Angle in Degrees
>>	CONTAINS	KVP	NUM	1-n	CONDITIONAL	kV
>>	CONTAINS	X-Ray Tube Current	NUM	1-n	CONDITIONAL	mA
>>	CONTAINS	Pulse Width	NUM	1-n	CONDITIONAL	ms
>>	CONTAINS	Exposure	NUM	1-n	CONDITIONAL	uAs
>>	CONTAINS	Irradiation Duration	NUM	1	CONDITIONAL	Seconds
>>	CONTAINS	Table Head Tilt Angle	NUM	1	CONDITIONAL	Angle in degrees
>	CONTAINS	DCID (10008) Dose Related Distance Measurements	INCLUDE	2	ALWAYS	Fill in fixed values for: - Distance source to detector - Distance source to Isocenter - Distance source to Reference Point
>>	CONTAINS	Anode Target Material	CODE	1	CONDITIONAL	Tungsten or Tungsten compound
>	CONTAINS	X-Ray Filters	CONTAINER	1-n	CONDITIONAL	
>>	CONTAINS	X-Ray Filter Type	CODE	1	CONDITIONAL	
>>	CONTAINS	X-Ray Filter Material	CODE	1	CONDITIONAL	
>>	CONTAINS	X-Ray Filter Thickness Minimum	NUM	1	CONDITIONAL	
>>	CONTAINS	X-Ray Filter Thickness Maximum	NUM	1	CONDITIONAL	

>	CONTAINS	DTID (1020) Person Participant	INCLUDE	1	CONDITIONAL	

10.3.2.1.4. TID 10004 Accumulated Projection X-Ray Dose

Table 380: Accumulated Projection X-Ray Dose

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
>>	CONTAINS	Dose Area Product Total	NUM	1	ALWAYS	Gym2
>>	CONTAINS	Dose (RP) Total	NUM	1	ALWAYS	Gy
>>	CONTAINS	Fluoro Dose Area Product Total	NUM	1	CONDITIONAL	Gy.m2
>>	CONTAINS	Fluoro Dose (RP) Total	NUM	1	CONDITIONAL	Gy
>>	CONTAINS	Total Fluoro Time	NUM	1	CONDITIONAL	Time in seconds
>>	CONTAINS	Acquisition Dose Area Product Total	NUM	1	ALWAYS	Gy.m2
>>	CONTAINS	Acquisition Dose (RP) Total	NUM	1	ALWAYS	Gy
>>	CONTAINS	Total Acquisition Time	NUM	1	ALWAYS	Time in seconds
>>	CONTAINS	Total Number of Radiographic Frames	NUM	1	CONDITIONAL	no units
>>	CONTAINS	Reference Point Definition	CODE	1	ALWAYS	15cm from Isocenter toward Source

10.3.2.1.5. TID 1002 Observer Context

Table 381: Observer Context

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
>	HAS OBS CONTEXT	Observer Type	CODE	1	CONDITIONAL	Device
	HAS OBS CONTEXT	DTID (1004) Device observer identifying attributes		1	ALWAYS	

10.3.2.1.6. TID 1004 Device Observer Identifying Attributes

Table 382: Device Observer Identifying Attributes

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
>	HAS OBS CONTEXT	Device Observer UID	UIDREF	1	ALWAYS	963334911392
>	HAS OBS CONTEXT	Device Observer Name	TEXT	1	CONDITIONAL	Station Name (0008,1010): Eleva
>	HAS OBS CONTEXT	Device Observer Manufacturer	TEXT	1	CONDITIONAL	Manufacturer (0008,0070): Philips Medical Systems

>	HAS OBS CONTEXT	Device Observer Model Name	TEXT	1	CONDITIONAL	Manufacturer's Model Name (0008,1090): Philips Eleva
>	HAS OBS CONTEXT	Device Observer Serial Number	TEXT	1	CONDITIONAL	Device Serial Number (0018,1000): 963334911392

10.3.2.1.7. TID 1020 Person Participant

Table 383: Person Participant

NL	Relation with Parent	Concept Name	VT	VM	Presence of Value	Value
		Person Name		1	ALWAYS	
>	HAS PROPERTIES	Person Role in Procedure		1	ALWAYS	

10.3.3. Private code definitions

Not applicable.

10.4. Grayscale Image consistency

The monitor of Eleva Workspot system can be calibrated according Grayscale Display Function Standard.

The pixel values exported and printed must be interpreted as P-Value. If the export destination or the printer does not support GSDF, Eleva Workspot provides calibration tools to adapt to this device to afford grayscale image consistency. The calibration takes into account ambient luminance and light box luminance.

10.5. Standard Extended/Specialized/Private SOPs/Structure Report Templates

Not Applicable.

10.6. Private Transfer Syntaxes

Not Applicable.