

DICOM

Conformance Statement

EasyDiagnost Eleva Rel. 3.0



Issued by:

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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
- Issue Procedure information to RIS / HIS system
- 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 ELEVAs System database and to Retrieve images from it.
- Can send out images either as raw data or as processed data.

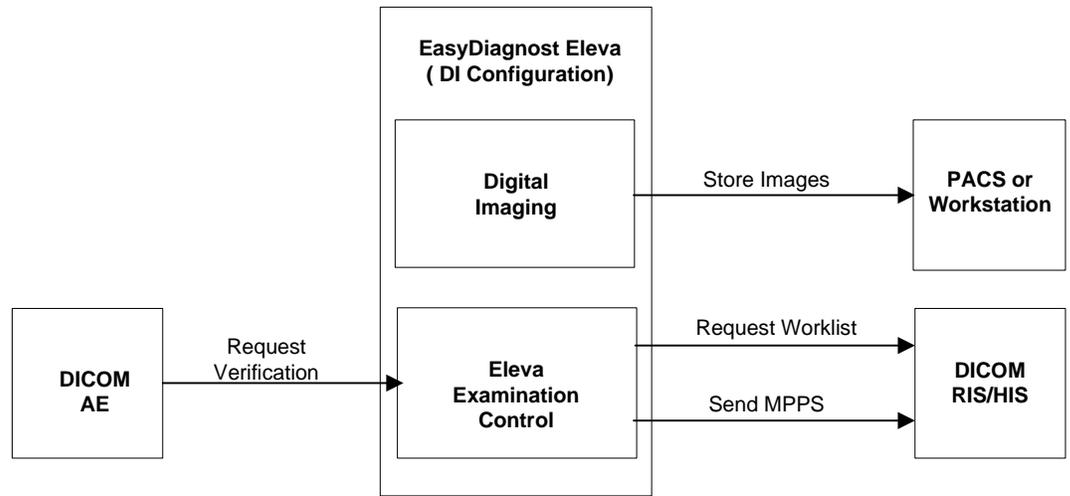


Figure 1: EasyDiagnost Eleva System in DICOM Network environment (DI Configuration)

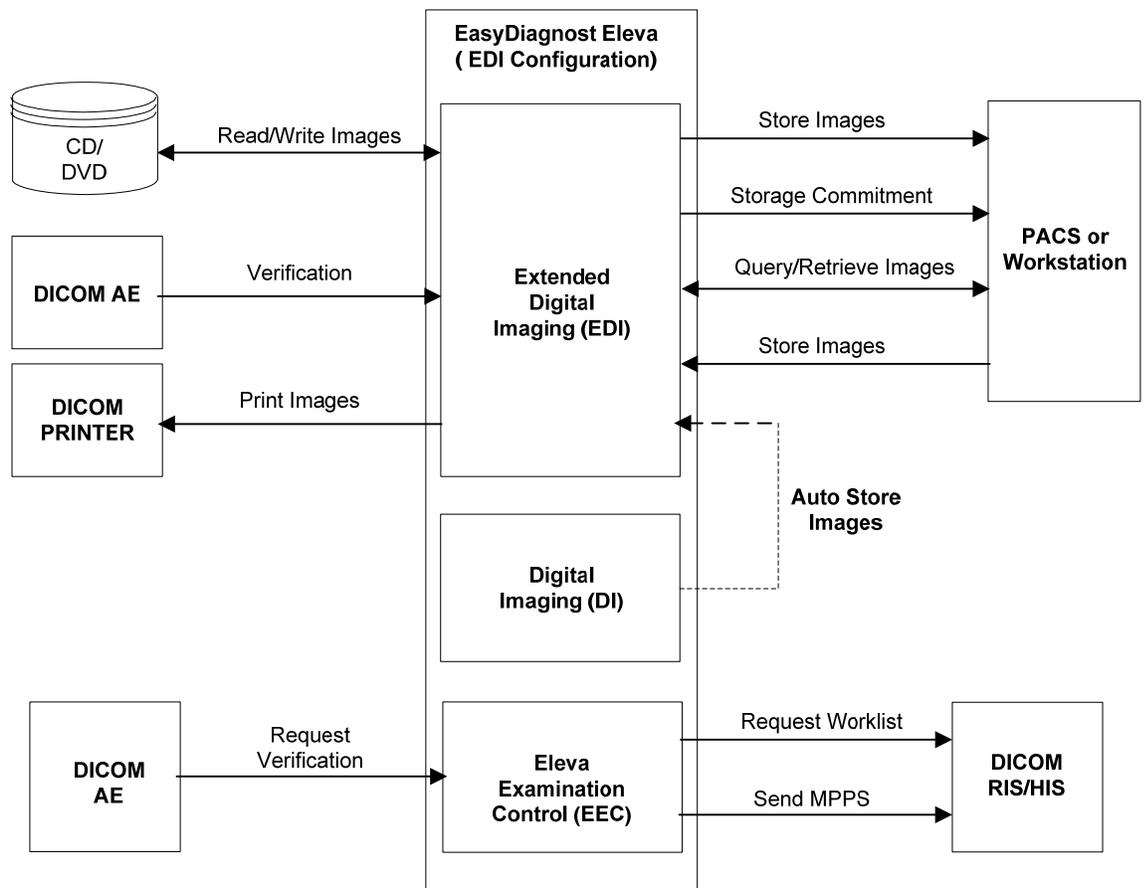


Figure 2: EasyDiagnost Eleva System in DICOM Network environment (EDI Configuration)

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			
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Yes	No
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Yes	No
>Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	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
>Printer SOP Class	1.2.840.10008.5.1.1.16	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
Query/Retrieve			
Patient Root Query/Retrieve Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Yes	Yes
Patient Root Query/Retrieve Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Yes	Yes
Patient/Study Only Query/Retrieve Info. Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.3.1	Yes	Yes
Patient/Study Only Query/Retrieve Info. Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.3.2	Yes	Yes
Study Root Query/Retrieve Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	Yes
Study Root Query/Retrieve Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes
Transfer			
3D Volume Object Storage(Private)	1.3.46.670589.5.0.2.1	Yes	Yes
Volume Storage (Private)	1.3.46.670589.5.0.1.1	Yes	Yes
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
CT Synthetic Image Storage (Private)	1.3.46.670589.5.0.9	Yes	Yes
CX Synthetic Image Storage (Private)	1.3.46.670589.5.0.12	Yes	Yes
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes

SOP Class		User of Service (SCU)	Provider of Service (SCP)
Name	UID		
MR Cardio Analysis Storage (Private)	1.3.46.670589.5.0.11.1	Yes	Yes
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
MR Synthetic Image Storage (Private)	1.3.46.670589.5.0.10	Yes	Yes
Perfusion (Private)	1.3.46.670589.5.0.13	Yes	Yes
Perfusion Analysis (Private)	1.3.46.670589.5.0.14	Yes	Yes
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	Yes
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
PMS X-Ray Specialization Image Store	1.3.46.670589.2.3.1.1	Yes	Yes
Surface Storage (Private)	1.3.46.670589.5.0.3.1	Yes	Yes
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
Reconstructed X-ray SOP Class (private)	1.3.46.670589.2.4.1.1	Yes	Yes
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
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 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 (For Eleva EDI Configuration Only)

Media Storage Application Profile	Write Files (FSC or FSU)	Read Files (FSR)
Compact Disk – Recordable		
General Purpose CD-R Interchange	Yes/ Yes	Yes
General Purpose Secure CD-R Interchange	Yes/ Yes	Yes
CT/MR Studies on CD-R	Yes/ Yes	Yes
DVD		
CT/MR Studies on DVD Media	Yes/ No	Yes
General Purpose DVD Interchange with JPEG	Yes/ No	Yes
General Purpose DVD Interchange with JPEG 2000	Yes/ No	Yes
General Purpose Secure DVD Interchange with JPEG	Yes/ No	Yes
General Purpose Secure DVD Interchange with JPEG 2000	Yes/ No	Yes

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)			
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	No
Grayscale Softcopy Presentation State Storage	1.2.840.10008.5.1.4.1.1.11.1	Yes	No
Specialized X-Ray	1.3.46.670589.2.3.1.1	Yes	No
X-Ray Radiofluoroscopic Image Storage	1.2.840.10008.5.1.4.1.1.12.2	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

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

1.	DICOM CONFORMANCE STATEMENT OVERVIEW	3
2.	TABLE OF CONTENTS	8
3.	INTRODUCTION	11
3.1.	REVISION HISTORY	11
3.2.	AUDIENCE	11
3.3.	REMARKS	11
3.4.	DEFINITIONS, TERMS AND ABBREVIATIONS	12
3.5.	REFERENCES	13
4.	NETWORKING	14
4.1.	IMPLEMENTATION MODEL	14
4.1.1.	Application Data Flow	14
4.1.1.1.	Application Data flow for EasyDiagnost Eleva EDI Configuration	14
4.1.1.2.	Application Data flow for EasyDiagnost Eleva DI Configuration	17
4.1.2.	Functional Definition of AE's	17
4.1.2.1.	Functional Definition of EasyDiagnost Eleva RIS AE	18
4.1.2.2.	Functional Definition of EasyDiagnost Eleva ACP AE (Eleva EDI Configuration)	18
4.1.2.3.	Functional Definition of EasyDiagnost Eleva DI AE (Eleva DI Configuration)	20
4.1.3.	Sequencing of Real World Activities	20
4.2.	AE SPECIFICATIONS	22
4.2.1.	EasyDiagnost Eleva RIS AE	22
4.2.1.1.	SOP Classes	22
4.2.1.2.	Association Policies	22
4.2.1.2.1.	General	22
4.2.1.2.2.	Number of Associations	22
4.2.1.2.3.	Asynchronous Nature	22
4.2.1.2.4.	Implementation Identifying Information	22
4.2.1.2.5.	Communication Failure Handling	23
4.2.1.3.	Association Initiation Policy	23
4.2.1.3.1.	Examination Control	26
4.2.1.4.	Association Acceptance Policy	38
4.2.1.4.1.	(Real-World) Activity – Verification as SCP	39
4.2.2.	EasyDiagnost Eleva ACP AE (for EDI Configuration only)	40
4.2.2.1.	SOP Classes	40
4.2.2.2.	Association Policies	41
4.2.2.2.1.	General	41
4.2.2.2.2.	Number of Associations	42
4.2.2.2.3.	Asynchronous Nature	42
4.2.2.2.4.	Implementation Identifying Information	42
4.2.2.2.5.	Communication Failure Handling	42
4.2.2.3.	Association Initiation Policy	43
4.2.2.3.1.	(Real-World) Activity – Print Management As SCU	45
4.2.2.3.2.	(Real-World) Activity – FIND as SCU	59
4.2.2.3.3.	(Real-World) Activity – MOVE as SCU	65
4.2.2.3.4.	(Real-World) Activity – Image Export	70
4.2.2.3.5.	(Real-World) Activity – Storage Commitment Push Model AS SCU	75
4.2.2.4.	Association Acceptance Policy	79
4.2.2.4.1.	(Real-World) Activity – Verification as SCP	80
4.2.2.4.2.	(Real-World) Activity – FIND as SCP	82
4.2.2.4.3.	(Real-World) Activity – MOVE as SCP	88
4.2.2.4.4.	(Real-World) Activity – Image Import	93
4.2.3.	EasyDiagnost Eleva DI AE (DI configuration only)	98

4.2.3.1.	SOP Classes	98
4.2.3.2.	Association Policies	99
4.2.3.2.1.	General	99
4.2.3.2.2.	Number of Associations.....	99
4.2.3.2.3.	Asynchronous Nature	99
4.2.3.2.4.	Implementation Identifying Information.....	99
4.2.3.2.5.	Communication Failure Handling	99
4.2.3.3.	Association Initiation Policy.....	100
4.2.3.3.1.	(Real-World) Activity – Image Export	100
4.2.3.4.	Association Acceptance Policy	104
4.3.	NETWORK INTERFACES.....	105
4.3.1.	Physical Network Interfaces.....	105
4.3.2.	Additional Protocols	105
4.4.	CONFIGURATION	105
4.4.1.	AE Title/Presentation Address Mapping	105
4.4.1.1.	Local AE Titles	105
4.4.1.2.	Remote AE Title/Presentation Address Mapping	105
4.4.1.2.1.	Remote Association Initiators	106
4.4.1.2.2.	Remote Association Acceptors.....	106
4.4.2.	Parameters.....	106
5.	MEDIA INTERCHANGE (FOR ELEVA EDI CONFIGURATION ONLY).....	110
5.1.	IMPLEMENTATION MODEL	110
5.1.1.	Application Data Flow Diagram.....	110
5.1.2.	Functional Definitions of AE's	112
5.1.2.1.	Functional definition of EasyDiagnost ACP AE	112
5.1.3.	Sequencing of Real World Activities	112
5.1.4.	File Meta Information for Implementation Class and Version.....	113
5.2.	AE SPECIFICATIONS	113
5.2.1.	EasyDiagnost Eleva ACP AE Specification	113
5.2.1.1.	File Meta Information for the EasyDiagnost Eleva ACP AE	114
5.2.1.2.	Real-World Activities	114
5.2.1.2.1.	Display Directory.....	114
5.2.1.2.2.	Write Images.....	114
5.2.1.2.3.	Read Images.....	115
5.3.	AUGMENTED AND PRIVATE APPLICATION PROFILES	116
5.3.1.	Augmented Application Profiles	116
5.3.2.	Private Application Profiles	116
5.4.	MEDIA CONFIGURATION	116
6.	SUPPORT OF CHARACTER SETS	117
7.	SECURITY	118
7.1.	SECURITY PROFILES	118
7.2.	ASSOCIATION LEVEL SECURITY.....	118
7.3.	APPLICATION LEVEL SECURITY	118
8.	ANNEXES OF APPLICATION "EASYDIAGNOST ELEVA ACP (APPLICATION)"	
	(EDI CONFIGURATION ONLY).....	119
8.1.	IOD CONTENTS	119
8.1.1.	Created SOP Instance	119
8.1.1.1.	Secondary Capture Image Storage SOP Class for the processed mode	120
8.1.1.2.	Softcopy Presentation State Storage SOP Class (AS LAST SEEN) for the processed mode	122
8.1.1.3.	Softcopy Presentation State Storage SOP Class (AS ACQUIRED) for the Processed Mode.....	127
8.1.1.4.	X-Ray Radiofluoroscopic Image Storage SOP Class for the processed mode.....	130
8.1.1.5.	Specialized PMS X-Ray object for the unprocessed mode	134
8.1.1.6.	Captured Image as Photo(s).....	138
8.1.1.7.	Captured Image(s) as Original.....	140

8.1.2.	Usage of Attributes from Received IOD.....	142
8.1.3.	Attribute Mapping.....	142
8.1.4.	Coerced/Modified fields.....	143
8.2.	DATA DICTIONARY OF PRIVATE ATTRIBUTES	147
8.3.	CODED TERMINOLOGY AND TEMPLATES.....	147
8.4.	GRAYSCALE IMAGE CONSISTENCY	147
8.5.	STANDARD EXTENDED/SPECIALIZED/PRIVATE SOPS	147
8.6.	PRIVATE TRANSFER SYNTAXES.....	148
9.	ANNEXES OF APPLICATION "EASYDIAGNOST ELEVA DI (APPLICATION)" (DI CONFIGURATION ONLY).....	149
9.1.	IOD CONTENTS	149
9.1.1.	Created SOP Instance	149
9.1.1.1.	Secondary Capture Image Storage SOP Class.....	150
9.1.1.2.	Softcopy Presentation State Storage SOP Class	152
9.1.1.3.	X-Ray Radiofluoroscopic Image Storage SOP Class.....	156
9.1.1.4.	Specialized PMS X-Ray SOP class	159
9.1.2.	Usage of Attributes from Received IOD.....	163
9.1.3.	Attribute Mapping.....	163
9.1.4.	Coerced/Modified fields.....	164
9.2.	DATA DICTIONARY OF PRIVATE ATTRIBUTES	168
9.3.	CODED TERMINOLOGY AND TEMPLATES.....	168
9.4.	GRAYSCALE IMAGE CONSISTENCY	168
9.5.	STANDARD EXTENDED/SPECIALIZED/PRIVATE SOPS	168
9.6.	PRIVATE TRANSFER SYNTAXES.....	168

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 4: Revision History

Document Version	Date of Issue	Author	Description
01	12 July 2007	PMS CTO C&S IC2	First release of DICOM Conformance Statement for EasyDiagnost Eleva R 3.0

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

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

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

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

The following acronyms and abbreviations are used in this document.

AE	Application Entity
ANSI	American National Standard Institute
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
DI	Digital Imaging (without ViewForum)
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DIMSE-Composite
DIMSE-N	DIMSE-Normalized
DX	Digital X-Ray
ED	EasyDiagnost
EDI	Extended Digital Imaging (includes ViewForum)
EBE	DICOM Explicit VR Big Endian
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
UID	Unique Identifier
US	Ultrasound
USMF	Ultrasound Multi-frame
WLM	Worklist Management
XA	X-Ray Angiographic

3.5. References

- [DICOM] Digital Imaging and Communications in Medicine, Part 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 2007) plus all the supplements and correction items that have been approved as Final Text.

4. NETWORKING

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 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 Application Entities in its implementation, namely

- EasyDiagnost Eleva RIS Application Entity (**ED ELEVA RIS AE**) and
- EasyDiagnost Eleva ACP AE Application Entity (EDI Configuration Only) (**ED ELEVA ACP AE**).

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.

As depicted in Figure the EasyDiagnost Eleva RIS AE and EasyDiagnost Eleva ACP AE incorporate the following functionality:

- 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-Recordable disk to Write, Read and Update images, either as raw data or as processed data (RF / XA), 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 / XA), on / from a DICOM DVD disk.

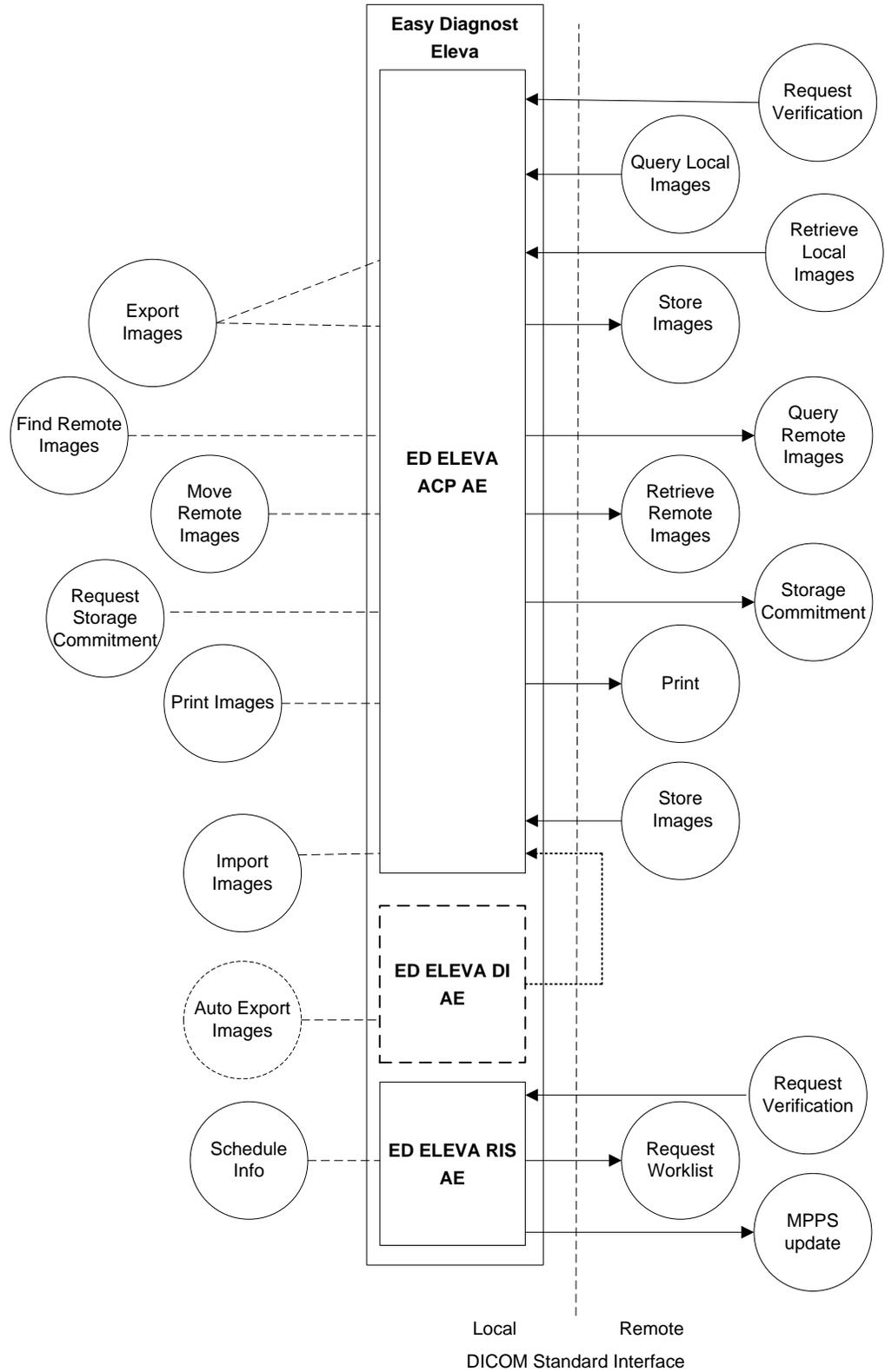


Figure 3: Application Data Flow Diagram of the EasyDiagnost Eleva System (EDI Configuration)

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

- EasyDiagnost Eleva RIS Application Entity (**ED ELEVA RIS AE**) and
- EasyDiagnost Eleva DI AE Application Entity (DI Configuration Only) (**ED ELEVA DI AE**).

Figure below shows the Networking application data flow as a functional overview of the ELEVA DI System. As depicted the ELEVA DI System incorporates the following functionality.

- 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

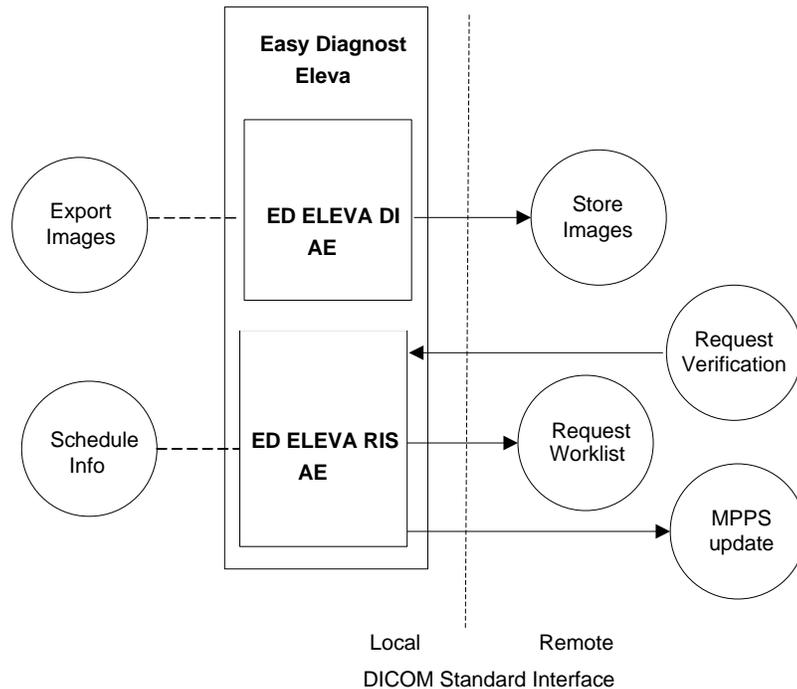


Figure 4: Application Data Flow Diagram of the EasyDiagnost Eleva System (DI Configuration)

4.1.2. Functional Definition of AE's

This section contains a functional definition for each individual local Application Entity. This describes in general terms the functions to be

performed by the AE, and the DICOM services used to accomplish these functions. In this sense, "DICOM services" refers not only to DICOM Service Classes, but also to lower level DICOM services, such as Association Services.

4.1.2.1. 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 Worklist and MPPS.

4.1.2.2. Functional Definition of EasyDiagnost Eleva ACP AE (Eleva EDI Configuration)

Verification Service Class

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

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

Storage Service Class

The EasyDiagnost Eleva AE can perform the Storage service as SCP (RWA Import Images).

A remote SCU shall request an association with the EasyDiagnost Eleva AE for Storage SOP classes. After accepting the association, the EasyDiagnost Eleva 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 AE can perform the Storage service as SCU (RWA Export Images, triggered by operator or retrieve request).

The EasyDiagnost Eleva AE shall request an association with the selected remote SCP for all applicable Storage SOP classes. When the association is accepted, the EasyDiagnost Eleva 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 AE shall request storage commitment per Storage Commitment service (ref. Storage Commitment service class).

Query/Retrieve Service Class

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

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

The EasyDiagnost Eleva 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 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 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 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 DI AE (Eleva DI Configuration)

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.

4.1.3. 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.

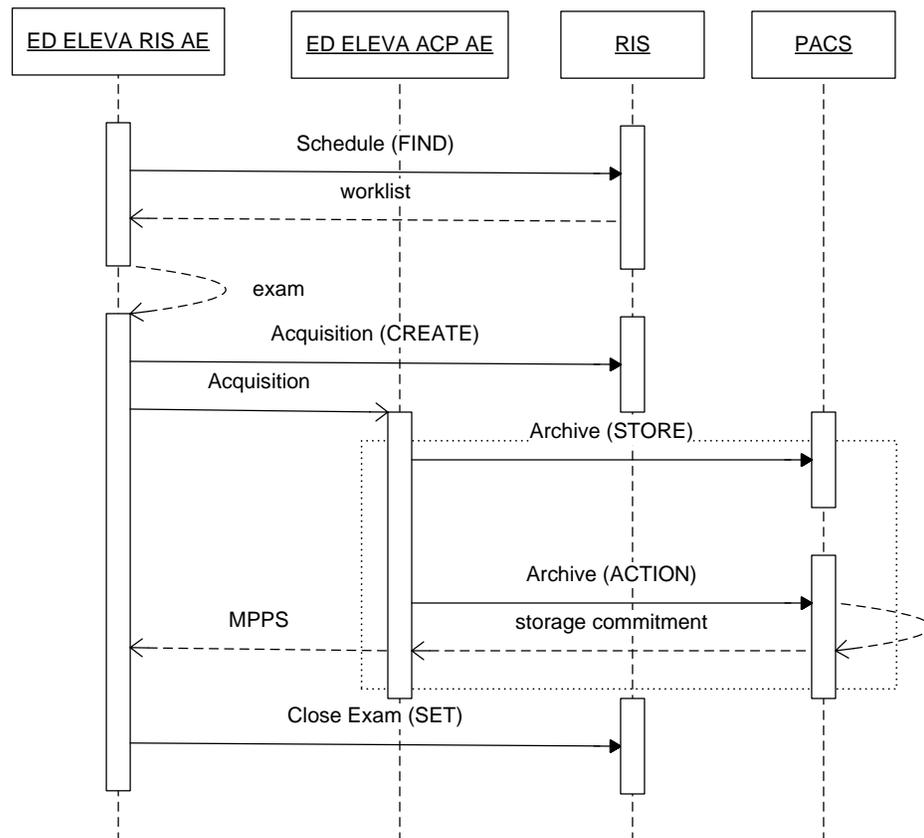


Figure 5: Sequencing of the Real World Activities of EasyDiagnost ELEVA (Eleva EDI Configuration Only)

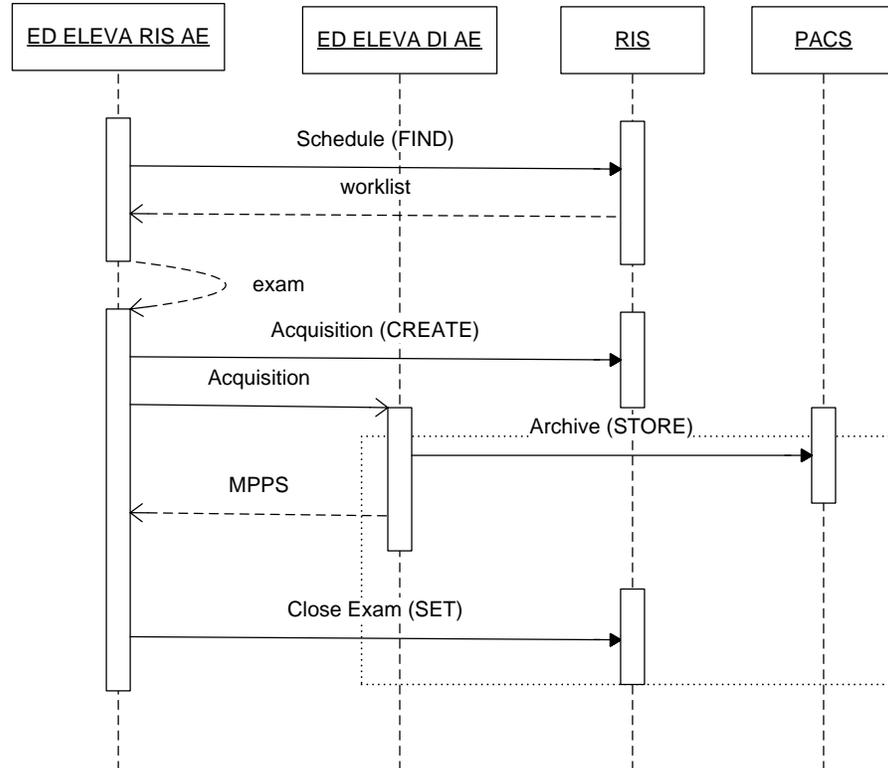


Figure 6: Sequencing of the Real World Activities of EasyDiagnost ELEVA (Eleva DI Configuration Only)

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 ELEVARI S AE to the RIS.

4.2. AE Specifications

The next section in the DICOM Conformance Statement contains the specifications of the Network capabilities of the **EasyDiagnost ELEVA** consists of the following DICOM Application Entities:

- **EasyDiagnost Eleva RIS AE** (ED ELEVA RIS AE)
- **EasyDiagnost Eleva ACP AE** (ED ELEVA ACP AE) (EDI Configuration only)
- **EasyDiagnost Eleva DI AE** (ED ELEVA DI AE) (DI Configuration only)

4.2.1. EasyDiagnost Eleva RIS AE

4.2.1.1. SOP Classes

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

Table 5: SOP Classes for the EasyDiagnost Eleva RIS AE

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	No	Yes
Modality Worklist Information Model - FIND	1.2.840.10008.5.1.4.31	Yes	No
Modality Performed Procedure Step	1.2.840.10008.3.1.2.3.3	Yes	No

4.2.1.2. Association Policies

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

4.2.1.2.1. General

The following DICOM standard application context is specified.

Table 6: DICOM Application Context

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 a SCU or SCP is specified.

Table 7: Number of Associations as an Association Initiator for the EasyDiagnost Eleva RIS AE

Maximum number of simultaneous associations	configurable
---	--------------

4.2.1.2.3. Asynchronous Nature

Not applicable.

4.2.1.2.4. Implementation Identifying Information

The following Implementation Class UID and Version Name are defined.

Table 8: DICOM Implementation Class and Version for the EasyDiagnost Eleva RIS AE

Implementation Class UID	1.3.46.670589.30.1.2
Implementation Version Name	PMS_ELEVA_PA_2.0

4.2.1.2.5. Communication Failure Handling

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

Table 9: Communication Failure Behavior

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

4.2.1.3. Association Initiation Policy

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

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

Table 10: DICOM Association Rejection Handling

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)

Result	Source	Reason/Diagnosis	Behavior
	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)
		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)

Result	Source	Reason/Diagnosis	Behavior
		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 Table 11.

Table 11: DICOM Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	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	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).

Source	Reason/Diagnosis	Behavior
	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).

The behavior of the AE for sending an association abort is summarized in Table 12.

Table 12: DICOM Association Abort Policies

Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	0 – reason-not-specified	The reason is logged
2 – DICOM UL service-provider	0 – reason-not-specified	The reason is logged
	1 – unrecognized-PDU	The reason is logged
	2 – unexpected-PDU	The reason is logged
	4 – unrecognized-PDU parameter	The reason is logged
	5 – unexpected-PDU parameter	The reason is logged
	6 – invalid-PDU-parameter value	The reason is logged

The behavior of the AE during DICOM communication failure is summarized in Table 13.

Table 13: 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.

4.2.1.3.1. Examination Control

This activity comprises the following RWA's.

- Verification;
- Schedule;
- Acquisition;
- Close Exam.

4.2.1.3.1.1. Description and Sequencing of Activities

An examination is regarded equivalent to a DICOM procedure step. It is scheduled or manually entered before an acquisition is being performed.

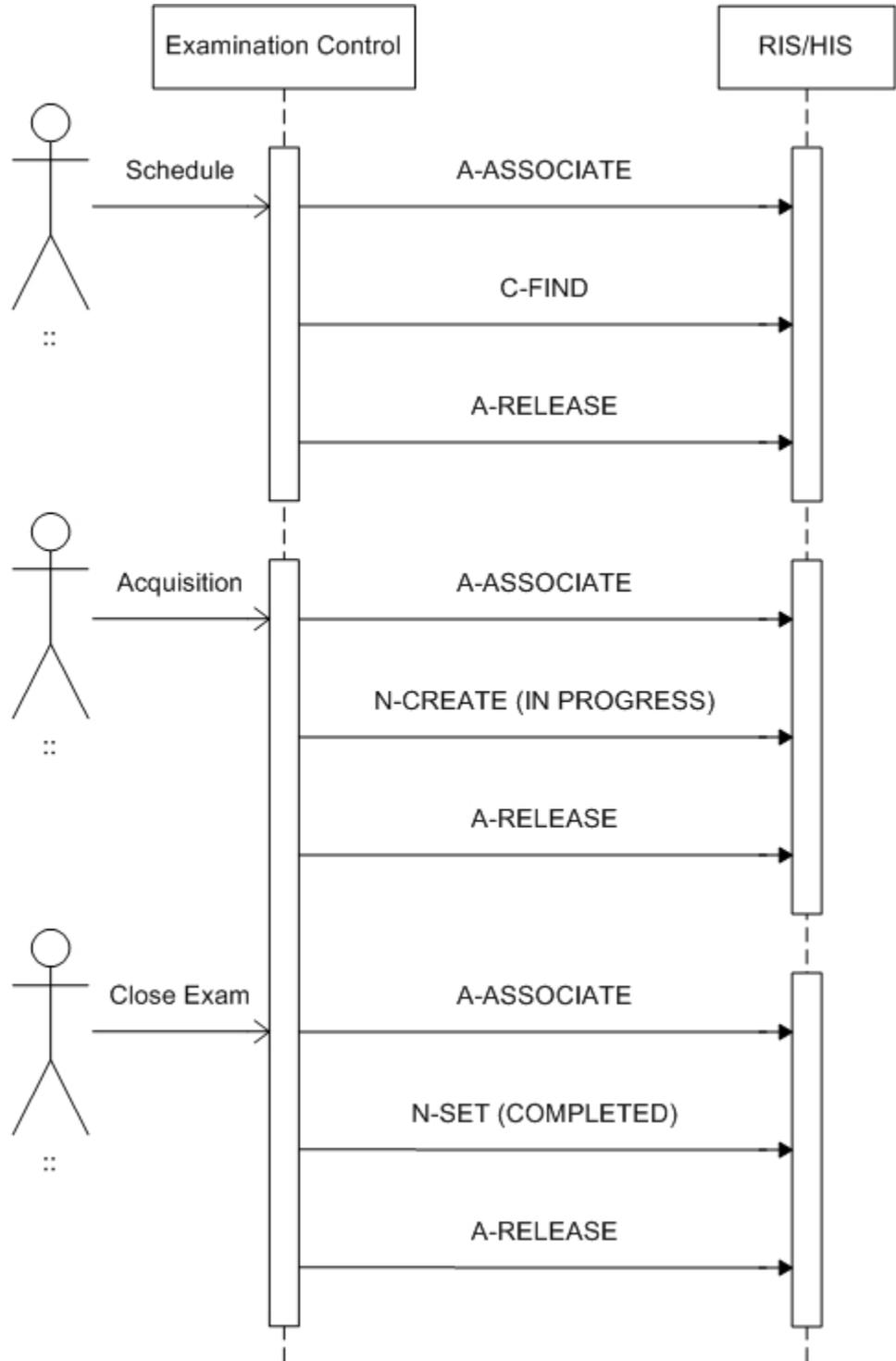


Figure 7: Sequencing of Examination Control

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 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
 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.

The operator may cancel an unclosed examination at any time. Depending on the state of the examination and MPPS related system configuration, the MPPS IN PROGRESS message already may have been sent (discontinued case) or not (abandoned case).

If not (abandoned case), the EasyDiagnost Eleva RIS AE first generates the MPPS N-CREATE IN PROGRESS message. In both cases the EasyDiagnost Eleva RIS AE sends the MPPS N-SET DISCONTINUED message.

4.2.1.3.1.2. Proposed Presentation Contexts

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

Table 14: Proposed Presentation Contexts for the EasyDiagnost Eleva RIS AE

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	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
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	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
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	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: ELE is preferred Transfer Syntax

4.2.1.3.1.3. SOP Specific Conformance for SOP Classes

4.2.1.3.1.3.1. Basic Worklist Management

All details regarding the specific conformance, including response behavior to all status codes, both from an application level and communication errors are provided in the following table.

Table 15: DICOM C-FIND Command Response Status Handling Behavior

Service Status	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.
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.

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 below provides a description of the EasyDiagnost Eleva RIS AE Worklist Request Identifier and specifies the attributes that are copied into the images.

Table 16: Worklist Request Identifier

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
SOP Common Module									
Specific Character Set	0008,0005	CS	X				X		Configurable.
Scheduled Procedure Step Module									
Scheduled Procedure Step Sequence	0040,0100	SQ		X					
>Modality	0008,0060	CS	X	X	X			Single Value, Universal	Modality. Configurable matching key values: "**"; "RF"; "XA"; "CR"; "DX"; "US".
>Requested Contrast Agent	0032,1070	LO		X					
>Scheduled Station AE Title	0040,0001	AE	X	X	X			Single Value, Universal	Scheduled station. Optional matching key for broad query and patient query. For broad query configurable value: "ALL" or comma separated list of AET's. Patient query may use wildcard. Note that any value other than Single Value results in Universal match being filtered internally.
>Scheduled Procedure Step Start Date	0040,0002	DA	X	X	X	X		Single Value, Universal	Date. Displayed until examination becomes in progress. Optional matching key for broad and patient query. For broad query configurable value: "all"; "today"; "today + tomorrow"; "today + yesterday"; "today + yesterday + tomorrow". For patient query value: "all"; "today"; "tomorrow".
>Scheduled Procedure Step Start Time	0040,0003	TM		X		X			Time. Displayed until examination becomes in progress.
>Scheduled Procedure Step End Date	0040,0004	DA		X					
>Scheduled Procedure Step End Time	0040,0005	TM		X					
>Scheduled Performing Physician's Name	0040,0006	PN		X		X			Physician.
>Scheduled Procedure Step Description	0040,0007	LO		X		X	X		Description.
>Scheduled Protocol Code Sequence	0040,0008	SQ		X			X		Only first item will be read and sent in image storage
>>Code Value	0008,0100	SH		X					
>>Coding Scheme Designator	0008,0102	SH		X					
>>Coding Scheme Version	0008,0103	SH		X					

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
>>Code Meaning	0008,0104	LO		X		X			Meaning. Displayed for each item.
>Scheduled Procedure Step ID	0040,0009	SH		X			X		Configurable.
>Scheduled Station Name	0040,0010	SH		X					
>Scheduled Procedure Step Location	0040,0011	SH		X					
>Pre-Medication	0040,0012	LO		X					
>Scheduled Procedure Step Status	0040,0020	CS		X					
>Comments on the Scheduled Procedure Step	0040,0400	LT		X					
Requested Procedure Module									
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		
Study Instance UID	0020,000D	UI		X			X		
Requested Procedure Description	0032,1060	LO		X		X			Description.
Requested Procedure Code Sequence	0032,1064	SQ		X					
>Code Value	0008,0100	SH		X		X			Code.
>Coding Scheme Designator	0008,0102	SH		X					
>Coding Scheme Version	0008,0103	SH		X					
>Code Meaning	0008,0104	LO		X		X			Meaning.
Requested Procedure ID	0040,1001	SH		X	X	X	X	Single Value, Universal, Wildcard	Request ID. Optional matching key for patient query.
Reason for the Requested Procedure	0040,1002	LO		X		C			Reason.
Requested Procedure Priority	0040,1003	SH		X		X			Priority.
Patient Transport Arrangements	0040,1004	LO		X		X			Patient transport.
Names of Intended Recipients of Results	0040,1010	PN		X		X			Recipients.
Requested Procedure Comments	0040,1400	LT		X		C			Comment.
Imaging Service Request Module									
Accession Number	0008,0050	SH		X	X	X	X	Single Value, Universal, Wildcard	Accession No. Optional matching key for patient query.
Referring Physician's Name	0008,0090	PN		X		X	X		Referring physician.
Requesting Physician	0032,1032	PN		X		X			Requesting physician.
Requesting Service	0032,1033	LO		X		X			Requesting service.
Reason for the Imaging Service Request	0040,2001	LO		X		C			Reason.
Issue Date of Imaging Service Request	0040,2004	DA		X		X			Issuing date.
Imaging Service Request Comments	0040,2400	LT		X		C			Comment.
Visit Status Module									
Current Patient Location	0038,0300	LO		X					

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
Patient Identification Module									
Patient's Name	0010,0010	PN		X	X	X	X	Single Value, Universal, WildCard	Name. Optional matching key for patient query.
Patient ID	0010,0020	LO		X	X	X	X	Single Value, Universal, WildCard	Patient ID. Optional matching key for patient query.
Issuer of Patient ID	0010,0021	LO		X					
Other Patient IDs	0010,1000	LO		X		X			Other patient IDs.
Patient Demographic Module									
Patient's Birth Date	0010,0030	DA		X		X	X		Date of birth. Used to determine patient type.
Patient Age	0010,1010	AS		X					Patient Age
Patient's Sex	0010,0040	CS		X		X	X		Gender.
Patient's Size	0010,1020	DS		X		X			Height. Used to determine patient type.
Patient's Weight	0010,1030	DS		X		X			Weight. Used to determine patient type.
Ethnic Group	0010,2160	SH		X		X			Ethnic group.
Patient Comments	0010,4000	LT		X		X			Comment.
Confidentiality Constraint on Patient Data Description	0040,3001	LO		X					
Patient Medical Module									
Medical Alerts	0010,2000	LO		X		X			Medical alerts.
Contrast Allergies	0010,2110	LO		X		X			Contrast allergies.
Additional Patient History	0010,21B0	LT		X		X			Additional patient history.
Pregnancy Status	0010,21C0	US		X		X			Pregnancy status.
Special Needs	0038,0050	LO		X					

The table 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. A "C" indicates that this worklist attribute is configurable.
- Q: Interactive Query Key. An "X" will indicate that this attribute can be used as matching key.
- D: Displayed Keys. An "X" indicates that this worklist attribute is displayed to the user during a patient registration dialog. An "C" indicates that this worklist attribute is configurable.
- 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 exist:

- List of UID Matching
- Range Matching
- Sequence Matching
- Single Value Matching

- Universal Matching
- Wild Card Matching

4.2.1.3.1.3.2. Study Management

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 generates an MPPS N-SET message with status IN PROGRESS. The EasyDiagnost Eleva RIS AE does not generate any intermediate MPPS IN PROGRESS messages for subsequent acquisitions of this examination. When closing the exam, the EasyDiagnost Eleva RIS AE 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 also generates MPPS messages for unscheduled exams.

Acquisition

All details regarding the specific conformance, including response behavior to all status codes, both from an application level and communication errors are provided in table below.

Table 17: DICOM N-CREATE Command Response Status Handling Behavior

Service Status	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.

Table 18: 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.

Table 19: MPPS Request Identifiers for N-CREATE-RQ

Attribute Name	Tag	VR	Value	Comment
SOP Common Module				
Specific Character Set	0008,0005	CS	ISO_IR 100	

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step Relationship Module				
Referenced Patient Sequence	0008,1120	SQ		Always empty.
Patient's Name	0010,0010	PN		Copied from MWL or entered by operator.
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 Sex	0010,0040	CS		Copied from MWL or entered by operator.
Scheduled Step Attribute Sequence	0040,0270	SQ		Copied from MWL.
>Accession Number	0008,0050	SH		
>Referenced Study Sequence	0008,1110	SQ		
>>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.3.1.2.3.1	
>>Referenced SOP Instance UID	0008,1155	UI		
>Study Instance UID	0020,000D	UI		
>Requested Procedure Description	0032,1060	LO		
>Scheduled Procedure Step Description	0040,0007	LO		
>Scheduled Protocol Code Sequence	0040,0008	SQ		Contents copied from MWL.
>>Code Value	0008,0100	SH		
>>Coding Scheme Designator	0008,0102	SH		
>>Coding Scheme Version	0008,0103	SH		
>>Code Meaning	0008,0104	LO		
>Scheduled Procedure Step ID	0040,0009	SH		
>Requested Procedure ID	0040,1001	SH		
Performed Procedure Step Information Module				
Procedure Code Sequence	0008,1032	SQ		Contents copied from MWL Requested Procedure Code Sequence.
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
>Coding Scheme Version	0008,0103	SH		
>Code Meaning	0008,0104	LO		
Performed Station AE Title	0040,0241	AE		As configured.
Performed Station Name	0040,0242	SH		Always empty.
Performed Location	0040,0243	SH		Always empty.
Performed Procedure Step Start Date	0040,0244	DA		
Performed Procedure Step Start Time	0040,0245	TM		
Performed Procedure Step End Date	0040,0250	DA		Always empty.
Performed Procedure Step End Time	0040,0251	TM		Always empty.
Performed Procedure Step Status	0040,0252	CS	IN PROGRESS	
Performed Procedure Step ID	0040,0253	SH		
Performed Procedure Step Description	0040,0254	LO		Copied from MWL.
Performed Procedure Type Description	0040,0255	LO		Always empty.

Attribute Name	Tag	VR	Value	Comment
Image Acquisition Results Module				
Modality	0008,0060	CS	RF	
Study ID	0020,0010	SH		If scheduled then copied from Requested Procedure ID, else equipment generated study identifier.
Performed Protocol Code Sequence	0040,0260	SQ		Always empty.
Performed Series Sequence	0040,0340	SQ		Always empty.
Radiation Dose Module				
Image and Fluoroscopy Area Dose Product	0018,115E	DS		Not sent in case of appended MPPS instances.
Total Time of Fluoroscopy	0040,0300	US		Not sent in case of appended MPPS instances.
Total Number of Exposures	0040,0301	US		Not sent in case of appended MPPS instances.
Entrance Dose	0040,0302	US		Not sent in case of appended MPPS instances.
Exposure Dose Sequence	0040,030E	SQ		Not sent in case of appended MPPS instances.

Close Exam

All details regarding the specific conformance, including response behavior to all status codes, both from an application level and communication errors are provided in Table 20.

Table 20: N-CREATE-RQ Status Response

Service Status	Code	Further Meaning	Behavior
Success	0000	Successful operation	The SCP has successfully received the modality performed procedure step set request. Log entry.
Failure	0110	Processing failure – performed procedure step object may no longer be updated	The reason is logged.
	xxxx	(any other failure)	The reason is logged.

Table 21: 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.

Close Exam

All details regarding the specific conformance, including response behavior to all status codes, both from an application level and communication errors are provided in Table 22

Table 22: DICOM N-SET Command Response Status Handling Behavior

Service Status	Code	Further Meaning	Behavior
Success	0000	Successful operation	The SCP has successfully received the modality performed procedure step set request. Log entry.
Failure	0110	Processing failure – performed procedure step object may no longer be updated	The reason is logged.
	xxxx	(any other failure)	The reason is logged.

Table 23: MPPS Request Identifiers for N-SET-RQ

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step Information Module				
Procedure Code Sequence	0008,1032	SQ		Contents copied from MWL Requested Procedure Code Sequence.
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
>Coding Scheme Version	0008,0103	SH		
>Code Meaning	0008,0104	LO		
Performed Procedure Step End Date	0040,0250	DA		
Performed Procedure Step End Time	0040,0251	TM		
Performed Procedure Step Status	0040,0252	CS	COMPLETED, DISCONTINUED	
Performed Procedure Step Description	0040,0254	LO		Copied from MWL.
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 Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
>Coding Scheme Version	0008,0103	SH		
>Code Meaning	0008,0104	LO		
Performed Series Sequence	0040,0340	SQ		One item per series or dummy value.
>Retrieve AE Title	0008,0054	AE		Always empty.
>Series Description	0008,103E	LO		Always empty.
>Performing Physician's Name	0008,1050	PN		The current physician as selected on DAM; default Scheduled Performing Physician's Name.
>Operators' Name	0008,1070	PN		
>Referenced Image Sequence	0008,1140	SQ		
>>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.5.1.4.1.1 .12.2	As exported by EasyDiagnost ACP AE.
>>Referenced SOP Instance UID	0008,1155	UI		As exported by EasyDiagnost ACP AE.
>Protocol Name	0018,1030	LO	unknown	
>Series Instance UID	0020,000E	UI		

Attribute Name	Tag	VR	Value	Comment
>Referenced Non-Image Composite SOP Instance Sequence	0040,0220	SQ		
>>Referenced SOP Class UID	0008,1150	UI	1.2.840.10008.5.1.4.1.1.11.1	As exported by EasyDiagnost ACP AE.
>>Referenced SOP Instance UID	0008,1155	UI		As exported by EasyDiagnost ACP AE.
Radiation Dose Module				
Image and Fluoroscopy Area Dose Product	0018,115E	DS		Not accumulating re-processed and non-digital images. Not sent in case of appended MPPS instances.
Total Time of Fluoroscopy	0040,0300	US		Not sent in case of appended MPPS instances.
Total Number of Exposures	0040,0301	US		Not counting re-processed images. Not sent in case of appended MPPS instances.
Entrance Dose	0040,0302	US		Not sent in case of appended MPPS instances.
Exposure Dose Sequence	0040,030E	SQ		Limited to 400 elements.
>KVP	0018,0060	DS		
>Exposure Time	0018,1150	IS		
>Radiation Mode	0018,115A	CS	CONTINUOUS, PULSED	
>Filter Material	0018,7050	CS	ALUMINIUM, ALUMINIUM\COPPER	
>X-Ray Tube Current in uA	0018,8151	DS		

Table 24: N-SET-RQ Status Response

4.2.1.4. Association Acceptance 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

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

4.2.1.4.1.1. Description and Sequencing of Activities

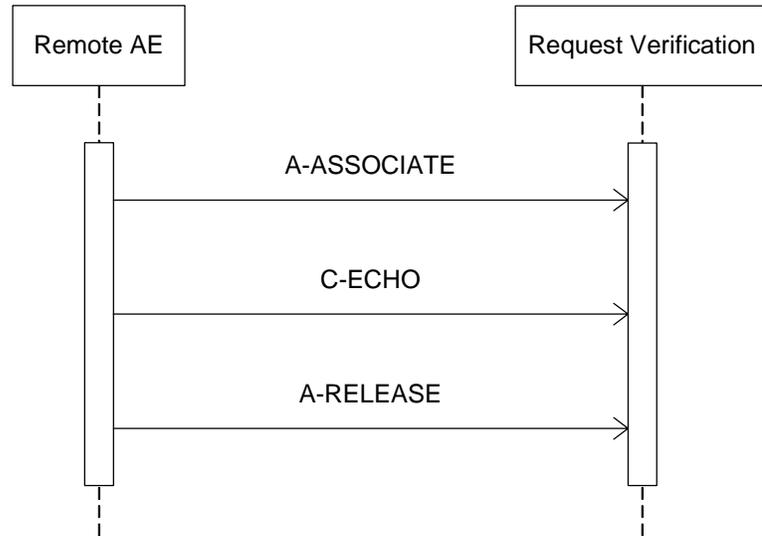


Figure 8: (Real World) Activity - Verification as SCP

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

4.2.1.4.1.2. Accepted Presentation Contexts

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

Table 25: 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		

4.2.1.4.1.3. SOP Specific Conformance for Verification SOP Class

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

4.2.1.4.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCP

Table 26: C-ECHO_RSP Status Response

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

4.2.2. EasyDiagnost Eleva ACP AE (for EDI Configuration only)

The EasyDiagnost Eleva ACP Application Entity provides Standard Extended Conformance to the DICOM V3.0 SOP classes as SCU/SCP.

The following remarks are important:

- In case the remote system does not support the import of a specific Image Storage SOP Class, the EasyDiagnost Eleva ACP AE will convert (if configured to do so) these images and sends them via the SC Image Storage SOP Class.
- The Imported Images should only be used for viewing purposes. The EasyDiagnost Eleva ACP AE requests for a Storage Commitment.

4.2.2.1. SOP Classes

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

Table 27: SOP Classes for EasyDiagnost Eleva ACP AE

SOP Class Name	SOP Class UID	SCU	SCP
3D Volume Object Storage (Private)	1.3.46.670589.5.0.2.1	Yes	Yes
Volume Storage (Private)	1.3.46.670589.5.0.1.1	Yes	Yes
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Yes	Yes
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	Yes	Yes
CT Synthetic Image Storage (Private)	1.3.46.670589.5.0.9	Yes	Yes
CX Synthetic Image Storage (Private)	1.3.46.670589.5.0.12	Yes	Yes
Digital X-Ray Image Storage - For Pres. SOP Class	1.2.840.10008.5.1.4.1.1.1.1	Yes	Yes
MR Cardio Analysis Storage (Private)	1.3.46.670589.5.0.11.1	Yes	Yes
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	Yes	Yes
MR Synthetic Image Storage (Private)	1.3.46.670589.5.0.10	Yes	Yes
Patient Root Query/Retrieve Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.1.1	Yes	Yes
Patient Root Query/Retrieve Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.1.2	Yes	Yes
Patient/Study Only Query/Retrieve Info. Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.3.1	Yes	Yes
Patient/Study Only Query/Retrieve Info. Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.3.2	Yes	Yes
Perfusion (Private)	1.3.46.670589.5.0.13	Yes	Yes
Perfusion Analysis (Private)	1.3.46.670589.5.0.14	Yes	Yes
Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Yes	No
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	Yes

SOP Class Name	SOP Class UID	SCU	SCP
Softcopy Presentation State Storage SOP Class	1.2.840.10008.5.1.4.1.1.11.1	Yes	Yes
PMS X-Ray Specialization Image Store	1.3.46.670589.2.3.1.1	Yes	Yes
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No
Study Root Query/Retrieve Information Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.2.1	Yes	Yes
Study Root Query/Retrieve Information Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.2.2	Yes	Yes
Surface Storage (Private)	1.3.46.670589.5.0.3.1	Yes	Yes
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	Yes	Yes
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	Yes	Yes
Verification SOP Class	1.2.840.10008.1.1	No	Yes
Reconstructed X-ray SOP Class (private)	1.3.46.670589.2.4.1.1	Yes	Yes
X-Ray Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	Yes	Yes
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2	Yes	Yes
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18	Yes	No
>Basic Color Image Box SOP Class	1.2.840.10008.5.1.1.4.1	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
>Printer SOP Class	1.2.840.10008.5.1.1.16	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: Any SOP specific behavior is documented later in the conformance statement in the applicable SOP specific conformance section.

Remarks:

- During installation the list of available SOP classes can be configured per EasyDiagnost Eleva ACP. The SOP classes to be supported can be configured per remote station.
- The Private SOP classes may be stored in image archives, but are to be used by EasyDiagnost Eleva ACP only!
- In case the remote SCP system does not support the import of a specific image storage SOP class, the EasyDiagnost Eleva ACP will convert and send such images as Secondary Capture images (if configured to do so).
- After storing images as SCU the EasyDiagnost Eleva ACP shall request Storage Commitment (only if configured to do so).

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 has specified.

Table 28: DICOM Application Context

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 a Initiator or Acceptor is specified.

Table 29: Number of Associations as an Association Initiator for EasyDiagnost Eleva ACP AE

Maximum number of simultaneous associations	3*
---	----

* As a result of local activities, EasyDiagnost Eleva ACP AE will initiate at most 3 simultaneous associations.
 One association may be used to issue **query** requests, the other association may be used to issue **store or retrieve** requests, and another association may be used for **print** requests.
 Furthermore, EasyDiagnost Eleva ACP AE may initiate an association for each remote retrieve request, executed by EasyDiagnost Eleva ACP AE as a C-MOVE operation. These associations are used to issue the C-STORE sub-operations implied by the retrieve requests. The number of simultaneous store associations for this retrieve purpose is principally not limited.
 The number of simultaneous associations for Storage Commitment is configurable.

Table 30: Number of Associations as an Association Acceptor for EasyDiagnost Eleva ACP AE

Maximum number of simultaneous associations	Configurable
---	--------------

4.2.2.2.3. Asynchronous Nature

If the implementation supports negotiation of multiple outstanding transactions this is stated here, along with the maximum number of outstanding transactions supported.

Table 31: Asynchronous Nature as an Association Initiator for EasyDiagnost Eleva ACP AE

Maximum number of outstanding asynchronous transactions	NA
---	----

4.2.2.2.4. Implementation Identifying Information

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

Table 32: DICOM Implementation Class and Version for EasyDiagnost Eleva ACP AE

Implementation Class UID	1.3.46.670589.5.2.23
Implementation Version Name	ViewForum R4.1

4.2.2.2.5. Communication Failure Handling

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

Table 33: Communication Failure Behavior

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

4.2.2.3. Association Initiation Policy

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

EasyDiagnost Eleva ACP shall initiate associations as a result of the following events.

- The EasyDiagnost Eleva ACP operator or a remote (Query/Retrieve) application copies selected images from the EasyDiagnost Eleva ACP database to another database; ref: section Export Images.
- The EasyDiagnost Eleva ACP operator queries a remote database; ref. section Find Remote Images.
- The EasyDiagnost Eleva ACP operator copies selected images from a remote database to another database; ref. section Move Remote Images.
- The operator requests storage commitment of images on a remote database; ref. section Request Storage Commitment.
- The EasyDiagnost Eleva ACP operator requests to print selected images of the EasyDiagnost Eleva ACP database; ref. section Print Images.
- The EasyDiagnost Eleva ACP operator requests the status of the selected printer; ref. section Request Printer Status.

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

Table 34: DICOM Association Rejection Handling

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.

Result	Source	Reason/Diagnosis	Behavior
		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.

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

Table 35: DICOM Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	0 – reason-not-specified	The association is rejected. The reason is logged.
2 – DICOM UL service-provider	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 for sending an association abort is summarized in next table.

Table 36: DICOM Association Abort Policies

Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	0 – reason-not-specified	The association is rejected. The reason is logged.
2 – DICOM UL service-provider	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.

4.2.2.3.1. (Real-World) Activity – Print Management As SCU

4.2.2.3.1.1. 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.

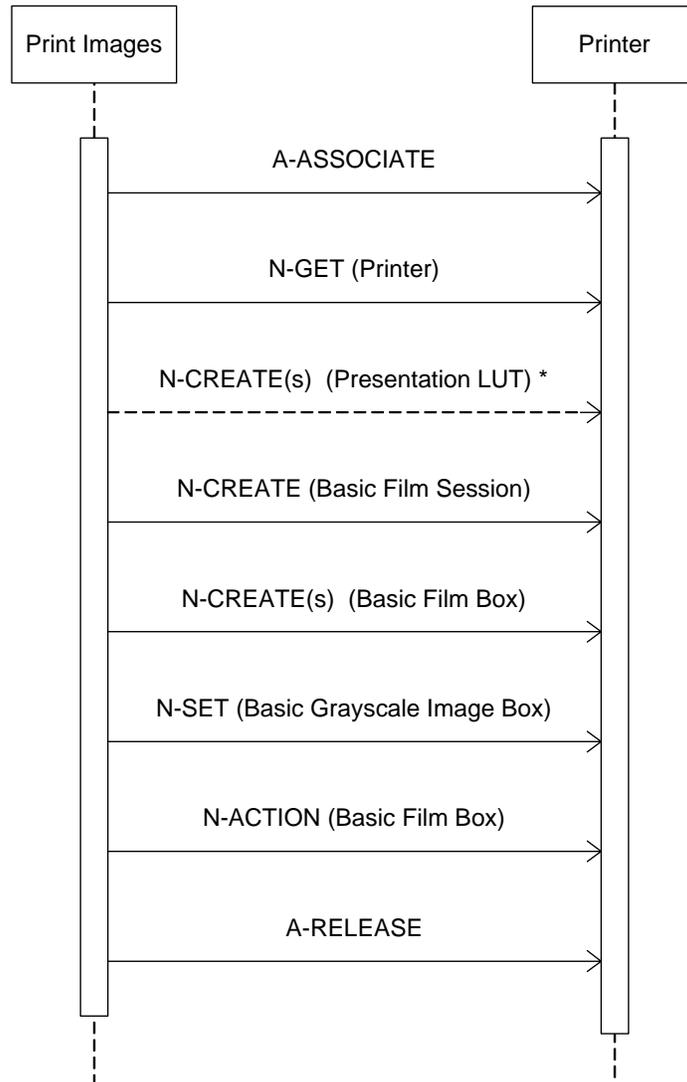


Figure 9: (Real World) Activity - Print Management As SCU

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

4.2.2.3.1.2. Proposed Presentation Contexts

Table 37: 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		
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		
Basic Color Print Management Meta SOP Class	1.2.840.10008.5.1.1.18			SCU	None
>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 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		
>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			SCU	None
>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		

The proposed presentation contexts are shown in above table.

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
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

4.2.2.3.1.3. 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:

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

Table 38: Presentation LUT Module

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

Table 39: N-CREATE-RQ Status Response

Service Status	Code	Further Meaning	Description
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.

Table 40: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released.

Exception	Behavior
Association Time-Out SCU	The association is released.
Association aborted	The Print job is marked as failed. The reason is logged and reported to the user.

4.2.2.3.1.4. SOP Specific Conformance for Basic Color Image Box SOP Class of the Basic Color Print Management Meta SOP Class

The EasyDiagnost ACP AE conforms to the Basic Color Image Box Sop Class.

The following DIMSE service element is supported:

4.2.2.3.1.4.1. Dataset Specific Conformance for Basic Color Image Box N-SET SCU.

Table 41: Image Box Pixel Presentation Module

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

Table 42: N-SET-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Image successfully stored in 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.
	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.

Service Status	Code	Further Meaning	Description
	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.

Table 43: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released
Association Time-out SCU	The association is released
Association aborted	The print job is marked as failed. The reason is logged.

4.2.2.3.1.5. SOP Specific Conformance for Basic Film Box SOP Class of the Basic Color Print Management Meta SOP Class

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

4.2.2.3.1.5.1. Dataset Specific Conformance for Basic Film Box N-ACTION SCU

Table 44: N-ACTION-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Film accepted for printing	The print job continues.
Warning	B603	Film Box SOP Instance Hierarchy does not contain Image Box SOP Instances	The print job continues and the warning is logged and reported to the user.
	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.
	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.

Service Status	Code	Further Meaning	Description
	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	C602	Unable to create Print Job SOP Instance – Print Queue is full	The print job is marked as failed and the reason is logged and reported to the user.
	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.
	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.

Table 45: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released
Association Time-out SCU	The association is released
Association aborted	The print job is marked as failed. The reason is logged.

4.2.2.3.1.5.2. Dataset Specific Conformance for Basic Film Box N-CREATE SCU

Table 46: Basic Film Box Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Display Format	2010,0010	ST	STANDARD\1,1 CUSTOM1	ALWAYS	CONF	
Film Orientation	2010,0040	CS	PORTRAIT; LANDSCAPE	ALWAYS	CONF	
Film Size ID	2010,0050	CS	8INX10IN, 8_5INX11IN, A, 10INX12IN, 10INX14IN, A3, 11INX14IN, 11INX17IN, A4, 14INX14IN, 14INX17IN, 24CMX24CM, 24CMX30CM	ALWAYS	CONF	
Magnification Type	2010,0060	CS		ALWAYS	USER	
Max Density	2010,0130	US		VNAP	CONF	
Trim	2010,0140	CS	NO, YES	VNAP	CONF	
Configuration Information	2010,0150	ST	L=1, L=V	ALWAYS	CONF	

Table 47: 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	UID of Parent Film Session	ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Referenced Presentation LUT Sequence	2050,0500	SQ		ANAP	AUTO	
> Referenced SOP Class UID	0008,1150	UI	UID of Parent LUT Presentation	ALWAYS	AUTO	
> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 48: N-CREATE-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Film Box successfully created	The print job continues.
Warning	B605	Requested Min Density or Max Density outside of Printer's operating Range	The print job continues and the warning is logged.
Failure	C616	There is an existing Film Box that has not been printed	The print job is marked as failed and the reason is logged.

Table 49: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released
Association Time-out SCU	The association is released
Association aborted	The print job is marked as failed. The reason is logged.

4.2.2.3.1.6. SOP Specific Conformance for Basic Film Session SOP Class of the Basic Color Print Management Meta SOP Class

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

4.2.2.3.1.6.1. Dataset Specific Conformance for Basic Film Session N-CREATE SCU

Table 50: Basic Film Session Presentation Module

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

Table 51: Basic Film Session Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Proposed Study Sequence	2130,00A0	SQ		ANAP	AUTO	
>Patient's Name	0010,0010	PN		ANAP	AUTO	
>Patient ID	0010,0020	LO		ANAP	AUTO	

Table 52: N-CREATE-RQ Status Response

Service Status	Code	Further Meaning	Description
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.

Table 53: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released
Association Time-out SCU	The association is released
Association aborted	The print job is marked as failed. The reason is logged.

4.2.2.3.1.7. SOP Specific Conformance for Printer SOP Class of the Basic Color Print Management Meta SOP Class

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

4.2.2.3.1.7.1. Dataset Specific Conformance for Printer N-GET-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 54: N-GET-RQ Status Response

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

Table 55: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job Fails
Reply Time-out	The association is rejected
Association Time-out SCU	The association is released.
Association aborted	The Print job is marked as failed. The reason is logged and reported to the user.

4.2.2.3.1.7.2. Dataset Specific Conformance for Printer N-EVENT-REPORT 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 56: N-EVENT-REPORT-RSP Status Response

Service Status	Code	Further Meaning	Description
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

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

Table 57: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released
Association Time-out SCU	The association is released
Association aborted	The print job is marked as failed. The reason is logged.

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

The EasyDiagnost ACP AE conforms to the Basic Film Box SOP class

4.2.2.3.1.8.1. Dataset Specific Conformance for Basic Film Box N-ACTION SCU

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

Table 58: N-ACTION-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Film accepted for printing	The print job continues.

Service Status	Code	Further Meaning	Description
Warning	B603	Film Box SOP Instance Hierarchy does not contain Image Box SOP Instances	The print job continues and the warning is logged and reported to the user.
	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.
	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	C602	Unable to create Print Job SOP Instance – Print Queue is full	The print job is marked as failed and the reason is logged and reported to the user.
	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.
	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.

Table 59: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released
Association Time-out SCU	The association is released
Association aborted	The print job is marked as failed. The reason is logged.

4.2.2.3.1.8.2. Dataset Specific Conformance for Basic Film Box N-CREATE SCU

Table 60: Basic Film Box Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Display Format	2010,0010	ST		ALWAYS	AUTO	

Table 61: 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	
Referenced Presentation LUT Sequence	2050,0500	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	

Table 62: N-CREATE-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Film Box successfully created	The print job continues.
Warning	B605	Requested Min Density or Max Density outside of Printer's operating Range	The print job continues and the warning is logged.
Failure	C616	There is an existing Film Box that has not been printed	The print job is marked as failed and the reason is logged.

Table 63: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released
Association Time-out SCU	The association is released
Association aborted	The print job is marked as failed. The reason is logged.

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

The EasyDiagnost ACP AEconforms to the Basic Film Session Sop Class. The following DIMSE service element is supported:.

4.2.2.3.1.9.1. Dataset Specific Conformance for Basic Film Session N-CREATE SCU

Table 64: Basic Film Session Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Print Priority	2000,0020	CS		ANAP	AUTO	
Medium Type	2000,0030	CS		ANAP	AUTO	
Film Destination	2000,0040	CS		ANAP	AUTO	
Film Session Label	2000,0050	LO		ANAP	AUTO	

Table 65: Basic Film Session Relationship Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Proposed Study Sequence	2130,00A0	SQ		ANAP	AUTO	
>Patient's Name	0010,0010	PN		ANAP	AUTO	
>Patient ID	0010,0020	LO		ANAP	AUTO	

Table 66: N-CREATE-RQ Status Response

Service Status	Code	Further Meaning	Description
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.

Table 67: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released
Association Time-out SCU	The association is released
Association aborted	The print job is marked as failed. The reason is logged.

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

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

4.2.2.3.1.10.1. Dataset Specific Conformance for Basic Grayscale Image Box N-SET SCU

Table 68: Image Box Pixel Presentation Module

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

Table 69: N-SET-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Image successfully stored in 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.
	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.

Service Status	Code	Further Meaning	Description
	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
		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
		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

Table 70: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released
Association Time-out SCU	The association is released
Association aborted	The print job is marked as failed. The reason is logged.

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

EasyDiagnost ACP AE Conforms to Standard Printer SOP.

4.2.2.3.1.11.1. Dataset Specific Conformance for N-GET 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 71: N-GET-RQ Status Response

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

Table 72: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job Fails
Reply Time-out	The association is rejected
Association Time-out SCU	The association is released.
Association aborted	The Print job is marked as failed. The reason is logged and reported to the user.

4.2.2.3.1.11.2. Dataset Specific Conformance for Printer N-EVENT-REPORT 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 73: N-EVENT-REPORT-RSP Status Response

Service Status	Code	Further Meaning	Description
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

Table 74: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	Print job fails.
Reply Time-out	The association is released
Association Time-out SCU	The association is released
Association aborted	The print job is marked as failed. The reason is logged.

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

4.2.2.3.2.1. Description and Sequencing of Activities

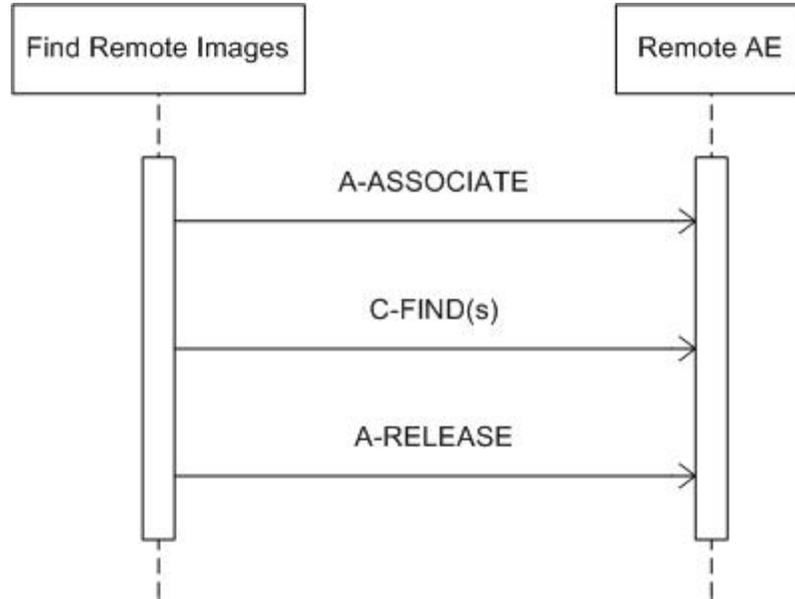


Figure 10: (Real World) Activity - FIND As SCU

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 handling 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).

4.2.2.3.2.2. 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 75: 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 Query/Retrieve 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		
Patient/Study Only Query/Retrieve Info. Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.3.1	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 Query/Retrieve 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		

The proposed presentation contexts are shown in above table.

4.2.2.3.2.3. SOP Specific Conformance for Patient Root Query/Retrieve 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.

4.2.2.3.2.3.1. 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 76: Supported Query Keys for Patient Root Q/R 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	

Attribute Name	Tag	VR	Type Of Matching	Comment
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	

Table 77: C-FIND-RQ Status Response

Service Status	Code	Further Meaning	Description
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.

Table 78: 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.

4.2.2.3.2.4. SOP Specific Conformance for Patient/Study Only Query/Retrieve Info. 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.

4.2.2.3.2.4.1. Dataset Specific Conformance for Patient/Study Only 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 79: Supported Query Keys for Patient/Study Only Q/R 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 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 Study level				
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	
Modalities in Study	0008,0061	CS	Universal	
Referring Physician's Name	0008,0090	PN	Universal	
Study Description	0008,1030	LO	Universal	
Study ID	0020,0010	SH	Universal	

Table 80: C-FIND-RQ Status Response

Service Status	Code	Further Meaning	Description
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.

Service Status	Code	Further Meaning	Description
	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.

Table 81: 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.

4.2.2.3.2.5. SOP Specific Conformance for Study Root Query/Retrieve 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.

4.2.2.3.2.5.1. Dataset Specific Conformance for Study 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 82: Supported Query Keys for Study Root Q/R 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	

Attribute Name	Tag	VR	Type Of Matching	Comment
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	
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	

Table 83: C-FIND-RQ Status Response

Service Status	Code	Further Meaning	Description
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.

Table 84: 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.

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

4.2.2.3.3.1. Description and Sequencing of Activities

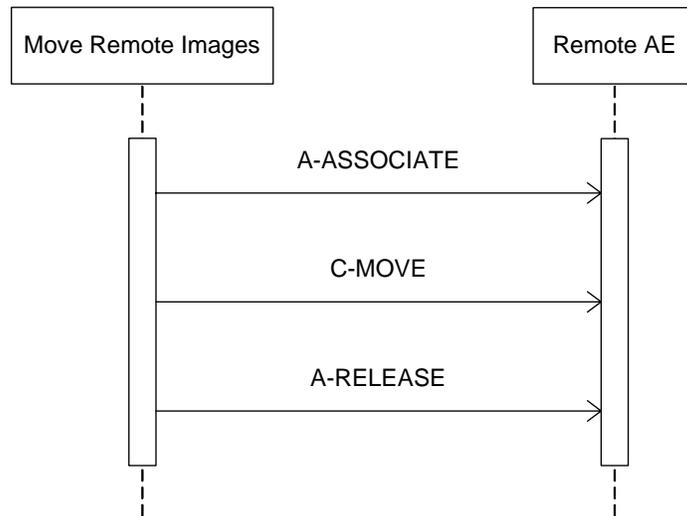


Figure 11: (Real World) Activity - MOVE As SCU

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).

4.2.2.3.3.2. Proposed Presentation Contexts

Each time an association is initiated, the association initiator proposes a number of Presentation Contexts to be used on that association. In this

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

Table 85: 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 Query/Retrieve 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		
Patient/Study Only Query/Retrieve Info. Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.3.2	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 Query/Retrieve 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		

The proposed presentation contexts are shown in the above table.

4.2.2.3.3.3. SOP Specific Conformance for Patient Root Query/Retrieve Information Model - MOVE SOP Class

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

4.2.2.3.3.3.1. 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 86: Identifiers for MOVE 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	

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

Table 87: C-MOVE-RQ Status Response

Service Status	Code	Further Meaning	Description
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.
	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.
	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.
	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.
Warning	B000	Sub-operations complete – One or more Failures	The move job is marked as completed. The association is released.
Pending	FF00	Sub-operations are continuing	The move job continues.

Table 88: 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.

4.2.2.3.3.4. SOP Specific Conformance for Patient/Study Only Query/Retrieve Info. Model - MOVE SOP Class

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

4.2.2.3.3.4.1. Dataset Specific Conformance for Patient/Study Only 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 89: Identifiers for MOVE SCU

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

Table 90: C-MOVE-RQ Status Response

Service Status	Code	Further Meaning	Description
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.
	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.
	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.
	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.
Warning	B000	Sub-operations complete – One or more Failures	The move job is marked as completed. The association is released.
Pending	FF00	Sub-operations are continuing	The move job continues.

Table 91: 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.

4.2.2.3.3.5. SOP Specific Conformance for Study Root Query/Retrieve Information Model - MOVE SOP Class

The EasyDiagnost Eleva ACP AE provides standard conformance MOVE SOP class

4.2.2.3.3.5.1. Dataset Specific Conformance for Study Root Query/Retrieve 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 92: Identifiers for MOVE 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	

Table 93: C-MOVE-RQ Status Response

Service Status	Code	Further Meaning	Description
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.
	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.
	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.
	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.
Warning	B000	Sub-operations complete – One or more Failures	The move job is marked as completed. The association is released.
Pending	FF00	Sub-operations are continuing	The move job continues.

Table 94: 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.

4.2.2.3.4. (Real-World) Activity – Image Export

4.2.2.3.4.1. Description and Sequencing of Activities

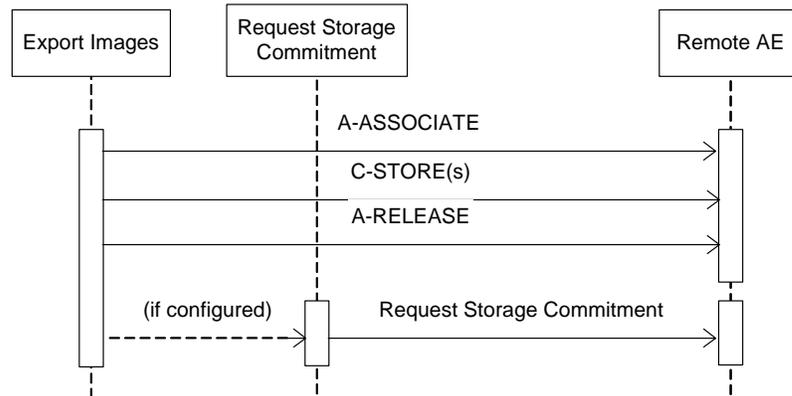


Figure 12: (Real World) Activity - Image Export

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, XA or RF.

There are two ways for the EasyDiagnost Eleva ACP AE to initiate Export Images.

1. 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.
2. 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).

4.2.2.3.4.2. Proposed Presentation Contexts

Table 95: 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		
3D Volume Object Storage (Private)	1.3.46.670589.5.0.2.1	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		
Volume Storage (Private)	1.3.46.670589.5.0.1.1	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		
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		
CT Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.2	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		
CT Synthetic Image Storage (Private)	1.3.46.670589.5.0.9	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		
CX Synthetic Image Storage (Private)	1.3.46.670589.5.0.12	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		
MR Cardio Analysis Storage (Private)	1.3.46.670589.5.0.11.1	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		
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	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		
MR Synthetic Image Storage (Private)	1.3.46.670589.5.0.10	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		
Perfusion (Private)	1.3.46.670589.5.0.13	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		
Perfusion Analysis (Private)	1.3.46.670589.5.0.14	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	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		
Image 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		
PMS X-Ray Specialization Image Storage	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		
Surface Storage (Private)	1.3.46.670589.5.0.3.1	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		
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	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		
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	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 Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	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		
Reconstructed X-ray SOP Class (private)	1.3.46.670589.2.4.1.1	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		

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

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.

4.2.2.3.4.3. 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 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 (Localiser 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 96: 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.*

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 97: C-STORE-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Storage is complete	Continues with next store until completed thereafter the store job is marked as completed and the association is released.
Refused	A7xx	Out of Resources	The store job fails and the association is released. The reason is logged and reported to the user.
Error	A9xx	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	Cannot understand	The store job fails and the association is released. The reason is logged and reported to the user.
Warning	B000	Coercion of Data Elements	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.
	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.

Table 98: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	The store job fails in case of association setup. The reason is logged and reported to the user.

Exception	Behavior
Reply Time-out	The store job fails and the association is aborted. The reason is logged and reported to the user.
Association Time-out SCU	The association is released.
Association aborted	The store job fails. The reason is logged and reported to the user.

4.2.2.3.5. (Real-World) Activity – Storage Commitment Push Model AS SCU

4.2.2.3.5.1. Description and Sequencing of Activities

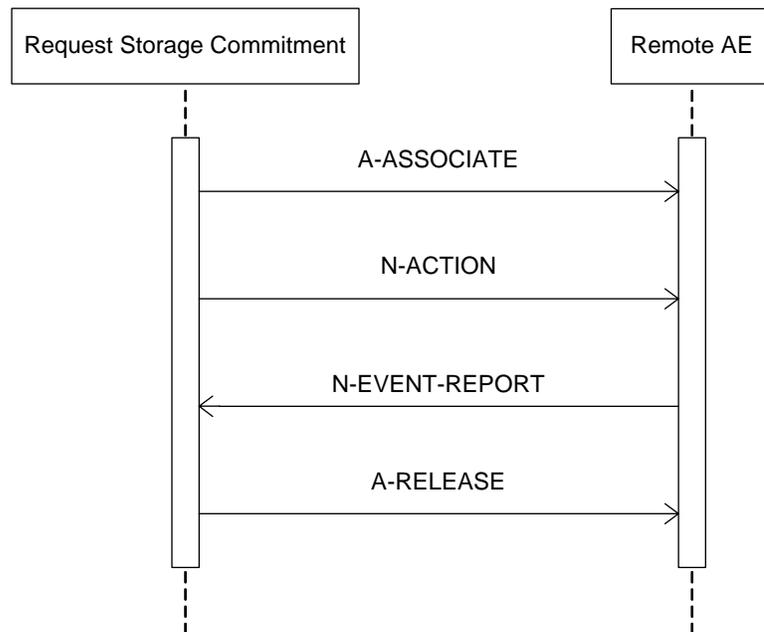


Figure 13: Sequencing of synchronous RWA Request Storage Commitment

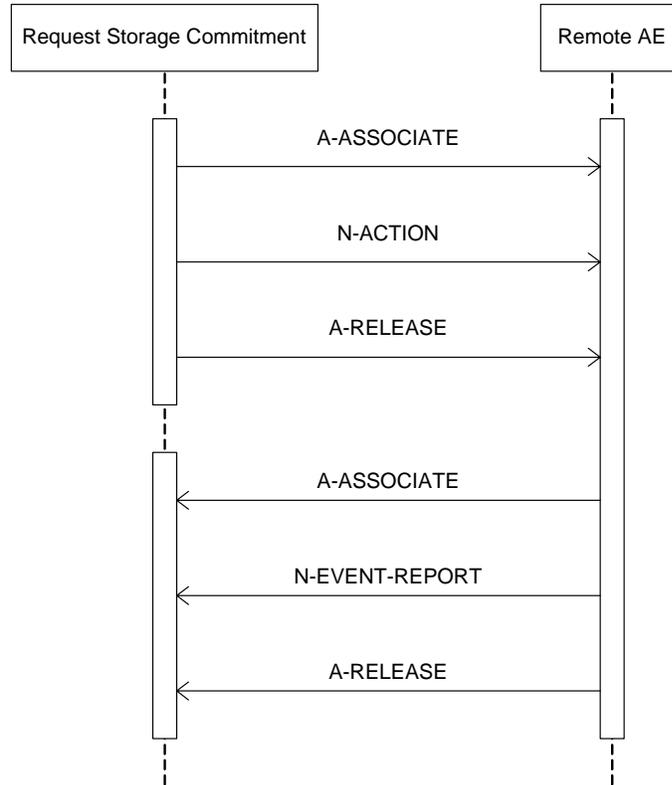


Figure 14: Sequencing of Asynchronous RWA Request Storage Commitment

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**).

4.2.2.3.5.2. 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 99: 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		

4.2.2.3.5.3. 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.

4.2.2.3.5.3.1. Dataset Specific Conformance for Storage Commitment Push Model N-ACTION 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 100: 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	

Table 101: N-ACTION-RQ Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Operation complete	Continues with waiting for storage commitment.
Failure	xxxx	Error, Failed, Refused	The reason is logged.

Table 102: DICOM 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.

4.2.2.3.5.3.2. Dataset Specific Conformance for Storage Commitment Push Model N-EVENT-REPORT SCU

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

Table 103: N-EVENT-REPORT-RSP Status Response

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

Table 104: DICOM 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.

4.2.2.4. Association Acceptance 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 105: DICOM Association Rejection Handling

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

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

Table 106: DICOM Association Abort Handling

Source	Reason/Diagnosis	Behavior
0 – DICOM UL service-user	0 – reason-not-specified	The association rejected. Reason is logged.
2 – DICOM UL service-provider	0 – reason-not-specified	The association rejected. Reason is logged.
	1 – unrecognized-PDU	The association rejected. Reason is logged.
	2 – unexpected-PDU	The association rejected. Reason is logged.
	4 – unrecognized-PDU parameter	The association rejected. Reason is logged.
	5 – unexpected-PDU parameter	The association rejected. Reason is logged.

Source	Reason/Diagnosis	Behavior
	6 – invalid-PDU-parameter value	The association rejected. Reason is logged.

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

Table 107: DICOM Association Abort Policies

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

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

4.2.2.4.1.1. Description and Sequencing of Activities

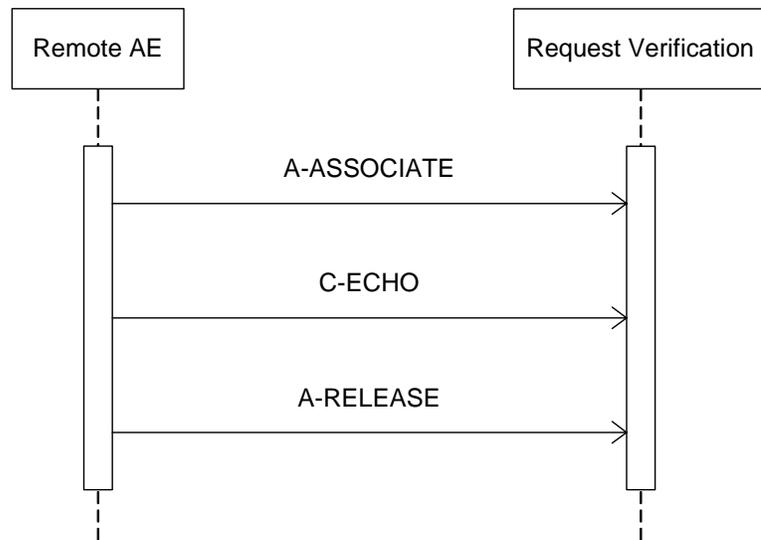


Figure 15: (Real World) Activity - Verification as SCP

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

4.2.2.4.1.2. Accepted Presentation Contexts

Table 108: 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

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.

Table 109: C-ECHO-RSP Status Response

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

Table 110: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM 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.

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

4.2.2.4.2.1. Description and Sequencing of Activities

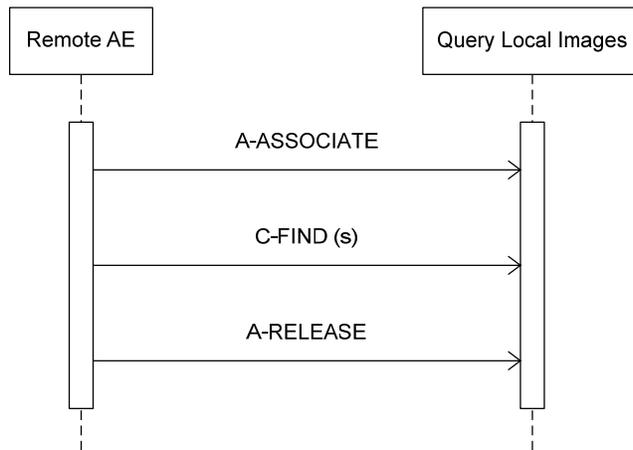


Figure 16: (Real World) Activity - FIND As SCP

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.

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 111: 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 Query/Retrieve 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		
Patient/Study Only Query/Retrieve Info. Model - FIND SOP Class	1.2.840.10008.5.1.4.1.2.3.1	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		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Study Root Query/Retrieve 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 Query/Retrieve 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 Q/R Information Model - FIND SOP Class SCP

Table 112: Requested Query Keys for Patient Root Q/R Information Model

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

Attribute Name	Tag	VR	Type Of Matching	Comment
Retrieve AE Title	0008,0054	AE		
Storage Media File-Set ID	0088,0130	SH		
Storage Media File-Set UID	0088,0140	UI		
Instance Availability	0008,0056	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		
Instance Number	0020,0013	IS		
Specific Character Set	0008,0005	CS		
Q/R Patient level				
Patient ID	0010,0020	LO		
Patient's Name	0010,0010	PN		
Q/R Series level				
Patient ID	0010,0020	LO		
Study Instance UID	0020,000D	UI		
Series Instance UID	0020,000E	UI		
Modality	0008,0060	CS		
Series Number	0020,0011	IS		
Specific Character Set	0008,0005	CS		
Q/R Study level (Patient Root)				
Patient ID	0010,0020	LO		
Study Instance UID	0020,000D	UI		
Study Date	0008,0020	DA		
Study Time	0008,0030	TM		
Accession Number	0008,0050	SH		
Study ID	0020,0010	SH		
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 113: C-FIND-RSP Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	The C-FIND request handling is completed, no more C-FIND responses are sent.
Refused	A700	Out of Resources	N/A
Failure	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.

Service Status	Code	Further Meaning	Description
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.

Table 114: 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.

4.2.2.4.2.4. SOP Specific Conformance for Patient/Study Only Query/Retrieve Info. Model - FIND SOP Class

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

4.2.2.4.2.4.1. Dataset Specific Conformance for Patient/Study Only Q/R Information Model - FIND SOP Class SCP

Table 115: Supported Query Keys for Patient Study Only Q/R Information Model

Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS		
Specific Character Set	0008,0005	CS		
Retrieve AE Title	0008,0054	AE		
Storage Media File-Set ID	0088,0130	SH		
Storage Media File-Set UID	0088,0140	UI		
Instance Availability	0008,0056	CS		
Q/R Patient level				
Patient ID	0010,0020	LO		
Patient's Name	0010,0010	PN		
Q/R Study level				
Patient ID	0010,0020	LO		
Study Instance UID	0020,000D	UI		
Study Date	0008,0020	DA		
Study Time	0008,0030	TM		
Accession Number	0008,0050	SH		
Study ID	0020,0010	SH		
Specific Character Set	0008,0005	CS		

Attribute Name	Tag	VR	Type Of Matching	Comment
Patient's Name	0010,0010	PN		

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 116: C-FIND-RSP Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	The C-FIND request handling is completed, no more C-FIND responses are sent.
Refused	A700	Out of Resources	N/A
Failure	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.

Table 117: 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.

4.2.2.4.2.5. SOP Specific Conformance for Study Root Query/Retrieve 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.

4.2.2.4.2.5.1. Dataset Specific Conformance for Patient/Study Only Q/R Information Model - FIND SOP Class SCP

Table 118: Supported Query Keys for Study Root Q/R Information Model

Attribute Name	Tag	VR	Type Of Matching	Comment
Query/Retrieve Level	0008,0052	CS		
Specific Character Set	0008,0005	CS		
Retrieve AE Title	0008,0054	AE		
Storage Media File-Set ID	0088,0130	SH		
Storage Media File-Set UID	0088,0140	UI		
Instance Availability	0008,0056	CS		
Q/R Image level				
SOP Instance UID	0008,0018	UI		
Study Instance UID	0020,000D	UI		
Series Instance UID	0020,000E	UI		
Instance Number	0020,0013	IS		
Q/R Series level				
Study Instance UID	0020,000D	UI		
Series Instance UID	0020,000E	UI		
Modality	0008,0060	CS		
Series Number	0020,0011	IS		
Q/R Study level (Study Root)				
Study Instance UID	0020,000D	UI		
Study Date	0008,0020	DA		
Study Time	0008,0030	TM		
Accession Number	0008,0050	SH		
Patient's Name	0010,0010	PN		
Patient ID	0010,0020	LO		
Study ID	0020,0010	SH		
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 119: C-FIND-RSP Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Matching is complete	The C-FIND request handling is completed, no more C-FIND responses are sent.
Refused	A700	Out of Resources	N/A
Failure	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.

Service Status	Code	Further Meaning	Description
	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.

Table 120: 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.

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

4.2.2.4.3.1. Description and Sequencing of Activities

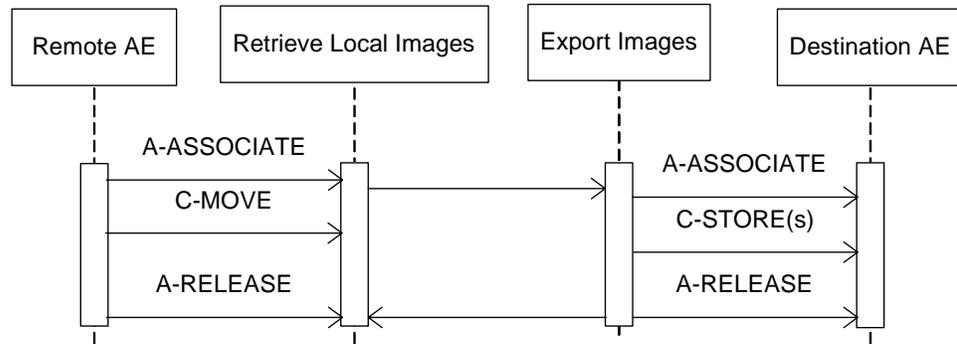


Figure 17: (Real World) Activity - MOVE As SCP

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.

4.2.2.4.3.2. Accepted Presentation Contexts

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

Table 121: 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 Query/Retrieve 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		
Patient/Study Only Query/Retrieve Info. Model - MOVE SOP Class	1.2.840.10008.5.1.4.1.2.3.2	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 Query/Retrieve 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 Query/Retrieve Information Model - MOVE SOP Class

The EasyDiagnost ACP AE provides standard conformance to MOVE SOP class of Patient Root Q/R information model.

4.2.2.4.3.3.1. Dataset Specific Conformance for Patient Root Q/R Information Model - MOVE SOP Class 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 122: Identifiers for MOVE 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	
Q/R Patient level			
Patient ID	0010,0020	LO	
Q/R Series level			
Series Instance UID	0020,000E	UI	

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

Table 123: C-MOVE-RSP Status Response

Service Status	Code	Further Meaning	Description
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.

Table 124: 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.

4.2.2.4.3.4. SOP Specific Conformance for Patient/Study Only Query/Retrieve Info. Model - MOVE SOP Class

The EasyDiagnost ACP AE provides standard conformance to MOVE SOP class of Patient/Study only Q/R information model..

4.2.2.4.3.4.1. Dataset Specific Conformance for Patient/Study Only Q/R Information Model - MOVE SOP Class 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 125: Identifiers for MOVE SCP

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

Table 126: C-MOVE-RSP Status Response

Service Status	Code	Further Meaning	Description
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.

Table 127: 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.

4.2.2.4.3.5. SOP Specific Conformance for Study Root Query/Retrieve Information Model - MOVE SOP Class

The EasyDiagnost ACP AE provides standard conformance to MOVE SOP class of Study Root Q/R information model.

4.2.2.4.3.5.1. Dataset Specific Conformance for Study Root Query/Retrieve Information Model - MOVE SOP Class 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 128: Identifiers for MOVE 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	

Table 129: C-MOVE-RSP Status Response

Service Status	Code	Further Meaning	Description
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.

Table 130: 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.

4.2.2.4.4. (Real-World) Activity – Image Import

4.2.2.4.4.1. Description and Sequencing of Activities

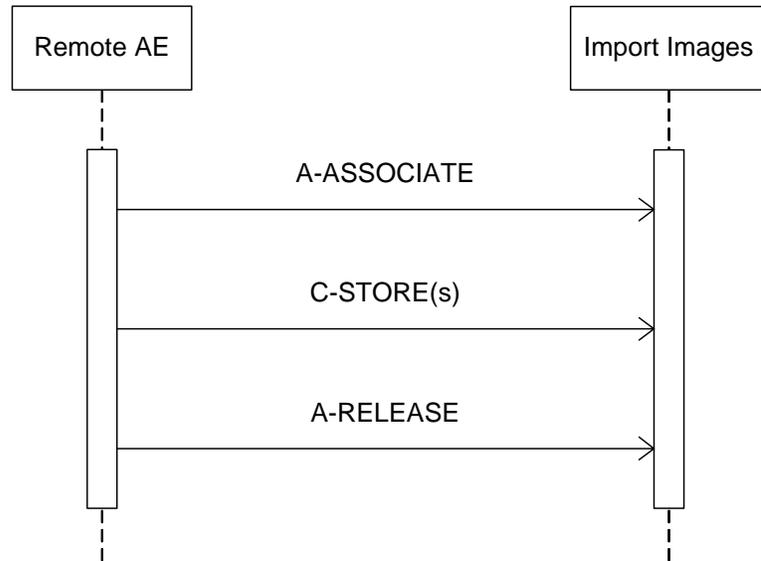


Figure 18: (Real World) Activity - Image Import

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

Table 131: 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		
3D Volume Object Storage (Private)	1.3.46.670589.5.0.2.1	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		
Volume Storage (Private)	1.3.46.670589.5.0.1.1	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		
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		
CT Image Storage SOP	1.2.840.10008.5.1.4.1.1.2	Explicit VR Big Endian	1.2.840.10008.1.2.2	SCP	None

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Class		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
CT Synthetic Image Storage (Private)	1.3.46.670589.5.0.9	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		
CX Synthetic Image Storage (Private)	1.3.46.670589.5.0.12	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		
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	SCP	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		
MR Cardio Analysis Storage (Private)	1.3.46.670589.5.0.11.1	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		
MR Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.4	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		
MR Synthetic Image Storage (Private)	1.3.46.670589.5.0.10	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		
Perfusion (Private)	1.3.46.670589.5.0.13	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		
Perfusion Analysis Storage (Private)	1.3.46.670589.5.0.14	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		
PMS X-Ray Specialization Image Store	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		
Surface Storage (Private)	1.3.46.670589.5.0.3.1	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		
Ultrasound Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.6.1	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		
Ultrasound Multi-frame Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.3.1	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 Angiographic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.1	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	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		

Presentation Context Table					
Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
Name	UID	Name List	UID List		
Class		Implicit VR Little Endian	1.2.840.10008.1.2		
Reconstructed X-ray SOP Class (private)	1.3.46.670589.2.4.1.1	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		

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.

Table 132: Support for Photometric Interpretation

Photometric Interpretation	Storage	Viewing
MONOCHROME1	Yes	Yes
MONOCHROME2	Yes	Yes
RGB	Yes	Yes
YBR_FULL	Yes	No
YBR_FULL_422	Yes *	Yes *
YBR_PARTIAL_422	Yes	No
PALETTE COLOR	Yes	No
Other	Yes	No

*Note: * is an Compressed YBR_FULL_422 images received per JPEG Baseline transfer shall be stored (and consequently viewed) as RGB images.*

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 extent 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 specified 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 takes the following action:

Table 133: Actions taken by EasyDiagnost Eleva ACP AE:

Attribute Name	Tag	Actions	
		Removed from original images	Set to a zero length value in the exported images
Referenced Patient Sequence	0008,1120	X	
Procedure Code Sequence	0008,1032	X	
Performed Protocol Code Sequence	0040,0260	X	
Requested Attributes Sequence	0040,0275	X	
Comments on the Performed Procedure Step	0040,0280	X	
Patient's Birth Date	0010,0032		X
Other Patient's ID's	0010,1000		X
Other Patient's Names	0010,1001		X
Ethnic Group	0010,2160		X
Patient Comments	0010,4000		X
Patient's Age	0010,1010		X
Patient's Size	0010,1020		X
Patient's Weight	0010,1030		X
Occupation	0010,2180		X
Additional Patient's History	0010,21B0		X

Support for Additional Standard, Private and Retired attributes:
 EasyDiagnost Eleva ACP AE stores all Additional Standard, Private and Retired attributes in received images.
 Retrieval of these attributes is only possible (by means of a C-MOVE request) 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 move destination (i.e. a C-STORE Service Class Provider) has accepted implicit value representation as the only transfer syntax applicable to the storage SOP class of the image (when EasyDiagnost Eleva ACP AE is C-STORE SCU).

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.

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 134: C-STORE-RSP Status Response

Service Status	Code	Further Meaning	Description
Success	0000	Storage is complete	The image(s) shall be stored in the EasyDiagnost Eleva ACP AE database.
Refused	A700	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.
Error	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
	B006	Elements discarded	N/A
	B007	Data set does not match SOP class	N/A

Table 135: 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.

4.2.3. EasyDiagnost Eleva DI AE (DI configuration only)

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 136: SOP Classes for EasyDiagnost Eleva DI 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	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.

4.2.3.2. Association Policies

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

4.2.3.2.1. General

The DICOM standard application context has specified.

Table 137: DICOM Application Context

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 a Initiator or Acceptor is specified.

Table 138: Number of Associations as an Association Initiator for EasyDiagnost Eleva DI AE

Maximum number of simultaneous associations	1
---	---

Table 139: Number of Associations as an Association Acceptor for EasyDiagnost Eleva DI AE

Maximum number of simultaneous associations	1
---	---

4.2.3.2.3. Asynchronous Nature

If the implementation supports negotiation of multiple outstanding transactions this is stated here, along with the maximum number of outstanding transactions supported.

Table 140: Asynchronous Nature as an Association Initiator for EasyDiagnost Eleva DI AE

Maximum number of outstanding asynchronous transactions	NA
---	----

4.2.3.2.4. Implementation Identifying Information

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

Table 141: DICOM Implementation Class and Version for EasyDiagnost Eleva DI AE

Implementation Class UID	1.3.46.670589.6.1.2.1.1
Implementation Version Name	DI2.4.1

4.2.3.2.5. Communication Failure Handling

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

Table 142: Communication Failure Behavior

Exception	Behavior
ARTIM Timeout	The association is closed and the reason is logged

4.2.3.3. Association Initiation Policy

EasyDiagnost Eleva DI AE initiates the association when the user exports the selected images from EasyDiagnost Eleva to another system.

4.2.3.3.1. (Real-World) Activity – Image Export

4.2.3.3.1.1. Description and Sequencing of Activities

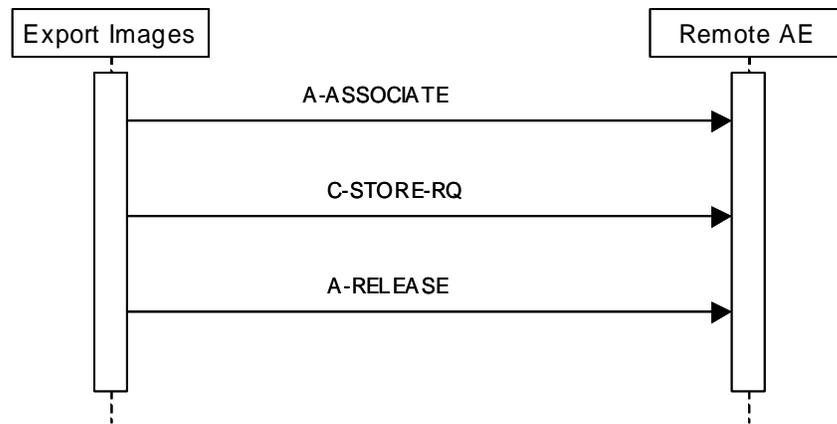


Figure 19: (Real World) Activity - Image Export

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.

4.2.3.3.1.2. Proposed Presentation Contexts

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

Table 143: 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	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		

4.2.3.3.1.3. 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 a transfer syntax according to the following table.

Table 144: Transfer Syntax Conversion

Syntax	Source	ILE	ELE	EBE
Destination	/			
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.

4.2.3.3.1.3.1. Dataset Specific behaviour for Storage SOP Classes

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

During the selection and export of an examination, the user interface shows the status:

Table 145: DICOM Command Response Status Handling Behavior

Service Status	Further Meaning	Behavior
Flag	Export Flagged image	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	Not Exported Export	Export of examination cancelled

Table 146: DICOM Command Communication Failure Behavior

Exception	Behavior
ARTIM Time-out	The store job fails in case of association setup. The reason is logged and reported to the user.
Reply Time-out	The store job fails and the association is aborted. The reason is logged and reported to the user.
Association Time-out SCU	The association is released.
Association aborted	The store job fails. The reason is logged and reported to the user.

4.2.3.4. Association Acceptance Policy

EasyDiagnost Eleva DI AE does not accept any incoming associations.

4.3. Network Interfaces

4.3.1. Physical Network Interfaces

The ED ELEVA (EasyDiagnost Eleva ACP AE and the EasyDiagnost Eleva ACP AE) application provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of [DICOM].

ED ELEVA inherits its TCP/IP stack from Windows XP (i.e. the operating system platform).

ED ELEVA supports a single network interface: Ethernet ISO.8802-3.

With standard supported physical medium include:

- IEEE 802.3 10BASE-TX
- IEEE 802.3 100BASE-TX (Fast Ethernet)
- IEEE 802.3 1000BASE-X (Fiber Optic Gigabit Ethernet).

4.3.2. Additional Protocols

Additional protocols such as used for network management are listed here.

4.4. Configuration

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

4.4.1.1. Local AE Titles

The ED ELEVA exits of two Application Entity titles and two IP addresses. One for the EasyDiagnost Eleva RIS AE and one for the EasyDiagnost Eleva ACP AE.

At installation the Customer Support Engineer can change the EasyDiagnost Eleva ACP AE host name.

The EasyDiagnost Eleva ACP AE can be changed independently.

The EasyDiagnost Eleva ACP AE listens on **port 3010** (default).

Table 147: 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

Configuration of remote host names and port numbers shall be specified here.

4.4.1.2.1. Remote Association Initiators

All relevant remote applications able to setup a DICOM association towards EasyDiagnost Eleva ACP AE and EasyDiagnost Eleva RIS AE must be configured at EasyDiagnost Eleva configuration time.

The Customer Support Engineer (CSE) must provide the following information for each remote application:

- The **Application Entity Title**.
- The **SOP Classes** and **Transfer Syntaxes** for which EasyDiagnost ACP AE ACP AE accepts associations.

4.4.1.2.2. Remote Association Acceptors

The following information must be provided for all relevant remote applications that are able to accept DICOM associations from EasyDiagnost Eleva RIS AE:

- The **Application Entity Title**.
- The **Host name / IP address** on which the remote application resides.
- The **Port number** at which the remote application accepts association requests.

4.4.2. Parameters

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

The configuration parameters for the ED ELEV A RIS AE are given in the following table and categorized in the sections

- General Parameters
- System Control
- RIS Parameters

Table 148: Configuration Parameters table for RIS AE

Parameter	Configurable	Default Value
General Parameters		
Time-out waiting for acceptance or rejection Response to an Association Open Request. (Application Level timeout)	Yes	0 (unlimited)
System Control – Location Parameters		
Location – Local system ID (Station Name < 16 Characters)	Yes	RF_System
Location – Hospital name (Institution Name)	Yes	Hospital
System Control – Patient Database Parameters		
Patient Database – Issuer of Patient ID	Yes	
RIS – Network Parameters		
IP address	Yes	
Subnet mask	Yes	
Default gateway	Yes	
RIS – System DICOM Node Parameters		
AE Title	Yes	IP host name of the EasyDiagnost Eleva RIS AE

Parameter	Configurable	Default Value
PortNumber	Yes	3010
Max Data PDU Length	Yes	16384
Artim timeout	Yes	60 [s]
Maximum nr of incoming associations	Yes	
RIS – External DICOM Nodes Parameters		
AE Title	Yes	
PortNumber	Yes	
IP Address	Yes	
Artim Timeout	Yes	
Automatic Association Timeout	Yes	
SOP class support	Yes	
Transfer syntax support	Yes	ILE, ELE, EBE
RIS – Worklist Management (WLM) Parameters		
WLM network node name	Yes	
General WLM Settings – Background broad query time interval	Yes	0 [min] (no background query)
DICOM WLM Settings – RIS query time-out	Yes	240 [min]
DICOM WLM Settings – WLM query requests attribute 'specific character set (0008,0005)'	Yes	No
DICOM WLM Settings – Scheduled Procedure Step ID (0040,0009) is mandatory	Yes	No
DICOM Query Attributes – Broad query SPS start date	Yes	today
DICOM Query Attributes – Broad query modality	Yes	all
DICOM Query Attributes – Broad query AE title	Yes	ALL
RIS – Emergency Patient Parameters		
Emergency patient sex	Yes	female
Emergency patient name male	Yes	Doe^John
Emergency patient name female	Yes	Doe^Jane
Emergency patient name other	Yes	Doe^J
RIS – MPPS Parameters		
MPPS network node name	Yes	

The configuration parameters for the EasyDiagnost ACP AE ACP are given in next table, and categorized in the following sections for the EasyDiagnost ACP AE.

- General Parameters.
- Local Configurable Parameters.
- Remote Configurable Parameters.
- General Print Parameters.
- Printer Specific Print Parameters.

Table 149: Configuration Parameters table (For Eleva EDI Configuration only)

Parameter	Configurable	Default Value
General Parameters		
Time-out waiting for acceptance or rejection Response to an Association Open Request. (Application Level timeout)	No	-
General DIMSE level time-out values	No	-
Time-out waiting for response to TCP/IP connect request. (Low-level timeout)	No	-
Time-out waiting for acceptance of a TCP/IP message over the network. (Low-level timeout)	No	-

Parameter	Configurable	Default Value
Time-out for waiting for data between TCP/IP packets. (Low-level timeout)	No	-
Any changes to default TCP/IP settings, such as configurable stack parameters.	No	-
Local Configurable Parameters		
Size constraint in maximum object size	No	-
Maximum PDU size the AE can receive	Yes	0 (unlimited)
Maximum PDU size the AE can send	No	-
AE specific DIMSE level time-out values	No	-
Number of simultaneous Associations by Service and/or SOP Class	No	-
SOP Class support	Yes	None
Transfer Syntax support ¹	Yes	ELE
Remote Configurable Parameters		
Size constraint in maximum object size (see note)	No	-
Maximum PDU size the AE can receive	Yes	0 (unlimited)
Maximum PDU size the AE can send	No	-
AE specific DIMSE level time-out values	No	-
Number of simultaneous associations by Service and/or SOP class	No	-
SOP class support	Yes	none
Transfer Syntax support	Yes	ELE
Storage Commitment request must be sent after Storage request	Yes	not
Storage Commitment time-out (synchronous to asynchronous)	Yes	none
Automatic conversion of images of SOP classes not supported by remote systems into Secondary Capture Image Storage SOP instances	Yes	convert to SC
Export of pure DICOM images (i.e. only the standard DICOM attributes as defined in the related IOD) or extended DICOM images (with additional Standard DICOM, Private and Retired attributes)	Yes	allow all attributes
Support of overlays for DICOM node not supporting Presentation State objects ²	Yes	enabled
Support of overlays for DICOM node supporting Presentation State objects ²	Yes	disabled
Support of overlays for CD ²	Yes	disabled
General Print Parameters		
The DICOM printers that may be selected by the operator	Yes	none
Printer Specific Print Parameters ³		
Medium type	Yes	all available
Film size ID (i.e. media size)	Yes	all available
Resolution (300 / 600 dpi)	Yes	300
Color model (8 / 16 bits color)	Yes	8
Min Density	Yes	0
Max Density	Yes	0

Note 1: The JPEG Baseline transfer syntax is only supported for RGB and YBR_FULL_422 images; therefore JPEG Baseline may NOT be configured for systems that are capable of handling storage of monochrome images too.

Note 2: The EasyDiagnost Eleva Copy-tool can override the configured setting of overlay support.

Note 3: These print parameters can be selected from choice lists. These choice lists are defined via so-called prototypes for each type of printer and print medium. These prototypes are also configurable.

Table 150: Configuration Parameters table (For Eleva DI Configuration only)

Parameter	Configurable	Default Value
General Parameters		
Time-out waiting for acceptance or rejection Response to an Association Open Request. (Application Level timeout)	No	-
General DIMSE level time-out values	No	-
Time-out waiting for response to TCP/IP connect request. (Low-level timeout)	No	-
Time-out waiting for acceptance of a TCP/IP message over the network. (Low-level timeout)	No	-
Time-out for waiting for data between TCP/IP packets. (Low-level timeout)	No	-
Any changes to default TCP/IP settings, such as configurable stack parameters.	No	-
Local Configurable Parameters		
Size constraint in maximum object size (see note)	No	-
Maximum PDU size the AE can receive	Yes	28 K Bytes
Maximum PDU size the AE can send	No	28 K Bytes
AE specific DIMSE level time-out values	No	-
Number of simultaneous associations by Service and/or SOP class	No	-
SOP class support	Yes	none
Transfer Syntax support	Yes	ELE
Remote Configurable Parameters		
Size constraint in maximum object size (see note)	No	-
Maximum PDU size the AE can receive	Yes	0 (unlimited)
Maximum PDU size the AE can send	No	-
AE specific DIMSE level time-out values	No	-
Number of simultaneous associations by Service and/or SOP class	No	-
SOP class support	Yes	none
Transfer Syntax support	Yes	ELE
Automatic conversion of images of SOP classes not supported by remote systems into Secondary Capture Image Storage SOP instances	Yes	convert to SC
Export of pure DICOM images (i.e. only the standard DICOM attributes as defined in the related IOD) or extended DICOM images (with additional Standard DICOM, Private and Retired attributes)	Yes	allow all attributes

5. MEDIA INTERCHANGE (FOR ELEVA EDI CONFIGURATION ONLY)

5.1. Implementation Model

The implementation model shall identify the DICOM Application Entities in a specific implementation and relate the Application Entities to Real-World Activities.

5.1.1. Application Data Flow Diagram

The ED ELEVA consists of one single application entity only: the EasyDiagnost Eleva ACP Application Entity.

The figure below shows the Media interchange Application Data Flow as a functional overview of the EasyDiagnost Eleva ACP AE for CD-R and DVD.

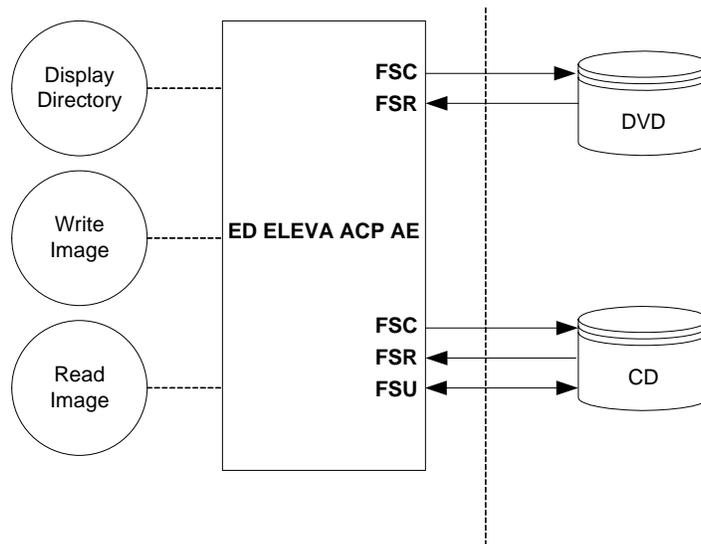


Figure 20: Application Data Flow Diagram

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

Table 151: 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 152: 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 ELEVAs supports images with the following DICOM Photometric Interpretations as shows in the Table below:

Table 153: 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 154: Transfer 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 ELEVAs supports images with Lossy image compression via JPEG as described as shows in the Table below.

Table 155: 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.

5.1.2.1. Functional definition of EasyDiagnost ACP AE

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

Whenever a CD or DVD has to be 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

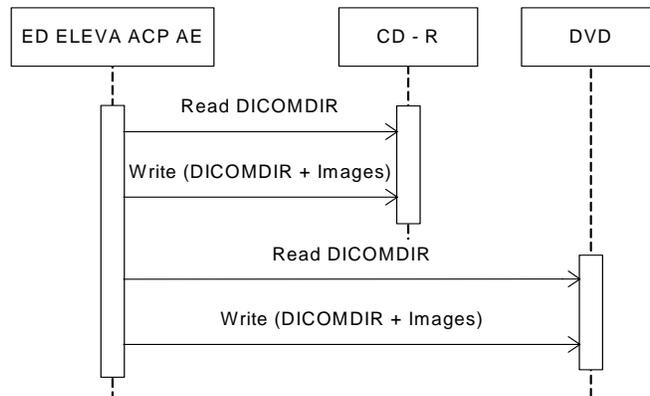


Figure 21: Sequencing of RWA Write Images

5.1.4. File Meta Information for Implementation Class and Version

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

Table 156: AE Related Application Profiles, Real-World Activities, and Roles

File Meta Information attributes	Value
File Meta Information Version	00, 01
Implementation Class UID	1.3.46.670589.5.2.23
Implementation Version Name	ViewForum R4.1

5.2. AE Specifications

The next section in the DICOM Conformance Statement contains the specification of the one and only EasyDiagnost Eleva ACP Application Entity.

5.2.1. EasyDiagnost Eleva ACP AE Specification

The EasyDiagnost Eleva ACP provides Standard Conformance to the DICOM media Storage Service and File Format ([DICOM] PS 3.10), the media Storage Application Profiles STD-GEN-CD ([DICOM] PS 3.11) and the media Storage Application Profiles STD-GEN-DVD-JPEG ([DICOM] PS 3.12) for Reading and Writing.

EasyDiagnost Eleva ACP AE supports multi-patient and multi-session CD-R / DVD disks, both for Reading and Writing.

Supported media by EasyDiagnost Eleva ACP AE are:

- **CD:** CD R / CD RW with the profile: STD-GEN-CD and
- **DVD:** DVD+R and DVD+RW with the profile: STD-GEN-DVD-JPEG and the Transfer Syntax ELE uncompressed.

The DVD - R and DVD - RW media can be Read but are NOT supported for Writing.

The supported Application Profiles, their Roles and the Service Class (SC) options, all defined in DICOM terminology, are listed in next table.

Table 157: AE Related Application Profiles, Real-World Activities, and Roles

Supported Application Profile	Real-World Activity	Roles	SC Option
STD-GEN-CD	Display Directory	FSR	Interchange
	Write Images	FSC, FSU	Interchange
	Read Images	FSR	Interchange
STD-GEN-DVD-JPEG	Display Directory	FSR	Interchange
	Write Images	FSC	Interchange
	Read Images	FSR	Interchange

Only adding on instances is supported for the FSU, deleting is not supported.

5.2.1.1. File Meta Information for the EasyDiagnost Eleva ACP AE

The Source Application Entity Title is configurable

5.2.1.2. Real-World Activities

The first sentence in this section shall state the roles and Media Storage Service Class options supported by the <Application Entity 1>.

5.2.1.2.1. Display Directory

When a database open action is initiated on the CD-R or DVD then EasyDiagnost Eleva ACP acts as an FSR using the interchange option to read the DICOMDIR of the CD-R or DVD medium.

This will result in an overview of the patients, studies, series and images on the EasyDiagnost Eleva ACP screen.

5.2.1.2.1.1. Media Storage Application Profile

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

5.2.1.2.1.1.1. Options

The mandatory DICOMDIR keys are required for the correct displaying of directory information. The displaying is structured according the DICOM Composite Information Model: Patient, Study, Series and Image.

5.2.1.2.2. Write Images

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

he EasyDiagnost Eleva ACP supports the RWA Write Images for the STD-GEN-CD and the STD-GEN-DVD-JPEG Application Profile

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.

Implementation remarks and restrictions

When writing the DICOMDIR records, key values are generated when no value of the corresponding attribute is supplied, according to the following table.

Table 158: Generated Keys

Key	Tag	Generated Value
Patient Keys		
Patient ID	(0010,0020)	At import EasyDiagnost Eleva ACP each time creates a new value based on the Study Instance UID for each new study written to the CD-R / DVD (even if this study belongs to a patient recorded earlier). Otherwise the default-generated value shall be a succession of "UNKNOWN", the Patient's Name, the Patient's Birth Date, and the Patient's Sex, concatenated by using underscore characters.
Study Keys		
Study Date	(0008,0020)	Date on which this Study was created.
Study Time	(0008,0030)	Time on which this Study was created.
Study ID	(0020,0010)	"UNKNOWN"
Series Keys		
Series Number	(0020,0011)	1
Image Keys		
Instance Number	(0020,0013)	1

The default value for the Pixel Intensity Relationship (0028, 1040) is set to DISP.

EasyDiagnost Eleva ACP can write Volumes of the media to that media.
EasyDiagnost Eleva ACP asks for a new media if media is spanning over more CD-R / DVD disks.

5.2.1.2.3. Read Images

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.

5.2.1.2.3.1. 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.

5.2.1.2.3.1.1. 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

5.3. Augmented and Private Application Profiles

This section shall be used for the description of augmented and private Application Profiles.

5.3.1. Augmented Application Profiles

None

5.3.2. Private Application Profiles

None

5.4. Media Configuration

See the Network configuration

6. SUPPORT OF CHARACTER SETS

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

Table 159: Supported DICOM Character Sets of EasyDiagnost

Character Set Description	Defined Term	ESC Sequence	ISO Registration Number	Code Element	Character Set
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

None

7.2. Association Level Security

Any calling AE title and/or IP address may open an association.

7.3. Application Level Security

The ED ELEVA does not supports the HIPAA Audit trail profile.

8. ANNEXES OF APPLICATION "EASYDIAGNOST ELEVA ACP (APPLICATION)" (EDI CONFIGURATION ONLY)

8.1. IOD Contents

8.1.1. Created SOP Instance

This section specifies each IOD to be exported by the **ED ELEVA ACP AE**.

This can take place as UNPROCESSED RAW data and PROCESSED data as RF. If the remote system does not support the import of a specific Image Storage SOP Class, the EasyDiagnost Eleva ACP AE will convert (if configured to do so) these images and sends them via the SC Image SOP Class. The Imported Images should only be used for viewing purposes.

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

The following IODs are created from Eleva EasyDiagnsot ACP AE in Eleva EDI configuration and by EasyDiagnost Eleva DI AE in Eleva DI Configuration.

Table 160: 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
X-Ray Radiofluoroscopic Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.12.2
Specialized PMS X-Ray Image Store	1.3.46.670589.2.3.1.1

8.1.1.1. Secondary Capture Image Storage SOP Class for the processed mode**Table 161: 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 162: 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 163: 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 164: 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 165: 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 4.1, PMS1.1 MIMIT, EVIIMDictionary	ALWAYS	AUTO	

Table 166: 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 167: 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 168: 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	O W/ OB		ALWAYS	AUTO	

Table 169: 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 170: 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	

8.1.1.2. Softcopy Presentation State Storage SOP Class (AS LAST SEEN) for the processed mode

When Eleva EasDiagnost 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 171: 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, Presentation Series Module	ALWAYS 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 172: 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 173: Presentation Series Module

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

Table 174: 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 175: 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 176: 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 177: Graphic Annotation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Graphic Annotation Sequence	0070,0001	SQ		ALWAYS	AUTO	
>Graphic Layer	0070,0002	CS	Layer created on import VGFEX	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 178: 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 179: 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 180: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	MWL/U SER	
Patient ID	0010,0020	LO		VNAP	MWL/U SER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL/U SER	
Patient's Sex	0010,0040	CS	F, M, O	VNAP	MWL/U SER	

Table 181: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Instance UID	0020,000D	UI		ALWAYS	MWL/U SER	
Study Date	0008,0020	DA	Date on which study was created	ALWAYS	MWL/U SER	
Study Time	0008,0030	TM	Time on which study was created.	ALWAYS	MWL/U SER	
Accession Number	0008,0050	SH		VNAP	MWL/U SER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL/U SER	
Study ID	0020,0010	SH		VNAP	MWL/U SER	
Study Description	0008,1030	LO	Examination Type (for DI/VF)	VNAP	MWL/U SER	
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	
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Table 182: 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 183: 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 4.1, PMS1.1 MIMIT, EVIIMDictionary	ANAP	AUTO	

Table 184: 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 185: 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	

8.1.1.3. Softcopy Presentation State Storage SOP Class (AS AQUIRED) for the Processed Mode

Table 186: 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 187: 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 188: Presentation Series Module

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

Table 189: 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 190: 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 191: 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	
>> Referenced SOP Class UID	0008,1150	UI	1.3.46.670589.2.3.1.1	ALWAYS	AUTO	
>> Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
>Window Center	0028,1050	DS		ALWAYS	AUTO	
>Window Width	0028,1051	DS		ALWAYS	AUTO	

Table 192: 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 193: Presentation State Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Presentation Value	0018,1622	US		ANAPC	AUTO	

Table 194: 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 195: 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 196: 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 197: 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 198: 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 199: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	CONFING	
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	

8.1.1.4. X-Ray Radiofluoroscopic Image Storage SOP Class for the processed mode

The following tables give a detailed overview of all supported attributes of the XRF Storage SOP Class for the Processed Mode with or without Overlays. The list of possible values are 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 200: IOD of Created X-Ray 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	Multi-Frame Module	ALWAYS
	Display Shutter Module	ALWAYS
	General Image Module	ALWAYS
	Image Pixel Module	ALWAYS
	X-ray Image Module	ALWAYS
	XRF Positioner Module	ALWAYS
	X-Ray Acquisition Module	ALWAYS
	SOP Common Module	ALWAYS
	Overlay Plane Module	CONDITIONAL
	VOI LUT Module	ALWAYS

Table 201: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		ALWAYS	AUTO	Received by RIS or entered by operator
Patient ID	0010,0020	LO		VNAP	AUTO	Received by RIS or entered by operator
Patient's Birth Date	0010,0030	DA		VNAP	AUTO	Received by RIS or entered by operator
Patient's Sex	0010,0040	CS	F, M, O	VNAP	AUTO	Received by RIS or entered by operator

Table 202: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	Generated at the creation of the study or received from RIS
Study Date	0008,0020	DA	Date on which study was created	ALWAYS	AUTO	
Study Time	0008,0030	TM	Time on which study was created.	ALWAYS	AUTO	
Accession Number	0008,0050	SH		VNAP	AUTO	Zero length if not received from RIS
Referring Physician's Name	0008,0090	PN		VNAP	AUTO	Zero length if not received from RIS
Study ID	0020,0010	SH		ALWAYS	AUTO	
Study Description	0008,1030	LO	Examination type (for DI/VF)	VNAP	AUTO	
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	

Table 203: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	RF	ALWAYS	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Laterality	0020,0060	CS		ANAPCV	AUTO	0 length, if value not present.
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	AUTO	Received from RIS, entered by user or is empty if not known

Protocol Name	0018,1030	LO	Examination Type (DI/VF)	VNAP	AUTO	
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		VNAP	AUTO	
Performed Procedure Step Description	0040,0254	LO		VNAP	AUTO	
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 204: 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	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 205: Multi-Frame Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Number of Frames	0028,0008	IS		ALWAYS	AUTO	
Frame Increment Pointer	0028,0009	AT	0x00181063	ALWAYS	AUTO	

Table 206: 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	AUTO	
Shutter Right Vertical Edge	0018,1604	IS		ANAP	AUTO	
Shutter Upper Horizontal Edge	0018,1606	IS		ANAP	AUTO	
Shutter Lower Horizontal Edge	0018,1608	IS		ANAP	AUTO	
Center of Circular Shutter	0018,1610	IS		ANAP	AUTO	
Radius of Circular Shutter	0018,1612	IS		ANAP	AUTO	

Table 207: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Instance Number	0020,0013	IS		VNAP	AUTO	
Content Date	0008,0023	DA		VNAP	AUTO	
Content Time	0008,0033	TM		VNAP	AUTO	
Patient Orientation	0020,0020	CS		VNAP	AUTO	
Acquisition Date	0008,0022	DA		VNAP	AUTO	
Acquisition Time	0008,0032	TM		VNAP	AUTO	
Acquisition Number	0020,0012	IS		VNAP	AUTO	
Presentation LUT Shape	2050,0020	CS	IDENTITY	VNAP	AUTO	

Table 208: Image Pixel Module

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

Table 209: X-ray Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	ORIGINAL, PRIMARY, SINGLE PLANE	ALWAYS	AUTO	
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	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 Intensity Relationship	0028,1040	CS	DISP	ALWAYS	AUTO	

Table 210: XRF Positioner Module

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

Table 211: X-Ray Acquisition Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Radiation Setting	0018,1155	CS	GR, SC	ALWAYS	AUTO	
KVP	0018,0060	DS		VNAP	AUTO	Always Zero length value
Exposure Time	0018,1150	IS		ANAP	AUTO	Required if Exposure (0018,1152) is not present
X-Ray Tube Current	0018,1151	IS		ANAP	AUTO	Required if Exposure (0018,1152) is not present
Exposure	0018,1152	IS		VNAP	AUTO	Required if Exposure Time (0018,1150) or X-Ray Tube Current (0018,1151) are not present.

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 212: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ANAP	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.12.2	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

Table 213: Overlay Plane Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Overlay Rows	6000,0010	US	512, 1024	ANAP	AUTO	
Overlay Columns	6000,0011	US	512, 1024	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	1	ANAP	AUTO	
Overlay Bit Position	6000,0102	US	0	ANAP	AUTO	
Overlay Data	6000,3000	O W/ OB		ANAP	AUTO	

Table 214: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS		ANAP	AUTO	is related to the Contrast/Brightness
Window Width	0028,1051	DS		ALWAYS	AUTO	is related to the Contrast/Brightness

8.1.1.5. 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 are 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 215: 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 216: Specialized PMS X-Ray Image Store – Patient Module (M)

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

Table 217: Specialized PMS X-Ray Image Store – General Study Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Study Date	0008,0020	PN		VNAP	AUTO
Study Time	0008,0030	LO		VNAP	AUTO
Accession Number	0008,0050	DA	Zero length if not received from RIS.	VNAP	AUTO
Referring Physician's Name	0008,0090	CS	Zero length if not received from RIS.	VNAP	AUTO
Study Description	0008,1030	LO	Examination Type (for DI/VF)	VNAP	AUTO
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	Generated at the creation of the study or received from RIS.	ALWAYS	AUTO
Study ID	0020,0010	SH	Always zero.	VNAP	AUTO

Table 218: Specialized PMS X-Ray Image Store – General Series Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Series Date	0008,0021	DA		VNAP	AUTO
Series Time	0008,0031	TM		ANAP	AUTO
Modality	0008,0060	CS	RF	ALWAYS	AUTO
Performing Physician's Name	0008,1050	PN	Received from RIS, entered by user or is empty if not known.	VNAP	AUTO
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	Examination Type (for DI/VF)	VNAP	AUTO
Series Instance UID	0020,000E	UI		ALWAYS	CONF
Series Number	0020,0011	IS		VNAP	AUTO
Laterality	0020,0060	CS	Always zero length value.	MAYBE	AUTO
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 219: Specialized PMS X-Ray Image Store – General Equipment Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
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	ANAP	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 220: Specialized PMS X-Ray Image Store – Multi-Frame Module Attribute (C)

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

Table 221: Specialized PMS X-Ray Image Store – Display Shutter Module (O)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Shutter Shape	0018,1600	CS	CIRCULAR RECTANGULAR	ALWAYS	AUTO
Shutter Left Vertical Edge	0018,1602	IS	Required if Shutter Shape is RECTANGULAR.	ANAPC	AUTO
Shutter Right Vertical Edge	0018,1604	IS	Required if Shutter Shape is RECTANGULAR.	ANAPC	AUTO
Shutter Upper Horizontal Edge	0018,1606	IS	Required if Shutter Shape is RECTANGULAR.	ANAPC	AUTO
Shutter Lower Horizontal Edge	0018,1608	IS	Required if Shutter Shape is RECTANGULAR.	ANAPC	AUTO
Center of Circular Shutter	0018,1610	IS	Required if Shutter Shape is CIRCULAR.	ANAPC	AUTO
Radius of Circular Shutter	0018,1612	IS	Required if Shutter Shape is CIRCULAR.	ANAPC	AUTO

Table 222: Specialized PMS X-Ray Image Store – General Image Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
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	Applied Value(s): 1-n	VNAP	AUTO
Patient Orientation	0020,0020	CS	Always zero length value.	MAYBE	AUTO
Image Comments	0020,4000	LT	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.	ANAP	USER

Table 223: Specialized PMS X-Ray Image Store – Image Pixel Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Rows	0028,0010	US	1024	ALWAYS	AUTO
Columns	0028,0011	US	1024	ALWAYS	AUTO
Pixel Data	7FE0,0010	OW		ALWAYS	AUTO

Table 224: Specialized PMS X-Ray Image Store – X-Ray Image Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
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 225: Specialized PMS X-Ray Image Store – XRF Positioner Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Distance Source to Detector	0018,1110	DS		ANAP	AUTO

Table 226: Specialized PMS X-Ray Image Store – X-Ray Acquisition Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
KVP	0018,0060	DS	Always zero length value.	VNAP	AUTO
Exposure Time	0018,1150	IS	Required if Exposure (0018,1152) is not present.	ALWAYS	AUTO
X-Ray Tube Current	0018,1151	IS	Required if Exposure (0018,1152) is not present.	ALWAYS	AUTO
Exposure	0018,1152	IS	Required if either Exposure Time (0018,1150) or X-Ray Tube Current (0018,1151) are not present.	ALWAYS	AUTO
Radiation Setting	0018,1155	CS	GR, SC	ALWAYS	AUTO

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 227: Specialized PMS X-Ray Image Store – SOP Common Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Specific Character Set	0008,0005	CS	ISO_IR 100	ALWAYS	AUTO
SOP Class UID	0008,0016	UI	1.3.46.670589.2.3.1.1	ALWAYS	AUTO
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO

Table 228: Specialized PMS X-Ray Image Store – VOI LUT Module (O)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Window Center	0028,1050	DS	This attribute is related to the DI Contrast / Brightness.	ANAP	AUTO
Window Width	0028,1051	DS	This Attribute is related to the DI Contrast / Brightness. Required if (0028,1050) is sent	ALWAYS	AUTO

8.1.1.6. Captured Image as Photo(s)

Table 229: Modules of Captured Image as Photo

Information Entity	Module Name	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 230: 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 4.1 PMS1.1 MIMIT EVIIMDictionary
SC Image Equipment Module (M)					
Modality	0008,0060	CS	ALWAYS	AUTO	OT

Name	Tag	VR	Presence of Value	Source	Comment
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	-
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	-

8.1.1.7. Captured Image(s) as Original

The Captured Images contains the following Modules:

Table 231: Modules of Captured Image as Original

Information Entity	Module Name	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 232: 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.
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

Name	Tag	VR	Presence of Value	Source	Comment
Software Version(s)	0018,1020	LO	ALWAYS	AUTO	ViewForum 4.1 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	ORIGINAL 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
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	-

8.1.2. Usage of Attributes from Received IOD

None

8.1.3. Attribute Mapping

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

Table 233: 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

Name	BWL M Tag	MPPS		Image IOD Tag
		Create Tag	Set Tag	
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	-	0008,1150	0008,1150	0008,1150
SOP Class UID	-	0008,1150	0008,1150	0008,1150
> Referenced SOP Instance UID	-	0008,1155	0008,1155	0008,1155
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.

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

Table 234: Specialized PMS X-Ray Image Store – VOI LUT Module (O)

Name	Tag	Generated Value
Performed Procedure Step Start Date	0040,0244	Copied from (0008,0020) Study Date.
Performed Procedure Step Start Time	0040,0245	Copied from (0008,0030) Study Time.
Performed Procedure Step ID	0040,0253	Copied from (0020,0010) Study ID.
Performed Procedure Step Description	0040,0254	Copied from (0008,1030) Study Description.

If the SCU does not propose a Presentation Context for the Grayscale Softcopy Presentation State storage SOP class, then EasyDiagnost Eleva will derive Grayscale Softcopy Presentation State data from the imported image data and store this data in a new series within the examination of the imported image.

However, if during import the image is accompanied by Grayscale Softcopy Presentation State data, the EasyDiagnost Eleva database shall avoid data overlap by only storing the relevant data from the first object received; either the first image or its Presentation State!

Thus it will omit data received by receiving objects concerning the optional attributes (VT=3) listed in next, and clear all mandatory attributes (VT=2) listed in.

Table 235: Omitted Attributes for Import Images

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	Examination Type (for DI/VF)
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	LO	
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	

Attribute Name	Tag	VR	Comment
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	Examination Type (for DI/VF)
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	Service-configurable values
Institution Address	0008,0081	SH	
Station Name	0008,1010	SH	Service-configurable values
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 236: Cleared Attributes for Import Images

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			
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 237: Modified 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	

Attribute Name	Tag	VR	Comment
Referring Physician's Name	0008,0090	PN	
Study Description	0008,1030	LO	Examination Type (for DI/VF)
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

8.4. 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

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 **Table 296** list the supported Private SOP Classes. The usage of these SOP Classes is in the ED ELEVAs 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 238: Private SOP classes

SOP Class	Description
3D Volume Storage (Private class)	1.3.46.670589.5.0.1.1
3D Volume Object Storage (Private class)	1.3.46.670589.5.0.2.1
Surface Storage (Private class)	1.3.46.670589.5.0.3.1
CT Synthetic Image (Private class)	1.3.46.670589.5.0.9
MR Synthetic Image (Private class)	1.3.46.670589.5.0.10
MR Cardio Storage (Private class)	1.3.46.670589.5.0.8.1
MR Cardio Analysis Storage (Private class)	1.3.46.670589.5.0.11.1
Specialized X-ray (Private class)	1.3.46.670589.2.3.1.1
CX Image (Private class)	1.3.46.670589.2.4.1.1
CX Synthetic Image (Private class)	1.3.46.670589.5.0.12
Perfusion (Private class)	1.3.46.670589.5.0.13
Perfusion Analysis (Private class)	1.3.46.670589.5.0.14

8.6. Private Transfer Syntaxes

Not Applicable

9. ANNEXES OF APPLICATION "EASYDIAGNOST ELEVA DI (APPLICATION)" (DI CONFIGURATION ONLY)

9.1. IOD Contents

9.1.1. Created SOP Instance

This section specifies each IOD created by the ELEVA DI.

- Secondary Capture Object by the ELEVA DI AE
- Grayscale Softcopy Presentation State Object by the ELEVA DI AE
- X-Ray RadioFluoroscopic Image by the ELEVA DI AE
- SPECIALIZED PMS X-Ray Object by the ELEVA DI AE

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

Table 239: 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	1.3.46.670589.2.3.1.1

9.1.1.1. Secondary Capture Image Storage SOP Class

The following tables give a detailed overview of all supported attributes of the SC Storage SOP Class. The lists of possible values are 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 240: 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
	VOI LUT Module	ALWAYS

Table 241: Patient Module

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

Table 242: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	Generated at the creation of the study or received from RIS
Study Date	0008,0020	DA		ALWAYS	AUTO	
Study Time	0008,0030	TM		ALWAYS	AUTO	
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 ID	0020,0010	SH		VNAP	AUTO	
Study Description	0008,1030	LO		ANAP	AUTO	

Table 243: 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	AUTO	
Laterality	0020,0060	CS		ANAPCV	AUTO	0 Length, if value not present.
Series Date	0008,0021	DA		ANAP	AUTO	
Series Time	0008,0031	TM		ANAP	AUTO	
Series Description	0008,103E	LO		ANAP	AUTO	
Protocol Name	0018,1030	LO		ANAP	AUTO	
Performing Physicians' Name	0008,1050	PN		VNAP	USER	Received from RIS, entered by user or is empty if not known.
Performed Procedure Step Start Date	0040,0244	DA		ANAP	AUTO	From MPPS
Performed Procedure Step Start Time	0040,0245	TM		ANAP	AUTO	From MPPS
Performed Procedure Step Description	0040,0254	LO		ANAP	AUTO	From MPPS

Table 244: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	VNAP	AUTO	

Table 245: SC Equipment Module

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

Table 246: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Instance Number	0020,0013	IS	1-n	VNAP	AUTO	
Content Date	0008,0023	DA		ANAPCV	AUTO	
Content Time	0008,0033	TM		ANAPCV	AUTO	
Patient Orientation	0020,0020	CS		ANAPCV	AUTO	0 length value, if value not present.
Acquisition Date	0008,0022	DA		ANAP	AUTO	
Acquisition Time	0008,0032	TM		ANAP	AUTO	
Acquisition Number	0020,0012	IS		ANAP	AUTO	
Image Comments	0020,4000	LT		ANAP	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.

Table 247: 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	O W/ OB		ALWAYS	AUTO	

Table 248: SC Image Module

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

Table 249: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100,	ANAP	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.7	ANAP	AUTO	
SOP Instance UID	0008,0018	UI		ANAP	AUTO	

Table 250: 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	

9.1.1.2. Softcopy Presentation State Storage SOP Class

Table 251: 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	CONDITIONAL
	Graphic Annotation Module	CONDITIONAL
	Graphic Layer Module	CONDITIONAL
	Presentation State Relationship Module	ALWAYS
	Display Shutter Module	CONDITIONAL

SOP Common Module

ALWAYS

If private Grayscale Presentation State information exists, in RAW Mode, then the Eleva DI DICOM AE will be send the Grayscale Softcopy presentation State object with the Presentation Label " **AS ACQUIRED**".

Table 252: 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	1, 1	ANAP	AUTO	
>Presentation Pixel Aspect Ratio	0070,0102	IS		ANAP	AUTO	

Table 253: Presentation Series Module

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

Table 254: 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	USER	
Content Creator's Name	0070,0084	PN		VNAP	AUTO	

Table 255: Softcopy Presentation LUT Module

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

Table 256: Softcopy VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Softcopy VOI LUT Sequence	0028,3110	SQ		ALWAYS	MWL /USER	

>Window Center	0028,1050	DS		ANAP	MWL /USER	Related to the DI Contrast/ Brightness
>Window Width	0028,1051	DS		ANAP	MWL /USER	Related to the DI Contrast/ Brightness

Table 257: Graphic Annotation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Graphic Annotation Sequence	0070,0001	SQ		ALWAYS	AUTO	
>Graphic Layer	0070,0002	CS		ALWAYS	AUTO	
>Text Object Sequence	0070,0008	SQ		ANAPEV	AUTO	
>>Unformatted Text Value	0070,0006	ST		ALWAYS	AUTO	
>>Bounding Box Annotation Units	0070,0003	CS		ANAPEV	AUTO	
>>Anchor Point Annotation Units	0070,0004	CS	DISPLAY, PIXEL	ANAPEV	AUTO	
>>Bounding Box Top Left Hand Corner	0070,0010	FL		ANAPEV	AUTO	
>>Bounding Box Bottom Right Hand Corner	0070,0011	FL		ANAPEV	AUTO	
>>Bounding Box Text Horizontal Justification	0070,0012	CS	CENTER, LEFT, RIGHT	ANAPEV	AUTO	
>>Anchor Point	0070,0014	FL		ANAPEV	AUTO	
>>Anchor Point Visibility	0070,0015	CS	N, Y	ANAPEV	AUTO	
>Graphic Object Sequence	0070,0009	SQ		ANAPEV	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	
>>Graphic Type	0070,0023	CS	CIRCLE, ELLIPSE, INTERPOLATED, POINT, POLYLINE	ALWAYS	AUTO	
>>Graphic Filled	0070,0024	CS	N, Y	ANAPEV	MPPS/AUTO	
>>Graphic Annotation Units	0070,0005	CS		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	
>>Graphic Type	0070,0023	CS		ALWAYS	AUTO	
>>Graphic Filled	0070,0024	CS		ANAPEV	AUTO	

Table 258: 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	
>Graphic Layer Order	0070,0062	IS		ALWAYS	AUTO	

Table 259: 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		ANAP	AUTO	
>>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	

>>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
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Table 260: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	MWL/USER	Patient's full name
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 Sex	0010,0040	CS		VNAP	MWL/USER	Received by RIS or entered by the operator

Table 261: 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 the study started	VNAP	MWL/USER	
Study Time	0008,0030	TM	Time the study started	VNAP	MWL/USER	
Accession Number	0008,0050	SH	User or equipment generated study identifier	VNAP	MWL/USER	
Referring Physician's Name	0008,0090	PN	Patient's referring physician	VNAP	MWL/USER	
Study ID	0020,0010	SH	Unique identifier for the study	VNAP	MWL/USER	
Study Description	0008,1030	LO		ANAP	USER	

Table 262: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Instance UID	0020,000E	UI		ALWAYS	MWL/USER	
Series Number	0020,0011	IS		VNAP	MWL/USER	
Laterality	0020,0060	CS		ANAPCV	MWL/USER	
Series Date	0008,0021	DA		ANAP	MWL/USER	
Series Time	0008,0031	TM		ANAP	MWL/USER	
Series Description	0008,103E	LO		VNAP	MWL/USER	
Protocol Name	0018,1030	LO		ANAP	MWL/USER	
Performed Procedure Step Start Date	0040,0244	DA		ANAP	MWL/USER	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	MWL/USER	
Performed Procedure Step ID	0040,0253	SH		ANAP	MWL/USER	

Table 263: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ANAP	AUTO	
Institution Name	0008,0080	LO	Hospital name	ANAP	MWL/USER	
Station Name	0008,1010	SH	Eleva	ANAP	MWL/USER	
Manufacturer's Model Name	0008,1090	LO	Digital Imaging	ANAP	MWL/USER	
Device Serial Number	0018,1000	LO		ANAP	MWL/USER	
Software Version(s)	0018,1020	LO	"DSI R2.4.1 LUT 05-11-15 R6.1.7.0122"	ANAP	AUTO	

Table 264: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS	CIRCULAR, RECTANGULAR	ANAP	USER	
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	USER	
Radius of Circular Shutter	0018,1612	IS		ANAP	USER	

Table 265: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ANAP	MWL/USER	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.11.1	ANAP	MWL/USER	
SOP Instance UID	0008,0018	UI		ANAP	MWL/USER	

9.1.1.3. X-Ray Radiofluoroscopic Image Storage SOP Class

The following tables give a detailed overview of all supported attributes of the XRF Storage SOP Class. The list of possible values are 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 266: IOD of Created X-Ray 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	Display Shutter Module	ALWAYS

General Image Module	ALWAYS
Image Pixel Module	ALWAYS
X-ray Image Module	ALWAYS
X-Ray Acquisition Module	ALWAYS
SOP Common Module	ALWAYS
VOI LUT Module	ALWAYS

Table 267: Patient Module

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	F, M, O	VNAP	AUTO	Received from RIS or entered by operator

Table 268: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Instance UID	0020,000D	UI		ALWAYS	AUTO	Generated at the creation of the study or received from the RIS.
Study Date	0008,0020	DA		VNAP	AUTO	
Study Time	0008,0030	TM		VNAP	AUTO	
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 Description	0008,1030	LO		VNAP	AUTO	
Study ID	0020,0010	SH		VNAP	AUTO	

Table 269: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	RF	ALWAYS	AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		VNAP	AUTO	
Laterality	0020,0060	CS		ANAPCV	AUTO	0 Length, if value not present.
Series Date	0008,0021	DA		ANAP	AUTO	
Series Time	0008,0031	TM		ANAP	AUTO	
Protocol Name	0018,1030	LO		ANAP	AUTO	
Performing Physicians' Name	0008,1050	PN		ANAP	AUTO	Received from RIS, entered by user or is empty if not known.
Performed Procedure Step Start Date	0040,0244	DA		ANAP	AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	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		ANAPEV	AUTO	

>Referenced SOP Instance UID	0008,1155	UI		ANAPEV	AUTO	
Request Attributes Sequence	0040,0275	SQ		ANAP	AUTO	
>Scheduled Procedure Step ID	0040,0009	SH		ANAPEV	AUTO	
>Requested Procedure ID	0040,1001	SH		ANAPEV	AUTO	
>Scheduled Procedure Step Description	0040,0007	LO		ANAP	AUTO	
> Scheduled Protocol Code Sequence	0040,0008	SQ		ANAP	AUTO	
>> Code Value	0008,0100	SH		ALWAYS	AUTO	
>> Coding Scheme Designator	0008,0102	SH		ALWAYS	AUTO	
>> Code Meaning	0008,0104	LO		ALWAYS	AUTO	

Table 270: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO	Philips Medical Systems	ANAP	AUTO	
Institution Name	0008,0080	LO	Hospital name	ANAP	AUTO	
Station Name	0008,1010	SH	Eleva	ANAP	AUTO	
Manufacturer's Model Name	0008,1090	LO	Digital Imaging	ANAP	AUTO	
Device Serial Number	0018,1000	LO		ANAP	AUTO	
Software Version(s)	0018,1020	LO	"DSI R2.4.1 LUT 05-11-15 R6.1.7.0122"	ANAP	AUTO	

Table 271: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS	CIRCULAR, RECTANGULAR	ALWAYS	USER	
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	USER	
Radius of Circular Shutter	0018,1612	IS		ANAP	USER	

Table 272: General Image Module

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

Table 273: Image Pixel Module

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

Table 274: X-ray Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	ORIGINAL, PRIMARY, SINGLE PLANE	ALWAYS	AUTO	
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	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 Intensity Relationship	0028,1040	CS	DISP	ALWAYS	AUTO	

Table 275: X-Ray Acquisition Module

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

Table 276: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS	ISO_IR 100	ANAP	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.12 .2	ANAP	AUTO	
SOP Instance UID	0008,0018	UI		ANAP	AUTO	

Table 277: VOI LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Window Center	0028,1050	DS		ANAP	AUTO	Is related to DI Contrast/ Brightness
Window Width	0028,1051	DS		ANAP	AUTO	Is related to DI Contrast/ Brightness

9.1.1.4. Specialized PMS X-Ray SOP class

In the DI NON PRO MODE each RAW-Image exits of one Specialized PMS X-Ray Image and one Softcopy Presentation State PR.

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 are 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 278: Modules of the Created SPECIALIZED PMS X-Ray SOP Class by the ELEVA DI

Information Entity	Module Name	Reference	Presence of Module
Patient	Patient Module		ALWAYS
Study	General Study Module		ALWAYS
Series	General Series Module		ALWAYS
Equipment	General Equipment Module		OPTIONAL
Image	General Image Module		ALWAYS
	Image Pixel Module		ALWAYS
	X-Ray Image Module		ALWAYS
	X-Ray Acquisition		ALWAYS
	VOI LUT Module		ALWAYS
	SOP Common Module		ALWAYS
	XRF POSITIONER Module		ALWAYS
	Display Shutter Module		ALWAYS

Table 279: Specialized PMS X-Ray Image Store - Patient Module (M)

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

Table 280: Specialized PMS X-Ray Image Store - General Study Module (M)

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

Table 281: Specialized PMS X-Ray Image Store - General Series Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Series Date	0008,0021	DA		VNAP	AUTO
Series Time	0008,0031	TM		ANAP	AUTO
Modality	0008,0060	CS	RF	ALWAYS	AUTO
Performing Physician's Name	0008,1050	PN	Received from RIS, entered by user or is empty if not known.	VNAP	AUTO
Referenced Performed Procedure Step Sequence	0008,1111	SQ		VNAP	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		ANAP	AUTO
Series Instance UID	0020,000E	UI		ALWAYS	AUTO
Series Number	0020,0011	IS		VNAP	AUTO
Laterality	0020,0060	CS	Always zero length value.	MAYBE	AUTO
Performed Procedure Step Start Date	0040,0244	DA	From MPPS	VNAP	AUTO
Performed Procedure Step Start Time	0040,0245	TM	From MPPS	VNAP	AUTO
Performed Procedure Step Description	0040,0254	LO	From MPPS	VNAP	AUTO
Request Attributes Sequence	0040,0275	SQ	Items: 1-n	VNAP	AUTO
> Scheduled Procedure Step ID	0040,0009	SH		ALWAYS	AUTO
> Requested Procedure ID	0040,1001	SH		ALWAYS	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 282: Specialized PMS X-Ray Image Store - General Equipment Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Manufacturer	0008,0070	LO	Philips Medical Systems	VNAP	AUTO
Institution Name	0008,0080	LO	Hospital	VNAP	AUTO
Station Name	0008,1010	SH	Eleva	ANAP	AUTO
Manufacturer's Model Name	0008,1090	LO	Digital Imaging	VNAP	AUTO
Device Serial Number	0018,1000	LO		VNAP	AUTO
Software Version(s)	0018,1020	LO	"DSI R2.4.1 LUT 05-11-15 R6.1.7.0122"	VNAP	AUTO

Table 283: Specialized PMS X-Ray Image Store - General Image Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
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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
Patient Orientation	0020,0020	CS		MAYBE	AUTO
Image Comments	0020,4000	LT		ANAP	AUTO

Table 284: Specialized PMS X-Ray Image Store - Image Pixel Module (M)

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

Table 285: Specialized PMS X-Ray Image Store - Display Shutter Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Shutter Shape	0018,1600	CS	CIRCULAR RECTANGULAR	ALWAYS	AUTO
Shutter Left Vertical Edge	0018,1602	IS		ANAP	AUTO
Shutter Right Vertical Edge	0018,1604	IS		ANAP	AUTO
Shutter Upper Horizontal Edge	0018,1606	IS		ANAP	AUTO
Shutter Lower Horizontal Edge	0018,1608	IS		ANAP	AUTO
Center of Circular Shutter	0018,1610	IS	VR = IS, VM = 2 Location of the center of the circular shutter with respect to pixels in the image given as row and column. Required if Shutter Shape is CIRCULAR.	ANAP	AUTO
Radius of Circular Shutter	0018,1612	IS	Required if Shutter Shape is CIRCULAR.	ANAP	AUTO

Table 286: Specialized PMS X-Ray Image Store - X-Ray Image Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
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	8	ALWAYS	AUTO
Bits Stored	0028,0101	US	8	ALWAYS	AUTO
High Bit	0028,0102	US	7	ALWAYS	AUTO
Pixel Representation	0028,0103	US	0	ALWAYS	AUTO
Pixel Intensity Relationship	0028,1040	US	DISP	ALWAYS	AUTO

Table 287: Specialized PMS X-Ray Image Store – X-Ray Acquisition Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
KVP	0018,0060	DS		VNAP	AUTO
Exposure Time	0018,1150	IS	Required if Exposure (0018,1152) is not present.	MAYBE	AUTO

X-Ray Tube Current	0018,1151	IS	Required if Exposure (0018,1152) is not present.	MAYBE	AUTO
Exposure	0018,1152	IS	Required if either Exposure Time (0018,1150) or X-Ray Tube Current (0018,1151) are not present.	MAYBE	AUTO
Radiation Setting	0018,1155	CS	GR, SC	ALWAYS	AUTO

Note: In this version of the EDI the attributes (0018,1150) "Exposure Time" and "Exposure " (0018,1152) are sending out together.

Table 288: Specialized PMS X-Ray Image Store - VOI LUT Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Window Center	0028,1050	DS	related to the DI Contrast / Brightness.	ANAP	AUTO
Window Width	0028,1051	DS	related to the DI Contrast / Brightness. Required if (0028,1050) is sent	ANAP	AUTO

Table 289: Specialized PMS X-Ray Image Store - SOP Common Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Specific Character Set	0008,0005	CS	ISO_IR 100	ANAP	AUTO
SOP Class UID	0008,0016	UI	1.3.46.670589.2.3.1.1	ANAP	AUTO
SOP Instance UID	0008,0018	UI		ANAP	AUTO

Table 290: Specialized PMS X-Ray Image Store - XRF POSITIONER Module (M)

Attribute Name	Tag	VR	Value	Presence of Value	Source
Distance Source to Detector	0018,1110	DS		ANAP	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 291: 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

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 292: Additional Attributes for EasyDiagnost Eleva

Name	Tag	Generated Value
Performed Procedure Step Start Date	0040,0244	Copied from (0008,0020) Study Date.
Performed Procedure Step Start Time	0040,0245	Copied from (0008,0030) Study Time.
Performed Procedure Step ID	0040,0253	Copied from (0020,0010) Study ID.
Performed Procedure Step Description	0040,0254	Copied from (0008,1030) Study Description.

Table 293: 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	
Performed Procedure Step Start Time	0040,0245	TM	
Performed Procedure Step ID	0040,0253	SH	

Attribute Name	Tag	VR	Comment
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 294: 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			

Attribute Name	Tag	VR	Comment
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 295: 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

9.4. 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

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 usage 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 296: Private SOP classes of ELEVA DI System

SOP Class	Description
Specialized X-ray (Private class)	1.3.46.670589.2.3.1.1

9.6. Private Transfer Syntaxes

None