DICOM Conformance Statement

MobileDiagnost Opta (release 1)

PHILIPS

1. DICOM Conformance Statement Overview

This document is the DICOM Conformance Statement for the Philips Medical Systems MobileDiagnost Opta (release 1) system. A table of Supported Networking DICOM Services, (SOP) Classes is provided with roles (User/Provider) and can be found on the next page.
MobileDiagnost Opta (release 1) is based on the PMS Eleva Platform 34.0.
The figure below shows the position of the MobileDiagnost Opta (release 1) in a radiology environment.
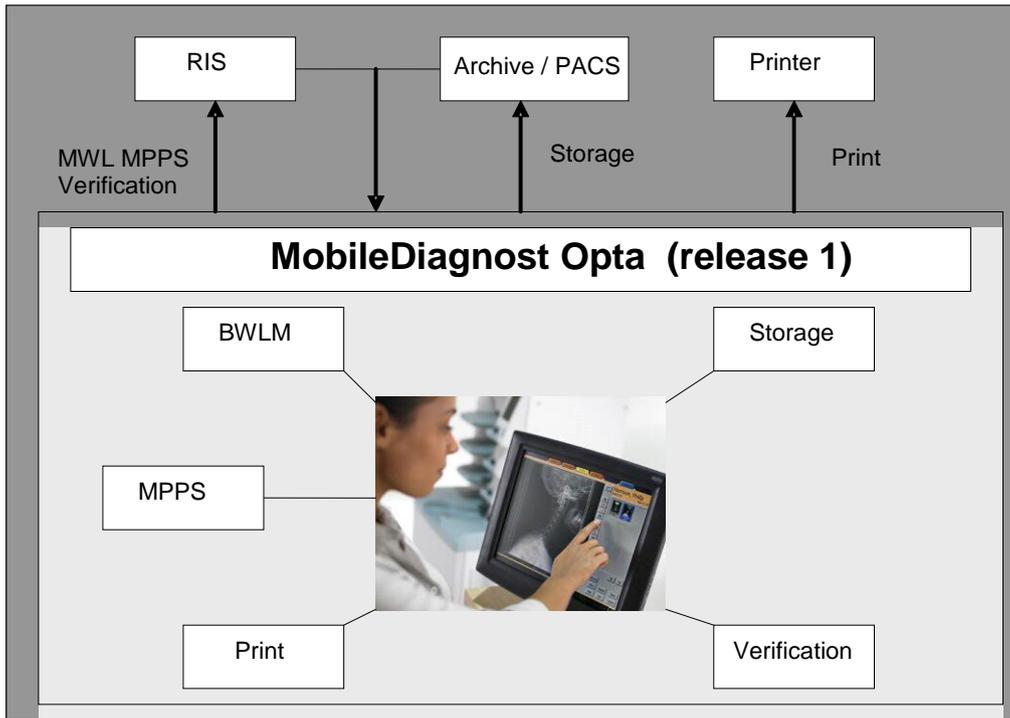
Figure 1 MobileDiagnost Opta (release 1) in a DICOM network

MobileDiagnost Opta (release 1) is an embedded modality system for acquiring DICOM images. It provides, among other things, the following features:

- Verification of application level communication.
- Basic Worklist Management (BWLM).
- Storage of images on a remote DICOM System.
- Study Management per Modality Performed Procedure Step (MPPS).
- Printing of hardcopies on a remote DICOM Printer.
- Storage of images per DICOM Media on CD/DVD

Table 1: Network Services

SOP Class		User of Service (SCU)	Provider of Service (SCP)	Display
Name	UID			
Other				
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes	N/A
Print Management				
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Yes	No	N/A
>Basic Film Box SOP Class	1.2.840.10008.5.1.1.2	Yes	No	N/A
>Basic Film Session SOP Class	1.2.840.10008.5.1.1.1	Yes	No	N/A
>Basic Grayscale Image Box SOP Class	1.2.840.10008.5.1.1.4	Yes	No	N/A

SOP Class		User of Service (SCU)	Provider of Service (SCP)	Display
Name	**UID**			
>Printer SOP Class	1.2.840.10008.5.1.1.16	Yes	No	N/A
Transfer				
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Yes	No	N/A
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	Yes	No	N/A
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	No	N/A
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	No	N/A
Workflow Management				
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No	N/A
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	Yes	No	N/A
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No	N/A

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.
All the supported Media Services by MobileDiagnost Opta (release 1) are shown in the next table.

Table 2: Media Services

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

2. Table of Contents

3. Introduction

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

3.1.   Revision History

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

Table 3: Revision History

Document Version	Date of Issue	Status	Description
00	29-September-2014	Draft	Initial version

3.2.   Audience

This Conformance Statement is intended for:
- (Potential) customers
- System integrators of medical equipment
- Marketing staff interested in system functionality
- Software designers implementing DICOM interfaces

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). The user should ensure that any non-Philips provider linking to Philips equipment also adapts to

future versions of the DICOM Standard. If not, the incorporation of DICOM enhancements into Philips equipment may lead to loss of connectivity (in case of networking) and incompatibility (in case of media).

3.4. Definitions, Terms and Abbreviations

Table 4: Definitions, Terms and Abbreviations

Abbreviation/Term	Explanation
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
DICOM	Digital Imaging and Communications in Medicine
DIMSE	DICOM Message Service Element
DIMSE-C	DIMSE-Composite
DIMSE-N	DIMSE-Normalized
DX	Digital X-Ray
EBE	DICOM Explicit VR Big Endian
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
PACS	Picture Archival and Communication System
PDU	Protocol Data Unit
RF	X-Ray Radiofluoroscopic
RIS	Radiology Information System
RT	Radiotherapy
RWA	Real-World Activity
SC	Secondary Capture
SCM	Study Component Management
SCP	Service Class Provider
SCU	Service Class User
SOP	Service Object Pair
TCP/IP	Transmission Control Protocol/Internet Protocol

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

3.5. References

[DICOM]   Digital Imaging and Communications in Medicine, Parts 1 - 20 (NEMA PS 3.1- PS 3.20), National Electrical Manufacturers Association (NEMA)

 Publication Sales 1300 N. 17th Street, Suite 1752 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 2014) plus all the supplements and correction items that have been approved as Final Text.

4. Networking

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

4.1. Implementation model

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

4.1.1. Application Data Flow

The MobileDiagnost Opta (release 1) system consists of one single application entity, the MobileDiagnost Opta (release 1) Application Entity (Eleva AE).
The figure below shows the networking application data flow as a functional overview of the Eleva AE.
It incorporates the following functionality.
- The Eleva AE can verify application level communication by using the verification service as SCP.
- The Eleva AE can request a worklist by using the Basic Worklist Management service as SCU.
- The Eleva AE can store images by using the Storage service as SCU and use the Storage-Commit SOP-Class perform storage-commit as SCU.
- The Eleva AE can compose the modality performed procedure step by using the Study Management service as SCU.
- The Eleva AE can print images by using the Print Management service as SCU Eleva AE.
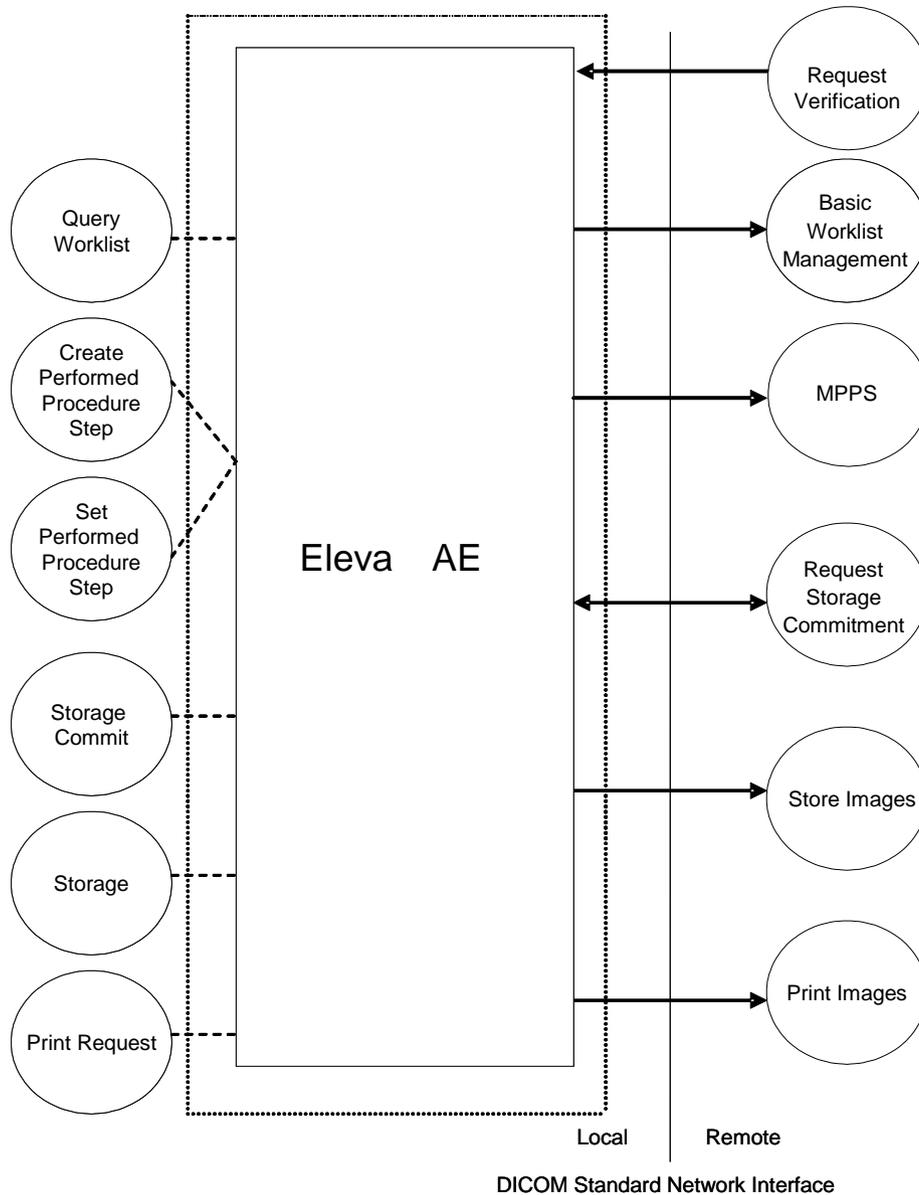
Figure 2 Application Data Flow Diagram

4.1.2.   Functional Definition of AE's

This section describes in general terms the functions to be performed by the AE, and the DICOM services used to accomplish these functions.

4.1.2.1.   Functional Definition of Eleva

The Eleva AE is the one and only application entity within the Eleva Workspot. It includes the following service classes.

Verification Service Class
The Eleva AE provides the Verification service as SCP. A remote SCU shall request an association with the Eleva AE for Verification SOP class. After accepting the association the Eleva AE shall receive and respond to the Verification request and release the association when requested.

Basic Worklist Management Service Class
The Eleva AE may use the Basic Worklist Management service as SCU.

After initiating the worklist query the Eleva AE shall request an association with the configured remote Basic Worklist Management SCP. After accepting the association the Eleva AE shall send the find request, wait for response, and then release the association. The user interface shall be updated with the query results.

Storage Service Class
The Eleva AE may use the Storage service as SCU. After a performed procedure step the Eleva AE shall store the related images at the configured Storage SCP. It shall request an association with the remote Storage SCP for the applicable Storage SOP classes. After accepting the association the Eleva AE shall send the store request, wait for response, and then release the association. After successful storage the user interface shall be updated accordingly. After successful storage, if selected, the Eleva AE shall request storage commitment per Storage Commitment service (ref. Storage Commitment Service Class)

Storage Commitment Service Class
The Eleva AE can perform the Storage Commitment service as SCU. The 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 Eleva 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 Eleva AE (still SCU). After accepting the association, the Eleva AE shall receive the Storage Commitment reports, and release the association when requested. The Storage Commitment Service can be done synchronously and asynchronously. A detailed specification of the Storage Commitment is described in section 4.2.1.3.5 (Real-World Activity: Storage Commitment Push Model as SCU).

Study Management Service Class
The Eleva AE may use the Study Management service as SCU. Before performing a procedure step the Eleva AE shall request an association with the configured remote Study Management SCP. After accepting the association the Eleva AE shall send a create request, wait for response, and then release the association. After performing a procedure step the Eleva AE shall request a new association to send a set request, and after response, release the association. Depending on the status of creates and set and the configuration the Eleva AE may perform a retry. The user interface shall be updated with the performed procedure step status.

Basic Grayscale Print Management Meta Class
The Eleva AE may use the Basic Grayscale Print Management service as SCU. After a performed procedure step the Eleva AE shall print the related images on the configured Printer. It shall request an association with the remote Basic Grayscale Print Management SCP for the applicable Basic Grayscale Print Management SOP class. After accepting the association the Eleva AE shall send the print request, wait for response, and then release the association. After successful printing the user interface shall be updated accordingly.

4.1.3.   Sequencing of Real World Activities

The figure below shows a typical sequence of an examination using a worklist. The user updates the worklist (query Worklist) and then selects and opens an examination. When the user starts the examination (acquiring the first image), the RIS is notified (Create Performed Procedure Step). After the user confirmed each acquisition (image 1-N) per default the image is sent to archive (Store Image) and printer (Print Image) simultaneously. Finally, when closing the examination, the RIS is notified to update the data of the examination (Set Performed Procedure Step).

Note that Print Image will send images to the printer only when enough images were received to fulfill the configured printer format or when the print job is flushed manually.
When the last image of an examination is received the print job will be flushed automatically.
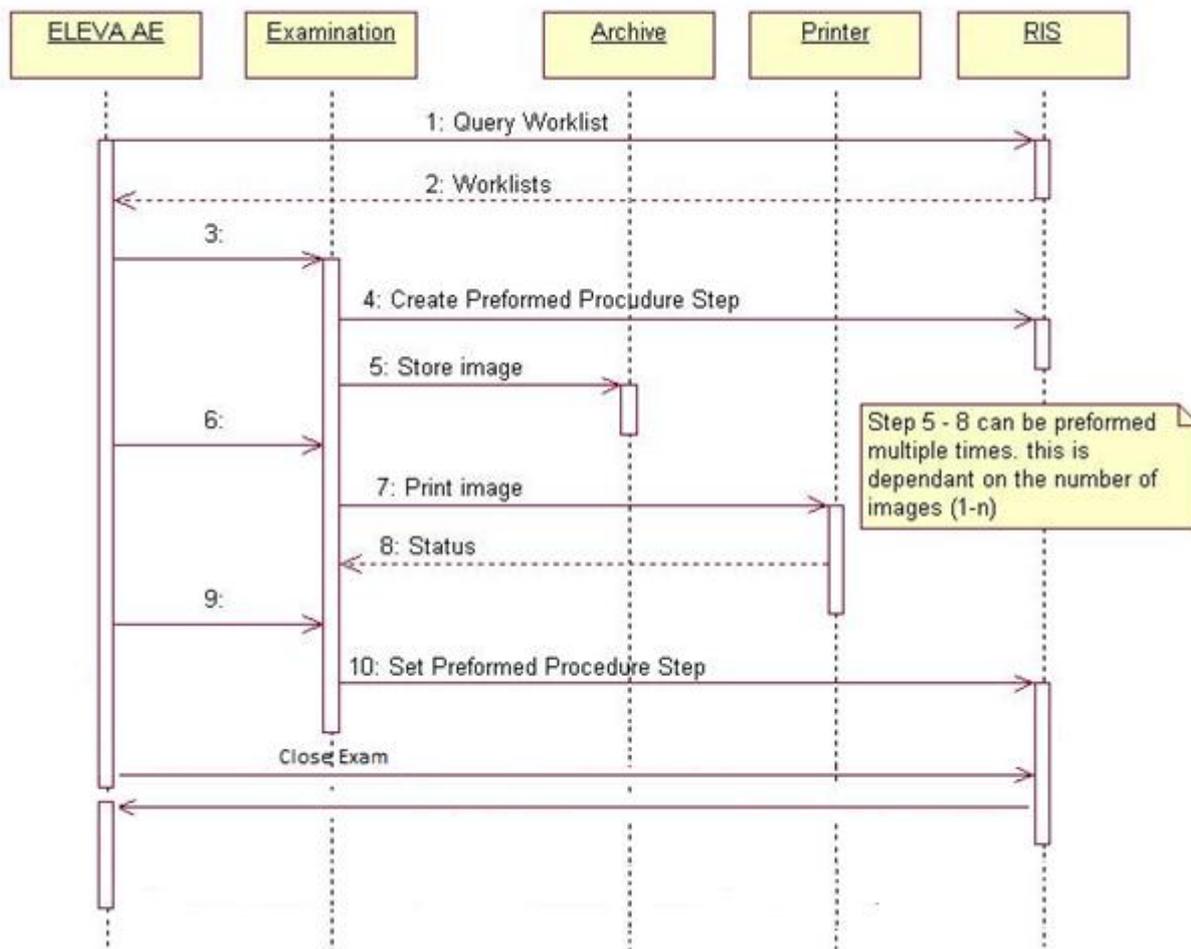
Figure 3 Sequence of an examination

4.2. AE Specifications

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

4.2.1. Eleva AE

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

4.2.1.1. SOP Classes

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

Table 5: SOP Classes for Eleva

SOP Class Name	SOP Class UID	SCU	SCP
Verification SOP Class	1.2.840.10008.1.1	Yes	Yes
Storage Commitment Push Model SOP Class	1.2.840.10008.1.20.1	Yes	No
Modality Performed Procedure Step SOP Class	1.2.840.10008.3.1.2.3.3	Yes	No
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1	Yes	No
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1	Yes	No
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1	Yes	No
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7	Yes	No
Modality Worklist Information Model - FIND SOP Class	1.2.840.10008.5.1.4.31	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.

4.2.1.2. Association Policies

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

4.2.1.2.1. General

The DICOM standard application context is specified below.

Table 6: DICOM Application Context

Description	Value
Application Context Name	1.2.840.10008.3.1.1.1

4.2.1.2.2. Number of Associations

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

Table 7: Number of associations as an Association Initiator for this AE

Description	Value
Maximum number of simultaneous associations	2

<div align="center">**Table 8: Number of associations as an Association Acceptor for this AE**</div>

Description	Value
Maximum number of simultaneous associations	8

4.2.1.2.3.   Asynchronous Nature

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

<div align="center">**Table 9: Asynchronous nature as an Association Initiator for this AE**</div>

Description	Value
Maximum number of outstanding asynchronous transactions	0

4.2.1.2.4.   Implementation Identifying Information

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

<div align="center">**Table 10: DICOM Implementation Class and Version for Eleva**</div>

Implementation Class UID	1.3.46.670589.30.34.0
Implementation Version Name	PMS_ELEVA_34.0

4.2.1.2.5.   Communication Failure Handling

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

<div align="center">**Table 11: Communication Failure Behavior**</div>

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.   Association Initiation Policy

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

<div align="center">**Table 12: DICOM Association Rejection Handling**</div>

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)

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

Result	Source	Reason/Diagnosis	Behavior
		2 – protocol-version-not-supported	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 2: REJECT_SOURCE _dul_provider (acse), 2: REJECT_REASON _application_context_not_support)
	3 – DICOM UL service-provider (presentation related function)	1 – temporary-congestion	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 3: REJECT_SOURCE _dul_provider (presentation), 1: REJECT_REASON _no_reason_given)
		2 – local-limit-exceeded	Association is not established. The following error is logged. Association rejected by peer (2: REJECT_RESULT_transient, 3: REJECT_SOURCE _dul_provider (presentation), 2: REJECT_REASON _application_context_not_support)

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

Table 13: Association Abort Handling

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

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

Table 14: 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.

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

4.2.1.3.1. (Real-World) Activity – Verification as SCU

4.2.1.3.1.1. Description and Sequencing of Activities
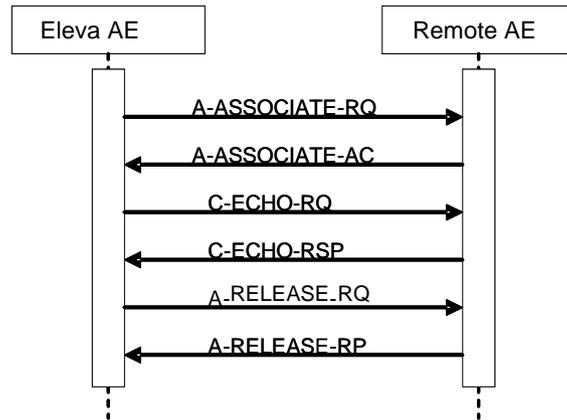
Figure 4 (Real World) Activity - Verification as SCU

The ELEVA AE can initiate associations to remote systems to verify application level communication using the C-ECHO command. This can be done using the DICOM Verification Tab for Server Test in the QA menu.

4.2.1.3.1.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 15: Proposed Presentation Contexts for (Real-World) Activity – Verification as SCU

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	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Implicit VR Little Endian	1.2.840.10008.1.2		

4.2.1.3.1.3. SOP Specific Conformance for Verification SOP Class

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

4.2.1.3.1.3.1. Dataset Specific Conformance for Verification C-ECHO SCU

Not Applicable

Table 16: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	e.g. Matching is complete	e.g The SCU has successfully returned all matching information

Table 17: DICOM Command Communication Failure Behavior

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

4.2.1.3.2.   (Real-World) Activity – Modality worklist As SCU

4.2.1.3.2.1.   Description and Sequencing of Activities
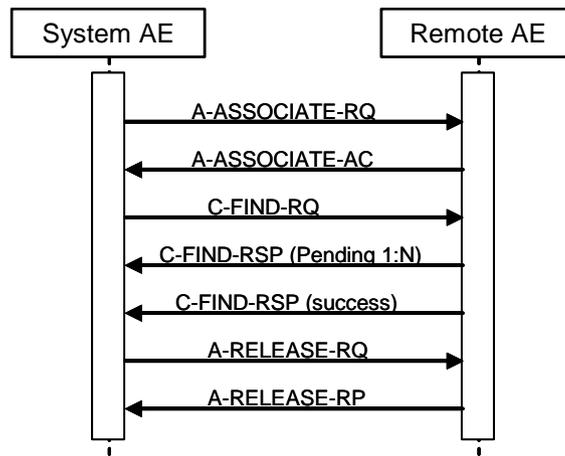
Figure 5 (Real World) Activity - Modality worklist As SCU

For each Broad or specific Worklist request, an association towards the Basic Worklist Management SCP is established and a C-FIND request is transmitted. The Broad query can be configured with a combination of the Matching Keys:

- Scheduled Station AE Title
- Scheduled Procedure Step Start Date
- Modality

Each of the matching keys is optional. The association will be closed on reception of the last C-FIND response. The Worklist Query result is displayed in the Patient List. The query is interruptible if it was triggered by the user.

After clicking the Query Worklist button the ELEVA AE shall request an association with the configured remote Basic Worklist Management SCP.When the association is accepted the ELEVA AE shall send the broad query find request, wait for response, and then release the association.

This RWA may be initiated in two ways.

After clicking the Query Worklist button the ELEVA AE shall request an association with the configured remote Basic Worklist Management SCP. When the association is accepted the ELEVA AE shall send the Broad Query find request, wait for response, and then release the association.

After clicking the Patient Query button - entering and confirming the matching key values - the ELEVA AE shall request an association with the configured remote Basic Worklist Management SCP. When the association is accepted the ELEVA AE shall send the patient query find request, wait for response, and then release the association.

Optionally the Broad Query may also be performed automatically in the system background. The time interval between subsequent background queries is configurable. Manual and automatic background queries are serialized and do not interfere with another.

4.2.1.3.2.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 18: Proposed Presentation Contexts for (Real-World) Activity – Modality worklist As SCU

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

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

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

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

Detail regarding the Dataset Specific response behavior will be reported in this section.
The table below should be read as follows:

Attribute Name:	Attributes supported to build a Modality Worklist Request Identifier.
Tag:	DICOM tag for this attribute.
VR:	DICOM VR for this attribute.
M:	Matching Keys for (automatic) Worklist Update.
R:	Return Keys. An "X" will indicate that this attribute as matching key can be used.
Q:	Interactive Query Key. An "X" will indicate that this attribute as matching key can be used.
D:	Displayed Keys. An "X" indicates that this Worklist attribute is displayed o the user during a patient registration dialog.
IOD:	An "X" indicates that this Worklist attribute is included into all object Instances created during performance of the related Procedure Step.
Type of matching:	The following types of matching exists: Single Value Matching List of UID Matching Wild Card Matching Range Matching Sequence Matching Universal Matching

Table 19: Worklist Request Identifier

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
Patient Identification Module									
Medical Record Locator	0010,1090	LO							
Other Patient IDs	0010,1000	LO		X					
Other Patient Names	0010,1001	PN							
Patient ID	0010,0020	LO	X	X	X	X		Single Value,Universal	
Patient's Birth Name	0010,1005	PN							
Patient's Mother's Birth Name	0010,1060	PN							

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
Patient's Name	0010,0010	PN	X	X	X	X		Single Value,Universal, WildCard	
Issuer of Patient ID	0010,0021	LO		X					
Patient Demographic Module									
Branch of Service	0010,1081	LO							
Confidentiality Constraint on Patient Data Description	0040,3001	LO							
Country of Residence	0010,2150	LO							
Ethnic Group	0010,2160	SH		X		X			
Military Rank	0010,1080	LO							
Occupation	0010,2180	SH		X		X			
Patient Comments	0010,4000	LT		X		X			
Patient's Address	0010,1040	LO							
Patient's Age	0010,1010	AS							
Patient's Birth Date	0010,0030	DA		X		X			
Patient's Birth Time	0010,0032	TM							
Patient's Religious Preference	0010,21F0	LO							
Patient's Sex	0010,0040	CS		X		X			
Patient's Size	0010,1020	DS		X		X			
Patient's Telephone Numbers	0010,2154	SH							
Patient's Weight	0010,1030	DS		X		X			
Region of Residence	0010,2152	LO							
Patient's Insurance Plan Code Sequence	0010,0050	SQ							
>Code Meaning	0008,0104	LO							
>Code Value	0008,0100	SH							
>Coding Scheme Designator	0008,0102	SH							
>Coding Scheme Version	0008,0103	SH							
>Context Group Extension Creator UID	0008,010D	UI							
>Context Group Local Version	0008,0107	DT							
>Context Group Version	0008,0106	DT							
>Mapping Resource	0008,0105	CS							
Patient Medical Module									
Additional Patient History	0010,21B0	LT		X		X			
Allergies	0010,2110	LO		X		X			
Last Menstrual Date	0010,21D0	DA							
Medical Alerts	0010,2000	LO		X		X			
Patient State	0038,0500	LO		X		X			
Pregnancy Status	0010,21C0	US		X		X			
Smoking Status	0010,21A0	CS							
Special Needs	0038,0050	LO		X					
Visit Identification Module									
Admission ID	0038,0010	LO							
Institution Address	0008,0081	ST							
Institution Name	0008,0080	LO							
Issuer of Admission ID Sequence	0038,0014	SQ							
>Local Namespace Entity ID	0040,0031	UT							

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
>Universal Entity ID	0040,0032	UT							
>Universal Entity ID Type	0040,0033	CS							
Issuer of Service Episode ID Sequence	0038,0064	SQ							
>Local Namespace Entity ID	0040,0031	UT							
>Universal Entity ID	0040,0032	UT							
>Universal Entity ID Type	0040,0033	CS							
Visit Status Module									
Current Patient Location	0038,0300	LO		X					
Patient's Institution Residence	0038,0400	LO							
Visit Comments	0038,4000	LT							
Visit Status ID	0038,0008	CS							
Visit Admission Module									
Admitting Date	0038,0020	DA							
Admitting Time	0038,0021	TM							
Referring Physician's Address	0008,0092	ST							
Referring Physician's Name	0008,0090	PN							
Referring Physician's Telephone Numbers	0008,0094	SH							
Route of Admissions	0038,0016	LO							
Admitting Diagnoses Code Sequence	0008,1084	SQ							
>Code Meaning	0008,0104	LO							
>Code Value	0008,0100	SH							
>Coding Scheme Designator	0008,0102	SH							
>Coding Scheme Version	0008,0103	SH							
Scheduled Procedure Step Module									
Scheduled Procedure Step Sequence	0040,0100	SQ		X					
>Comments on the Scheduled Procedure Step	0040,0400	LT		X					
>Modality	0008,0060	CS	X	X	X			Single Value,Universal	SOP Classes: CR, DX, OT, US, MG, RF, XA, PX, NM
>Pre-Medication	0040,0012	LO		X					
>Requested Contrast Agent	0032,1070	LO		X					
>Scheduled Performing Physician's Name	0040,0006	PN		X					
>Scheduled Procedure Step Description	0040,0007	LO		X		X			
>Scheduled Procedure Step End Date	0040,0004	DA		X					
>Scheduled Procedure Step End Time	0040,0005	TM		X					
>Scheduled Procedure Step ID	0040,0009	SH		X					
>Scheduled Procedure Step Location	0040,0011	SH		X					
>Scheduled Procedure Step Start Date	0040,0002	DA	X	X	X	X		Single Value,Universal	Value: All, Today, Tomorrow, Yesterday
>Scheduled Procedure Step Start Time	0040,0003	TM		X		X			
>Scheduled Procedure Step	0040,0020	CS		X					

Attribute Name	Tag	VR	M	R	Q	D	IOD	Type of Matching	Comment
Status									
>Scheduled Station AE Title	0040,0001	AE	X	X	X			Single Value,Universal	
>Scheduled Station Name	0040,0010	SH		X					
>Scheduled Protocol Code Sequence	0040,0008	SQ		X					
>>Code Meaning	0008,0104	LO							
>>Code Value	0008,0100	SH							
>>Coding Scheme Designator	0008,0102	SH							
>>Coding Scheme Version	0008,0103	SH							
Requested Procedure Module									
Requested Procedure Description	0032,1060	LO		X		X			
Requested Procedure ID	0040,1001	SH	X					Single Value,Universal	
Study Date	0008,0020	DA							
Study Instance UID	0020,000D	UI		X					
Referenced Study Sequence	0008,1110	SQ		X					
>Referenced SOP Class UID	0008,1150	UI		X					
>Referenced SOP Instance UID	0008,1155	UI		X					
Requested Procedure Code Sequence	0032,1064	SQ		X					
>Code Meaning	0008,0104	LO		X					
>Code Value	0008,0100	SH		X					
>Coding Scheme Designator	0008,0102	SH		X					
>Coding Scheme Version	0008,0103	SH		X					
>Context Group Extension Creator UID	0008,010D	UI							
>Context Group Local Version	0008,0107	DT							
>Context Group Version	0008,0106	DT							
>Mapping Resource	0008,0105	CS							
Imaging Service Request Module									
Accession Number	0008,0050	SH	X	X	X	X		Single Value,Universal	
Imaging Service Request Comments	0040,2400	LT							
Issue Date of Imaging Service Request	0040,2004	DA							
Reason for the Imaging Service Request (retired)	0040,2001	LO		X					
Referring Physician's Name	0008,0090	PN		X					
Requesting Physician	0032,1032	PN		X					
Requesting Service	0032,1033	LO							

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

Table 20: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Matching is complete	The worklist is updated.

Service Status	Error Code	Further Meaning	Behavior
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 Query Worklist 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 Query Worklist job continues.

Table 21: DICOM Command Communication Failure Behavior

Exception	Behavior
RIS query timeout (default 240 seconds)	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.

4.2.1.3.2.3.2. Dataset Specific Conformance for Modality Worklist Information Model - FIND C-CANCEL SCU

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

Table 22: 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.

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

4.2.1.3.3.1.   Description and Sequencing of Activities
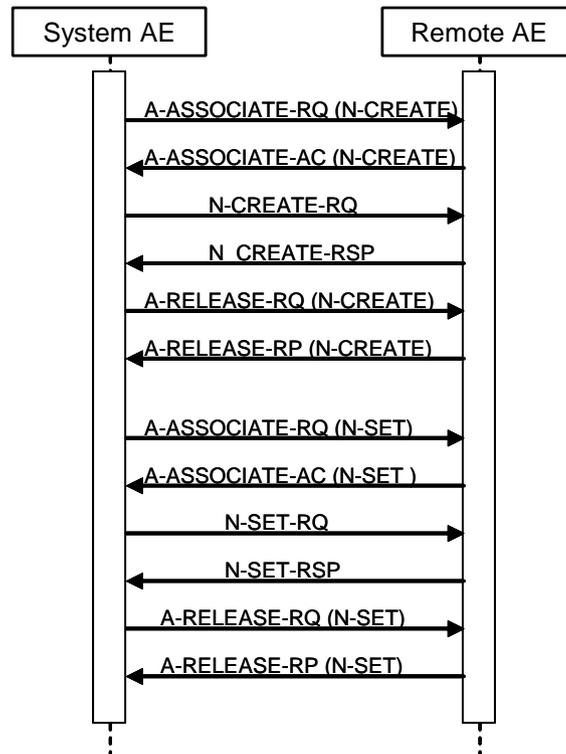
Figure 6 (Real World) Activity - Modality Performed Procedure Step as SCU

A MobileDiagnost Opta (release 1) "Examination" is regarded equivalent to a DICOM Procedure Step. It is scheduled or manually entered before an acquisition is taken, and performed by taking acquisitions. If scheduled by the RIS, one Examination is the result of one Scheduled Procedure Step. Since an examination may not be re-opened after having been closed, and each examination workflow context is enclosed in one MPPS, one examination may result in 0:1 MPPS instances. However, image archiving after the examination's closure leads to 1:n MPPS instances per examination (append case).

After the image for a Scheduled Procedure Step has been acquired, the system sets the MPPS status of the related examination to "IN PROGRESS" and generates an initial MPPS IN PROGRESS message. The system does not generate intermediate MPPS IN PROGRESS messages for subsequent acquisitions of this Scheduled Procedure Step instance.

After finishing the appropriate acquisition(s), the system will change the MPPS status of the related examination to "COMPLETED" and generate an MPPS N-SET-FINAL message.
MobileDiagnost Opta (release 1) also generates MPPS messages for unscheduled examinations.

The MPPS COMPLETED message will list the UID's of all related DICOM archived images and the format of (optionally) generated direct prints.

After abandoning or discontinuing a procedure step, the operator may set the MPPS status of the related examination to "DISCONTINUED" and the system generates a MPPS DICONTINUED message. The reason for abandoning or discontinuing a procedure step is unspecified.

The operator may interchange the performed sequence order of scheduled procedure steps.

MPPS messages may interleave. Depending on the application workflow optimization by the user, an MPPS sequence like this may come up:

MPPS / SOP Instance UID 1: N-CREATE (IN PROGRESS)
MPPS / SOP Instance UID 2: N-CREATE (IN PROGRESS)
MPPS / SOP Instance UID 3: N-CREATE (IN PROGRESS)

...
MPPS / SOP Instance UID 2: N-SET (COMPLETED)
MPPS / SOP Instance UID 1: N-SET (COMPLETED)
MPPS / SOP Instance UID 3: N-SET (COMPLETED)

(i.e.: running multiple procedure steps 'in parallel').

Sequencing of Activities

After storing a performed procedure step the ELEVA AE shall request an association with the configured remote Study Management SCP. After accepting the association the ELEVA AE shall send a Create request, wait for response, and then release the association.

4.2.1.3.3.2.   Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 23: Proposed Presentation Contexts for (Real-World) Activity – Modality Performed Procedure Step As SCU

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

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

When acquiring the first image of a Scheduled or Unscheduled Procedure Step, MobileDiagnost Opta (release 1) generates a MPPS IN PROGRESS message.
MobileDiagnost Opta (release 1) does not generate intermediate IN PROGRESS (N-SET) messages and does not support the Performed Procedure Step Exception Management Option. MobileDiagnost Opta (release 1) has no Billing Code Tables and does not support the Performed Procedure Step Billing and Material Management Option, except default values for Medium Type (2000,0030) and Film Size ID (2010,0050), if optional Local Print is configured.

Assisted Acquisition Protocol Setting Option
ELEVA AE by default derives the specific acquisition protocol from the Scheduled Protocol Code Sequence Items. Any single Item results in an Examination.
ELEVA AE supports 3 more (configurable) mapping relations, as shown below:

- Examination is selected from Scheduled Protocol Code Items->Code Value (0040,0008) (default)
- Examination is selected from Scheduled Procedure Step Description (0040,0007)
- Examination is selected from Requested Procedure Code Items->Code Value (0032,1064)
- Examination is selected from Requested Procedure Description (0032,1060)

ELEVA AE does not evaluate the attributes Coding Scheme Version (0008,0103), Coding Scheme Designator (0008,0102), Code Meaning (0008,0104), but only the Code Value (0008,0100), for mapping the examination settings. I.e. ELEVA AE expects that any used Code Value is unique (unambiguous) within a given RIS domain.

Restrictions Depending on Number of Scheduled Protocol Code Items
It is highly recommended that the Scheduled Procedure Step contains only 1 Item in the Scheduled Protocol Code Sequence.

If the Scheduled Procedure Step contains <n> items in the Scheduled Protocol Code Sequence, the Scheduled Procedure Step is split into <n> examinations, where any single examination shows only 1 of the Scheduled Protocol Code Items, but all the other attributes are the same.

When such an examination is returned back via MPPS, also the Performed Protocol Code Sequence will show only 1 item. If all <n> Scheduled Procedure Step Code Items are performed, <n> MPPS instances will be sent back to the RIS, and the sum of all Performed Protocol Code Items will be <n>.

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

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

Table 24: MPPS Request Identifiers for N-CREATE-RQ

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step Relationship Module				
Patient ID	0010,0020	LO		
Patient's Birth Date	0010,0030	DA		
Patient's Name	0010,0010	PN		
Patient's Sex	0010,0040	CS		
Scheduled Step Attributes Sequence	0040,0270	SQ		
>Accession Number	0008,0050	SH		
>Requested Procedure Description	0032,1060	LO		
>Requested Procedure ID	0040,1001	SH		
>Scheduled Procedure Step Description	0040,0007	LO		
>Scheduled Procedure Step ID	0040,0009	SH		
>Study Instance UID	0020,000D	UI		
>Referenced Study Sequence	0008,1110	SQ		
>Scheduled Protocol Code Sequence	0040,0008	SQ		
Issuer of Patient ID	0010,0021	LO		
Performed Procedure Step Information Module				
Performed Location	0040,0243	SH		EMPTY
Performed Procedure Step Description	0040,0254	LO		
Performed Procedure Step End Date	0040,0250	DA		Finish of the examination
Performed Procedure Step End Time	0040,0251	TM		Finish of the examination
Performed Procedure Step ID	0040,0253	SH		
Performed Procedure Step Start Date	0040,0244	DA		Start of the examination
Performed Procedure Step Start Time	0040,0245	TM		Start of the examination
Performed Procedure Step Status	0040,0252	CS		
Performed Procedure Type Description	0040,0255	LO		
Performed Station AE Title	0040,0241	AE	Eleva	
Performed Station Name	0040,0242	SH		EMPTY
Image Acquisition Results Module				
Modality	0008,0060	CS		
Study ID	0020,0010	SH		
Performed Protocol Code Sequence	0040,0260	SQ		
>Protocol Context Sequence	0040,0440	SQ		
>>Content Item Modifier Sequence	0040,0441	SQ		
>>>Date	0040,A121	DA		
>>>DateTime	0040,A120	DT		
>>>Numeric Value	0040,A30A	DS		
>>>Person Name	0040,A123	PN		
>>>Text Value	0040,A160	UT		
>>>Time	0040,A122	TM		
>>>UID	0040,A124	UI		

Attribute Name	Tag	VR	Value	Comment
>>>Value Type	0040,A040	CS		
>>>Concept Code Sequence	0040,A168	SQ		
>>>>Code Meaning	0008,0104	LO		
>>>>Code Value	0008,0100	SH		
>>>>Coding Scheme Designator	0008,0102	SH		
>>>>Coding Scheme Version	0008,0103	SH		
>>>>Context Group Extension Creator UID	0008,010D	UI		
>>>>Context Group Extension Flag	0008,010B	CS		
>>>>Context Group Local Version	0008,0107	DT		
>>>>Context Group Version	0008,0106	DT		
>>>>Context Identifier	0008,010F	CS		
>>>>Mapping Resource	0008,0105	CS		
>>>Concept Name Code Sequence	0040,A043	SQ		
>>>>Code Meaning	0008,0104	LO		
>>>>Code Value	0008,0100	SH		
>>>>Coding Scheme Designator	0008,0102	SH		
>>>>Coding Scheme Version	0008,0103	SH		
>>>>Context Group Extension Creator UID	0008,010D	UI		
>>>>Context Group Extension Flag	0008,010B	CS		
>>>>Context Group Local Version	0008,0107	DT		
>>>>Context Group Version	0008,0106	DT		
>>>>Context Identifier	0008,010F	CS		
>>>>Mapping Resource	0008,0105	CS		
>>>Measurement Units Code Sequence	0040,08EA	SQ		
>>>>Code Meaning	0008,0104	LO		
>>>>Code Value	0008,0100	SH		
>>>>Coding Scheme Designator	0008,0102	SH		
>>>>Coding Scheme Version	0008,0103	SH		
>>>>Context Group Extension Creator UID	0008,010D	UI		
>>>>Context Group Extension Flag	0008,010B	CS		
>>>>Context Group Local Version	0008,0107	DT		
>>>>Context Group Version	0008,0106	DT		
>>>>Context Identifier	0008,010F	CS		
>>>>Mapping Resource	0008,0105	CS		
>>Date	0040,A121	DA		
>>DateTime	0040,A120	DT		
>>Numeric Value	0040,A30A	DS		
>>Person Name	0040,A123	PN		
>>Text Value	0040,A160	UT		
>>Time	0040,A122	TM		
>>UID	0040,A124	UI		
>>Value Type	0040,A040	CS		
>>Concept Code Sequence	0040,A168	SQ		
>>>Code Meaning	0008,0104	LO		
>>>Code Value	0008,0100	SH		
>>>Coding Scheme Designator	0008,0102	SH		
>>>Coding Scheme Version	0008,0103	SH		
>>>Context Group Extension Creator UID	0008,010D	UI		
>>>Context Group Extension Flag	0008,010B	CS		

Attribute Name	Tag	VR	Value	Comment
>>>Context Group Local Version	0008,0107	DT		
>>>Context Group Version	0008,0106	DT		
>>>Context Identifier	0008,010F	CS		
>>>Mapping Resource	0008,0105	CS		
>>Concept Name Code Sequence	0040,A043	SQ		
>>>Code Meaning	0008,0104	LO		
>>>Code Value	0008,0100	SH		
>>>Coding Scheme Designator	0008,0102	SH		
>>>Coding Scheme Version	0008,0103	SH		
>>>Context Group Extension Creator UID	0008,010D	UI		
>>>Context Group Extension Flag	0008,010B	CS		
>>>Context Group Local Version	0008,0107	DT		
>>>Context Group Version	0008,0106	DT		
>>>Context Identifier	0008,010F	CS		
>>>Mapping Resource	0008,0105	CS		
>>Measurement Units Code Sequence	0040,08EA	SQ		
>>>Code Meaning	0008,0104	LO		
>>>Code Value	0008,0100	SH		
>>>Coding Scheme Designator	0008,0102	SH		
>>>Coding Scheme Version	0008,0103	SH		
>>>Context Group Extension Creator UID	0008,010D	UI		
>>>Context Group Extension Flag	0008,010B	CS		
>>>Context Group Local Version	0008,0107	DT		
>>>Context Group Version	0008,0106	DT		
>>>Context Identifier	0008,010F	CS		
>>>Mapping Resource	0008,0105	CS		
>Code Meaning	0008,0104	LO		
>Code Value	0008,0100	SH		
>Coding Scheme Designator	0008,0102	SH		
>Coding Scheme Version	0008,0103	SH		
>Context Group Extension Creator UID	0008,010D	UI		
>Context Group Extension Flag	0008,010B	CS		
>Context Group Local Version	0008,0107	DT		
>Context Group Version	0008,0106	DT		
>Context Identifier	0008,010F	CS		
>Mapping Resource	0008,0105	CS		
Performed Series Sequence	0040,0340	SQ		
Radiation Dose Module				
Entrance Dose	0040,0302	US		
Image and Fluoroscopy Area Dose Product	0018,115E	DS		Not sent in case of appended MPPS Instances
Total Number of Exposures	0040,0301	US		
Total Time of Fluoroscopy	0040,0300	US		
Exposure Dose Sequence	0040,030E	SQ		
Billing And Material Management Code Module				
Billing Procedure Step Sequence	0040,0320	SQ		
Film Consumption Sequence	0040,0321	SQ		

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

Table 25: Status Response

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

Table 26: 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.

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

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

Table 27: MPPS Request Identifiers for N-SET-RQ

Attribute Name	Tag	VR	Value	Comment
Performed Procedure Step Information Module				
Performed Procedure Step Description	0040,0254	LO		
Performed Procedure Step End Date	0040,0250	DA		
Performed Procedure Step End Time	0040,0251	TM		
Performed Procedure Step Status	0040,0252	CS		
Image Acquisition Results Module				
Performed Series Sequence	0040,0340	SQ		
>Operators' Name	0008,1070	PN		N-Values
>Performing Physician's Name	0008,1050	PN		
>Protocol Name	0018,1030	LO		Copied from Performed protocol Code Sequence - Item code value
>Retrieve AE Title	0008,0054	AE		
>Series Description	0008,103E	LO		
>Series Instance UID	0020,000E	UI		
>Referenced Image Sequence	0008,1140	SQ		
>>Referenced SOP Class UID	0008,1150	UI		
>>Referenced SOP Instance UID	0008,1155	UI		
>Referenced Non-Image Composite SOP Instance Sequence	0040,0220	SQ		
>>Referenced SOP Class UID	0008,1150	UI		
>>Referenced SOP Instance UID	0008,1155	UI		
Radiation Dose Module				
Entrance Dose	0040,0302	US		
Image and Fluoroscopy Area Dose Product	0018,115E	DS		Not accumulating: re-processed images, non-digital images. Not sent in case of appended MPPS instances.
Total Number of Exposures	0040,0301	US		Not accumulating: re-processed images, non-digital images. Not sent in case of appended MPPS instances.
Total Time of Fluoroscopy	0040,0300	US		

Attribute Name	Tag	VR	Value	Comment
Exposure Dose Sequence	0040,030E	SQ		
>Radiation Mode	0018,115A	CS		
Billing And Material Management Code Module				
Billing Procedure Step Sequence	0040,0320	SQ		
Film Consumption Sequence	0040,0321	SQ		

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

Table 28: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Confirmation	The association is released.
Failed	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 29: 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.

4.2.1.3.4.　(Real-World) Activity – Image Export

4.2.1.3.4.1.　Description and Sequencing of Activities
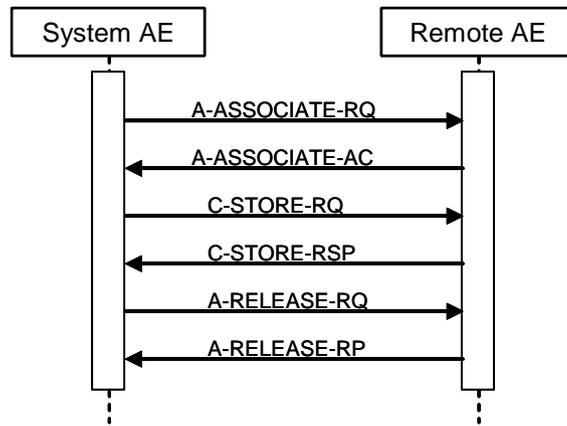
Figure 7 (Real World) Activity - Image Export

Export means that MobileDiagnost Opta (release 1) stores images without Storage Commitment.
This RWA may be initiated in two ways.

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

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

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

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

4.2.1.3.4.2.   Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 30: Proposed Presentation Contexts for (Real-World) Activity – Image Export

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

By default, all images are DICOM Stored according to the SOP Class Digital XRay. CR Image attributes that are undefined for DX Images are stored in private attributes.

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

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

For DICOM CR images there is a constraint that a change in position, detector, body part or laterality implies a new series. This has been relaxed for DX images through the use of the 'DX Anatomy Imaged' and 'DX Positioning' Modules, which define attributes at image level. The DX Image IOD is used in two SOP Classes as defined in the DICOM Standard, a SOP Class for storage of images intended for Presentation, and a SOP Class for storage of images intended for further Processing before presentation.

These are distinguished by their SOP Class UID and by the Enumerated Value of the mandatory Attribute in the DX Series Module, Presentation Intent Type (0008,0068). It is possible to export / store one single image first as a DICOM CR and secondly as a DICOM DX object, therefore the SOP Instance UIDs of both DICOM image instances have to be different.

The Numbering Scheme shall support 'Hanging Protocols' of PACS systems & Viewing Stations, in case of the CR as well as the DX model:

1. The Series Number shall start with 1 for the first Series of every Study Instance, identified by StudyInstanceUID.
2. The Series Number shall increase by 1 for every new Series Instance within the same Study Instance, by the timely order, the Series Instances are created.
3. The Image Number shall start with 1 for every new Series Instance.
4. The Image Number shall increase by 1 for every new Image Instance within the same SeriesInstance, by the timely order, the Images are exported.

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

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

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

Notes:

- The requirement for the MobileDiagnost Opta (release 1) specifically deprecates the common film/screen and Computed Radiography practice of making multiple exposures on different areas of a cassette or plate by using lead occlusion between exposures. Such acquisitions could be separated and transformed into multiple DX images during an appropriate quality assurance step by an operator.
- The requirement for the MobileDiagnost Opta (release 1) does not deprecate the acquisition of multiple paired structures during a single exposure, provided that they can be described by the relevant orientation Attributes. For example, an AP or PA projection of both hands side by side is typically obtained in a single exposure, and can be described by a Patient Orientation (0020,0020) of R\H or L\H since both hands are in the same traditional Anatomical Position.

4.2.1.3.4.3. SOP Specific Conformance for Storage SOP Classes

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

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

4.2.1.3.4.3.1. Dataset Specific Conformance for C-STORE-RQ

Table 31: Status Response

Service Status	Error Code	Further Meaning	Behavior
Success	0000	Successful stored	
Refused	A7xx	Out of resources	The association is released. The reason is logged. The user is informed.
Error	A9xx	Error: Data Set does not match SOP Class	The association is released. The reason is logged. The user is informed.
	Cxxx	Error: cannot understand	The association is released. The reason is logged. The user is informed.
Warning	B000	Coercion of Data Elements	The association is released. The reason is logged. The user is informed.
	B007	Data Set does not match SOP Class	The association is released. The reason is logged. The user is informed.
	B006	Elements Discarded	The association is released. The reason is logged. The user is informed.

Table 32: 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.

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

4.2.1.3.5.1. Description and Sequencing of Activities
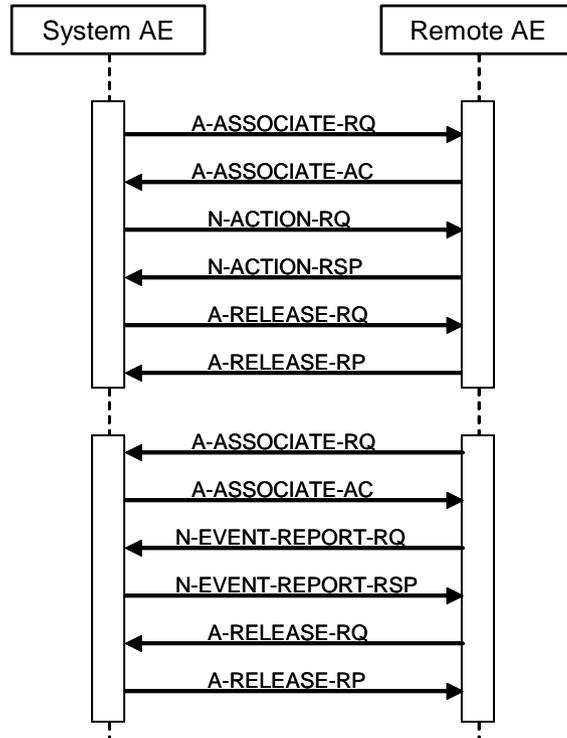
Figure 8 (Real World) Activity – Storage Commitment Push Model as SCU within separate associations (asynchronous)
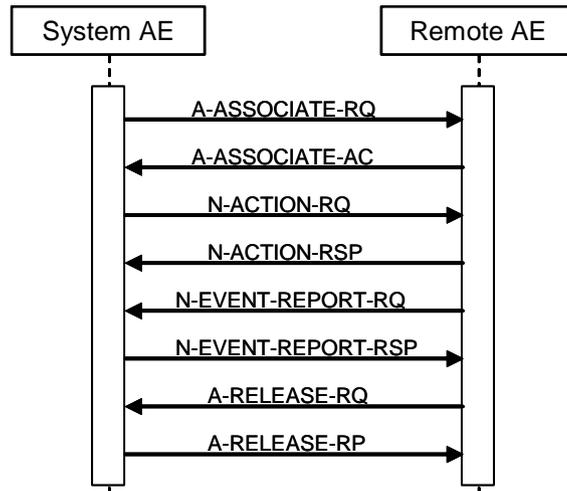
Figure 9 (Real World) Activity – Synchronous Storage Commitment Push Model as SCU within one association (synchronous)

Archive means that MobileDiagnost Opta (release 1) stores images with Storage Commitment (both synchronous and asynchronous can be configured).
This RWA may be initiated in two ways.

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

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

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

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

When an archive supports DICOM Storage Commitment, this node can be configured for it. For each image that is sent to this node, also a Storage Commitment Request is sent. The image is delete-protected until the Storage Commit Response has been received. The current status is shown in the Image Info Panel.

4.2.1.3.5.2. Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 33: 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	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Big Endian	1.2.840.10008.1.2.2		
		Explicit VR Little Endian	1.2.840.10008.1.2.1		

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

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

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

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

Table 34: 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.

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

Table 35: 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 36: Status Response

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

Table 37: DICOM Command Communication Failure Behavior

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

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

4.2.1.3.6.1.   Description and Sequencing of Activities
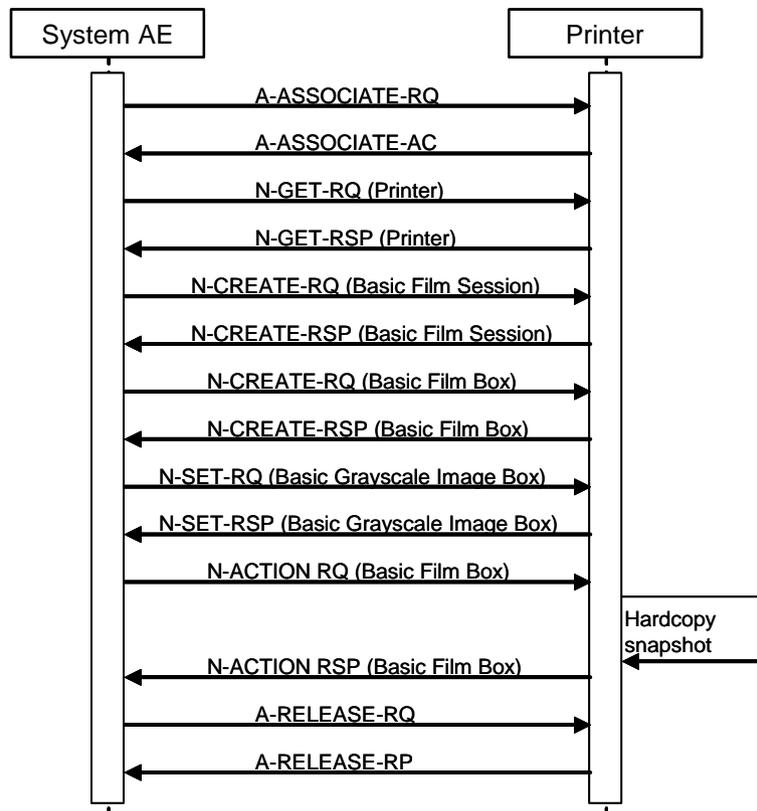
Figure 10 (Real World) Activity - Print Management as SCU

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

The print component in MobileDiagnost Opta (release 1) supports a highly automated print from acquisition operation mode, which does not interrupt the clinical acquisition workflow.

Supplementary to that is the manual print operation mode that is to be used as advanced interactive print preview and as reprint facility.

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

In auto print mode conflicting and incomplete print jobs are either printed "as is" or must be manually corrected and confirmed.

In easy print mode all automatically started print jobs have to be confirmed manually.

The behaviour of the print GUI on entry is dependent on the configuration not on the workflow context.

The three different print modes are:

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

By Manual Printing the basic composition of films is possible with click and point functions.

To allow for more automation, auto-arranging (AA) is required.

AA takes the configured defaults (2x1P 14x17) and loads the images automatically.

User can make multiple selections of images or all images select/deselect and pressed "arrange". Images are taken for AA in the order they have been selected, if this is relevant for the

Templates if ALL images are selected, then they are taken in order from top left to lower right in rows.

After AA the result can be modified manually.

By Auto Print the operation mode the handling of conflicts between configuration and operation is configurable. This means:

If the collimation and thus the image is larger as originally configured it can be configured if the image shall be cut, scaled or the print job with the conflict shall be manually corrected and confirmed.

If the operator omits one of the routine views configured and a page is thus left half-filled it can be configured if the page is going to be printed half-filled, if a layout suitable for the number of available images is chosen instead or if the page must be manually changed and confirmed.

In case of a manual check configured conflict jobs are sent to the print GUI and handled like the Easy Print. Outstanding jobs are shown to the user by:

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

By Easy Print all print jobs are sent to the Print UI for checking first.

The user is not forced to go there, but outstanding jobs are shown to the user by:

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

Depending on the response status of set and the configuration the Eleva AE may perform a retry.

4.2.1.3.6.2.   Proposed Presentation Contexts

The presentation contexts are defined in the next table.

Table 38: Proposed Presentation Contexts for (Real-World) Activity – Print Management As SCU

Presentation Context Table					
Abstract Syntax		**Transfer Syntax**		**Role**	**Extended Negotiation**
Name	**UID**	**Name List**	**UID List**		
Basic 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		

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

Table 39: DICOM Command Response Status Handling Behavior for Grayscale Print Management Meta Sop Class

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

Table 40: DICOM Command Communication Failure Behavior

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

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

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

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

Table 41: Basic Film Box Presentation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Display Format	2010,0010	ST		ALWAYS		
Film Orientation	2010,0040	CS		ANAP		
Film Size ID	2010,0050	CS		ANAP		
Min Density	2010,0120	US		ANAP		
Trim	2010,0140	CS		ANAP		
Configuration Information	2010,0150	ST		ANAP		

Table 42: Basic Film Box Relationship Module

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

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

Not Applicable

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

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

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

Table 43: Basic Film Session Presentation Module

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

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

Not Applicable

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

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

Table 44: Image Box Pixel Presentation Module

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

| >Pixel Representation | 0028,0103 | US | 0x0000 | ALWAYS | AUTO | |
| >Pixel Data | 7FE0,0010 | OW/OB | | ALWAYS | AUTO | |

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

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

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

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

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

4.2.1.3.7.1. Description and Sequencing of Activities
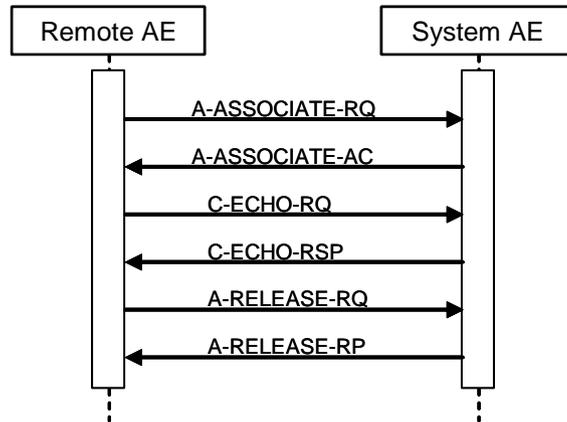
Figure 11 (Real World) Activity - Verification as SCP

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

4.2.1.3.7.2. Accepted Presentation Contexts

The presentation contexts are defined in the next table.

Table 45: 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		

4.2.1.3.7.3. SOP Specific Conformance for Verification SOP Class

This section includes the SOP specific behavior for the verification SOP Class, i.e. error codes, error and exception handling, time-outs, etc. This behavior is summarized in the tables below. The standard as well as the manufacturer specific status codes and their corresponding behavior are specified.

Table 46: C-ECHO-RSP Status Response

Service Status	Code	Further Meaning	Behavior
Success	0000	Verification is complete	The MobileDiagnost Opta (release 1) has successfully received the verification request.

Table 47: DICOM Command Communication Failure Behavior

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

4.3.　Network Interfaces

4.3.1.　Physical Network Interfaces

The MobileDiagnost Opta (release 1) provides DICOM 3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM 3.0 Standard. The MobileDiagnost Opta (release 1) system supports ISO 8802-3 10BASE-T and 100Base-TX Ethernet.

4.3.2.　Additional Protocols

Not applicable

4.4.　Configuration

Any implementation's DICOM conformance may be dependent upon configuration, which takes place at the time of installation. Issues concerning configuration 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 local AE title mapping and configuration are specified as:

Table 48: AE Title configuration table

Application Entity	Default AE Title	Default TCP/IP Port
ELEVA AE	ELEVA	3010

4.4.1.2.　Remote AE Title/Presentation Address Mapping

All remote applications to be selected as destination (SCP) are configurable for the following items:
- The Application Entity Title of the remote application.

The Presentation Address of where the remote application should accept association requests.

4.4.2.　Parameters

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

Table 49: Configuration Parameters Table

Parameter	Configurable	Default Value
General Parameters		
Maximum PDU receive size	No	-
Maximum PDU send size	Yes	16384
Maximum number of simultaneous associations	Yes	2
ARTIM Timeout Specifies the time in seconds of the ARTIM (Association Request/Reject/Release Timer). Allowed values: 0: unlimited waiting time 0 < n: real time in seconds	Yes	20 [seconds]

Parameter	Configurable	Default Value
Automatic Association Timeout Specifies the association inactivity timeout in seconds after which the association is closed automatically. Allowed values: -1: immediate timeout 0: unlimited waiting time 0 < n: real time in seconds	Yes	0 [unlimited]
Transfer Syntax support: ILE, ELE, EBE	Yes	ILE, ELE, EBE
Storage Specific Parameters		
Automatic export to a configurable destination	Yes	-
Storage Commitment Specific Parameters		
Storage Commit Max Reply Waiting Time Specifies the time in seconds that is waited for a storage commitment event report message. After this time the association will be terminated Allowed values: -1: immediate timeout 0: unlimited waiting time 0 < n: real time in seconds	Yes	-1 [asynchronous]
Basic Worklist Management Specific Parameters		
RIS query timeout Specifies the time after which the query is automatically aborted Allowed values: 1- 300 minutes	Yes	240 [seconds]
Background broad query time interval Specifies the time until the background query will be repeated. Allowed values: 0: no broad query 0 < n: real time in minutes	Yes	0 [no broad query]
Print Management Specific Parameters		
Automatic print to a configurable destination	Yes	-

5. Media Interchange

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 MobileDiagnost Opta(release 1) system consists of one single application entity only: the ELEVA Application Entity.
Next figure shows the Media Interchange application data flow as a functional overview of the Eleva AE.
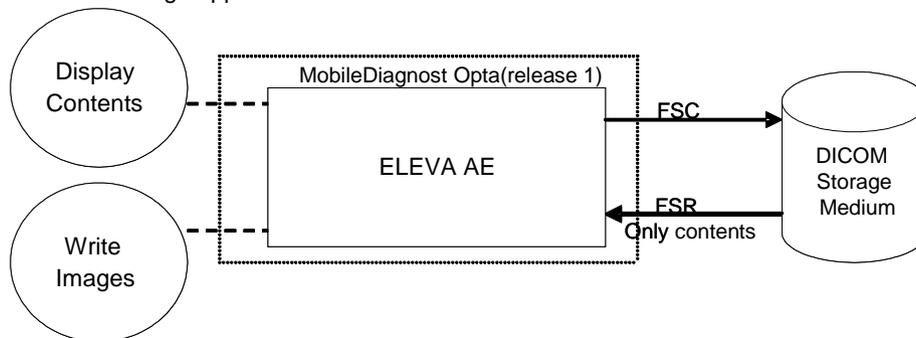
Figure 12 Media Interchange Application Data Flow Diagram

The ELEVA AE will act as a FSC/FSU when writing the selected images in a patient folder onto the CD-R/DVD medium.

5.1.2.   Functional Definitions of AE's

The ELEVA AE is the one and only application entity within the MobileDiagnost Opta(release 1). It includes the following service class.

Media Storage Service Class
The ELEVA AE can perform the Media Storage service as SCU, with capabilities for RWA Create File-Set (as FSC/FSU).

5.1.3.   Sequencing of Real World Activities

Write images can be initiated by selecting a proper export destination, selecting requested images and clicking the export button.

Whenever a CD-R/DVD has to be written the ELEVA AE first tries to read the DICOMDIR. The ELEVA AE will compile the updated DICOMDIR and any required DICOM images into a CD/DVD session image; this CD session image will be written to CD-R/DVD.

5.2.   AE Specifications

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

5.2.1.   Eleva Media - Specification

The Eleva AE provides Standard Conformance to the DICOM Media Storage Service and File Format ([DICOM] PS 3.10) and the Media Storage Application Profiles STD-GEN-CD ([DICOM] PS 3.11).

Eleva AE supports Multi-Patient and Multi-Session CD-R/DVD disks. On the Eleva AE is only "adding on" of instances is supported for the FSU, deleting is not supported. The supported Application Profiles, their Roles and the Service Class (SC) options, all defined in DICOM terminology, are listed in next table.

Table 50: AE Eleva related Application Profiles, RWA activities and roles

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

5.2.1.1.   File Meta Information for the Eleva

Table 51: File Meta Information for the Eleva

Implementation Class UID	1.3.46.670589.30.34.0
Implementation Version Name	PMS_ELEVA_34.0

5.2.1.2.   Real-World Activities

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

5.2.1.2.1.   RWA - Create File-set

When an image transfer to CD-R/DVD is initiated then the Eleva AE acts as an FSC or FSU using the interchange option to export SOP Instances from the local database to a CD-R/DVD medium.

5.2.1.2.1.1.   Media Storage Application Profile

The Eleva AE supports the RWA - Create File-SET for the STD-GEN-CD Application Profile and the General Purpose DVD Interchange with JPEG Application Profile.

5.2.1.2.1.1.1. Options

The DICOMDIR file will be created on the CD-R/DVD medium 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 filled in.
The Eleva AE can write created image to media of the following listed SOP Classes

Table 52: AE related storage SOP Classes for Media

SOP Class Name	SOP Class UID
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1

The Eleva AE can write created image to media with the following listed Transfer Syntax.

Table 53: AE related Transfer Syntax for Media

Transfer Syntax	UID List
Explicit VR Little Endian	1.2.840.10008.1.2.1

The Eleva AE can write created image to media with the following listed Media Storage SOP Class.

Table 54: AE Media Store SOP Class

Media Storage SOP Class Name	Media Storage SOP Class UID
Media Storage Directory Storage	1.2.840.10008.1.3.10

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

The Numbering Scheme shall support 'Hanging Protocols' of PACS systems & Viewing Stations, in case of the CR as well as the DX model:

- The Series Number starts with 1 for the first Series of every Study Instance, identified by Study Instance UID.
- The "Series Number" increases by 1 for every new Series Instance within the same Study Instance, by the timely order, the Series Instances are created.
- Every Stored image gets also a unique "Series Instance UID" and "Media Storage SOP Instance UID".
- The Image Number starts with 1 for every new Series Instance.
- The Image Number increases by 1 for every new Image Instance within the same Series Instance, by the timely order, the Images are created.

Table 55: Supported attributes in the DICOMDIR

DICOM Tag	Description
0002,0000	Meta Element Group Length
0002,0001	File Meta Information Version
0002,0002	Media Storage SOP Class UID
0002,0003	Media Storage SOP Instance UID
0002,0010	Transfer Syntax UID
0002,0012	Implementation Class UID
0002,0013	Implementation Version Name
File Set and Directory Information	
0004,1130	File Set ID
0004,1200	Offset Of The First Directory Record Of The Root Directory Entity
0004,1202	Offset Of The Last Directory Record Of The Root Directory Entity
0004,1212	File Set Consistency Flag
0004,1220	Directory Record Sequence
Patient Level	
0004,1400	Offset Of The Next Directory Record
0004,1410	Record In Use Flag
0004,1420	Offset Of Referenced Lower Level Directory Entity
0004,1430	Directory Record Type
0010,0010	Patients Name
0010,0020	Patient ID
Study Level	
0004,1400	Offset Of The Next Directory Record
0004,1410	Record In Use Flag
0004,1420	Offset Of Referenced Lower Level Directory Entity
0004,1430	Directory Record Type
0008,0020	Study Date
0008,0030	Study Time
0008,0050	Accession Number
0008,1030	Study Description
0020,000d	Study Instance UID
0020,0010	Study ID
Series Level	
0004,1400	Offset Of The Next Directory Record
0004,1410	Record In Use Flag
0004,1420	Offset Of Referenced Lower Level Directory Entity

DICOM Tag	Description
0004,1430	Directory Record Type
0008,0060	Modality
0008,103e	Series Description
0018,0015	Body Part Examined
0018,1030	Protocol Name
0020,000e	Series Instance UID
0020,0011	Series Number
Image Level	
0004,1400	Offset Of The Next Directory Record
0004,1410	Record In Use Flag
0004,1420	Offset Of Referenced Lower Level Directory Entity
0004,1430	Directory Record Type
0004,1500	Referenced File ID
0004,1510	Referenced SOP Class UID In File
0004,1511	Referenced SOP Instance UID In File
0004,1512	Referenced Transfer Syntax UID In File
0008,0008	Image Type
0008,0016	SOP Class UID
0008,0018	SOP Instance UID
0020,0013	Instance Number
0020,0052	Frame Of Reference UID
0028,0010	Rows
0028,0011	Columns
0028,0030	Pixel Spacing

5.3. Augmented and Private Application Profiles

Eleva does not support any augmented or private application profiles.

5.4. Media Configuration

When creating a CD with anonymous patient data, the following attributes are changed.

Attribute	Tag	Change to
Media Storage SOP Instance UID	0002,0003	New UID
Referenced SOP Instance UID in File	0004,1511	New UID
SOP Instance UID	0008,0016	New UID
Accession Number	0008,0050	[empty]
Institution Name	0008,0080	[empty]
Institution Address	0008,0081	[empty]
Referring Physician's Name	0008,0090	[empty]
Station Name	0008,1010	[empty]
Study Description	0008,1030	[empty]
Series Description	0008,103E	[empty]
Institutional Department Name	0008,1040	[empty]
Performing Physician's Name	0008,1050	[empty]
Operators' Name	0008,1070	[empty]
Patient Name	0010,0010	[empty]
Patient ID	0010,0020	New ID
Patient's Birth Date	0010,0030	[empty]

Attribute	Tag	Change to
Patient's Sex	0010,0040	[empty]
Other Patient Ids	0010,1000	[empty]
Patient's Size	0010,1020	[empty]
Patient's Weight	0010,1030	[empty]
Device Serial Number	0018,1000	New ID
Study Instance UID	0020,000D	New UID
Series Instance UID	0020,000E	New UID
Study ID	0020,0010	New ID
Requesting Physician	0032,1032	[empty]
Request Attributes Sequence	0040,0270	[empty sequence]
Requested Procedure ID	0040,1001	New ID

6. Support of Character Sets

Any support for character sets in Network and Media services is described here.

Table 56: Supported DICOM Character Sets

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

7. Security

7.1. Security Profiles

MobileDiagnost Opta (release 1) conforms to the IHE Basic Security Integration Profile. MobileDiagnost Opta (release 1) allows the use of either a conventional (non-secure) DICOM communication or a secure DICOM communication based on the Transport Layer Security (TLS) protocol. If configured MobileDiagnost Opta (release 1) supports the following security measures:

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

7.1.1. Security use Profiles

Not applicable

7.1.2. Security Transport Connection Profiles

MobileDiagnost Opta (release 1) conforms to the Basic TLS Secure Transport Connection Profile. MobileDiagnost Opta (release 1) initiates TLS Connections and accepts TLS Connections with Storage Commitment. TLS ports are configurable. MobileDiagnost Opta (release 1) provides a service accessible tool to configure private keys and certificates of the local and remote DICOM nodes.

Secure communication is a "mode of operation" of MobileDiagnost Opta (release 1) supported by the implementation of the DICOM Basic TLS Secure Transport Connection Profile. This functionality will be used by the nodes that can authenticate each other before they exchange DICOM information. For secure communication the TLS protocol v1.0 is used which provides message authentication, integrity, and confidentiality. Confidentiality is optional and can be controlled by the encryption settings.

MobileDiagnost Opta (release 1) may communicate using the following Cipher Suites:
TLS_RSA_WITH_NULL_SHA (Node authentication without encryption)
TLS_RSA_WITH_AES_128_CBC_SHA (Node authentication with encryption)

MobileDiagnost Opta (release 1) supports X.509 certificates. The following TLS Certification checks will be done (TLS Handshake). The machine (either server or client) that will send its certificate will:

- Choose the certificate according to Common Name (CN) value in the Subject-field. This name is case-sensitive. All present certificates should have unique CN names.
- The server verifies
  - that the client certificate is a X.509 certificate which is not tampered with
  - that the client certificate is in the list of trusted certificates
  - that the client certificate is not expired (present time is between "Valid From" and "Valid To" fields of the X.509 certificate)
  - that the client certificate has the correct purpose (at least the Client Authentication purpose)
- The client verifies
  - that the server certificate is a X.509 certificate which is not tampered with
  - that the server certificate is in the list of trusted certificates
  - that the server certificate is not expired (present time is between "Valid From" and "Valid To" fields of the X.509 certificate)
  - that the server certificate has the correct purpose (at least Server Authentication purpose)

No verification is done on:

- revocation of certificates
- limiting the connection to a limited set of IP-addresses

Node authentication with or without encryption is only possible when both nodes have:

- an access to their own private keys
- an access to a copy of the certificate of the other node containing its public key

Figure below presents the message flow of TLS handshake supported by MobileDiagnost Opta (release 1).
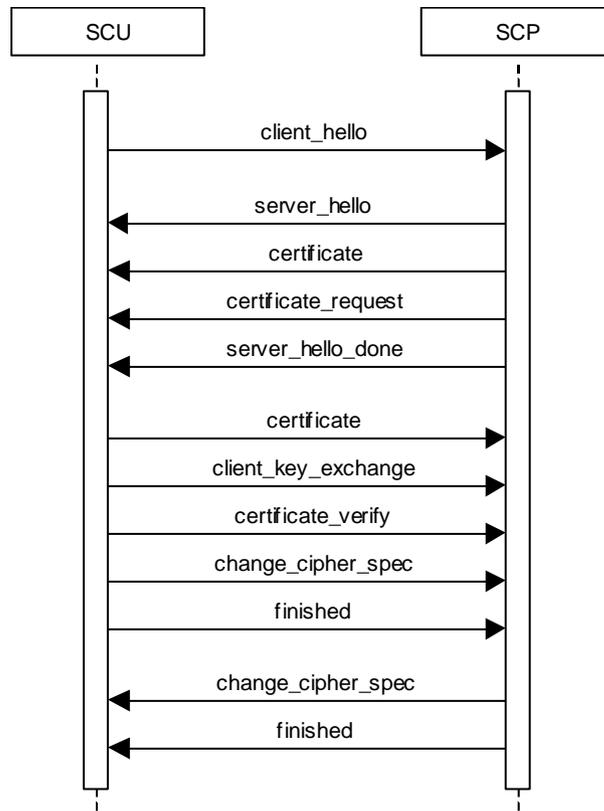
Figure 13 Message flow of TLS handshake

7.1.3.   Digital Signature Profiles

Not applicable

7.1.4.   Media Storage Security Profiles

Not applicable

7.1.5.   Attribute Confidentiality Profiles

MobileDiagnost Opta (release 1) conforms to the Basic Application Level Confidentiality Profile as de-identifier.
De-identified SOP Instances will be created on DICOM Media if specified by the user.
No instances of the Encrypted Attributes Data Set are created. No Transfer Syntaxes are supported for encoding/decoding of
Encrypted Attributes Data Sets.
Table 57 lists the protected attributes as defined in [DICOM], Part 15. It may contain attributes which are currently not part of images
created by MobileDiagnost wDR 2.0. The terms used to describe the replacement value can be read as follows:

Empty   The attribute will have a value of zero length.
n. a.   Not applicable, the attribute is not contained in the standard IOD of MobileDiagnost wDR 2.0
anon string   The original value is mapped onto a string with a length of max 12 characters UID using the procedure described
                below.
anon UID   The original value is mapped onto a syntactically valid DICOM UID using the procedure described below.

The above mentioned mapping procedure works as follows:
- The original value is taken as a string of arbitrary length.
- This string is mapped onto a 16-byte value using MD5 hash.
- From this value only the first 8 bytes are used further.

- To create an anon string these first 8 bytes are mapped onto a 12 characters long string using base 64.
- To create an anon UID the 8 bytes are read as two integers which are used together with the Implementation Class UID and the device serial number to create a valid DICOM UID: (ImplClassUID).(DevSerialNu).2.Integer(byte[0-3]).Integer(byte[4-7])

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

Table 57: Basic Application Level Confidentiality Profile Attributes

Attribute Name	Tag	Replacement Value
Instance Creator UID	0008,0014	anon UID
SOP Instance UID	0008,0018	anon UID
Accession Number	0008,0050	empty
Institution Name	0008,0080	empty
Institution Address	0008,0081	empty
Referring Physician's Name	0008,0090	empty
Station Name	0008,1010	empty
Study Description	0008,1030	empty
Series Description	0008,103E	empty
Institutional Department Name	0008,1040	empty
Physician(s) of Record	0008,1048	empty
Performing Physicians' Name	0008,1050	empty
Name of Physician(s) Reading Study	0008,1060	empty
Operators' Name	0008,1070	empty
Admitting Diagnoses Description	0008,1080	empty
Referenced SOP Instance UID	0008,1155	anon UID
Derivation Description	0008,2111	empty
Patient's Name	0010,0010	empty
Patient ID	0010,0020	anon ID
Patient's Birth Date	0010,0030	empty
Patient's Birth Time	0010,0032	empty
Patient's Sex	0010,0040	empty
Other Patient Ids	0010,1000	empty
Other Patient Names	0010,1001	empty
Patient's Age	0010,1010	empty
Patient's Size	0010,1020	empty
Patient's Weight	0010,1030	empty
Ethnic Group	0010,2160	empty
Occupation	0010,2180	empty
Additional Patient's History	0010,21B0	empty
Patient Comments	0010,4000	empty
Device Serial Number	0018,1000	anon string
Protocol Name	0018,1030	empty
Study Instance UID	0020,000D	anon UID
Series Instance UID	0020,000E	anon UID
Study ID	0020,0010	anon string
Frame of Reference UID	0020,0052	anon UID
Image Comments	0020,4000	empty
Requesting Physician	0032,1032	empty
Requested Attributes Sequence	0040,0275	empty Sequence
Requested Procedure ID	0040,1001	anon ID
UID	0040,A124	anon UID

Attribute Name	Tag	Replacement Value
Content Sequence	0040,A730	empty
Storage Media File-set UID	0088,0140	anon UID

No attributes or attribute values are inserted.

7.1.6. Network Address Management Profiles

Not applicable

7.1.7. Time Synchronization Profiles

MobileDiagnost Opta (release 1) conforms to the Basic Time Synchronization Profile as NTP Client. MobileDiagnost Opta (release 1) does support secure transactions.

7.1.8. Application Configuration Management Profiles

Not applicable

7.1.9. Audit Trail Profiles

MobileDiagnost Opta (release 1) creates audit messages according to the IHE Basic Security Integration Profile. These messages may contain information that identifies the patient. The following messages will be created and sent to a central Audit Record Repository:

- Application Activity (when MobileDiagnost Opta (release 1) starts or shuts down).
- Begin Transferring DICOM Instances (when an examination is being transferred from the MobileDiagnost Opta (release 1) to a remote network node).
- DICOM Instances Transferred (when an examination is transferred from the MobileDiagnost Opta (release 1) to a remote network node).
- DICOM Instances Accessed (Study is created, modified, accessed, or deleted).
- User Authentication (when the user logs in or logs out).
- SecurityAlert (when an authentication of a secure node during TLS negotiation fails, e.g. due to an invalid certificate and configuration and other changes).
- Export (when printing job is started or export on media e.g CD, DVD).

7.2. Association Level Security

7.3. Application Level Security

MobileDiagnost Opta (release 1) does not support any specific application level security measures. The Application which gives access to Patient records and DICOM communication requires Login with Username and Password.
The system is used within a secured environment. It is assumed that a secured environment includes at a minimum:

- Firewall or router protections to ensure that only approved external hosts have network access to MobileDiagnost wDR 2.0.
- Firewall or router protections to ensure that MobileDiagnost Opta (release 1) only has network access to approved external hosts and services.
- Any communication with external hosts outside the locally secured environment can be configured to use secure network channels.
- A local AntiVirus client should be installed to protect against malicious software.

Other network security procedures such as automated intrusion detection may be appropriate in some environments.
Additional security features may be established by the local security policy and are beyond the scope of this conformance statement.

8. Annexes of application "Eleva"

8.1.   IOD Contents

8.1.1.   Created SOP Instance

This section specifies each IOD created by this application.

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

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

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

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

8.1.1.1.   List of created SOP Classes

Table 58: List of created SOP Classes

SOP Class Name	SOP Class UID
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1

8.1.1.2.   Computed Radiography Image Storage SOP Class

Table 59: IOD of Created Computed Radiography Image Storage SOP Class Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Study	Patient Study Module	ALWAYS
Series	General Series Module	ALWAYS
Series	CR Series Module	ALWAYS

Equipment		General Equipment Module	ALWAYS
Image		General Image Module	ALWAYS
Image		Image Pixel Module	ALWAYS
Image		Display Shutter Module	ALWAYS
Image		CR Image Module	ALWAYS
Image		Modality LUT Module	ALWAYS
Image		VOI LUT Module	ALWAYS
Image		SOP Common Module	ALWAYS
Image		Overlay Plane Module	ALWAYS

Table 60: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	MWL, USER	
Patient ID	0010,0020	LO		ALWAYS	AUTO, MWL	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Other Patient IDs	0010,1000	LO		ANAP	MWL, USER	
Ethnic Group	0010,2160	SH		ANAP	AUTO	
Patient Comments	0010,4000	LT		ANAP	MWL, USER	
Issuer of Patient ID	0010,0021	LO		ANAP	MWL, USER	

Table 61: General Study Module

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

Table 62: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	MWL, USER	
Patient's Size	0010,1020	DS		ANAP	MWL, USER	
Patient's Weight	0010,1030	DS		ANAP	MWL, USER	
Additional Patient History	0010,21B0	LT		ANAP	MWL, USER	

Table 63: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAP	AUTO	
Series Time	0008,0031	TM		ANAP	AUTO	
Modality	0008,0060	CS	CR	ALWAYS	CONFIG	
Series Description	0008,103E	LO		ANAP	MPPS, USER	
Performing Physician's Name	0008,1050	PN		ANAP	MPPS, USER	
Operators' Name	0008,1070	PN		ALWAYS	MPPS, USER	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP		
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	

>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Protocol Name	0018,1030	LO		ALWAYS	MWL, USER	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO, MPPS	
Series Number	0020,0011	IS		ALWAYS	AUTO, MPPS	
Laterality	0020,0060	CS		VNAP	CONFIG	
Performed Procedure Step Start Date	0040,0244	DA		ANAP	AUTO, MPPS	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	AUTO, MPPS	
Performed Procedure Step ID	0040,0253	SH		ANAP	AUTO, MPPS	
Performed Procedure Step Description	0040,0254	LO		ANAP	AUTO, MPPS	

Table 64: CR Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Body Part Examined	0018,0015	CS		VNAP	MPPS, USER	
View Position	0018,5101	CS		VNAP	AUTO	

Table 65: 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		ALWAYS	CONFIG	
Institution Address	0008,0081	ST		ALWAYS	CONFIG	
Station Name	0008,1010	SH	MobileDiagnost	ALWAYS	CONFIG	
Institutional Department Name	0008,1040	LO		ALWAYS	CONFIG	
Manufacturer's Model Name	0008,1090	LO	MobileDiagnostOpta	ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	CONFIG	
Software Version(s)	0018,1020	LO	1.0.0	ALWAYS	AUTO	
Spatial Resolution	0018,1050	DS		ALWAYS	AUTO	

Table 66: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	Value 1: ORIGINAL, Value 2: PRIMARY	ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Acquisition Time	0008,0032	TM		ALWAYS	AUTO	
Content Time	0008,0033	TM		ALWAYS	AUTO	
Irradiation Event UID	0008,3010	UI		ANAP	AUTO	
Acquisition Number	0020,0012	IS		ANAP		
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Patient Orientation	0020,0020	CS		VNAP	AUTO	
Quality Control Image	0028,0300	CS		ALWAYS	AUTO	
Burned In Annotation	0028,0301	CS		ALWAYS	AUTO	
Lossy Image Compression	0028,2110	CS	00	ANAP	AUTO	
Presentation LUT Shape	2050,0020	CS	IDENTITY	ALWAYS	AUTO	

Table 67: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	

Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Bits Allocated	0028,0100	US	16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	10, 12, 15	ALWAYS	AUTO	When Parameter "Increase virtual depth for PACS" is enabled values are : 16,13,11
High Bit	0028,0102	US	11, 14, 9	ALWAYS	AUTO	When Parameter "Increase virtual depth for PACS" is enabled values are : 15,12,10
Pixel Representation	0028,0103	US	0000	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW/ OB		ALWAYS	AUTO	

Table 68: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS		ALWAYS		
Vertices of the Polygonal Shutter	0018,1620	IS		ANAP		

Table 69: CR Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
KVP	0018,0060	DS		ANAP	AUTO	
Exposure Time	0018,1150	IS		ANAP	AUTO	
Exposure	0018,1152	IS		ANAP	AUTO	
Exposure in µAs	0018,1153	IS		ANAP	AUTO	
Imager Pixel Spacing	0018,1164	DS		ALWAYS	AUTO	
Acquisition Device Processing Description	0018,1400	LO		ANAP	AUTO	
Relative X-ray Exposure	0018,1405	IS		ANAP	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME 2	ALWAYS	AUTO	

Table 70: Modality LUT Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rescale Intercept	0028,1052	DS		ALWAYS	AUTO	
Rescale Slope	0028,1053	DS		ALWAYS	AUTO	
Rescale Type	0028,1054	LO	US	ALWAYS	AUTO	

Table 71: VOI LUT Module

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

Table 72: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP	AUTO	
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.1	ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	

8.1.1.3.   Secondary Capture Image Storage SOP Class

Table 73: 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
Study	Patient Study Module	ALWAYS
Series	General Series Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Equipment	SC Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	SC Image Module	ALWAYS
Image	VOI LUT Module	ALWAYS
Image	SOP Common Module	ALWAYS

Table 74: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Issuer of Accession Number Sequence	0008,0051	SQ		ANAP		
Patient's Name	0010,0010	PN		VNAP	MWL, USER	
Patient ID	0010,0020	LO		ALWAYS	MWL, USER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Sex	0010,0040	CS		VNAP	MWL, USER	
Other Patient IDs	0010,1000	LO		ANAP	MWL, USER	
Ethnic Group	0010,2160	SH		ANAP	MWL, USER	
Patient Comments	0010,4000	LT		ANAP	MWL, USER	
Issuer of Patient ID	0010,0021	LO		ANAP	MWL, USER	

Table 75: General Study Module

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

Table 76: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	AUTO, MWL	
Patient's Size	0010,1020	DS		ANAP	AUTO, MWL	
Patient's Weight	0010,1030	DS		VNAP	AUTO, MWL	
Additional Patient History	0010,21B0	LT		VNAP	AUTO, MWL	

Table 77: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAP	AUTO	
Series Time	0008,0031	TM		ANAP	AUTO	
Modality	0008,0060	CS		ALWAYS	AUTO	
Series Description	0008,103E	LO		ANAP	MPPS, USER	
Performing Physician's Name	0008,1050	PN		ANAP	MPPS, USER	
Operators' Name	0008,1070	PN		ALWAYS	MPPS, USER	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ALWAYS	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ALWAYS	AUTO	
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS	AUTO	
Body Part Examined	0018,0015	CS		VNAP	MPPS, USER	
Protocol Name	0018,1030	LO		ALWAYS	MWL, USER	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO, MPPS	
Series Number	0020,0011	IS		ALWAYS	AUTO, MPPS	
Laterality	0020,0060	CS		VNAP	CONFIG	
Performed Procedure Step Start Date	0040,0244	DA		ANAP	AUTO, MPPS	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	MPPS	
Performed Procedure Step ID	0040,0253	SH		ANAP	AUTO, MPPS	
Performed Procedure Step Description	0040,0254	LO		ANAP	AUTO, MPPS	

Table 78: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO		ALWAYS	AUTO	
Institution Name	0008,0080	LO		ALWAYS	CONFIG	
Institution Address	0008,0081	ST		ALWAYS	CONFIG	
Station Name	0008,1010	SH	MobileDiagnost	ALWAYS	CONFIG	
Institutional Department Name	0008,1040	LO		ALWAYS	CONFIG	
Manufacturer's Model Name	0008,1090	LO	MobileDiagnostOpta	ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ANAP	CONFIG	
Software Version(s)	0018,1020	LO	1.0.0	ALWAYS	AUTO	
Spatial Resolution	0018,1050	DS		ALWAYS	AUTO	

Table 79: SC Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS		ALWAYS	AUTO	
Conversion Type	0008,0064	CS		ALWAYS	AUTO	

Table 80: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	Value 1: ORIGINAL, Value 2: PRIMARY	ALWAYS	AUTO	
Acquisition Date	0008,0022	DA		ALWAYS	AUTO	
Content Date	0008,0023	DA		ALWAYS	AUTO	
Acquisition Time	0008,0032	TM		ALWAYS	AUTO	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Content Time	0008,0033	TM		ALWAYS	AUTO	
Irradiation Event UID	0008,3010	UI		ANAP	AUTO	
Instance Number	0020,0013	IS		ALWAYS	AUTO	
Quality Control Image	0028,0300	CS		ALWAYS	AUTO	
Burned In Annotation	0028,0301	CS		ALWAYS	AUTO	
Lossy Image Compression	0028,2110	CS		ANAP	AUTO	
Patient Orientation	0020,0020	CS		ANAP	USER	

Table 81: 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		ALWAYS	AUTO	
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	
Bits Allocated	0028,0100	US	16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	10, 12, 15	ALWAYS	CONFIG	When Parameter "Increase virtual depth for PACS" is enabled values are : 16,13,11
High Bit	0028,0102	US	11, 14, 9	ALWAYS		
Pixel Representation	0028,0103	US	0000	ALWAYS	AUTO	
Pixel Data	7FE0,0010	OW/OB		ALWAYS	AUTO	

Table 82: 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 83: VOI LUT Module

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

Table 84: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP	AUTO	
SOP Class UID	0008,0016	UI		ALWAYS	AUTO	
SOP Instance UID	0008,0018	UI		ALWAYS	AUTO	
Instance Number	0020,0013	IS		ANAP	AUTO	

8.1.1.4.　Digital X-Ray Image Storage - For Pres. SOP

Table 85: IOD of Created Digital X-Ray Image Storage - For Pres. SOP Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	ALWAYS
Study	General Study Module	ALWAYS
Study	Patient Study Module	CONDITIONAL

Series	General Series Module	ALWAYS
Series	DX Series Module	ALWAYS
Frame of Reference	Frame of Reference Module	ALWAYS
Equipment	General Equipment Module	ALWAYS
Image	General Image Module	ALWAYS
Image	Image Pixel Module	ALWAYS
Image	Acquisition Context Module	ALWAYS
Image	Display Shutter Module	CONDITIONAL
Image	DX Anatomy Imaged Module	ALWAYS
Image	DX Image Module	ALWAYS
Image	X-Ray Collimator Module	CONDITIONAL
Image	DX Detector Module	
Image	DX Positioning Module	CONDITIONAL
Image	X-Ray Acquisition Dose Module	CONDITIONAL
Image	VOI LUT Module	CONDITIONAL
Image	SOP Common Module	ALWAYS

Table 86: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	MWL, USER	
Patient ID	0010,0020	LO		VNAP	MWL, USER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Sex	0010,0040	CS		VNAP	MWL, USER	
Other Patient IDs	0010,1000	LO		ANAP	MWL, USER	
Ethnic Group	0010,2160	SH		ANAP	MWL, USER	
Patient Comments	0010,4000	LT		ANAP	MWL, USER	
Issuer of Patient ID	0010,0021	LO		ANAP	MWL, USER	

Table 87: General Study Module

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

Table 88: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	MWL, USER	
Patient's Size	0010,1020	DS		ANAP	MWL, USER	
Patient's Weight	0010,1030	DS		ANAP	MWL, USER	
Additional Patient History	0010,21B0	LT		ANAP	MWL, USER	

Table 89: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAP	MPPS	

				Presence of Value	Source	
Series Time	0008,0031	TM		ANAP	MPPS	
Modality	0008,0060	CS		ALWAYS	AUTO	
Series Description	0008,103E	LO		ANAP	MPPS, USER	
Performing Physician's Name	0008,1050	PN		ANAP	MPPS, USER	
Operators' Name	0008,1070	PN		ANAP	MPPS, USER	
Body Part Examined	0018,0015	CS		ANAP	MPPS	
Protocol Name	0018,1030	LO		ANAP	MWL, USER	
Performed Procedure Step Start Date	0040,0244	DA		ANAP	MPPS, AUTO	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	MPPS, AUTO	
Performed Procedure Step ID	0040,0253	SH		ANAP	MPPS, AUTO	
Performed Procedure Step Description	0040,0254	LO		ANAP	MPPS, AUTO	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO	
Series Number	0020,0011	IS		ALWAYS	AUTO	

Table 90: DX Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	DX	ALWAYS	CONFIG	
Presentation Intent Type	0008,0068	CS	FOR PRESENTATION	ALWAYS	AUTO	
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP		
>Referenced SOP Class UID	0008,1150	UI		ANAP	AUTO	
>Referenced SOP Instance UID	0008,1155	UI	1.2.840.10008.3.1.2.3.3	ANAP	AUTO	

Table 91: Frame of Reference Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Frame of Reference UID	0020,0052	UI		ALWAYS	AUTO	
Position Reference Indicator	0020,1040	LO		VNAP	CONFIG	

Table 92: General Equipment Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Manufacturer	0008,0070	LO		VNAP	AUTO	
Institution Name	0008,0080	LO		ANAP	CONFIG	
Institution Address	0008,0081	ST		ANAP	CONFIG	
Station Name	0008,1010	SH	MobileDiagnost	ANAP	CONFIG	
Institutional Department Name	0008,1040	LO		ANAP	CONFIG	
Manufacturer's Model Name	0008,1090	LO	MobileDiagnostOpta	ANAP	AUTO	
Device Serial Number	0018,1000	LO		ANAP	CONFIG	
Software Version(s)	0018,1020	LO	1.0.0	ANAP	AUTO	
Spatial Resolution	0018,1050	DS		ANAP	AUTO	

Table 93: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Date	0008,0022	DA		ANAP	AUTO	
Content Date	0008,0023	DA		ANAP	AUTO	
Acquisition Time	0008,0032	TM		ANAP	AUTO	
Content Time	0008,0033	TM		ANAP	AUTO	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Source Image Sequence	0008,2112	SQ		ANAP		
>Patient Orientation	0020,0020	CS		ANAP	AUTO	
Irradiation Event UID	0008,3010	UI		ANAP	AUTO	
Quality Control Image	0028,0300	CS		ALWAYS	AUTO	
Lossy Image Compression	0028,2110	CS		ANAP		

Table 94: Image Pixel Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Rows	0028,0010	US		ALWAYS	AUTO	
Columns	0028,0011	US		ALWAYS	AUTO	

Table 95: Acquisition Context Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Context Sequence	0040,0555	SQ		VNAP	AUTO	

Table 96: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS		ALWAYS	AUTO	
Vertices of the Polygonal Shutter	0018,1620	IS		ANAP	AUTO	

Table 97: DX Anatomy Imaged Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Laterality	0020,0062	CS		VNAP	AUTO	
Anatomic Region Sequence	0008,2218	SQ		VNAP	AUTO	

Table 98: DX Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Type	0008,0008	CS	Value 1: ORIGINAL, Value 2: PRIMARY	ALWAYS	AUTO	
Acquisition Device Processing Description	0018,1400	LO		ANAP	AUTO	
Samples per Pixel	0028,0002	US	1	ALWAYS	AUTO	
Photometric Interpretation	0028,0004	CS	MONOCHROME2	ALWAYS	AUTO	
Bits Allocated	0028,0100	US	16	ALWAYS	AUTO	
Bits Stored	0028,0101	US	10, 12, 15	ALWAYS	CONFIG	When Parameter "Increase virtual depth for PACS" is enabled values are : 16,13,11
High Bit	0028,0102	US	11, 14, 9	ALWAYS	AUTO	When Parameter "Increase virtual depth for PACS" is enabled values are : 15,12,10
Pixel Representation	0028,0103	US	0	ALWAYS	AUTO	
Burned In Annotation	0028,0301	CS		ALWAYS	CONFIG	
Pixel Intensity Relationship	0028,1040	CS	LOG	ALWAYS	AUTO	
Pixel Intensity Relationship Sign	0028,1041	SS	1	ALWAYS	AUTO	
Window Centre	0028,1051	DS	Value 1: 2047.0	ANAP	AUTO	
Rescale Intercept	0028,1052	DS		ALWAYS	AUTO	
Rescale Slope	0028,1053	DS		ALWAYS	AUTO	
Rescale Type	0028,1054	LO		ALWAYS	AUTO	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Lossy Image Compression	0028,2110	CS	00	ALWAYS	AUTO	
Presentation LUT Shape	2050,0020	CS	IDENTITY	ALWAYS	AUTO	

Table 99: X-Ray Collimator Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Collimator Shape	0018,1700	CS		ALWAYS	AUTO	
Collimator Left Vertical Edge	0018,1702	IS		ANAP	AUTO	
Collimator Right Vertical Edge	0018,1704	IS		ANAP	AUTO	
Collimator Upper Horizontal Edge	0018,1706	IS		ANAP	AUTO	
Collimator Lower Horizontal Edge	0018,1708	IS		ANAP	AUTO	

Table 100: DX Detector Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Imager Pixel Spacing	0018,1164	DS		ALWAYS	AUTO	
Field of View Origin	0018,7030	DS		ANAP	AUTO	
Field of View Rotation	0018,7032	DS		ANAP	AUTO	
Field of View Horizontal Flip	0018,7034	CS		ANAP	AUTO	
Detector Temperature	0018,7001	DS		VNAP	AUTO	
Detector Mode	0018,7008	LT		VNAP	AUTO	
Detector ID	0018,700A	SH		ANAP		
Date of Last Detector Calibration	0018,700C	DA		ANAP	AUTO	
Time of Last Detector Calibration	0018,700E	TM		ANAP	AUTO	
Detector Time Since Last Exposure	0018,7012	DS		VNAP	AUTO	
Detector Manufacturer Name	0018,702A	LO		VNAP	AUTO	
Detector Manufacturer's Model Name	0018,702B	LO		VNAP	AUTO	

Table 101: DX Positioning Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Positioner Type	0018,1508	CS		VNAP	AUTO	
View Position	0018,5101	CS		ANAP	AUTO	

Table 102: X-Ray Acquisition Dose Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
KVP	0018,0060	DS		ANAP	AUTO	
Exposure Time	0018,1150	IS		ANAP	AUTO	
Exposure	0018,1152	IS		ANAP	AUTO	
Exposure in µAs	0018,1153	IS		ANAP	AUTO	
Image and Fluoroscopy Area Dose Product	0018,115E	DS		ANAP	AUTO	
Relative X-ray Exposure	0018,1405	IS		ANAP	AUTO	
Exposure Time in mS	0018,8150	DS		ANAP	AUTO	
Entrance Dose	0040,0302	US		ANAP	AUTO	

Table 103: VOI LUT Module

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

Table 104: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP		
SOP Class UID	0008,0016	UI	1.2.840.10008.5.1.4.1.1.1.1	ANAP	AUTO	
SOP Instance UID	0008,0018	UI		ANAP	AUTO	
Instance Number	0020,0013	IS		ANAP	AUTO	

8.1.1.5. Digital X-Ray Image Storage - For Proc. SOP

Table 105: IOD of Created Digital X-Ray Image Storage - For Proc. SOP Instances

Information Entity	Module	Presence Of Module
Patient	Patient Module	
Study	General Study Module	
Study	Patient Study Module	
Series	General Series Module	
Series	DX Series Module	
Frame of Reference	Frame of Reference Module	
Equipment	General Equipment Module	
Image	General Image Module	
Image	Image Pixel Module	
Image	Acquisition Context Module	
Image	Display Shutter Module	
Image	DX Anatomy Imaged Module	
Image	X-Ray Collimator Module	
Image	DX Detector Module	
Image	DX Positioning Module	
Image	X-Ray Acquisition Dose Module	
Image	X-Ray Generation Module	
Image	SOP Common Module	

Table 106: Patient Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Name	0010,0010	PN		VNAP	MWL, USER	
Patient ID	0010,0020	LO		ALWAYS	MWL, USER	
Patient's Birth Date	0010,0030	DA		VNAP	MWL, USER	
Patient's Sex	0010,0040	CS	F, M, O	VNAP	MWL, USER	
Other Patient IDs	0010,1000	LO		ANAP	MWL, USER	
Ethnic Group	0010,2160	SH		ANAP	MWL, USER	
Patient Comments	0010,4000	LT		ANAP	MWL, USER	
Issuer of Patient ID	0010,0021	LO		ANAP	MWL, USER	

Table 107: General Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Study Date	0008,0020	DA		ALWAYS	MPPS	
Study Time	0008,0030	TM		ALWAYS	MPPS	
Accession Number	0008,0050	SH		VNAP	MWL, USER	
Referring Physician's Name	0008,0090	PN		VNAP	MWL, USER	
Study Description	0008,1030	LO		ANAP	MWL, USER	
Procedure Code Sequence	0008,1032	SQ		ANAP		
>Coding Scheme Designator	0008,0102	SH		ALWAYS		
>Code Meaning	0008,0104	LO		ALWAYS		
Referenced Study Sequence	0008,1110	SQ		ANAP		
>Referenced SOP Class UID	0008,1150	UI		ALWAYS		
>Referenced SOP Instance UID	0008,1155	UI		ALWAYS		
Study Instance UID	0020,000D	UI		ALWAYS		
Study ID	0020,0010	SH		ALWAYS	AUTO, MPPS	

Table 108: Patient Study Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Patient's Age	0010,1010	AS		ANAP	MWL, USER	
Patient's Size	0010,1020	DS		ANAP	MWL, USER	
Patient's Weight	0010,1030	DS		ANAP	MWL, USER	
Additional Patient History	0010,21B0	LT		ANAP	MWL, USER	

Table 109: General Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Series Date	0008,0021	DA		ANAP	MPPS	
Series Time	0008,0031	TM		ANAP	MPPS	
Modality	0008,0060	CS		ALWAYS		
Series Description	0008,103E	LO		ANAP	MPPS, USER	
Performing Physician's Name	0008,1050	PN		ANAP	MPPS, USER	
Operators' Name	0008,1070	PN		ANAP	MPPS, USER	
Body Part Examined	0018,0015	CS		ANAP	MPPS, USER	
Protocol Name	0018,1030	LO		ANAP	MWL, USER	
Series Instance UID	0020,000E	UI		ALWAYS	AUTO, MPPS	
Series Number	0020,0011	IS		VNAP	AUTO, MPPS	
Performed Procedure Step Start Date	0040,0244	DA		ANAP	AUTO, MPPS	
Performed Procedure Step Start Time	0040,0245	TM		ANAP	AUTO, MPPS	
Performed Procedure Step ID	0040,0253	SH		ANAP	AUTO, MPPS	
Performed Procedure Step Description	0040,0254	LO		ANAP	AUTO, MPPS	

Table 110: DX Series Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Modality	0008,0060	CS	DX	ALWAYS	CONFIG	
Presentation Intent Type	0008,0068	CS	FOR PROCESSING	ALWAYS	AUTO	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Referenced Performed Procedure Step Sequence	0008,1111	SQ		ANAP	AUTO	
>Referenced SOP Class UID	0008,1150	UI		ANAP	AUTO	
>Referenced SOP Instance UID	0008,1155	UI	1.2.840.10008.3.1.2.3.3	ANAP	AUTO	

Table 111: Frame of Reference Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Position Reference Indicator	0020,1040	LO		VNAP		

Table 112: 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		ALWAYS	CONFIG	
Institution Address	0008,0081	ST		ALWAYS	CONFIG	
Station Name	0008,1010	SH	MobileDiagnost	ALWAYS	CONFIG	
Institutional Department Name	0008,1040	LO		ALWAYS	CONFIG	
Manufacturer's Model Name	0008,1090	LO	MobileDiagnostOpta	ALWAYS	AUTO	
Device Serial Number	0018,1000	LO		ALWAYS	CONFIG	
Software Version(s)	0018,1020	LO	1.0.0	ALWAYS	AUTO	
Spatial Resolution	0018,1050	DS		ALWAYS	AUTO	

Table 113: General Image Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
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	
Source Image Sequence	0008,2112	SQ		ANAP		
>Patient Orientation	0020,0020	CS		ANAP		
Irradiation Event UID	0008,3010	UI		ANAP		
Instance Number	0020,0013	IS		VNAP	AUTO	
Quality Control Image	0028,0300	CS		ALWAYS	AUTO	
Lossy Image Compression	0028,2110	CS		ANAP		

Table 114: Image Pixel Module

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

Table 115: Acquisition Context Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Acquisition Context Sequence	0040,0555	SQ		VNAP		

Table 116: Display Shutter Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Shutter Shape	0018,1600	CS		ALWAYS	AUTO	
Vertices of the Polygonal Shutter	0018,1620	IS		ANAP	AUTO	

Table 117: DX Anatomy Imaged Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image Laterality	0020,0062	CS		ALWAYS		
Anatomic Region Sequence	0008,2218	SQ		VNAP		

Table 118: X-Ray Collimator Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Collimator Shape	0018,1700	CS		ALWAYS		
Collimator Left Vertical Edge	0018,1702	IS		ANAP		
Collimator Right Vertical Edge	0018,1704	IS		ANAP		
Collimator Upper Horizontal Edge	0018,1706	IS		ANAP		
Collimator Lower Horizontal Edge	0018,1708	IS		ANAP		

Table 119: DX Detector Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Plate ID	0018,1004	LO		ANAP		
Cassette ID	0018,1007	LO		ANAP		
Field of View Shape	0018,1147	CS		ANAP		
Field of View Dimension(s)	0018,1149	IS		ANAP		
Imager Pixel Spacing	0018,1164	DS		ALWAYS		
Detector Active Time	0018,7014	DS		ANAP		
Detector Activation Offset From Exposure	0018,7016	DS		ANAP		
Field of View Origin	0018,7030	DS		ANAP		
Field of View Rotation	0018,7032	DS		ANAP		
Field of View Horizontal Flip	0018,7034	CS		ANAP		
Sensitivity	0018,6000	DS		ANAP		
Detector Conditions Nominal Flag	0018,7000	CS		ANAP		
Detector Temperature	0018,7001	DS		ANAP		
Detector Type	0018,7004	CS		VNAP		
Detector Configuration	0018,7005	CS		ANAP		
Detector Description	0018,7006	LT		ANAP		
Detector Mode	0018,7008	LT		ANAP		
Detector ID	0018,700A	SH		ANAP		
Date of Last Detector Calibration	0018,700C	DA		ANAP		
Time of Last Detector Calibration	0018,700E	TM		ANAP		
Exposures on Detector Since Last Calibration	0018,7010	IS		ANAP		

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Exposures on Detector Since Manufactured	0018,7011	IS		ANAP		
Detector Time Since Last Exposure	0018,7012	DS		ANAP		
Detector Binning	0018,701A	DS		ANAP		
Detector Element Physical Size	0018,7020	DS		ANAP		
Detector Element Spacing	0018,7022	DS		ANAP		
Detector Active Shape	0018,7024	CS		ANAP		
Detector Active Dimension(s)	0018,7026	DS		ANAP		
Detector Active Origin	0018,7028	DS		ANAP		
Detector Manufacturer Name	0018,702A	LO		ANAP		
Detector Manufacturer's Model Name	0018,702B	LO		ANAP		
Pixel Spacing	0028,0030	DS		ANAP		
Pixel Spacing Calibration Type	0028,0A02	CS		ANAP		
Pixel Spacing Calibration Description	0028,0A04	LO		ANAP		

Table 120: DX Positioning Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Positioner Type	0018,1508	CS		VNAP		
View Position	0018,5101	CS		ANAP		

Table 121: X-Ray Acquisition Dose Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Image and Fluoroscopy Area Dose Product	0018,115E	DS		ANAP		
Relative X-ray Exposure	0018,1405	IS		ANAP		
Entrance Dose	0040,0302	US		ANAP		

Table 122: X-Ray Generation Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
KVP	0018,0060	DS		ANAP		
Exposure Time	0018,1150	IS		ANAP		
Exposure	0018,1152	IS		ANAP		
Exposure in µAs	0018,1153	IS		ANAP		
Exposure Time in mS	0018,8150	DS		ANAP		

Table 123: SOP Common Module

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Specific Character Set	0008,0005	CS		ANAP		
SOP Class UID	0008,0016	UI		ALWAYS		
SOP Instance UID	0008,0018	UI		ALWAYS		
Instance Number	0020,0013	IS		ANAP		

8.1.2.   Usage of Attributes from Received IOD

The MobileDiagnost Opta (release 1) has only an export side. The modality cannot read/view images from a CD or by import.

8.1.3. Attribute Mapping

Table 124: Attribute mapping during Modality Workflow

Name	BWLM Tag	MPPS Create Tag	MPPS Set Tag	Image IOD Tag
Accession Number	0008,0050	0008,0050	-	0008,0050
Modality	-	0008,0060	-	0008,0060
Referring Physician's Name	0008,0090	-	-	0008,0090
Operators' Name	-	-	0008,1070	0008,1070
Referenced Study Sequence	0008,1110	0008,1110	-	0008,1110
Referenced Image Sequence	-	-	(0008,1140)	-
> Referenced SOP Class UID	-	-	0008,1150	0008,0016
SOP Class UID				
> Referenced SOP Instance UID	-	-	0008,1155	0008,0018
SOP Instance UID				
Patient's Name	0010,0010	0010,0010	-	0010,0010
Patient ID	0010,0020	0010,0020	-	0010,0020
Issuer of Patient ID	0010,0021	0010,0021	-	0010,0021
Patient's Birth Date	0010,0030	0010,0030	-	0010,0030
Patient's Sex	0010,0040	0010,0040	-	0010,0040
Other Patient IDs	0010,1000	0010,1000	-	0010,1000
Medical Alerts	0010,2000	-	-	0010,2000
Allergies	0010,2110	-	-	0010,2110
Ethnic group	0010,2160	-	-	0010,2160
Additional Patient History	0010,21B0	-	-	0010,21B0
Pregnancy Status	0010,21C0	-	-	0010,21C0
Patient Comments	0010,4000	-	-	0010,4000
Protocol Name	-	-	0018,1030	0018,1030
Study Instance UID	0020,000D	0020,000D	-	0020,000D
Series Instance UID			0020,000E	0020,000E
Study ID	-	0020,0010	-	0020,0010
Requesting Service	0032,1033	-	-	0032,1033
Requested Procedure Description	0032,1060	0032,1060	-	-
Requested Procedure Code Sequence[3]	0032,1064	0008,1032	0008,1032	0008,1032
Performed Procedure Code Sequence				
Special Needs	0038,0050	-	-	0038,0050
Patient State	0038,0500	-	-	0038,0500
Scheduled Procedure Step Description[4]	0040,0007	0040,0007	-	0040,0007
Performed Procedure Step Description		0040,0254	-	0040,0254
Scheduled Protocol Code Sequence[4]	0040,0008	0040,0260	0040,0260	0040,0008
Performed Protocol Code Sequence				0040,0260
Scheduled Procedure Step ID	0040,0009	0040,0009	-	0040,0009
Performed Procedure Step Start Date	-	0040,0244	-	0040,0244
Performed Procedure Step Start Time	-	0040,0245	-	0040,0245
Performed Procedure Step ID	-	0040,0253	-	0040,0253
Requested Procedure ID	0040,1001	0040,1001	-	0040,1001

8.1.4. Coerced/Modified fields

Not Applicable

8.2. Data Dictionary of Private Attributes

Not Applicable

8.3. Coded Terminology and Templates

Not Applicable

8.3.1. Context Groups

Not Applicable

8.3.2. Template Specifications

Not Applicable

8.3.3. Private code definitions

Not Applicable

8.4. Grayscale Image consistency

The monitor of MobileDiagnost Opta (release 1) system can be calibrated according Grayscale Display Function Standard.

The pixel values exported and printed should be interpreted as P-Value. If the export destination or the printer does not support GSDF, MobileDiagnost Opta (release 1) provides calibration tools to adapt to this device to afford grayscale image consistency. The calibration takes into account ambient luminance and light box luminance.

8.5. Standard Extended/Specialized/Private SOPs

Table 125: List of Extended/Specialized/Private created SOP Instance

SOP Class Name	SOP Class UID
Computed Radiography Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.1
Secondary Capture Image Storage SOP Class	1.2.840.10008.5.1.4.1.1.7
Digital X-Ray Image Storage - For Pres. SOP	1.2.840.10008.5.1.4.1.1.1.1
Digital X-Ray Image Storage - For Proc. SOP	1.2.840.10008.5.1.4.1.1.1.1.1

8.5.1. Standard Extended/Specialized/Private SOP Instance

The Storage SOP classes are extended to create a standard extended SOP class by addition of standard and private attributes to the created SOP Instances.

8.5.1.1. Computed Radiography Image Storage SOP Class

Table 126: Addition of standard and private attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		VNAP	MWL/USER	
Allergies	0010,2110	LO		VNAP	MWL/USER	
Pregnancy Status	0010,21C0	US		VNAP	MWL/USER	
Image and Fluoroscopy Area Dose Product	0018,115E	DS		VNAP	AUTO	
Grid	0018,1166	CS		VNAP	AUTO	

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Filter Material	0018,7050	CS		VNAP	AUTO	
Requesting Physician	0032,1032	PN		VNAP	MWL/USER	
Requesting Service	0032,1033	LO		VNAP	MWL/USER	
Requested Procedure Description	0032,1060	LO		VNAP	MWL/USER	
Special Needs	0038,0050	LO		VNAP	MWL/USER	
Patient State	0038,0500	LO		VNAP	MWL/USER	
Performed Station AE Title	0040,0241	AE		VNAP	MPPS/AUTO	
Performed Procedure Step End Date	0040,0250	DA		VNAP	MPPS/AUTO	
Performed Procedure Step End Time	0040,0251	TM		VNAP	MPPS/AUTO	
Performed Procedure Step Status	0040,0252	CS		VNAP	MPPS/AUTO	
Total Number of Exposures	0040,0301	US		VNAP	AUTO	
Requested Procedure ID	0040,1001	SH		VNAP	MWL/USER	
Reason for the Requested Procedure	0040,1002	LO		VNAP	MWL/USER	
Requested Procedure Priority	0040,1003	SH		VNAP	MWL/USER	
Patient Transport Arrangements	0040,1004	LO		VNAP	MWL/USER	
Names of Intended Recipients of Results	0040,1010	PN		VNAP	MWL/USER	
Requested Procedure Comments	0040,1400	LT		VNAP	MWL/USER	
Reason for the Imaging Service Request (RETIRED)	0040,2001	LO		VNAP	MWL	
Issue Date of Imaging Service Request	0040,2004	DA		VNAP	MWL/USER	
Imaging Service Request Comments	0040,2400	LT		VNAP	MWL/USER	
Requested Procedure Code Sequence	0032,1064	SQ		VNAP	MWL	
Exposure Dose Sequence	0040,030E	SQ		VNAP	AUTO	
Film Consumption Sequence	0040,0321	SQ		VNAP	AUTO	

8.5.1.2.   Secondary Capture Image Storage SOP Class

Table 127: Addition of standard and private attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		VNAP	MWL/USER	
Allergies	0010,2110	LO		VNAP	MWL/USER	
Pregnancy Status	0010,21C0	US		VNAP	MWL/USER	
KVP	0018,0060	DS		ANAP	AUTO	
Distance Source to Detector	0018,1110	DS		ANAP	AUTO	
Distance Source to Patient	0018,1111	DS		ANAP	AUTO	
Exposure Time	0018,1150	IS		ANAP	AUTO	
Exposure	0018,1152	IS		ANAP	AUTO	
Exposure in uAs	0018,1153	IS		ANAP	AUTO	
Radiation Setting	0018,1155	CS		VNAP	AUTO	
Image and Fluoroscopy Area Dose Product	0018,115E	DS		VNAP	AUTO	
Grid	0018,1166	CS		VNAP	AUTO	
Filter Material	0018,7050	CS		VNAP	AUTO	
Imager Pixel Spacing	0018,1164	DS		VNAP	AUTO	
Acquisition Device Processing Description	0018,1400	LO		VNAP	AUTO	
Relative X-ray Exposure	0018,1405	IS		VNAP	AUTO	
View Position	0018,5101	CS		VNAP	AUTO	
Requesting Physician	0032,1032	PN		VNAP	MWL/USER	
Requesting Service	0032,1033	LO		VNAP	MWL/USER	
Requested Procedure Description	0032,1060	LO		VNAP	MWL/USER	
Special Needs	0038,0050	LO		VNAP	MWL/USER	

Patient State	0038,0500	LO		VNAP	MWL/USER	
Performed Station AE Title	0040,0241	AE		VNAP	MPPS/AUTO	
Performed Procedure Step End Date	0040,0250	DA		VNAP	MPPS/AUTO	
Performed Procedure Step End Time	0040,0251	TM		VNAP	MPPS/AUTO	
Performed Procedure Step Status	0040,0252	CS		VNAP	MPPS/AUTO	
Total Number of Exposures	0040,0301	US		VNAP	AUTO	
Entrance Dose	0040,0302	US		VNAP	AUTO	
Requested Procedure ID	0040,1001	SH		VNAP	MWL/USER	
Reason for the Requested Procedure	0040,1002	LO		VNAP	MWL/USER	
Requested Procedure Priority	0040,1003	SH		VNAP	MWL/USER	
Patient Transport Arrangements	0040,1004	LO		VNAP	MWL/USER	
Names of Intended Recipients of Results	0040,1010	PN		VNAP	AUTO	
Requested Procedure Comments	0040,1400	LT		VNAP	MWL	
Reason for the Imaging Service Request (RETIRED)	0040,2001	LO		VNAP	MWL	
Issue Date of Imaging Service Request	0040,2004	DA		VNAP	MWL/USER	
Imaging Service Request Comments	0040,2400	LT		VNAP	MWL/USER	
Requested Procedure Code Sequence	0032,1064	SQ		VNAP	MWL	
Exposure Dose Sequence	0040,030E	SQ		VNAP	AUTO	
Film Consumption Sequence	0040,0321	SQ		VNAP	AUTO	

8.5.1.3. Digital X-Ray Image Storage - For Pres. SOP

Table 128: Addition of standard and private attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		VNAP	MWL/USER	
Allergies	0010,2110	LO		VNAP	MWL/USER	
Pregnancy Status	0010,21C0	US		VNAP	MWL/USER	
Requesting Physician	0032,1032	PN		VNAP	MWL/USER	
Requesting Service	0032,1033	LO		VNAP	MWL/USER	
Requested Procedure Description	0032,1060	LO		VNAP	MWL/USER	
Requested Procedure Code Sequence	0032,1064	SQ			MWL/USER	
Special Needs	0038,0050	LO		VNAP	MWL/USER	
Patient State	0038,0500	LO		VNAP	MWL/USER	
Performed Station AE Title	0040,0241	AE		VNAP	MPPS/AUTO	
Performed Procedure Step End Date	0040,0250	DA		VNAP	MPPS/AUTO	
Performed Procedure Step End Time	0040,0251	TM		VNAP	MPPS/AUTO	
Performed Procedure Step Status	0040,0252	CS		VNAP	MPPS/AUTO	
Total Number of Exposures	0040,0301	US		VNAP	AUTO	
Requested Procedure ID	0040,1001	SH		VNAP	MWL/AUTO	
Requested Procedure Priority	0040,1003	SH		VNAP	MWL	
Patient Transport Arrangements	0040,1004	LO		VNAP	MWL/USER	
Names of Intended Recipients of Results	0040,1010	PN		VNAP	AUTO	
Requested Procedure Comments	0040,1400	LT		VNAP	MWL	
Reason for the Imaging Service Request (RETIRED)	0040,2001	LO		VNAP	MWL	
Imaging Service Request Comments	0040,2400	LT		VNAP	MWL/USER	
Requested Procedure Code Sequence	0032,1064	SQ		VNAP	MWL	
Exposure Dose Sequence	0040,030E	SQ		VNAP	AUTO	
Film Consumption Sequence	0040,0321	SQ		VNAP	AUTO	

8.5.1.4. Digital X-Ray Image Storage - For Proc. SOP

Table 129: Addition of standard and private attributes

Attribute Name	Tag	VR	Value	Presence of Value	Source	Comment
Medical Alerts	0010,2000	LO		VNAP	MWL/USER	
Allergies	0010,2110	LO		VNAP	MWL/USER	
Pregnancy Status	0010,21C0	US		VNAP	MWL/USER	
Requesting Physician	0032,1032	PN		VNAP	MWL/USER	
Requesting Service	0032,1033	LO		VNAP	MWL/USER	
Requested Procedure Description	0032,1060	LO		VNAP	MWL/USER	
Special Needs	0038,0050	LO		VNAP	MWL/USER	
Patient State	0038,0500	LO		VNAP	MWL/USER	
Performed Station AE Title	0040,0241	AE		VNAP	MPPS/AUTO	
Performed Procedure Step End Date	0040,0250	DA		VNAP	MPPS/AUTO	
Performed Procedure Step End Time	0040,0251	TM		VNAP	MPPS/AUTO	
Performed Procedure Step Status	0040,0252	CS		VNAP	MPPS/AUTO	
Total Number of Exposures	0040,0301	US		VNAP	AUTO	
Requested Procedure ID	0040,1001	SH		VNAP	MWL/AUTO	
Reason for the Requested Procedure	0040,1002	LO		VNAP	MWL	
Requested Procedure Priority	0040,1003	SH		VNAP	MWL	
Patient Transport Arrangements	0040,1004	LO		VNAP	MWL/USER	
Names of Intended Recipients of Results	0040,1010	PN		VNAP	AUTO	
Requested Procedure Comments	0040,1400	LT		VNAP	MWL	
Reason for the Imaging Service Request (RETIRED)	0040,2001	LO		VNAP	MWL	
Imaging Service Request Comments	0040,2400	LT		VNAP	MWL/USER	
Requested Procedure Code Sequence	0032,1064	SQ		VNAP	MWL	
Exposure Dose Sequence	0040,030E	SQ		VNAP	AUTO	
Film Consumption Sequence	0040,0321	SQ		VNAP	AUTO	

8.6. Private Transfer Syntaxes

Not Applicable